

## ALL ABOUT MUSCLES

### Exploring the role of muscles in better health

When we run, speak, breathe or engage in all the other physical activities that get us through our day, we do so through the contraction of our skeletal muscles. The human body is home to more than 600 of these muscles in all, adding up to between 40% and 50% of our body weight. Together with our skeleton, muscles dictate the shape and contours of our body. And like our bones themselves, muscles perform more functions than meet the eye, impacting our posture, movement, regulation of blood glucose, heat generation and supply of mitochondria, the oxygen-producing component found in all tissues.

Larger muscles are often stronger muscles, which leads to improved daily functioning in most individuals. Muscle is metabolically active and affects the way the body handles nutrients. For instance, people who are more muscular (especially combined with lower body fat), typically have better insulin control. From a health perspective, advancing age is associated with a loss of muscle mass, better known as sarcopenia. Preserving muscle mass can preserve strength; strength is a predictor of survival as one ages.

Muscles consist of long slender muscle cells, or fibers. Each muscle cell is a bundle of fine myofibrils, the cylindrical filaments whose name derives from the Greek "mys," meaning muscle. The development of a muscle cell's mass, density, shape and function is called hypertrophy. An example of adaptation, hypertrophy allows the muscles to meet stress caused by exercise and/or function. Within the world of hypertrophy, there are two key types of muscle growth:

- **Myofibrillar Hypertrophy** (also called "functional hypertrophy") enhances muscle density by increasing the number of myofibrils within the muscle cells, as triggered by osteogenic loading
- **Sarcoplasmic Hypertrophy**, triggered when lifting weights, increases muscle size by increasing the volume of sarcoplasmic fluid within the muscle cells



<sup>4</sup> Mosby's Handbook of Anatomy & Physiology ; Encyclopedia Britannica; Precision Nutritio

## MUSCLES AND OSTEOSTRONG

### Declining strength, reversed

It's not just bone density that decreases with age. According to the American College of Sports Medicine, we lose roughly 10% of our muscle mass by age 50. Through our 60s and 70s, our muscle strength will drop by about 15% per decade. By the time we hit our 80s, what's left of our muscle strength will decline by 30% each decade.

But rather than resign us to less than golden later years, these statistics should serve as a powerful call to action. Because here's the most important fact of all: osteogenic loading can reverse this decline in people of all ages.

## OSTEOSTRONG AFFECTS YOUR MUSCLES!

### MUSCLE ANATOMY

