

## *Training for Mass, Second Edition*

### The Intensity Principle

The above discussion of the Adaptation Principle made several references to the idea that the degree of the body's response rises with the intensity of stress it encounters. It is therefore necessary, if you want to stimulate the greatest amount of muscular growth that your genetics will allow, to subject your muscles to the most intense contractions possible. There are a few weight-training tactics that can be used in order to achieve this, and they will be addressed in the *Physique* section. Meanwhile, once again consider the examples of adaptation with regard to runners, sprinters, and weightlifters. As the intensity of contractions associated with these activities rise, so do the degrees of the body's adaptive response: The higher the intensity, the greater the growth stimulation. Within the realm of weight training, where muscular growth itself is the objective, the ability to generate a high level of intensity is the most critical factor under your control. It will have a large impact on your overall success.

The reason for this is simple: Physiological research has shown that intensity is the only important exercise factor in muscular growth.<sup>4</sup> The conclusions of this research are not surprising. They had been predicted by Hans Selye's theory on adaptation: Human skeletal muscles, when subjected to stress, will respond in a manner that will allow them to deal with similar, future stress more effectively. They do this by becoming bigger. It therefore became evident that an optimal strategy for building muscle must exploit this discovery. Whatever its particulars may be, intensity should be its fundamental component.

The Greeks of the Classical age may have been the first to celebrate and idealize the male form and the athletic physique. Well-developed muscles were elemental to the aesthetic ideal, and they symbolized the physical prowess which, suitably enough, they helped to provide. Yet anyone who wanted to possess a physique adorned with such muscles was immediately faced with a problem: How exactly does one go about developing them? Man had known for a long time that physical exercise would often cause muscles to grow larger, and that some types of exercise seemed to be more effective than others for creating this effect. He discovered that exercise involving the lifting of heavy objects resulted in more growth than, say, running foot races. Much later weightlifting, as its own separate activity, came into being. Simple devices like barbells and kettle-drums were devised for this purpose. Yet for a very long time the mechanism of growth-stimulation—the specific causes of muscular growth—were not fully understood. Rather, weightlifters forged physiques using workouts based on the simple correlation that lifting weights creates big muscles.

As was inevitable, some weight-training methodology was created, but like the potion-mixing alchemists of the previous few millennia, formulations were based on trial-and-error and blind experimentation and little else. Regardless, bodybuilding was born, and when the physiques of average males were compared to turn-of-the-twentieth-century strongmen, it can be said that these techniques were not without some success. However, the emphasis of early bodybuilding training strategy—which has largely remained in place to this day—is that raw effort is of utmost importance, all hard work will be rewarded, and by all

means, you've got to put in the hours. Perhaps most gravely, muscular fatigue was mistakenly believed to be the catalyst for growth.

Fortunately, in the twentieth century scientific thought shed some light on the matter. When it was realized that Selye's theory of stress-response and research on the effects of intensity on muscular growth had drawn the same conclusions, it set the stage for an entirely new way of thinking about weight-training—and the formulation of an equally new strategy of bodybuilding. Beneath the alchemy, blind trial-and-error, and misguidance—all along encouraged by romance of toil—lay the simple fact that muscular growth is stimulated by intense contractions. The groundwork was thus laid for high-intensity training to emerge.

In the simplest of terms, *high-intensity* means performing a weightlifting set with the greatest amount of effort that can possibly be mustered. Unlike the raw effort of a standard bodybuilding workout alluded to above, which typically manifests itself as the expenditure of great amounts of energy on multiple tasks and in many directions with fatigue as its goal, intensity should be harnessed and concentrated for a single, powerful effort. This is what stimulates growth.

Since the aim of an effective mass-building workout should be to produce the greatest possible intensity of muscular contractions, it helps to be aware of the fact that there are three types of muscular strength: concentric, static, and eccentric. The concentric portion of an exercise is the lifting, or positive segment; the static portion involves holding the weight motionless at any point in the range of movement of the exercise; and the eccentric, or negative portion, involves lowering of the weight under control (not dropping the weight while hanging on to it).

It's important to realize that your muscles don't "know" whether you are lifting or lowering a weight. Their growth is stimulated by the intensity of contractions, whether these contractions take place when a weight is being lifted, held in place, or lowered. As will be seen, a set can always be made more intense by lowering a weight slowly and under control (rather than dropping it quickly), especially the very last negative repetition of an exercise. This is so because eccentric strength is greater than concentric—and you will always be able to lower a greater amount of weight than what you can lift. Ending a set with a slow, intense negative repetition after positive failure had been reached is an instance of a good, growth-stimulating tactic—and an example the usefulness of this knowledge. Most weightlifters are not aware of the existence of eccentric strength, or of the true value of training with the highest level of intensity.

During a high-intensity training session, the goal is to *completely* exhaust your ability to continue the set. At any given moment, there is a very specific limit to the amount of effort that skeletal muscles are able to exert. Intensity can be expressed as a percentage of the momentary maximum ability of muscles to exert force. A typical bodybuilding set will have somewhere in the neighborhood of ten repetitions. The beginning of such a set, even when very heavy weight is being lifted, is of low intensity; performing the first rep requires a relatively small percentage of your total momentary ability to complete it. As the set continues and the muscle begins to tire, a greater percentage of this ability is required to keep the weight moving. As additional reps are completed, intensity increases. In an ideal scenario, every last bit of momentary ability is required to complete the final repetition of the

set. When this happens, maximum intensity has been achieved, and the objective of training has been attained: Muscular growth has been stimulated.

Although it's reasonable to want to immediately repeat a set like this, it's also important to know that performing additional sets of the same exercise will not stimulate further growth, for two reasons:

1. Growth stimulation is not cumulative. Doing another set just like this one will not double that stimulation. When the first set was completed, the equivalent of the following message was sent to the brain: "Encountered stress of  $x$  degree of intensity; adapt accordingly." If another set is performed, the same exact message will be sent. Your body will be once more stimulated to merely adapt to stress  $x$ . It will not adapt to  $2x$ .
2. If the first set was truly an all-out effort, additional sets for the same exercise will not reach the intensity level of the first set. The muscles being trained will not have recovered enough strength in the brief period of time between sets to allow this. Extra sets of lower intensity will of course have zero effect on growth stimulation—and they are even harmful to the overall effectiveness of the workout, as will be discussed in the *Why volume training works (for some)* chapter (p. 72).

When Hans Selye formulated his theory of stress-response, he never mentioned anything about its implications for bodybuilding training. The thought probably never crossed his mind. Nevertheless, as a *general* syndrome, his idea predicted the very thing that separate research confirmed: Intense muscular contractions are a form of stress. The body's response to this stress is the stimulation of growth. Yet once these two elements were in place—the theory and the experiments that confirmed it—two questions remained to be answered: Could a weightlifting strategy be devised which fully exploited this information, and in real-life practice, would it work? As it turns out, the answers are yes and yes. High-intensity training isn't just theory and laboratory research. It's the most effective and efficient strategy of bodybuilding yet devised. Those that use it swear by it—and they understand that above all else, their purpose in the gym is to generate intensity.