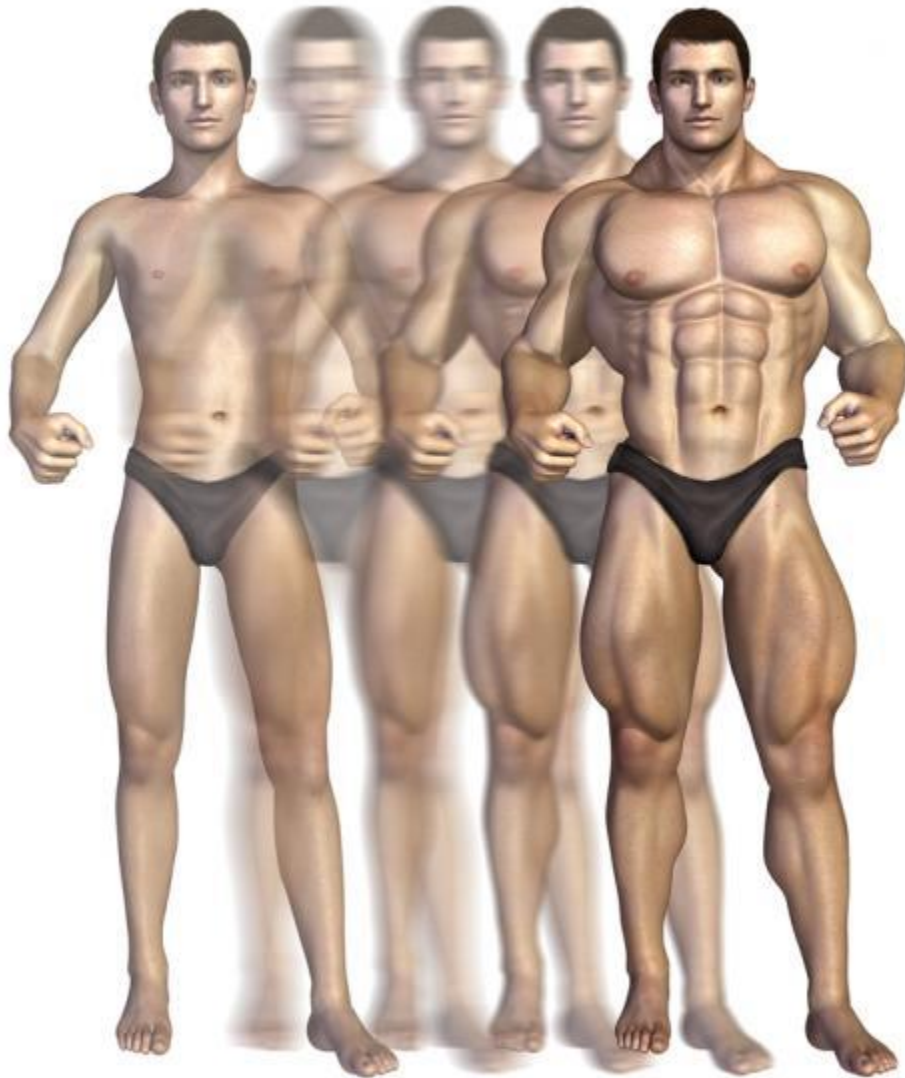


Muscular Development

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How to Add Muscle Tissue to the Human Body

Introduction

As a crucial part of the body, the muscular system is responsible for movement and overall body function, but in today's society nobody is concerned with that. It's about body image and fitness which ultimately starts with the muscular system and making them grow and develop. There are two ways this process can happen, through two different exercising philosophies. First is by weight overload, involving very heavy weight, forcing the body to adapt and build itself up to handle that amount of load. The second is by hypertrophy training, which involves engorging the muscle with so much blood it is actually forced to expand and therefore grow.



Muscle Building Process

Wolfe's law or blunt force trauma is the first principle behind muscular development. This is achieved by using relatively heavy weights (anaerobic exercise) that the body is not accustomed to. This has been proven to be the most effective technique in putting on muscle mass. These weights are going to be utilized in a low repetition range which generally is 1-4 repetitions. This heavy weight, even over a short time, causes tiny micro tears in the muscle tissue, more specifically the muscle fiber. Overtime these tears repair themselves and grow back slightly bigger than before. As these muscles grow bigger, more weight can be added, which will only continue the muscle building process.

The other way to effectively trigger muscular development is through the principle of hypertrophy training in which a high repetition range is utilized. This is often referred to as "the burn" or "the pump." This process takes slightly longer, but at a much lower intensity. The target rep range here is anything over 10 and what happens after 10 repetitions is the muscle becomes so engorged with blood and glycogen that it is forced to expand. The muscle walls are in fact stretched so far that they have no choice but to grow and become larger. Overtime this process will begin to snowball and result in a bigger, more developed muscle. Neovascularization also is a large factor in the success of hypertrophy training. It is the process of increasing a muscle's ability to move waste products and maintain contraction overtime. This ability is developed progressively but can amplify training results significantly.

