

Stimulating Growth

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There is an obvious threshold in exercise...a threshold below which, no increase in strength will be produced. Regardless of the amount of exercise. It might well be called the “threshold to results.”

This threshold is related to the intensity of effort. It has no relationship to the amount of exercise, except that intensity limits the possible amount of exercise.

If the intensity of an exercise is below this threshold, below a certain level, then you can train for years with nothing in the way of resulting strength increases. But if the intensity is above a certain level, then strength increases will be produced rapidly. And it seems that the higher the intensity, the faster the strength increases will be produced...or, at least, they will be if you don't make the mistake of overtraining, of training too much.

Unfortunately nobody knows exactly what level of intensity is required to produce maximum strength increases.

Another troublesome factor is introduced by the fact that it is almost impossible to measure the intensity of an exercise.

And yet a third factor adds even more confusion to the situation...the simple fact that most people have absolutely no idea what you mean when you use the word “intensity”. Intensity is probably best defined as...”percentage of momentary ability.”

The key word is that definition being **MOMENTARY**.

Maximum intensity simply means that you are producing as much muscular force as you are **MOMENTARILY** capable of doing...that you are working as “hard” as possible...moving the available resistance as fast as possible...or pulling as hard as possible against a resistance that you can't move.

So it is possible to measure maximum intensity. When you are doing all you can at that moment, then the intensity is 100%.

But just how do you measure a level of intensity that is anything less than 100%.

During almost all forms of exercise, the level of intensity is constantly changing, as the following example will show.

At the start of an exercise, you might be capable of producing 500 pounds of force...but if you used 500 pounds of resistance, then you could perform only one repetition. So, instead, you use only 400 pounds of resistance...which will permit several repetitions.

Thus, during the first repetition, you are required to produce only 400 pounds of force. When, at that moment, you could have produced 500 pounds...so the intensity level was 80%. The first repetition did NOT produce a maximum level of intensity, but it did reduce your momentary strength.

So, when you start the second repetition, your momentary level of strength might be only 450. But again you are required to produce only enough force to lift the available 400 pounds of resistance, so the intensity is still not 100%. But it is higher than it was during the first repetition.

During the second repetition, the intensity level is 90%...because you are then using a higher percentage of your **MOMENTARY** strength.

And again your momentary strength level will be reduced, perhaps to a point where you are capable of producing only 400 pounds of force.

Thus the third repetition will result in an intensity of 100%...because, at the moment, you are required to produce 400 pounds of force in order to lift the weight, and that figure represents 100% of your momentary ability.

The only factor that changed during the three repetitions was intensity, everything else remained constant. The weight was the same in all three repetitions, the distance of movement was the same, and the speed of movement was the same.

The amount of work performed was also exactly the same during each repetition. The energy consumed, the heat produced, the oxygen required...everything remained constant, except the level of intensity.

It should now be obvious that intensity is not related to the amount of work, nor the production of power.

Instead, intensity is a relative term...directly related to the percentage of your momentary ability that you are actually using.

It is my personal opinion that an intensity of effort of 100% will produce the fastest rate of strength increases...and if not, then something very close to 100% is required. But my opinion is based strictly on experience, and cannot be supported by tests or research, because no practical tests exist for the purpose of measuring intensity.

It might well be...it could be...it is possible that a level of intensity somewhat below 100% is all that is required for producing maximum strength increases. But even if we knew that to be true, how could we measure it? How would we know that we were producing the proper level of intensity?

SO...even if we knew that, for example, a level of intensity of only 90% was just as productive as a higher level, this information would be of no use to us. Because we would never be able to measure it, we would never know if we were producing that level of intensity.

In effect, not knowing just where the “threshold to results” is to be found, we must always be sure that we are going high enough to reach it...and the only way to be sure is to go as high as possible, to a point of momentary muscular failure, which is the only point where we can be sure of our level of intensity.

