

LifeExtension®
Stay Healthy, Live Better

Skin, Bones & Muscle

THREE *GOOD* REASONS FOR COLLAGEN





TABLE OF CONTENTS



1. Rejuvenate your skin



2. Strengthen your bones



3. Improve muscle function

4. What is the right collagen?

Collagen is the most abundant protein in your body. It's the main component of most types of connective tissue. But sun exposure, dietary issues and the slow passage of time can reduce your body's collagen levels.

While collagen depletion can contribute to a variety of health concerns, supplementation can help replenish this vital protein and, in turn, make you look, feel and move that much better.



1

**Rejuvenate
your skin**



Rejuvenating Healthy, Beautiful Skin

Collagen is essential for healthy skin. That's because collagen is what maintains your skin's moisture, elasticity and smoothness. Integrated with elastin fibers, collagen lets your skin *stretch*, and yet still return to its original shape.

The decline in the collagen content of our skin as we age contributes to wrinkled, sagging skin.¹ To address this, scientists have developed collagen peptides (a string of amino acids that can provide the "building blocks" for larger proteins) to fuel collagen synthesis and stimulate collagen and elastin production in the skin.



GO WRINKLE-FREE

STEP 1

Eat collagen peptides



STEP 2

Improve skin elasticity



STEP 3

Reduce eye wrinkles.²





2

**Strengthen
your bones**



Strong Bones, Strong You

Since collagen is a protein, it can help with other things, like strong, healthy bones. Everyone knows that maintaining bone health is an important part of aging well. But it's also a challenge, because over time chemically-altered collagen may cause more harm than good.

Glycation is a natural chemical reaction where sugars react with a protein. If collagen undergoes glycation, its structure becomes damaged. Structurally damaged collagen doesn't help with bone density like healthy collagen does—and that's bad news for bone health.

Bone tissue isn't just about *quantity*; it's about *quality* as well. Collagen is vital to a healthy bone matrix: the spongy mass of collagen fibers and crystalline structures inside your bones.³ A healthy bone matrix helps absorb compression, which is crucial for avoiding things like stress fractures.

Why does bone health matter? Fragile bones increase the risk of fractures, breaks and other injuries that can have devastating consequences, particularly on seniors. The older you are, the more a bone break can permanently reduce self-sufficiency, jack up healthcare costs, or even lead to fatal complications.



Collagen can help. There are a number of nutrients that can keep your bones healthy. But more and more evidence points to collagen supplementation as an additional arrow in your quiver: a 2015 study showed a preservation of bone strength in women who took collagen peptides.⁴

CLINICAL STUDY:

Collagen and Bone Health



Post-menopausal women with osteopenia (low-bone density) took 5g collagen, 500 mg of calcium and 200 IU of vitamin D3.⁴

Bone Mineral Density Bone density loss was substantially lower.

Break Down Biomarkers Biomarkers of bone breakdown were also significantly reduced.

(Control group took calcium as well as vitamin D—but no collagen.)



3

**Improve
muscle
function**



Flexing Muscle Health

Collagen is in your muscles, too. It's a major part of what is known as the *extracellular matrix*, which provides a supporting structure for muscle fibers, creating elasticity and helping transmit the force of contractions⁵ (what you call "moving").

Bro-science: In 2015, over 50 men (average age: 70+) with low muscle mass participated in a study designed to observe the effects of collagen peptides on muscle function.

Collagen peptides: This randomized double-blind placebo-controlled study assessed the effect of post-exercise collagen peptides vs. placebo.

Muscle mass & function: After resistance training (you call it "weights") both groups showed improvements in muscle strength and fat loss. But the effect was significantly more pronounced in the collagen group.



The researchers concluded that collagen peptide supplementation, combined with resistance training, increased strength and reduced fat more than exercise alone.⁶





4

**What is the
right collagen?**



What Kind of Collagen is Best for Me?

There are plenty of collagen supplements and skin care products out there. But collagen *peptides* have unique qualities that provide special health and beauty advantages.

Collagen peptides come from collagen that has already been partially broken down. These peptides provide the building blocks for collagen synthesis, stimulating the production of new collagen and elastin. Plus, they *block* enzymes that degrade collagen!

Matrix metalloproteinase 2 (also known as MMP2) is a “protein-melting” enzyme that degrades collagen and hastens skin aging.⁷ Collagen peptides reduce the activity of MMP2. This may be why human trials demonstrate oral collagen peptides restore the appearance of youthful skin.

Collagen gummies are a tasty way to get your daily dose of collagen peptides. This method delivers clinically effective doses, with no added sugar. And some formulas even augment collagen with hyaluronic acid to protect and nourish your skin by increasing its moisture content.

Whichever collagen peptide formula you choose, it’s never been easier to replenish your collagen supplies for healthier skin, bones and muscles.



REFERENCES

1. *Nurs Stand*. 2012 Sep 19-25;27(3):35-42.
2. *Skin Pharmacol Physiol*. 2014;27 (3):113-9.
3. *Osteoporos Int*. 2006;17(3):319-36.
4. *J Med Food*. 2015 Mar;18(3):324-31.
5. InTechOpen 2016. ISBN 978-953-51-2415-3
6. *Br J Nutr*. 2015 Oct 28; 114(8): 1237–1245.
7. *J Med Food*. 2011 Jun;14(6): 618-24.

LifeExtension[®]
Stay Healthy, Live Better