Report on the International Hammer Throwing Seminar And Szombathley Hammer Throw Training Center Program

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The following is a report compiled by Harold Connolly for the USATF about the International Hammer Throwing Seminar and the Hammer throw Training Center in Szombathley. The first section contains information about the presentations by Anatoly Bondarchuk, and Iouri Sedykh, and the second part contains information from Pal Nemeth about the Hammer throw Training Center in Szombathley. At the conclusion of this article you will find some recommendations for the USATF for the future of hammer throwing in the US.

Part One: Seminar Hammer throwing training points from Anatoly Bondarchuk and Iouri Sedykh

In the '50s and '60s American hammer throwers did primarily only two forms of physical training. They threw the hammer and 35-pound weight and used only weightlifters' and power lifters' exercises. A positive reaction of the thrower's body decreases with using the same narrow scope of physical exercises. After 4 to 6 years of improved throwing performances, improvement stops because of a lack of a variety of stimuli to the athlete's body. The theory of many years of general preparation in hammer throw training is obsolete.

In the late 1970s and early '80s high intensity and specific training for the hammer closer to the hammer throw angles was added to the hammer throwers' training and employed from the very beginning of training

Based on the coaches' assessment of athletes' specific physical and psychological needs, they prescribe for each athlete regularly varied complexes of exercises derived from 150 to 200 physical movements in repeated sets of repetitions of approximately 8 to 10 different physical movements or drills, including hammer and weight throwing, varied types of running, long running, sprinting, jumping, weight training, other resistance exercises, swimming, relays, ball games, and gymnastics movements.

Within the complexes of exercises the sets, repetitions, and poundages can be varied, but the order of the exercises should remain the same. If the complex begins with throwing exercises and concludes with power exercises, it should remain the same otherwise the athlete's brain becomes confused.

For all athletes there are three stages: a growth phase with improving performances, a stabilization or maintenance phase during which the athletes' performances remain essentially level, and a period of declining performances.

The growth phase in hammer throwers' development usually occurs until the athlete is approximately 25 - 26 years of age. The maintenance phase generally lasts from 26 - 33 years of age, and the stage of decline begins at approximately 34 to 35 years of age when the thrower begins to have less adrenaline and fewer nerve mediators.

Eastern European research has found that by regularly changing the complexes of exercises (the athletes' training stimuli) every three or four weeks or when he/she has a significant throwing performance improvement, the thrower's growth, stabilization, and declining phases can be lengthened. Employing novelty of physical movements, including periodic fun physical activities, obviates mental boredom and physical stagnation.

Bondarchuck estimates it can take 6 to 8 years to achieve 65 - 70 m results, another 5

years to achieve 73 - 78 m results, and another 5 years to achieve 80 m+ results with a 16-pound hammer.

Throwing rhythm is the most important thing to learn. The athlete must throw at 82 % to 90 % effort to attain competition-throwing rhythm. To attain this rhythm, the coach must find causes or roots of the technical mistakes made by the thrower. It can take a year to change bad technique and results will probably decrease. The athlete must successfully make the adjustments to improve technique in order to begin improving performance again.

Hammer Throwing Biomechanical Points:

- The hammer can only be accelerated when both feet are on the ground.
- The winds are the beginning of hammer's acceleration. On entry the hammer plane should not be excessively steep but more horizontal.
- In the two legged stance (double support) the hammer's acceleration stops when the hammer reaches zero degrees and the shoulder and hip axes are no longer separated.
- After accelerating the hammer to zero degrees let the hammer turn the body. Do not have the body turn the hammer. Let the hammer turn the left foot and lift off the right foot. The faster the hammer is accelerated the quicker the right foot lifts off.
- From the right foot touch down accelerate the hammer to 0 degrees, relax, and let the hammer's orbits make the turns of the body.
- Use the hammer to move the hammer body system throughout the turns and into the release.
- If the athlete does not let the hammer make the turns, he will lose speed in the single support.

