

NSA ROUND TABLE 34: HAMMER THROW

The following is a round table question – answer format discussion on various aspects of the hammer throw. The NSA Round Table is a staple feature of most NSA editions. Re-printed with permission from New Studies in Athletics.

- Teodoru AGACHI (Romania) is a hammer throw club coach of S.C. Bacau. She discovered Mihaela Melinte in 1988, when she was 13, and has coached her ever since.
- Yuriy BAKARYNOV (Russia) is the head coach for throwing events of the All-Russian Athletic Federation. With Anatoliy Bondarchuk he was responsible for creating the so-called Soviet School of Hammer throwing in the 1970's. A former high-level Hammer thrower himself, whose in the past has coached Y. Sedykh, S. Litvinov, I. Nikulin, among others.
- Lawrie BARCLAY (Australia) is a national hammer and throws coach.
- Guy GUERIN (France), a former 69.90m hammer thrower, has been French national hammer coach since 1984. Has been responsible for considerable French success in major Championships since 1990.
- Boris RUBANKO (Ukraine) is a hammer throw coach at the Republic Training College of Physical Culture in Kiev.
- Allan STAERCK (Great Britain) is the special event coach for the hammer for the South of England Athletic Association and a former event coach for the women's hammer for the British Athletic Federation.
- Sergey Ivanovich SYKHONOSOV (Ukraine) is a club coach for Sdushor 'Atlet', Kiev.
- Ernő SZABO (Hungary) graduated at the Faculty of Coaching and works as a coach at the Track and Field Youth Club (VEDAC) at Veszprém. He is personal coach to Balázs Kiss, Olympic Champion 1996.

Athletes in all four throwing events possess certain physical qualities in common. However, each of the throws also demands physical qualities specific to the event. What specific physical are essential for success in the hammer event and what training means would you use develop / improve them?

AGACHI:

In our opinion, the principal physical qualities for women hammer throwers are:

- general skills, especially the sense of balance, rhythm, mobility and flexibility of the locomotor system;
- speed-strength; speed in power conditions; throwing power;
- quality and speed of the cortical process, hammer throwing being also a neuro-muscular activity.

In order to develop and improve these qualities, we use the following methods:

- general athletic training, including hurdling, high jump, long jump, as well as exercises from other throwing events,
- exercises from Olympic and Rhythmic gymnastics,
- exercises from basketball and football training.
- exercises to develop balance — from acrobatic gymnastics — like rolling, handstands, bridge from standing and supine positions, different forms of balance walk on gym bench,
- specific throwing exercises, such as 25-30 pirouettes using hammer or weightlifting discs, turns with hammer but with a high jump bar on the shoulders, hammer turns with sand sack on shoulders.

For the development of power, we use:

- power tracks, exercises aimed at developing power using the weight-lifting method; exercises following the Power-Training method;
- running and jumping exercises;
- combined throws using a light hammer of 3Kg; a heavy hammer of 5kg and the competition hammer of 4kg.

To develop rhythm, we use:

- runs with changes of rhythm, accelerations, starts,
- hammer throws with different rhythms and with an even rhythm for each turn.

BAKARYNOV:

The level of general physical conditioning achieved by the strongest throwers over the last thirty years has not changed very much. What has changed is the structure of their physical conditioning. It has become considerably more specific, and a tendency has developed to use basic exercises for the physical conditioning for the different throwing events.

Of the types of exercises that specifically determine performance in the hammer throw, the following are the most effective: bench press, snatch, squats, clean and jerk, standing long and triple jump, throwing the shot forwards and behind the head.

(This information is based on the statistical analysis of the results of tests carried out on 82 hammer throwers).

Below are the results of the testing of the physical conditioning of hammer throwers. The statistical characteristics of the selection are: std. dev. = standard deviation, min. and max. = minimum and maximum value of the parameters.

