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4

Indirect Effect

Throw a stone into a pool of water, and it will make a splash – and a wave will run to the far end of the pool; the larger the stone, the larger the splash – and the larger the wave. A very similar effect results from any form of exercise – I have named this "indirect effect". When one muscle grows in response to exercise, the entire muscular structure of the body grows to a lesser degree – even muscles that are not being exercised at all; and the larger the muscle that is growing – or the greater the degree of growth – the greater this indirect effect will be.

Until quite recently, this effect was most pronounced as a result of the practice of full squats. It has been repeatedly demonstrated that the practice of squats – as a single exercise – will induce large-scale muscular growth throughout the body; and while nobody yet understands why this happens, there is no slightest doubt that it does happen. The results are extremely obvious; for example – if a six foot man weighing 150 pounds is put on a regular schedule of heavy squats, he may gain 50 pounds of muscular bulk within a year, as a direct result of this one type of exercise. But all of this growth will not occur in the legs and the lower back – the areas of the body being worked – in fact, a very marked degree of growth will also occur in the muscles of the shoulders, the chest, the neck, and the arms. While such an individual might have 13 inch upper arms at the start of such a training program, it is almost impossible for his arms to stay that small; by the end of the program, his arms would probably be at least 15 inches. And in almost all cases, the bulk of this arm-size increase will be in the form of muscular fiber – rather than fatty tissue; the strength of the arms will increase in proportion (but not in direct proportion) to the size increase – in spite of the fact that no exercise is employed for the arms at all. All other muscular masses of the body will show the same effect – to a greater or lesser degree.

While it is certainly possible to build an obvious degree of disproportionate muscular size through the employment of an unbalanced program of exercises – and a training program limited to squats would be just that – there seems to be a definite limit to the degree of such disproportionate development that the body will permit; for example, it is difficult to build the size of the arms beyond a certain point, unless the large muscles of the legs are also being exercised.

It is very common for young men on a weight-training program to ignore the development of their legs entirely – while concentrating on their arms and the muscles of the torso; on such a program, the arms will grow up to a point, but then additional growth will not be forthcoming – or at least not until heavy exercises for the legs are added to the training program, and then the arms will almost always start growing again immediately.

Apparently having reached a maximum permissible degree of disproportionate development, the body will not permit additional arm growth until the legs are also increased in size. Or perhaps some other cause/effect relationship is responsible – but the results are obvious, regardless of what the actual causative factors may be. It is not necessary to understand the effect to be aware of its results. While the actual percentile of effect from this factor is not known, it is obvious that it varies within a certain range –apparently depending primarily upon two conditions; (1) the larger the mass of the muscle that is being exercised, the larger the degree of results from indirect effect will be, and (2) the greater the distance between the muscle that is being exercised and the muscle that is not being exercised, the smaller the degree of results will be.

Thus it is obvious that heavily working the arms would have the largest indirect effect on nearby muscular masses, the pectorals, the latissimus, and the trapezoids – and the least effect on the muscles of the lower legs; and it is equally clear that the degree of indirect effect produced by building the arms would not be as great as that resulting from exercise for the much larger muscles of the thighs or the upper back – all other factors being equal.

From these observations, a number of conclusions are rather obvious; (1) for good results from exercise, it is essential that the training program be well rounded – that some form of exercise be included for each of the major muscle masses of the body, (2) greatest concentration should be directed towards working the largest muscles in the body, and (3) the training sequence should be arranged in such a way that the muscles are worked in order of their relative sizes.

In practice, this last point requires that the thighs be worked first, the latissimus muscles second, the trapezoids third, the pectorals fourth, the upper arms fifth, and the forearms last. Smaller muscles – such as the deltoids – should be worked in conjunction with the larger muscles whose functions they assist; or immediately afterwards, where such simultaneous exercise is not possible through the utilization of some form of compound exercise.

The first two conclusions indicated above are quite obvious, and require no additional explanation – but the third conclusion, the order of performance of exercises, may not be so obvious. It is generally agreed – and long experience has well proven – that the greatest degree of growth stimulation is provided by exercise that works a muscle well inside its momentary reserve of ability; but it is sometimes literally impossible to reach the required condition of induced momentary exhaustion while working a large muscular mass if the system has been previously exhausted by exercises intended for other, smaller muscles. Thus it is important to work the largest muscles first – while the system is still capable of working to the desired degree; secondly, since the largest muscles will also cause the greatest degree of overall indirect effect, this is another important consideration in this sequence of exercise.