

# How much stretching should I do?

BY ANTHONY LETT

I'm often asked this question by students, and there isn't a simple answer. The question is complex, and one reason is that we vary in so many ways, as Roger Williams outlines below.

## Human Variation



In "*Biochemical Individuality*" Roger Williams outlines just some of our differences .

"Every human being is a deviate in some respect. There is no normal and no abnormal, only you in all your uniqueness, and this uniqueness will determine what, of all of life's offerings is available for you to partake in, and what you should, with wisdom, leave on the plate. We have differences in blood chemistry, personality, diet, lifestyle, body shape, height, weight, blood pressure, length of arms relative to spine, genes, tendon to muscle length, organ weights, blood volume, amount of curvature of leg bones, depth of hip sockets and the list goes on."

Little wonder, therefore, that exercise tolerance is an individual affair.

## General Training Principles

In exercise science, training principles include volume, frequency, intensity, and duration. These principles are carefully manipulated to bring about the desired training effect without causing injury or burnout. (I've recently started teaching a leading horse trainer, and perhaps unsurprisingly, the same principles are applied to the training of these domesticated one-toed hoofed mammals.)

In the field of Exercise Medicine, discussion centers around finding the correct "dose/response" relationship to exercise so as to improve symptoms and minimize disease risk, without causing further deterioration in health. Whether using exercise to manage or improve symptoms of ill health, or to bring about improvements in performance (the same thing actually!), exercise is a stressor, and there are limits to our adaptive/recuperative capacities after exposure to any form of stress. Exercise prescription is therefore a delicate juggling act that requires a degree of careful trial and error.

A further consideration in prescribing exercise is the personality type and expected outcomes of the client. Some clients will be content with mild and consistent gains over time (the smart "slow and steady wins the race" approach) and others will want to pursue their new goals with aggression and passion and won't be satisfied with anything less. What type of client are you, and what kind of program will you be satisfied with?

Lots to consider....

## The exercise/stress cycle

Below is a simple example to give you insight into what's involved in exercise and adaptation. First, a stressor (the exercise) is applied and then there's a rest period during which time adaptation occurs. (Of course, adaptation is also determined by simultaneous exposure to other stressors, be they psychological, environmental, and nutritional for example.)

The cycle is then repeated, and gradually, greater stressors are applied (called "progressive overload"). New stressors are also introduced, because our bodies are smart and if the same stress is constantly applied, the body, which has already adapted, will not be called upon or stimulated to adapt any further. At this point, little adaptation occurs, and a review of training loads and some manipulation of training principles described above (volume, frequency, intensity, and duration) is indicated.

## Sandpaper as a stressor

In the example below, sandpaper is applied as an exercise stressor. The need for the careful application of training principles becomes obvious.



If you rub sandpaper on the palm of your hands each day, you will end up with no skin, and very sore and bloodied hands. Clearly, this indicates the need to modify frequency, intensity, and duration.

If you rub sandpaper on the palm of your hands every three or four days, you will end up with thickened skin which is stronger and more resistant to the stress of the sandpaper. (A much smarter manipulation of training principles.)

Why so? Because, in the days between the rubbing of the sandpaper, your body has time for rest, recovery and adaptation. This includes the growth of new, specialized cells.

All physical stress drives adaptation if there is adequate time for rest before the next stress is applied. If this is combined with a safe and effective dose, you will get a positive adaptation.

## Adaptations to stretching



Because it is easy to see, we all know that the response of the body to the stress of lifting weights is muscle growth. Muscle and other soft tissues become larger, called hypertrophy. The stress response to sandpaper rubbing is thickened skin. The response to stretching, although not as visible, is muscle elongation.

With repeated stretching cells actually grow minutely longer. (1) This response is an expression of Davis Law, discovered back in the 19th century. (2) The response is predictable too, just like eating. If you do enough of it, your dimensions will change!

A second adaptation also occurs, a "neural" adaptation—the reprogramming of the centers in the brain that record what your body considers the normal length of muscle, and normal ranges of movement. The "normal" length is recalibrated. A related adaptation includes a general reduction in pain during stretching, and a modification in the response to the sensation of pain during a stretch. With perseverance stretching becomes less painful and our response to any pain is less reactive. This is known as "Stretch Tolerance."

## What's the verdict?

The manipulation of training principles requires time and experimentation. Finding the effective and safe dose/exposure/stress load is tricky and is never set in stone. I call this exploration "wise practice." Flogging your body day after day is not the way.

I read a T-shirt a few weeks ago emblazoned with the slogan "Train Insane." Really!? Following this advice will surely lead to injury, and who wants to cultivate insanity anyway? The information above suggests that to "Train with your Brain" is a better modus operandi for long-term health.

## Bottom line?

Just like every other physical quality flexibility needs to be trained as a discrete modality with intention and consistency. Goals need to be realistic, and the mix of volume, frequency, duration, and intensity needs to be regularly assessed. You need a teacher or coach to help you with all this. But you've heard versions of this before no doubt. What's most important is that you need to know what you want, and why you want it. If your "why" touches you deeply, and feels consistent with what you value, why you value it, who you are or who you'd like to become, you'll do the work required.

Have a think and then have a stretch! You've only got your stiffness to lose!

1. There are many references to muscle fibre elongation in the technical literature. (The interested student can check out this recent study for example Jorgenson KW, Phillips SM, Hornberger TA. Identifying the Structural Adaptations that Drive the Mechanical Load-Induced Growth of Skeletal Muscle: A Scoping Review. *Cells*. 2020 Jul 9;9(7):1658. doi: 10.3390/cells9071658. PMID: 32660165; PMCID: PMC7408414.) Muscle lengthening has been noticed since the time of the early Greek philosophers and has been shown repeatedly in modern experiments.[10] Muscle fibers can and do grow longer and thicker through the

stretching process

2. Davis's Law was named after an American orthopedic surgeon named Henry Gasset Davis. In the late 19th century, Dr. Davis worked on improving traction methods after soft tissue injuries. His book, *Conservative Surgery*, had this to say about how soft tissue reacted to tension:

"Ligaments, or any soft tissue, when put under even a moderate degree of tension, if that tension is unremitting, will elongate by the addition of new material; on the contrary, when ligaments, or rather soft tissues, remain uninterruptedly in a loose or lax state, they will gradually shorten, as the effete material is removed, until they come to maintain the same relation to the bony structures with which they are united that they did before their shortening. Nature never wastes her time and material in maintaining a muscle or ligament at its original length when the distance between their points of origin and insertion is for any considerable time, without interruption, shortened."

In layman's terms, this means that over time, soft tissue in the human body will adapt to the loads that are placed on it. For instance, a muscle that is repeatedly stretched will lengthen. A similar principle found in bony tissue is known as "Wolff's law." Over time, bones that are forced to carry heavy loads will adapt, reforming and becoming stronger in response to the strain they are placed under.

Bones that aren't given heavy loads become weaker over time. You may have heard that NASA is concerned about the bone density of astronauts who return from long space flights; this is because astronauts in microgravity don't carry heavy loads with their bones, causing those bones to leech calcium into the bloodstream and become weak and brittle. After months or years in space, astronauts' weakened bones may not be able to handle the stresses of running, jumping, or even standing in earth's gravity.