

Cause and Effect

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CAUSE AND EFFECT: an understanding of the requirements for productive exercise is essential for the production of good results from exercise. Which, in at least one sense, is a misleading statement, because exercise does not PRODUCE physiological improvement, increases in muscular size and strength; instead exercise STIMULATES physiological changes. But any actual improvements that follow is a result of the body's response to that stimulus provided by exercise. The things you can be, the limits of your potential size, strength, intelligence and several other things, were determined before you were born, were dictated by your genetics; but what you will be is largely determined by stimulation provided by experience. Given the proper stimulation, your body will respond by improving; assuming that only all the requirements for such improvement are provided, essentially meaning that you can not grow without food, water, air, and regardless of any stimulation.

If you never perform work or exercise with your hands, never expose your hands to force of any kind, you will never the less find that the skin on the palms of your hands is thicker than the skin on the back of your hands. Why? Because millions of years of evolution has established the need for thicker skin on your palms; the palms are more likely to be exposed to potentially-dangerous forces, and thus need to be stronger than the back of your hands. The same thing being true in regard to your feet: skin on the bottom is thicker than skin on the top for the same reason.

And if you never walked a step in your life the skin on the bottom would still be thicker than that on top. And much the same situation exists in regard to your muscles: with no exercise of any kind, some of your muscles would be larger and stronger than some others.

By far the vast majority of children born in this country today, will grow up without having been exposed to anything in the way of either hard work or meaningful exercise, yet their muscles, with no stimulation from any source, will never the less grow to a certain size and strength. And just why does growth stop at that point? Because the body does not sense any need for greater muscular size and strength; the existing level, low as it is, nevertheless is enough to provide any requirements imposed by the activities of daily living.

Additional increases in muscular size and strength will be provided only if the body senses that such greater strength is needed; you have probably heard the expression "If you don't use it, you will lose it." Which is a true statement, but it is also true that if you don't need it you will never get it in the first place. So you must convince your body that greater muscular size and strength is required, that the existing levels are not enough for your requirements.

With no stimulation for growth the body will nevertheless provide enough strength to meet your actual needs, PLUS AT LEAST SOME ADDITIONAL STRENGTH AS A RESERVE FOR EMERGENCY USE. If that "extra" level of strength is never used, then no growth will occur; but if you do call upon that "extra" emergency level of strength, then you are sending a clear signal to the body that even more strength is required. Thus the need for so-called "overload" in productive exercise; and while you can obviously not lift an impossibly heavy weight, you must, at least, lift as much as possible, and then must attempt to lift the impossible load.

Which DOES NOT mean trying to lift the impossibly-heavy weight once. But it does mean that you should try to stop when it becomes momentarily impossible to perform one or more repetitions in good form. Do as many repetitions in good form, and then, after you fail, try to do one more repetition. But isn't that dangerous? No, it is not dangerous: so long as the style of performance, or "form," of an exercise remains constant, then the force imposed upon the body also remains constant. If you perform ten repetitions and then fail, the last repetition will certainly feel heavier than the first one did; but that is an illusion, the last repetition felt heavier only because of fatigue from the earlier repetitions had momentarily reduce your starting level of strength.

If your starting level of strength is 100, and if you exercise with 80 pounds of resistance, then the first repetition will be relatively easy, the weight will feel light; because, at that point in the exercise, you still have "extra" strength that you are not yet using, you are working at a "submaximal" level of resistance.

Then, repetition by repetition, it will appear that the weight is getting heavier; but, as stated above, that is an illusion, the weight seems to be getting heavier only because you are getting weaker from fatigue. During the final repetition, your strength, and the resistance will be the same. So, during that final repetition, you are working with maximum resistance. One more repetition in good form is then momentarily impossible because your remaining strength is then less the level of resistance. At that point, your remaining strength might be 79, down only 21 percent from your fresh level, but 79 will not lift 80, so you are forced to stop.

Danger from exercise occurs only when the imposed force of resistance exceeds the existing level of structural strength of some part of the body; if the "breaking strength" of a muscle, a tendon, or a bone is 100, then a force of 100 or more will break something, will cause an injury.

Just "how heavy" the weight feels is of no importance; but it must feel heavy at the end of a properly-performed exercise; if not, then there is no overload, and thus little or no stimulation for growth. Remember: you must convince the body that additional strength is required.

Having done that properly, then you should avoid any hard exercise long enough for the body to respond properly. If growth stimulation is provided too often, without enough time for full recovery between workouts, then growth becomes impossible; in extreme cases, too much exercise will cause losses in size and strength. And if you are training regularly, but are not getting any stronger, then you are probably training too much, or too often.

If you take a wood rasp and use it to scrape the skin on the palm of your hand, scrape it hard but not so hard that you remove the skin on your hand, and if you do this about twice each week, then you will rather quickly produce a heavy callus on your hand in the place that you scraped it. Such scraping tells the hand that the existing level of skin thickness was not enough to deal with the forces being encountered, so the development of a callus is an attempt by the body to strengthen your hand. But if, instead, you scrape it too often, then no callus will ever be produced; instead, the skin itself becomes thinner. The muscles respond to overload in a very similar manner.

In exercise you have a choice: you can exercise "hard" or you can exercise "a lot," but you cannot do both. Relatively "light" exercise is usually a waste of time and energy, regardless of how much of it you perform, because there is little or no overload. "Heavy" exercise, working to failure, does provide overload, but very little of it is actually required to stimulate muscular growth, and too much will prevent growth, or even cause losses in size and strength.