Statistical characteristics:

	Result	std. dev.	min.	max.
Competition result [m]	72.40	0.91	49.92	86.34
Bench press [kg]	127.6	4.49	50.0	175.0
Snatch [kg]	148.3	2.41	60.0	180.0
Squats [kg]	219.0	3.91	85.0	280.0
Clean and jerk [kg]	108.1	1.74	50.0	140.0
Standing long jump [cm]	313	2.70	240	365
Standing triple jump [cm]	924	5.91	770	1086
Sergeant jump [cm]	83	1.93	60	102
Throwing the shot forwards [m]	16.77	0.26	10.03	19.02
Throwing the shot backwards [m]	18.46	0.25	13.00	21.99

By using a regressive method to analyze the test data, we were able to obtain the equations of regression of the dependence of the results on the apparent physical conditioning. The following equation was obtained:

$$R = 18.75 - 0.132 \times (\text{snatch}) \div 0.155 \times (\text{squats}) + 0.174 \times (\text{clean and jerk}) + 1.218 \times (\text{throwing shot backwards}) + 0.244 \times (\text{throwing shot forwards}) - 0.07 \times (\text{standing long jump}) - 0.514 \times (\text{standing triple jump}).$$

(Here R is the result of the hammer throw. These are the results of controlled exercises.)

Thus, on the basis of this information concerning the physical readiness of hammer throwers, applied accordingly to the regressive equation, it is possible to calculate their possible results.

BARCLAY:

Male athletes of a muscular build, having a height potential of 178-182cm, with long arms, long trunk and short legs, allowing for a low centre of gravity, are best suited to hammer throwing. I believe that the low centre of gravity is an important requirement in order to maintain balance in the complex turning movements essential to the event. Girls have a decided genetic advantage in this area, and stockier girls as short as 166cm can be successful. Good balance and the ability to perform the complex turning movements can then be developed, using drills with broomsticks etc., and against added resistance in the form of weight discs or medicine balls.

GUERIN:

The essential physical qualities for the hammer throw are revealed during adolescence and growth, after a period of general athletic training, a training programme aiming at creating a general athletic base and developing a wide range of movement provides a springboard for the qualities of explosiveness and co-ordination of the future thrower (male or female).

The specific nature of the co-ordination during the turn should be developed progressively with a light hammer. It will be improved by developing strength.

The teaching methods may be global or analytical. The global method concentrates on the purpose of the movement, and limits movement inhibitions.

This method favors the development of the rhythmic structure of the throw, which is the foundation of the event.

The analytical method corrects possible technical errors, and is used in the form of drills.

RUBANKO:

The qualities needed for success in the hammer throw are, in order of priority:

- For women:
 - Co-ordination, speed, quickness of movement, explosive power, flexibility.

- For men:
 - General and explosive power, co-ordination, quickness of movement, speed, jumping ability, flexibility.

STAERK:

Apart from the basic physical qualities required by all throwers, I would look for good co-ordination and rotational speed. The ability to turn fast and still stay in control is the most important pre-requisite for good hammer throwing. Provided that young athletes show that they at least have the potential physical qualities of height, strength and build, then this ability to rotate rapidly is the surest indication of the likelihood of success in the hammer throw.

To develop this ability I would use a series of skill drills involving a combination of swings and turns.

SYKHONOSOV:

Specific and special physical qualities are essential factors for success in the hammer throw. In fact, it was the evolution of these qualities that gave a fundamental stimulus to performance in the hammer event at the beginning of and during the 1980s.

Former leading hammer throwers (Y. Sedykh, S. Litvinov, U. Tamm) not only improved their general physical qualities but also successfully developed their specific qualities, and thereby obtained better results.

As a coach, during training sessions, I prefer using the following to develop and improve specific qualities:

- the use of heavier, lighter and standard hammers
- throws with dumbbells of 16, 24, 32 kg (forward / upward, overhead / backward, to the left and right; with 2 hands and with 1 hand, with 1 turn)
- shot throws (forward / up, overhead / back, to the left and right)
- throwing weights of 16 kg on a short rope (to the left and right, 1 and 2 turns)
- throwing disc weights, to the left and right, and also throwing the discus with the left and right hands
- exercises with free weights (twisting, lunges, bends, squats, jumps / hops, step-ups on benches)

- exercises with dumb bells (twisting, lunges, jumps/hops).

SZABO:

Leg and trunk muscles have a great role in the technical performance of the hammer-throw. Accordingly, the specific and general strengthening exercises aim at these areas. To give an example I list Balázs' control results from 1991 (junior age). It can be seen from these results what training we used.

