



CHEK POINTS

for Personal Trainers

The Science of Reps

When designing an exercise program, it is extremely important to carefully choose the variables prescribed for each exercise. These variables include reps, sets, tempo, intensity and rest periods. The single most important acute exercise variable is the number of repetitions completed. Below are some key points to consider when selecting reps.

- ✓ Total Reps = Volume
 - Volume is a major factor when balancing a program to prevent injury and has a direct effect on both hypertrophy and strength development.
 - When two athletes of comparable strength are on the same basic program, the athlete who performs the greater volume will always become stronger.
- ✓ There is an inverse relationship between sets and reps, as the number of reps increase, the number of sets decrease and vice versa.
- ✓ Sets of 1-3 reps put great stress on the neuromuscular and endocrine systems. They are best used for short periods (1-3 weeks) and only by highly qualified athletes. The endocrine system needs time to recuperate, otherwise the athlete may experience adrenal depletion. Bones, joints, and other connective tissues are also heavily stressed with high intensity training and may be injured with over exposure to intense loads. (See Figure 1)

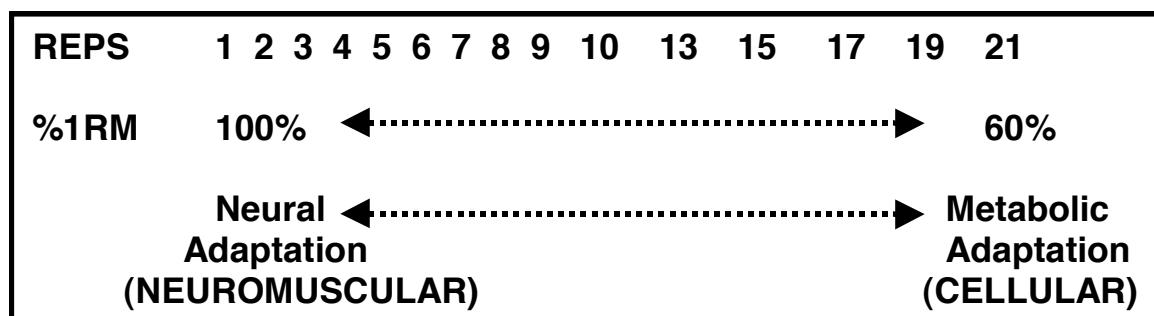


Figure 1. Repetition continuum versus training effect.

(Poliquin & King 1991) Reproduced with permission from Charles Poliquin 1995.

- ✓ The first year of training should be devoted to training with sets of 8 reps for adolescents and beginners. Fewer reps may be acceptable when using slow tempo training (slow concentric/eccentric contraction cycles), although the intensity should stay below 80%.
- ✓ Muscles with higher slow twitch fiber composition respond best to fewer, higher repetition sets. Fast twitch dominant muscles respond best to multiple sets of less reps and high intensity.

(c) Paul Chek, 2002

- ✓ If you seek muscle mass, increased repetitions (8-12 reps) will usually produce the best results. If maximal strength is a concern you should train in a 1-8 repetitions range. (See Figure 2)

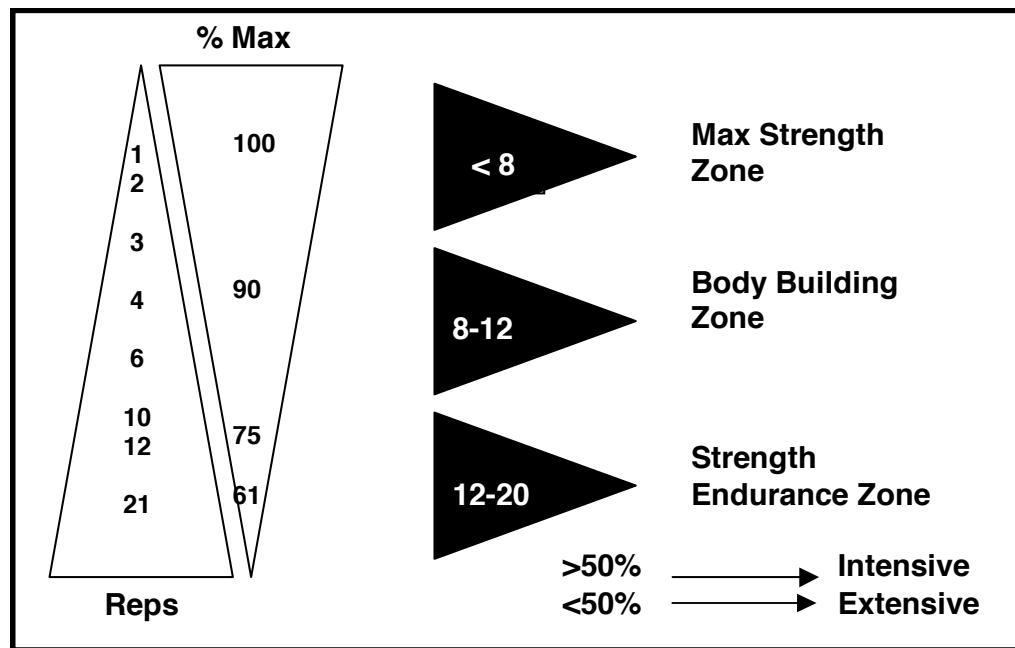


Figure 2. Repetition/Intensity Relationships with corresponding Strength Training Zones

Sets

- ✓ In order to maintain the quality of training stimulus, no more than 30-36 sets per workout should be performed. Better results are achieved if the total number of sets is kept under 20-25. It is also recommended that workouts be kept between 45 minutes and one hour for optimal results. During the first few weeks of training, less training volume (1-2 sets) will bring about ample improvement in performance because adaptations are neural. It generally takes 6-8 weeks of training before three sets are needed for beginners.
- ✓ Once initial strength fitness is achieved, a multiple presentation of the stimulus (3-6 sets) with specific rest periods between sets is superior to a single presentation of the stimulus. One must ensure that this increase is done progressively.
- ✓ Muscles which are not usually subjected to high levels of training, such as the adductors and neck musculature, react well to few sets (1-3).
- ✓ Smaller muscle groups, such as the triceps, recover more quickly than larger muscle groups, such as the quadriceps. The larger muscle groups need more extensive work loads to achieve optimal results. As an athlete improves their skill level and matures in training age, more sets will be needed to bring about supercompensation and performance improvement.

**For more information on acute exercise variables,
see Paul Chek's Program Design Correspondence Course.**

Paul Chek is an internationally recognized lecturer and consultant in the fields of corrective and performance exercise. For more information on the C.H.E.K Institute or to receive a free catalog call **800.552.8789** or int'l 760.477.2620 Also, visit us on the web at: www.chekinstitute.com.

(c) Paul Chek, 2002