Different Types of Muscle Fibers

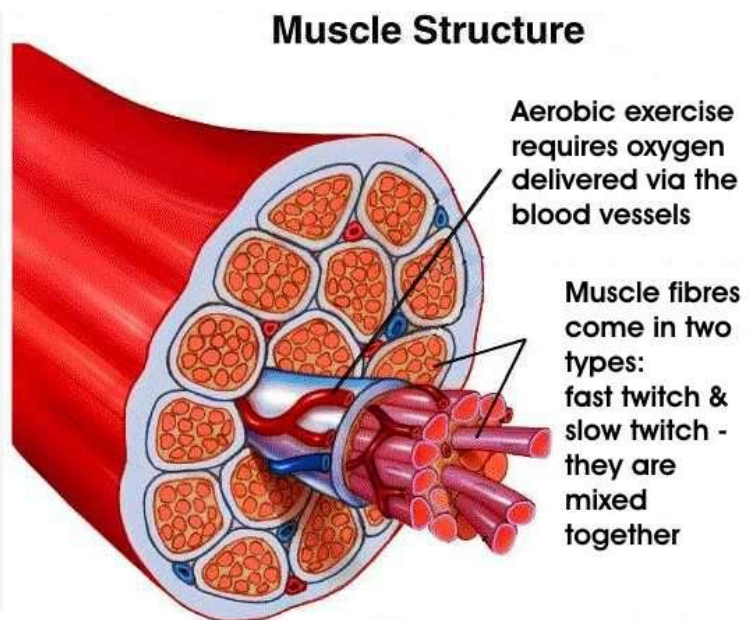
In either case, these muscles are made up of protein filaments that slide past one another during exercise or exertion. This contraction results in a change in shape and length. This is only the case for skeletal muscles, which the body has voluntary control over, unlike cardiac muscle which is controlled involuntarily.

Skeletal muscles can be divided into two main categories, fast and slow twitch fibers. These are different layers of the muscle, which are targeted during different types of training.

The fast twitch fibers are responsible for quick bursts and utilized when trying to move heavier loads. So using blunt force trauma (anaerobic training) is how to properly contract the fast twitch part of the muscle. This part is referred to as fast twitch because it is the first to react but fatigues the quickest and is completely expended in a much shorter amount of time.

The other part of the muscle is referred to as the slow twitch fibers which are most effectively trained through hypertrophy training. These fibers contract the most during an exercise with a higher repetition range. The slow twitch fibers are the part of the muscle used for endurance and stamina so more time needs to be dedicated to this technique, but with a much lower amount of intensity. Ultimately seeking that muscle pump is going to give the best results. (The muscle pump is a sensation caused by blood and glycogen engorging the muscle and creating a feeling of the muscle being on the verge of bursting. Sometimes painful, it is the muscle's way of telling the body it is being properly or improperly worked.)

When slow twitch fibers are forced to grow, a mixture of macronutrients (carbohydrates, fats, and proteins) are absorbed for energy and consume large amounts of oxygen, resulting in minimal lactic acid build up. When these fast twitch fibers are targeted through anaerobic exercise, the body relies more on ATP or glucose for fuel and relatively low amounts of oxygen are consumed, resulting in large amount of lactic acid build up. This is because the respiratory system is not taxed as much during this way of training, which takes place over a much shorter time period.



Conclusion

So while soreness may be uncomfortable and unpleasant, it is the body's way of demanding rest and saying that it is repairing itself. These muscle fibers that have been recently broken down are now rebuilding and repairing themselves.

The muscular system and human body as a whole is astounding in its ability to adapt. This applies to muscular development as well. One type of training principle utilized to long and the body begins to adapt and does not respond as well over time. The results seen from the same type of training can begin to level off and it eventually becomes counterproductive. So it is important to utilize both types of training to keep the muscles guessing which is often referred to as muscle confusion. This will optimize results and have the most significant effect on muscular development.

Audience and Purpose:

My sought after audience is comprised of individuals with already a base of knowledge about exercise. These individuals have an understanding of the basic principles of fitness and ideally have been practicing these principles for a great deal of time.

My goal is to clarify so much of the confusion I constantly hear today in the fitness world. So often, an individual is hooked on one exercise principle and is so stubborn as to admit anything else could work. I want to shed light on the fact that more than one technique has been proven to be effective. The most advanced in this field, bodybuilders, utilize the advantages of both training techniques.

This description & definition applies to both genders and all age groups. It is not limited to any particular type of group of any particular body type for that matter. With that being said a certain level of knowledge is assumed of the reader. I do not take the time to explain what a repetition is so at minimum, a basic understanding of fitness is assumed. There are certain exercising terms used that any beginner would have no problem understanding.