Control results are:

- 30m run from high start 3.6s
- Long jump from standing 325cm
- Five hops from standing (with both feet) 16.98m
- Shot throw backwards over the head with two hands:
 - 6kg shot 19.66m
 - 7.26kg shot 18.02m
- Weightlifting
 - snatch 115kg
 - power clean starting from the ground 165kg
 - deep squats with weight on shoulders 215kg
 - deep squats on chest 190kg
- Heavy weight-throw
 - 8kg with full wire-length 64.00m
 - 10kg with 1m wire-length 49.50

In terms of numbers participating, the hammer throw can be termed a weak event. What is the reason for this and how do you think this position could be remedied?

AGACHI:

The hammer throw is a highly technical and also a very spectacular event. However, it is not an event for every athlete.

For the moment, we cannot say whether the number of participants is increasing or decreasing, but we surely know their number is small. This is because this event requires a variety of skills, as detailed above, as well as a considerable amount of equipment and facilities: special throwing cage, special areas for hammer throwing, throwing security; indoor facilities for complex power training, hammers of different weights and sizes.

The organizers of athletics meetings do not always provide the best conditions — presenting the event at a time when there will be few spectators in the stadium, or even moving the event to another stadium.

We think the following measures would help to increase the numbers of spectators and participants in the hammer event:

- putting on the hammer throw with other events that attract many spectators
- presenting each event in such a way that spectators may follow and understand better athletics events in general and the throwing events in particular
- organizing indoor hammer competitions, using shorter wires and heavier hammers.

BAKARYNOV:

Often the calculated and actual results do not concur. This is due to the athlete's ability to exploit his general conditioning. The coefficient of use of the physical conditioning was introduced (C ut). To calculate the C ut, the real (taken as 100%) results are correlated with the predicted results in the hammer throw.

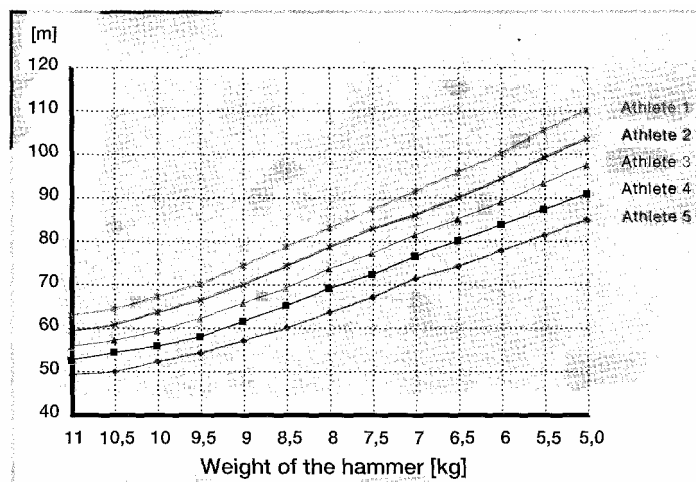
According to this calculation, the answer was derived from the deviation from "0" (where the real and predicted results are equal) into the zones "+" or "-". The deviation showed the correlation of the levels of the physical and special technical readiness.

For example,

Name	Year	Result [m]	Predicted result [m]	Coefficient of utilisation
V. Rudenkov	1959	68.27	77.82	0.88 (-0.12)
Y. Bakarynov	1960	68.90	80.20	0.86 (-0.14)
R. Klim	1964	69.74	78.29	0.89 (-0.11)
A. Bondarchuk	1974	75.88	76.47	0.99 (-0.01)
Y. Sedykh	1976	78.86	74.84	1.05 (+0.05)
Y. Sedykh	1980	81.80	76.12	1.02 (+0.02)
Y. Sedykh	1984	86.34	76.70	1.13 (+0.13)
Y. Sedykh	1988	85.14	79.37	1.07 (+0.07)
I. Nikulin	1990	84.48	83.43	1.01 (+0.01)
I. Astapovich	1993	84.62	83.28	1.02 (+0.02)
W. Edletitsch	1995	67.48	79.44	0.85 (-0.15)

For the detailed evaluation of the level of special conditioning, the principle of striving for a balance between speed and strength in throwing is used, as expressed in the “Curves of the equivalent results”. This principle is based on the method of determining the objective of throwing training.

