NEW ENGLAND FUNCTIONAL FITNESS
The Gym Rag

NO BONES ABOUT IT:

Resistance training strengthens your bones!

By Julie Sopchak

Let's face it, exercise is good for you. There are an untold amount of physiological responses that occur when we exercise that lead to healthy bodily and mental function. But other than helping us look good in a bathing suit, what happens when we exercise that makes it so healthy? Sometimes understanding exactly *why* something is good for us helps us to make a better habit out of it. This month, we're going to talk about bones and why resistance training (specifically!) is so beneficial and what it does for them. We're also going to talk about the structure function of our bones to understand why it's so imperative to keep them healthy and strong.

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Wolff's Law

Bone architecture is determined by the mechanical structures put on it.

What does that mean?

It means that if you load bone in a specific direction, that's where it will get stronger!

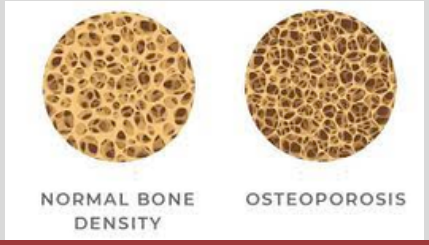
Here's an example:
A tennis player's racket arm will have stronger bone because of the constant impact from hitting the ball.

Here's another example:
Longer limb bones are strongest around mid-shaft, where most stress is received.

At first glance, bones probably don't seem all that miraculous. They're hardened structures that give us shape and allow us to not be amorphous blobs when we move. They also provide a degree of protection for our vital organs and tissues, like the skull, rib cage, and spinal vertebrae. But even more than that, they help regulate electrolyte and pH levels, help with blood formation, and store minerals as a reserve. They have both biomechanical and physiological purpose!

Believe it or not, your bones are not completely solid. Under a microscope, they actually look more like a sponge with fibers weaving and intersecting. The thicker and more dense the fibers are, the stronger your bones are. With diseases like osteoporosis, those fibers become thinner, and the spaces between the fibers becomes larger, making the bone less **dense**.

On the next page, we'll list a few exercises that will help you build overall stronger bones.



MONTHLY TRIVIA

LAST MONTH'S ANSWER: SARTORIUS

The sartorius muscle is long, skinny, and wraps around the thigh across both the hip and knee joints.

This month's question: Body Mass Index (BMI) estimate's a person's "healthy" weight based on what?

Bone responds best to repetitive high-impact and regular resistance training (always start low and slow):

- **Running/jumping/cutting**
- **Weight bearing exercises**
  - **Vertical - squats and overhead presses**
  - **Horizontal - pushups, planks**

These are just a few examples. Truly, **ANY** resistance training is good for your bones!

Bones are mostly made of a substance called hydroxyapatite, but they also have some collagen. The hydroxyapatite is a thick, almost cement-like compound that is meant to make your bones strong and sturdy. The collagen is there to provide your bones with just a little bit of bend. You see, a little bit of bend is good, because force is able to be absorbed. If there was no bend, the bone would be brittle and much easier to break.

Similarly to muscle, bones adapt to resistance training. They are constantly breaking down and rebuilding back tissue, so when you load them, they will reinforce those stressed areas. Alternatively, if you do not consistently stimulate the tissue, you will lose bone mass. The body will not spend energy and resources sustaining tissue it's not using. So as we age and become less active, that breakdown begins to surpass the rebuild, and this slowly develops into diseases like osteoporosis.

Your bone mass is more or less determined when you are an adolescent and you stop accumulating it around 30 years old. Once you get to that point, you will actually start to lose bone mass little by little. What we can do is keep working on that density, because we *can* control those little architectural changes within the bone mass. Do this through exercise, and you can also do it through your diet to make sure you are actually consuming the right minerals to keep your bones from losing mass and density. Take note, your intake of these minerals might be different than the recommended daily intake. You should always consult your doctor before consuming any kind of dietary supplement.

BONE MINERALS AND WHERE TO FIND THEM

Calcium - dairy, leafy greens, fish

Phosphorous - poultry, pork, seafood, dairy, sunflower/pumpkin seeds, nuts

Vitamin D - salmon, herring, sardines, cod liver oil, canned tuna, egg yolks, mushrooms

Magnesium - dark chocolate, avocados, nuts, legumes, whole grains, bananas

Cold weather golf tips

Summer's over, but that doesn't mean golf is! While there's still plenty of golf left to play, we should make some adjustments for the colder weather on the horizon. Here's a few that we found useful:

- **Walk the course! Driving a cart when it's hotter is good because you won't overwork and exhaust yourself in the heat, but walking when it's cooler is a good way to keep warm and loose.**
- **Club up/tee forward! The ball doesn't travel as far in colder weather because of the change in atmospheric pressure (cold air is more dense).**
- **Respect the elements! The same game you play in beautiful, temperate weather probably won't go as smoothly when it's colder. Don't be afraid to get a little creative with your shots and try different things - it'll help you come time for warmer weather!**