**Formula For One Rep Max**

**By: Dennis B. Weis**

The Mathematics of Determining a Single Rep Maximum If you have spent a respectable amount of time following a number of basic principles of pumping iron, then undoubtedly, you have attained some decent size, strength, and muscularity in you physique. I'd be willing to bet that, on occasion, you have had to address one or both to the following questions: "How big are you arms?", and/or "How much can you bench press?" This article in not how to develop arm that stun or secrets of bench press explosion.

However, the question, "How much can you bench press?" generally refers to the amount of poundage you can bench press successfully in a complete range of motion for a maximum single effort (MSE). Does it really matter that you know what your current un-fatigued maximal single effort is in the bench press, squat, or any other exercise? The answer is YES, but only if you are a competitive Olympic or powerlifter.

Due to the amount of high force it impacts, some authorities in exercise physiology feel that even when the ‘technique-emphasis' is done with perfect motion and precise form (never jerky), in a select exercise for a MSE, there occurs the greatest potential of physical injury to the musculo-skeletal system.

These experts also feel that MSE's tear down the body mentally and emotionally as well. A MSE is an indicator of the maximum poundage that can be performed correctly in any exercise, such as the amount of poundage that can be done for a single-rep in the bench press etc.. It is not and indication of anaerobic strength, power, and endurance. These components are developed when maximal effort is sustained or approximately 30 to 70 seconds.

According to the National Strength Training Association, an ideal repetition level for igniting gains in size and strength is generally accomplished when 6-8 reps and beyond are performed. Generally, it should take 2 seconds of less to raise the poundage in the positive (concentric) phase and two times slower (around 4 seconds) to lower the poundage in the negative (eccentric) phase of each consecutive rep.

When maximum single, double, and triple (plus 4 & 5) rep set(s) are performed, the poundage is usually increased and the duration is decreased. For example, a maximum triple rep set following the above suggested guidelines of 2 seconds up and 4 seconds down, would only allow a maximal sustained effort of 18 seconds.

One way to increase the duration of maximal sustained effort within the repetition levels of less than six, is to do the reps in super-slow fashion. This would be done by lifting the poundage upward in 10 seconds and lowering it in 5 seconds with smooth directional reversals (turnarounds) at the conclusion of each rep.

Most bodybuilders the I have observed training, use repetition levels of 6-8 and beyond, utilizing multiple sets (such as Larry Scott's "Greatest Workout in the World" or perhaps Denie Walter's " Psycho-Blast Sets", etc., or the single set (Heavy Duty component) as espoused by Mike Mentzer. The key to sustaining maximal effort of 60 to 70 seconds, is to do the majority of you sets at 6 - 8 reps and beyond. Wouldn't it be terrific though, to be able to determine what a single-rep maximum is in a select exercise, but without actually having to do one? Of course it would and its here's how.

You can determine what you single-rep maximum is in any select exercise by using a coefficient as a multiplier which is used to find the maximum amount of poundage you can do correctly for a single rep. The idea then, is to multiply the weight you are using for a maximum repetition set with the corresponding coefficient factor.

|  |
| --- |
| **One Rep Max Percentage ChartCOEFFICIENT TABLE** |
| **Reps** | **@** | **Coefficient** |
| **2** | **@** | **1.07** |
| **3** | **@** | **1.12** |
| **4** | **@** | **1.15** |
| **5** | **@** | **1.18** |
| **6** | **@** | **1.21** |
| **7** | **@** | **1.24** |
| **8** | **@** | **1.27** |
| **9** | **@** | **1.30** |
| **10** | **@** | **1.33** |

Here is a chart of select coefficient based against repetition levels of 2 up to 10. The maximum repetitions listed in the column above, does not exceed 10 for the following reason: repetitions higher than 10 do not accommodate for Golgi-tendon readiness or the feel of really heavy weights and therefore additional reps and assigned coefficient do no accurately reflect what a true all out single-rep maximum might be.

**HOW TO USE THE COEFFICIENT TABLE**

Just recently, Ted Arcidi, the cinder block Hercules, and the monarch of the bench press, blasted up 0 full exercise traits of motion reps in the bench press with 500 pounds for a world rep record and without the use of a bench shirt. This demonstrates raw Herculean power at its best.

Referring to the Coefficient Table, 9 reps has an assigned coefficient of 1.30. 500 pounds is multiplied by a coefficient of 1.30 500 X 1.30 = 650 lbs. For a single rep maximum.

Realize that the chart is not chiseled in stone and a particular answer can be a plus or minus 5 percent, depending on a person's prior or present traits of training protocol, as well as the development of the "will". In Ted Arcidi's case, he is on the comeback trail from some very serious surgery on both elbows. So, he feels, in all honesty, that his single-rep maximum is perhaps 5% lower that what the coefficient table suggests.

Having said that, the coefficient table has been put to the test hundreds upon hundreds of times and has proven to be extremely accurate on most compound and some isolationary exercises.

To squeeze the most accuracy out of the coefficient table, the maximum repetition set (be it 3 RM, 5RM, 6 RM) must be executed with the most poundage involved that you can do correctly. For example, if you do 300 pounds for 6 reps, in a select exercise, but you can really do 8 reps to positive failure then you must use the assigned coefficient for 8 reps not 6. Also, when multiplying with a coefficient, always round an answer either up or down (you choice) to the nearest 5 pound interval.