“Curves of equivalent results” represent the leveled and averaged dependencies of throwing results on the changing of the weight of the throwing implement amongst throwers of different levels of conditioning. (They are based on many years of observation and testing of throwers, taking into account the best results of throwing with normal, lighter and heavier implements).



In order to achieve harmony in their special conditioning, must show results that correspond to the “Curves of Equivalent results” from the throwing of lighter and heavier implements. Deviation from the norm are evidence of individual character and excess or insufficiency of development of the special qualities of speed or strength.

BARCLAY:

In Australia, the hammer throw is not contested at school level; therefore, youngsters and their coaches are not really exposed to the event in the crucial early teen years. I also feel that coaches in general have a fear of the technique and find it difficult to teach, compared to the other throwing disciplines.

Hammer throwers are usually denied access to existing athletics facilities, and the cost of equipment can also be a problem, but this is not an excuse for the committed coach. A little imagination and a slab of concrete are all that is really required.

GUERIN:

Participation in recent major championships (Atlanta and Athens) was greater than in the past, in terms of the number of countries and individuals taking part.

Some continents are underrepresented, particularly Africa and South America. The nature of the facilities and coaching required probably explain this. The IAAF's Development Programme for the training of coaches is a step in the right direction. Coaching material must be improved, though.

The richness of the event must be emphasized, in terms of coaching and in the expression of its qualities, in order to improve the image of the event.

RUBANKO:

In the Ukraine, basically we lack the financial support required to study and train; sports complexes, fields for throwing, cages, throwing implements and equipment.

The other side of the problem is the lack of information provided on athletics and sport in general. As a result of this it is impossible to make a high quality selection of potential athletes from the preparatory groups of beginners.

STAERK:

I feel that there are many reasons for the comparatively low number of athletes participating in the hammer throw but perhaps the main reason is the lack of facilities for athletes to train and throw hammers all year round. To acquire an effective technique, hammer throwers need to be able to throw three to four times a week throughout most of the year; this requires the availability of safe, well lit throwing areas. In many parts of this country, even when these facilities are available, no hammer throwing is allowed from the 31st of August to the 1st of May because of other events or sports taking place in the infield. Training for the hammer throw requires safe (floodlit) areas. Lack of funding to provide these is the real problem.

SYKHONOSOV:

Insufficient financing for sport in general, including athletics, can be considered as being the primary reason for the low numbers of athletes competing in the Hammer Throw in our country. The decrease in the number of young people taking part in sport is due to the budget cuts, the lack of sports facilities and fields suitable for throwing, throwing implements and equipment. Here, the fundamental problems are economic and only a change in social policy can end them. However, as a coach, I would never regard hammer throwing as a weak event. It is a relatively complex throwing event in terms of the movement (the coordination of the athlete with the throwing implement), and in terms of the development of general and specific physical qualities. Leading hammer throwers achieve good results in weight-lifting, sprinting, standing long and triple jump, and they do well in many other sports. The preparation of an elite hammer thrower takes 6-8 years.

SZABO:

I don't think this question is true for hammer throw as it is more and more popular all over the world and especially at a national level.

If we compare the throws with other track and field events, there are two main differences. First, a throwing area is needed and this is very important. Second, due to the risk of danger the use of a cage is necessary.

I don't agree with the idea of over-crowding this event, for this would be detrimental to quality work, would underline the importance of promotion, instructional films and regular professional training at both national and international level. It confirms my earlier thoughts that hammer-throwing can be done by those with an average build, it does not require extra height or weight.

The addition of women's event also shows that the hammer is popular and attractive.

What sort of strengthening work do you consider to be most effective for developing the power required for success in the hammer throw?

AGACHI:

To reach the standard of performance achieved by Mihaela Melinte, we have worked in two main directions:

- developing power using means more and more similar to the event;
- developing rhythm and the capacity to accelerate the launching period.

BAKARYNOV:

According to an investigation into the structure of the training methods and means employed by throwers, the physical exercises were divided into two types and six basic groups:

1. Exercises related to throwing different implements whose structure basically resembles that of the specific throwing implement.
2. Exercises related to throwing different implements not specific to a given throwing discipline.
3. Exercises with free weights and multi-gym.
4. Exercises with and without small loads.
5. Sprints and running exercises, games.

