K-value—a tool for determining training intensity

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During Professor Angel Spassov's 1989 U.S. lecture tour on Bulgarian Methods of Strength Training, he mentioned the use of the K-value to monitor the training intensity of weightlifters. Since the implementation of this concept in the planning of training may be unknown to a great many American lifters and coaches, this article should serve to introduce readers to its benefits.

The K-value was introduced in American weightlifting by Carl Miller in 1974. He not only explained the use of the K-value through a series of articles, but also established the norms for American lifters and demonstrated how they compared to their Bulgarian counterparts (1).

In its simplest terms, the K-value is a percentage of the competitive total projected for the competition at the end of the current training cycle. When this percentage is translated into an absolute value, that value should represent the mean weight lifted in each rep of the training cycle. Thus, the K-value is used to monitor the intensity, distribution and load for the primary training lifts. In addition to the classic lifts, calculations should be kept on snatch and clean pulls, front and back squats, jerks, power jerks and push press off rack.

The formula for determining the K-value is:

K-value = (average training intensity x 100) ÷ proposed total.

The hypothesis behind the use of the K-value is that once that percentage is empirically determined, it shall remain constant throughout the career of the athlete.

To determine your K-value, you need the following information regarding the training cycle(s) prior to your most successful competition(s):

a. The training load

b. The number of repetitions

c. The total(s) achieved at the end of the cycle(s).

The calculation of the K-value would then proceed as follows:

1. Each weight lifted is multiplied by the number of repetitions it is lifted. The products of all of these calculations are added together to yield the training load of the cycle. As an example, if a lifter performed the following series of lifts in a given exercise: 60 kilogram/3 reps, 80 kilograms/3, (90 kilograms/2)3 sets, (100 kilograms/2)3, 110 kilograms/1, the resulting training load for that exercise would be 1,670 kilograms. This must be done for all reps in major exercises during a training cycle. In our hypothetical example, the training load at the end of a three-month cycle is 756,000 kilograms.

2. The number of repetitions for this period is 7,000.

3. By dividing the training load by the number of repetitions, the resulting average intensity is 108 kilograms.

4. Multiplying this figure by 100 results in 10,800.

5. If the total achieved at the end of the cycle was 300 kilograms, then 10,800 is divided by 300 to achieve the K-value figure of 36 (2).

Using this figure of 36, the lifter can then plan to total 320 kilograms at the end of the next training cycle. By multiplying 0.36 x 320, a figure of 115.2 (rounded to 115 kilograms) is obtained. The

training is then planned so that the average intensity of 115 is achieved at the end of the cycle.

When Miller's study was completed during the mid-1970s, he found that most American lifters had K-values that ranged between 32 and 36, although some were as low as 28. By comparison, Bulgarian K-values ranged between 38 and 42 (1). This disparity reflects the differences in the two systems. American athletes were (and are) not professionals, are not as highly selected and lack the restoration facilities of the Bulgarians. On the other hand, the Bulgarians are fully supported, highly selected, have professional coaching and have restoration facilities available. It was not possible to determine disparities dependent upon pharmacological factors.

When planning training with the use of the K-value, a judicious selection and distribution of exercises is a critical factor. The inclusion of a high volume of high intensity pulls and squats can skew the effectiveness of the K-value and can result in a loss of speed. Those individuals who are dogmatic in their utilization of the K-value will be less successful than those who conceptualize it as another guideline in the planning of training. Although highly selected athletes will offer fewer genetic variability factors, one must always keep in mind that biological entities function dogmatically primarily at molecular levels. The K-value is a reification.●

References

1. Miller, Carl. 1974. K-value revisited. **International Olympic Lifter**. 1(11):20-21.
2. Takano, Bob. 1979. Calculating the K-value. **International Olympic Lifter**. 6(1,2,3).