

# CONDITIONING TRAINING OF THROWERS: STRENGTH AND POWER DEVELOPMENT

By Lothar Altmeyer, Klaus Bartonietz, Dieter Krieger

The development of top performances requires:

- The determination of the main reserves in the competition exercise through analysis of the technique and the training load of the previous year;
- Conclusions for the training load for the new preparation period, planning of competitions and test performances, and;
- Control of the training, comparison between “actual value and set value”

## Basic Considerations for Strength and Power Development

The development with the competition implement takes place at a higher level of power in the strong physical sense (see 1.2). This high power level can only be developed with the help of specific exercises and specific implements (including heavy implements). The preceding strength training period with heavy weights develops the indispensable basic potential of working abilities.

For the high school athlete, it is advisable to accentuate a peak load in the strength training followed by a peak load in the special throwing preparation from March through the beginning of May. A week of high volume is followed by a week with possibilities to recover. In summary, the training load (including volume, intensity and quality of the main exercises) must increase during the preparation period. At the same time the specificity of the training must increase, too.

## Principles and Recommendations for the Strength Training

Athlete and coach must try to consider the specific demands of each competition exercise with regard to the weight training, e.g.:

1. With increasing special performance during the preparation period, reduction of volume at higher intensity (related to single lifts and also to the average of the week),

- Higher quality at the execution of the movement: the athlete's mind must be activated; final power output at the end of the movement, especially extension of the ankle joint even at high loads (attention: plates under the heels "switch off" the movement possibilities of the ankle and put an overload on the knee joints).

The athlete should only use exercises that are related to the short paths of the acceleration and deceleration of the body. Therefore, it is useful to do strength exercises in these angles: snatch from different positions: hang, hip, etc., half squats or 1/4 squats.

Figure 6 shows the biomechanical peculiarities of such modified exercises.

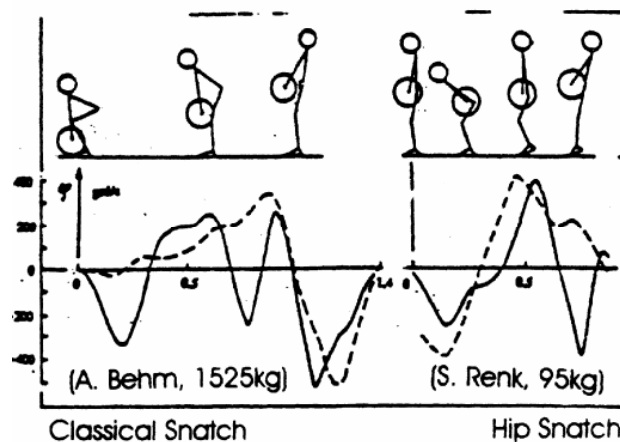


Figure 6: Stick figures and angular velocities of classical snatch and snatch from the hip (Bartoniets, 1992).

- Using single-leg exercises, based on a good preparation to consider the specific demands of the right "pushing" leg and the left "bracing" leg,
- Classification of the exercises into the training phases is based on knowledge of the movement pattern. Bench press and butterflys are closely related to the external momentum. Therefore, butterflys belong to the strength training phase.

Analysis of the training of top athletes has shown that 3 exercises are sufficient to develop the basic strength abilities. The main training exercises are:

- Squats, bench press, and jerks for shot putters,
- Squats, snatch and bench press (or butterflys) for discus throwers.

Altogether 1500-2000 repetitions can be enough to improve your strength results by 5 percent during a period of 6 months.



An ineffective bracing left leg when throwing heavy implements does bring the desired results for throws with the competition implement.

Table 2:  
A Typical Microcycle During the Power Training Period for a High School Senior (8th week, end of April)

	Shot Put	Main Attention	Discus Throwing
A proper warm-up (30 minutes) is required before each session			
Monday	Drills 15 minutes Standard implement 15 Light 10		12-15 starts from different positions 20-30m, plyometrics (5 hurdles, 5 - 6 series) imitations (15 minutes)
Tuesday		Starts from different positions 20-30m, plyometrics (5 hurdles, 5 - 6 series) imitations (15 minutes)	Drills 15 minutes 12-15 x standard implement 10 x light implement
Wednesday	Strength training for both groups:		
	Snatch, bench	85% 90% 95%	95% 90% 90%
		4 3 2	2 2 2
	Squats	80% 85% 90%	90% 85% 80%
		5 4 3	3 4 5
	(for discus throwers butterflys instead of bench, 4 x 5 reps) Step ups 3 x 3 x 80% left and right Trunk 15-20 minutes		
Thursday	Technique for both groups Drills 15 minutes Full motion standard 10 Full motion light 5		
Friday	Strength training for both groups:		
	Snatch	85% 90% 95%	
		2x2 2x2 2	
	Mental preparation for competition (among other things, video presentation)		
Saturday	Competition (medium important)		
Sunday	Active recovery 5R		