6. Jumps and jumping exercises.

Thus the general exercises that make up the training load, in the case of throwing disciplines, are primarily throwing training and speed-power training with weights and loads. These types of exercises are basic forms of actions determining the structure of the training of throwers and their training potential.

The hammer throw, like no other type of throwing discipline, allows for a variety of means and methods of coaching influences during the throwing forms of training. By using the principle of balancing the results obtained from throwing different implements with a purposeful training influence, measured by the linear and angular speeds and by the exertion developed, training can be precisely controlled.

Throwing training is made up of throwing implements of decreasing, standard and increasing weights, and throwing auxiliary implements. This furthers the formation of the skills of agility and mobility, and establishes the principal, desired effect on the separate structures and elements of the throwing technique. Throwing implements of different weights is an effective means of learning the throwing technique and of developing the specific morphology of the hammer thrower.

For hammer throwing training, it is common to change the lengths of the implement, as this gives the sportsmen an additional opportunity to diversify and, at the same time, to increase the effectiveness of throwing training.

With the reduction of length of the implement (L) for the same weight (M), the results (R) decrease in linear dependence ($R = a + K L$, when M is constant). The linear dependence of a performance on the length of the hammer's chain stays the same for lighter or heavier implements, but the importance of the coefficient "K" decreases with an increase in the weight of the implement.

BARCLAY:

The Olympic lifts and their variants, along with all types of squatting are the most effective strengthening exercises. Jumping and bounding are also essential for the development of the specific leg power required for the event. The strengthening of the muscular corset around the midsection of the body is also of great importance.

GUERIN:

Specific strength is built on general strength. The selection of exercises and the weight training regime should be created for each training programme and determined according to the needs of the individual.

RUBANKO:

In the Hammer Throw, the principle muscle groups are in the back and the legs. It is essential to develop the explosive power of these muscles, by means of:

- Exercises with free weights; lunges, clean and jerk, half squats with the bar on the chest, step ups, dead lifts.
- Special exercises with weights such as dumb bells.
- Auxiliary throwing with medicine balls, dumb bells, weights, heavy hammers.

STAERK:

There is a need for a full strength training programme to develop the whole athlete, using a wide range of exercises. However, there are some basic exercises that I feel provide the key to the development of power for hammer throwing. These are the power clean, power snatch, power pulls, front and back squats and the deadlift. Also, some time can be spent working at specific strength with heavy hammers. We must not lose sight of the fact that the hammer is a speed event, and any strength exercises should be carried out with this in mind.

SYKHONOSOV:

The most effective sort of strengthening work for the development of power are exercises with free weights, dumbbells and throwing increasingly heavier implements.

SZABO:

A hammer thrower, at the moment of release, is exposed to 400-500kg radial force in case of throws around 80m. The athlete needs a widely-scaled strengthening work in order to support such loads.

In my throwing team the strengthening is done in two ways. On the one hand, in the form of weightlifting, which consists of snatch, power clean, deep squats with weight and pulling up of weight. On the other hand, in the form of specific exercises, consisting of movements similar to the hammer-throw. These help improve the performance.

In my opinion, it is throwing with heavy weights which improves most of the performance of the adults' hammer throw.

One of the determining factors of Balázs success in Atlanta was that during his preparation he made heavy-weight throws (8-9-10-12kg) with a full wire-length hammer.

At what age would you introduce boys and girls to the hammer throw and what methods would you employ?

AGACHI:

In our opinion, the best age to initiate this event is 13 for boys and 14 for girls. Both must have a previous general athletic background, as well as a physical condition allowing them to practice such an event. They should start with light implements; to them, training should be like a game. They should be introduced to the discus and shot put at the same time as the hammer, and should take part in all three events before specializing in the hammer throw.

BAKARYNOV:

Attempts to “specialize” equally in all throws, including the hammer, do not bring great success. With young athletes, training should be based on general physical conditioning and co-ordination. This also includes training with the hammer (especially lighter and heavier ones) from 8-9 years old. The most important thing at this stage is to use play as a method of training.

I cannot consider the hammer throw as a “weak event”.

BARCLAY:

In my experience, boys and girls of twelve to thirteen years are the most receptive to this learning process. I use shortened, light implements in the early stages, as the speed of the movements is vital. I believe that athletes should progress to the basic throw of three turns as quickly as possible and then be introduced to the necessary refinements. It is a mistake to let youngsters throw off a reduced number of turns, as it is almost impossible to add to the technique at a later date, once the modified version has become ingrained.