Performance Norms for 80m + Throwers

In **Table 1** are some estimates on performance norms for 80m+ throwers. These norms are estimates, the following of which have significantly higher correlation to predict 80 m + hammer performance than others: snatch, vertical jump, and shot backwards.

They have found that a 155 kilogram snatch and a 320 kg squat have no increased influence on hammer throw performance, and they recommend that emphasis on attempting to improve performances in all these norms should be decreased after the athlete has reached the 70 m + level of hammer throw performance. At that point even greater emphasis should be given to varying the complexes of exercises for hammer throw development.

Table 1: Exercises performances norms with possible correlations to 80 m + hammer throwing performance.	
Power Snatch,	130 – 140 kg
Power Clean,	180 -190 kg
Squat,	270-280 kg
Shot Backwards,	22- 23 m
Shot Forwards,	20-20.50 m
Standing Triple Jump,	9.50 - 9.80 m
Standing Long Jump,	3.20 - 3.50 m
Vertical Jump,	.90 - 1.00 m
6 kg hammer,	92 m
8 kg hammer,	75 - 76 m
Crouch Start Sprint 30 m,	4.0 – 3.8 secs

Part Two: Hammer training at the Szombathley Training Center

Athletes report for training after school or after work Monday through Friday between 2 and 3:30 PM.

They are divided into six groups of mixed genders and ability of young and older throwers.

Their approximately 2-hour training session begins with the groups jogging, stretching, and performing multiple turns on the aprons of the track or on the practice soccer field. They do at least 5 sets of no fewer than 10 turns with the hammer. Multiple turn drills develop stability and basic hammer throwing rhythm.

Table 2: Athletes Training at the Szombathley Training Center

Age	Number	Male	Female
10	2	1	1
11	2	1	1
12 – 15	14	9	5
16 – 18	11	6	5
19 – 23	6	4	2
24 + older	2	1	1
Totals	37	22	15

The coaches' comments emphasize the positive performance of the athlete; they do not concentrate on the mistakes.

Their hammers and/or throwing weights weigh 2 kg, 3 kg, 3.5 kg, 4 kg, 5 kg, 6 kg, 7.26 kg, 8.5 kg, 9 kg, 10 kg, 12.5 kg, 14.5 kg, 16 kg, and 20 kg.

Throwers 10 – 12 years-of-age train primarily with 2, 3, and 3.5 kg hammers. They compete with 2 and 3 kg hammers. 13 – 15 year-olds train primarily with 4 and 5 kg hammers, and they compete with 4 kg hammers. 16 and 17 year-olds train with 5 and 6 kg hammers and compete with 5 kg.

All throwers make 25 to 30 throws each training session, usually with two or three different weighted hammers and weights. In 26 weeks they take a minimum of 4,010 throws.

On Saturdays they train at 9 AM in the morning and a second session in the afternoon. Scheduled competitions are held on Sundays.

Ten and 12 -year-old athletes also incorporate a wide variety of exercises and drills to strengthen all parts of their bodies. Their complexes of exercises are also changed regularly. Weight training is introduced at ages 13 – 14 with wooden plates approximately the same size as Olympic plates in order to teach correct lifting technique. Athletes begin with a maximum of 25 to 30 kilos and progressively increase the resistance. All athletes' daily weight training workouts take approximately 20 minutes. For their hurdling drills youngsters use plastic hurdles to avoid injury.

As they grow into adolescence when athletes break the wires, they are taught to cut hammer wire from large reels and rewire their hammers.

All athletes at the Training Center are taught and regularly reminded to be very cautious about accidents. They use caged-in, parallel throwing circles where one athlete after another from the lined up groups steps into the two throwing cages to take alternate throws after receiving a signal from a teammate and looking himself or herself to see that the throwing area is clear. After everyone has taken 2 throws, they all go into the field to retrieve their hammers. Other groups of less proficient throwers use a third caged throwing circle at the far end of the throwing field.

