The Phasic Structure of the Snatch & Clean

Each exercise (excluding the recovery from the squat under) is divided into three periods which each contain two phases for a total of six. At the start (in both lifts) place the feet at pelvis width or slightly closer,toes turned out relative to the center of the bar. The metatarso-phalangeal joints (MPJ) are situated precisely under the bar with shoulders slightly in front of the bar. Hand spacing for the snatch is roughly twice shoulder width or shoulder width plus the length of arm extended laterally with closed fist. Hand spacing for clean is shoulder width. Back is straight and slightly arched in lumbar area.
The *first period* consists of two phases. Phase one consists of the athletes interaction with the bar up to the instant it is separated from the platform. The objective of phase one is to create a rigid interaction between the links of the kinematic chain of the athlete, the support, and the barbell which will in turn contribute to the further efficient lifting of the barbell. Comment: The importance of the notion of the lifter and the bar representing a unified system simply cannot be overemphasized. One should never attempt to manipulate or "position" the bar, but rather always seek to interact with it. The movements of both are interdependent.

Phase two consists of the preliminary acceleration. This phase lasts from the initial bar separation (IBS) to the first maximum extension of the knee joints. At completion, the apparatus has shifted slightly towards the athlete. The posture is as follows: the shoulder joints have shifted forward, arms straight, feet flat on floor. The objective of phase two is to move the bar in a rational trajectory, to impart the necessary speed, and to assume a rational posture prior to phase three. During phase two the barbell will shift 4-7 cm. toward the athlete. The muscles which straighten the lower extremities do the fundamental work while the muscles of the torso execute isometric work.

The *second period* also consists of two phases. Phase three is the amortization phase. This phase starts when the knees begin to flex and ends when the knee joints have reached their largest degree of flexion. At the end of the phase the shoulder and elbow joints lie in the same vertical plane as the bar.The athlete remains flat-footed. The objective of phase three is to maintain the optimal interaction between the support and the apparatus and further to preserve the achieved barbell velocity by means of executing this phase QUICKLY.

Phase four is the final acceleration. This phase begins at the instant of largest knee flexion and continues up to the moment of the largest extension of the knee, iliofemoral,and the ankle joints. At the end, the legs are completely straight, the trapezius muscles are actively working, the elbows flexed, and the athlete is on the toes ready to execute the squat under. The point of phase four is to achieve maximum barbell velocity and the greatest height possible. The key objective is to make the switch from phase three to phase four an instantaneous one with the subsequent maximum amplitude of movement in the joints of the lower extremities.

The two phases of the *third period* are the squat under (non-support and support phases). Phase five lasts from the maximum extension of the joints of the lower extremities up to the instant the bar reaches its maximum height. The objective is to constantly interact with the apparatus. The key point is to switch from the explosion to the squat under with maximum speed and to rearrange the legs instantaneously.

Phase six is executed from maximum height up to the instant the barbell is fixed in the squat position. The objective of phase six is to fix the barbell in the supported squat position, to utilize maximum mobility in the joints without deviating significantly from the initial areas of support.

Some Fundamental Differences in the Technique of the Snatch and Clean

The differences in technique are due principally to the significantly heavier weight and the narrow grip employed in the clean. A comparison of the phasic structure of the "explosion" period revealed that the amortization phase is significantly shorter (timewise) than the final acceleration. Just the opposite is true for the clean. The extra time required to execute phase three of the clean is due to the barbells heavier weight and slower speed. The faster execution of the final acceleration is due to the lesser inclination of the torso at the border between phases three and four.

In the snatch the amount of weight is much less and the hand spacing is wide. Consequently, it is practically impossible to fully utilize the elastic qualities of the bar during the lift. The distance over which force is applied to the apparatus is much greater than in the clean. As a consequence of the large amplitude of movement and the difficulty in utilizing the elasticity of the bar, the height at which the bar achieves maximal velocity becomes the integral criterion of snatch technique. To sum up,it should be emphasized that snatch results will depend,to a great extent,on the speed of muscular contraction,the reactive abilities of the neuro-muscular apparatus and the distance over which force is applied.

In the clean, the distance over which force is applied is much shorter. Here, it is necessary to utilize the elastic qualities of the bar which will be greater the more the

athlete interacts with the bar during the pull and the "explosion". The need for a powerful application of force in the "explosion" is based on the significant deformation of the bar that is a result of this force, so that the elasticity of the bar can be utilized to acieve a great maximum velocity. Second, this allows one to be briefly "liberated" from the barbell in order to switch the muscles of the legs, torso, and arms from the overcoming to the yielding regime of work and to create as large a rigidity as possible in the kinematic chain in order to fix the bar in the squat position.

Athletes should be cautioned against an excessively powerful start from the floor. This can disrupt the rigid interaction between the links in the kinematic chain during the second phase of the pull, which inevitably results in a series of mistakes during the execution of all the subsequent phases of the movement.