GUERIN:

In France, we do not have a systematic selection system. Therefore the clubs receive young athletes of varying ages and they train as a complement to their physical education classes at school. The orientation towards a specific event usually occurs around the age of 16-18. Training before this involves creating an awareness of the throwing events. Regular training will be the basic method, alternating throwing and weight training, in order to develop general strength. (This also applies to question 1).

RUBANKO:

We introduce hammer throwing between the ages of 10 and 13. We include elementary instruction breaking down the movement, games and informal

competitions, and exercises which simulate the movement without using throwing implements.

STAERK:

There is no real starting age for throwing the hammer. I feel that boys and girls should experience the whole spectrum of athletic events in the beginning, and then become more selective as their talent for various events reveals itself. A possible starting age to spend more time concentrating on one event could be 14. The first step, when an athlete is starting to learn to throw the hammer, is to build up confidence. To achieve this, I employ hammers of various weights and lengths, preferring to match the hammer to the athlete. I generally start with a one swing standing throw, encouraging the athlete to learn the proper delivery. This quickly progresses into a two swing standing throw. Once this is accomplished, a turn is introduced into the throw, by means of various swings and drills.

SYKHONOSOV:

I introduce boys and girls to the Hammer Throw at the age of 10-12 years. It is at this age in particular that they get a good grasp of the elements of the movement. As a coach, I try to develop in them the correct technique, so that they can build on this in the future. I use talks and show them various material (films, programmes, posters and the advice given by leading athletes from our country and around the world).

SZABO:

In my throwing team, children are acquainted with hammer-throwing at the age of 11-12.

In the past, the accepted view was that the practice of hammer throwing was not recommended before the age of 15-16, due to the heavy loads. The complicated demands of the throwing movement was another factor.

But in other sports, e.g. in gymnastics, they coach 10-12 year-old children equally difficult sets of movement that made me think during my coach work. What age would be ideal for starting the hammer event? Fortunately, sport science helped solve the problem. We can differentiate various sensitive phases in the development of youth. In this phase of development the age between 8 and 12 is the most convenient for acquiring movements. Children at this age are best able to learn fast those difficult movements which later — due to psychic reasons — become harder to learn. Bearing this in mind, in my team for over 10 years I have taught movements and trained 11-12 year-olds. Already, in the first period of time my experiences were very positive and only one problem was left to be solved. How heavy should the teaching hammer be? I decided to stay with 2kg full wire-length hammer. The light weight helped the children (who I selected) to learn

within 3-4 months practice the appropriate several swing throw without any effort. All my actual throwers (even girls) started their careers with using 2kg hammers.

I am ready to answer all questions and am willing to share my detailed experiences with all those who are interested.

What tests would you recommend as being useful and reliable indicators of potential for the hammer throw?

AGACHI:

Apart from the effect of improved technique, Mihaela Melinte's best results were achieved when she could run 50m (from a standing start) in 6.6sec, throw the 4kg shot forwards 15.60m and backwards 17.40m, throw the hammer (4kg and with a shortened wire of 910mm) 63.42m the heavier hammer (5kg) 59.70m.

BAKARYNOV:

The structure of a thrower's conditioning is reliably characterized by the results of specific exercises.

The level of development of the qualities of strength can be detected in the results of exercises with free weights — bench press, snatch, squats with weights on shoulders, clean and jerk. Standing long and triple jumps from one leg to the other show the level of the speed-power qualities.

The level of development of specific throwing ability is revealed by throwing different implements (usually the shot) from below forwards and backwards over the head.

The method of evaluating the special conditioning is explained above.

BARCLAY:

I have found that the only reliable test is the throw itself! If an athlete can master two swings, a turn and a delivery in the first lesson and then perform them at speed, and show a genuine love for the event, I feel that this is the only real test of potential ability.

GUERIN:

First of all, we evaluate the performances achieved with lighter or heavier hammers. Then we develop the athlete's sense of balance, by correction of technique or improvement of physical strength. We then use the well-known tests to evaluate strength and physical condition, especially explosiveness.