The coach looks back and forth between the 2 adjacent circles, giving occasional

encouragement or instruction to the throwers. They proceed throwing without wasting any time and do not wait for comments from the coach. Completing the assigned daily volume of throws and training complex of exercises within the prescribed time is the day's training goal.

Before competitions they follow the same varied complexes of exercises training system only reducing the intensity. If an athlete usually takes 10 maximum throws of his 25 or 30 in a training session, he/she will take only 5 maximum throws and reduce intensity in the other workout exercises the week before a competition.

New young athletes are given a hammer, encouraged to practice what they can at home, and after approximately two or three weeks of training are introduced to competition. Improving their throwing results from competition to competition develops a positive attitude.

Young throwers receive motivational certificates of accomplishment. There are gold silver and bronze throwing levels of achievement for under 14-year-olds, 15-year-olds, 16 - 17-year-olds, and 18 - 19-year-olds.

Table 3: Levels of Achievement

	Gold	**Silver**	**Bronze**
Boys:			
18 – 19 year-old (hammer/ 6 kg)	62.00	52.00	42.00
16 – 17 year-old (hammer/ 5 kg)	60.00	48.00	38.00
15 – year-old (hammer/ 4 kg)	55.00	47.00	37.00
14 – year-old (hammer/ 4 kg)	48.00	40.00	30.00
Girls:			
18 – 19 year-old (hammer/ 4 kg)	51.00	44.00	34.00
16 – 17 year-old (hammer/ 4 kg)	45.00	37.00	28.00
15 – year-old (hammer/ 3 kg)	40.00	34.00	27.00
14 – year-old (hammer/ 3 kg)	36.00	30.00	23.00

When throwers reach the gold category (see **Table 3**) in their age group, a 1,000 meters swim at 6 AM every Tuesday and Thursday morning before school or employment is added to their training regimen.

From the end of November until the middle of March, they train indoors in the sports hall. On Monday and Friday they do medicine ball drills, jumping exercises, multiple hammer turns the length of the basketball court, gymnastics movements, and various other complexes of movements. Tuesday and Thursday evenings weight training and other resistance movements. Wednesday at 2 PM and Saturday morning at 9 AM, throwing. December to mid-March, swimming 1000 m Tuesday and Thursday mornings.

Every year approximately 5 to 7 athletes drop out of the program for one reason or another. The Center recruits new athletes only from the Szombathely community (Population 86,000). There are always between 35 and 40 training at their Training Center, which has been in operation since 1993. During that time the Training Center has produced 4 male throwers over 80 m, 2 over 77.90 m and one female over 70 m.

Part Three: Recommendations

1. The USATF should vote at its 2003 Annual Meeting to include hammer throwing for boys and girls 14 – 15 and young men and women 16 – 18 as a regular event of the USATF Youth and Junior Olympics Track and Field Programs.

2. A weekend meeting of the nation's leading male and female hammer throw coaches should be convened as soon as possible in order to arrive at a consensus for a critical zones strategic approach for putting American hammer throwers into the finals at the Olympic Games and a basic curriculum on coaching the hammer throw for the USATF Coaches' Education Program.

3. Levels I, II, and III of the USATF Coaches' Education System should train all levels of American throws coaches in the key biomechanical principles of hammer throwing, the varied complexes of exercises training system, and the training procedures of the Szombathely Hammer Throwing Training Center applicable to the United States

4. Five regional Throwing Club Training Centers should be endorsed and, as much as possible, supported by USATF. These throwing clubs would be located in supportive communities with interest in encouraging the hammer throw and other throwing events. A volunteer director, possibly a former thrower or masters thrower would pledge to focus on coaching hammer throwing and providing competition opportunities. Coaching and competitions would also be provided in no fewer than 2 other of the 4 throwing events. These Throwing Clubs would serve primarily youth 10 years of age and older through adults. Appropriate USATF Coaches' Education certification would be required of the director and encouraged of other volunteer coaching staff at a USATF supported Throwing Club Training Center.