If you have performed as many repetitions as possible, and if the last repetition was almost IMPOSSIBLE, and if another repetition is impossible...then your level of intensity reached 100% during the final repetition. Having done so, you have stimulated the muscles as much as you can...additional exercise on that day for the same muscles is neither necessary nor desirable.

But if, instead, you stopped even a few repetitions short of a point of momentary muscular failure, then you may have done little or nothing to stimulate muscular growth or strength increases.

Maybe you did, although I don't think so...and maybe you didn't; but in either case, you can never be sure. Whereas, if you had continued to a point of muscular failure, then you would be sure.

Years ago, people performed thousands of repetitions of callisthenics...with little or nothing in the way of resulting strength increases. Because the intensity of effort is far too low during such exercises.

Later, much better results were produced by the use of Indian Clubs. Even though the amount of exercise was greatly reduced. Better results were produced because the intensity was increased.

More recently, even better results were produced by the use of barbells. And again, the amount of exercise was reduced.

Step by step, the available resistance was increased...so it might appear that the better results were produced by the increased resistance. But that appearance is misleading.

The increased resistance was a requirement, a prerequisite...but it was not the actual factor responsible for the improved production of results.

Instead, the increased resistance made it possible to work at a higher level of intensity...and it was the raised intensity that improved the results.

During callisthenics, when no added resistance was available, it is possible to perform literally thousands of repetitions...and as a result, such exercises are normally terminated far short of an actual point of muscular failure.

You might become winded, or the muscles might start hurting so much that you are unwilling to continue...but the muscles could continue, so you have failed to reach a level of high-intensity.

With Indian Clubs, the added resistance makes the situation somewhat better. It is no longer possible to perform as many repetitions as you could during unweighted calisthenics, so you are likely to approach an actual point of muscular failure. The number of possible repetitions is still far too high, but the increased level of intensity will greatly improve the production of results.

With a barbell, the great increase in available resistance makes it impossible to perform more than a few repetitions...or it will of you use enough weight, and you should. You should use ENOUGH weight, but not TOO MUCH.

Thus it becomes possible to reach an actual level of momentary muscular failure...and it becomes NECESSARY to reduce the amount of exercise.

When you increase the intensity of exercise, then you must reduce the amount of exercise. A widespread failure to understand this simple point has done more to damage the cause of exercise than any other factor of which I am aware.

It is easily possible for a man to walk 30 miles a day for a period of years...but doing so will do little or nothing to increase his strength.

But it is NOT possible for a man to run 30 miles a day at top speed...and even attempting to do so will produce losses in strength.

The “amount” of work would be exactly the same in either case...but the “intensity” of work would not be the same.

And the faster you run, the less you can stand to run...a sprinter does not train, literally MUST NOT TRAIN, like a distance runner.

Sprinting requires a brief but very high-intensity effort, and if such a level of performance is repeated frequently then losses in strength (and thus losses in speed) will be produced.

Growth of a muscular mass, and thus an increase in strength, is stimulated by high-intensity work; but such work makes demands on the recovery ability of the body that cannot easily be met, so the amount of such high-intensity work must be strictly limited.

Failing to understand this relationship between the “amount” of work and the “intensity” or work, most trainees are tempted to do more than is required. But the result is not merely a waste of time and energy; instead, the result is usually a total lack of results...or, at best, very poor results.

BECAUSE...you can NOT have both. You can perform a large amount of work...OR, you can perform high-intensity work. But not both.

So if you insist on increasing the amount of exercise, then you will be forced to reduce the intensity of exercise; you have no choice in the matter.

But even when the implications of high-intensity exercise are clearly understood, practical application is still not easy. Because high-intensity exercise is certainly NOT an “easy” way to train.

In an earlier chapter, I mentioned that the forces involved, and thus the chances of injury, are actually REDUCED in the final, seemingly hardest, repetition. Yet many people are still tempted to avoid the last few possible repetitions under the mistaken impression that they are thus avoiding the most dangerous repetitions...when in fact, the last few repetitions are actually the SAFEST repetitions, and by far the most productive ones.