RUBANKO:

The tests we use are

- Speed-strength tests:
 - starting speed - 20-30m runs
 - standing long jump and other jumps
 - putting the shot and throwing weights overhead / backwards
- Co-ordination tests:
 - repeating a set movement
 - jumping with turns of 360° or 180° (precision of execution).

STAERK:

There are many accepted, standard weight lifting, throwing and jumping tests used to give an indication of general throwing potential, but the main test I use, as a specific indication of potential for the hammer event, is the throwing of light hammers. If athletes cannot throw the light hammer a long way, then they have little chance of success with the full weight hammer.

SYKHONOSOV:

I would recommend the following tests:

- 30m run
- standing long jump and triple jump
- putting the shot from forward / up and overhead / back
- throwing dumbbells and weights of 16kg on a short rope from a standing position and with 1 and 2 turns
- exercises with free weights (jerks, bench presses, lunges, squats)
- throwing the standard hammer from a standing position and with 1 turn.

SZABO:

For selection I use the following exercises besides physical suitability:

- long jump from standing,

- 30 m run from standing start,
- throwing of the shot and medicine-ball backwards over the head with both hands,
- skill exercises, mainly with a ball,

There is another area which I consider important. This is the family background. If this is satisfactory, then there is a good chance that the chosen child will / might become a good thrower.

The weights of hammer implements for the younger age groups differ around the world. What weights are used in your country and are you happy with them?

AGACHI:

In our country, Romania, we use the following weights of hammer in competition:

- boys:
 - 14-15 years 5kg
 - 16-17 years 6kg
 - 18-19 years 7.26kg
- girls:
 - 16—17 years 4kg
 - 18-19 years 4kg

We proposed to the Romanian Athletic Federation that they introduce this event also for girls aged 14-15, and to change the hammer weights as follows:

- girls:
 - 15 years 3kg
 - 16-17 years 3kg
 - 18-19 years 4kg

The Technical Commission of the Romanian Athletic Federation has agreed with our proposal to introduce the hammer event for girls starting with the age 14-15.

BAKARYNOV:

For quite a while there has been no progress shown in the records of any throwing event (with the exception of men's javelin). The performances of the winners at the most important international competitions have stabilized. This could be due to a number of reasons.

Event	Year	World Record	World's best performance					
			1991	1992	1993	1994	1995	1996
<i>Shot</i>								
Men	1990	23.12	21.67	21.70	21.97	20.78	21.47	21.62
Women	1987	22.63	20.83	21.08	20.57	19.61	21.22	20.56
<i>Discus</i>								
Men	1986	74.08	66.20	65.12	67.72	64.78	68.76	69.40
Women	1984	74.56	71.02	70.06	67.40	68.72	68.64	69.66
<i>Javelin</i>								
Men	1993	95.66	90.82	89.66	85.98	85.20	89.58	88.12
Women	1988	80.60	68.78	68.34	69.18	68.00	67.56	67.94
<i>Hammer</i>	1986	86.74	81.70	82.54	81.64	81.46	81.56	81.24

BARCLAY:

In Australia, the implement weights currently used for boys are:

u15	u16	u17-18	u19-20
8lb	10lb	12lb	16lb
(3.63kg)	4.54kg	5.44kg	7.26kg)

I would prefer the following:

u15	u16	u17-18	u19-20
4kg	5kg	6.25kg	7.26kg

The girls throw the 4kg hammer from under sixteen to the open age group. I would much prefer to see the 3kg implement used until the girls have reached the age of sixteen years.

GUERIN:

In France, based on a decision taken in 1986 by myself and a group of coaches, we define the different hammer weights as follows:

	male	female
12-13	3kg	2kg
14-15	4kg	3kg
16-17	5kg	3kg
18-19	6.25kg and 7.25kg	4kg

Today, the best French hammer throwers have all passed through this system. They concentrate on skill with light hammers (the weight of the preceding age group) during the learning process, and delay the development of strength in young athletes.

However, the use of heavier hammers in training is not excluded.

RUBANKO:

In my opinion the weights of the hammers used in the Ukraine are suited to requirements:

	<i>Boys</i>		<i>Girls</i>	
	<i>training</i>	<i>competing</i>	<i>training</i>	<i>competing</i>
16-17 years	4-7.26	6kg	2.5-4.5	3kg
15-14 years	4-6.5	5kg	2-4	3kg
13-12 years	3-6	None	2-3.5	None
12-11 years	2.5-5	None	1.5-2	None
10 years	2-3	None	0.5-1	None

STAERK:

The weights of the hammers used in Great Britain for men follow a fairly logical progression: a 4kg hammer for the under 15 age group, a 5kg hammer for the under 17 age group and a 6.25kg hammer for the under 20 group. Women use a 4kg hammer for both the under 17 and under 20 age groups. The under 15 age group has not been permitted to throw the hammer up until now, but this is about to change and a 3.25kg hammer will be introduced for this age group in 1998. I have no basic problems with the weight of the hammer thrown by the younger age groups, apart from the fact that, at the national under 20 championships, the men have to throw the full weight senior (7.26kg) hammer. I feel that this increase in weight may have a negative effect on the athletes' motor learning at a crucial time in their skill development.

SYKHONOSOV:

In our country, the following weights of hammer implements are used for the younger age groups:

<i>Boys</i>		<i>Girls</i>	
12-13 years	4kg	12-14 years	3kg
14-15 years	5kg	15-17 years	4kg
16-17 years	6kg		

These weights are used not only in our country but also in the country of the Russian Federation, and practice has shown that it is precisely athletes from these countries who set the standard at international competitions. As a coach, am satisfied with the weights of the implements.

SZABO:

In Hungary, national championships are organized for girls and boys from the age of 13. These are the weights of the hammers for the different ages and genders.

Age	Boys	Girls
13-14-15	4kg	3kg
16-17	5kg	4kg
18-19	6kg	4kg
	7.26kg	
over 20	7.26kg	4kg

I would use 3kg weight hammers in the case of 13-14 year-old boys. In the case of 13-14 year-old girls this would be 2kg, and only at the age of 16-17 should girls use 3kg weight hammers.

The use of lighter hammers means a considerable change in the field of learning movements.

The level of women's performance in the Hammer is constantly improving, and at the moment the women's world record is around 80% of the men's, Do you think that, due to the particular physical characteristics of women, there will be continued rapid improvement in this event?

AGACHI:

There are physical and physiological differences between women and men, which could be an unquestionable handicap for the women, especially in those athletic events which require great power. However, we are convinced that, before 2000, women hammer throwers will reach 80m.

Finally we would like to stress that this athletic event is very new for women (it has only been included in official competitions in the last five years). Few meetings and competitions include this event, and only this year did it become an official event in the European Junior Championships, European Youth Championships, European Cup for Champion Clubs and the World University Games.

BAKARYNOV:

It is incorrect to correlate the level of the performances of male and female hammer throwers. In both instances this is a maximum result (100%). However the rate of growth of the women's record is significant; perhaps, towards the year 2000, the record may equal 80m.

BARCLAY:

I think that the women's world record will probably reach 75 meters by the year 2000, and then stabilize. As the women are already achieving turning speeds equal to, and at times in excess of, those of men, I think that we as coaches will be looking for ways to increase the radius of the movement.

GUERIN:

80m will not be a barrier for women. Kuzenova is the first women to throw over 70m. We shall see what the future brings between now and Sydney.

RUBANKO:

Improvement in this event will come about, as in other events, with better technique, training methods, technical means and equipment used in the training processes.

The correlation of men and women's record results (80%) will probably increase to 85%, since, in the other throwing events, except for the discus, the time of contact with the implement is short, whereas in the case of the Hammer Throw it is relatively long at around 2-3 seconds. Considering the physiological characteristics of the female organism (the power of co-ordination and the precision of execution), and taking into account the weight of the throwing implements, we can expect an improvement in their record results in the near future.

SYKHONOSOV:

I think that it is particularly the development and improvement of specific physical qualities that will lead to further improvement in the women's hammer throw. The development of these qualities will allow the technique to be perfected, which is the key to good results in the hammer throw. However, the development and improvement of the general physical qualities of speed, quickness of movement and flexibility should not be neglected.

SZABO:

There will be an enormous improvement in women's hammer-throw. The main reason for this is that it has been accepted as an Olympic event. Every country with considerable traditions in throwing events, among these the hammer, possesses the spiritual and material conditions that are necessary for development. It is now only a matter of time to find women with convenient qualities and physique.