

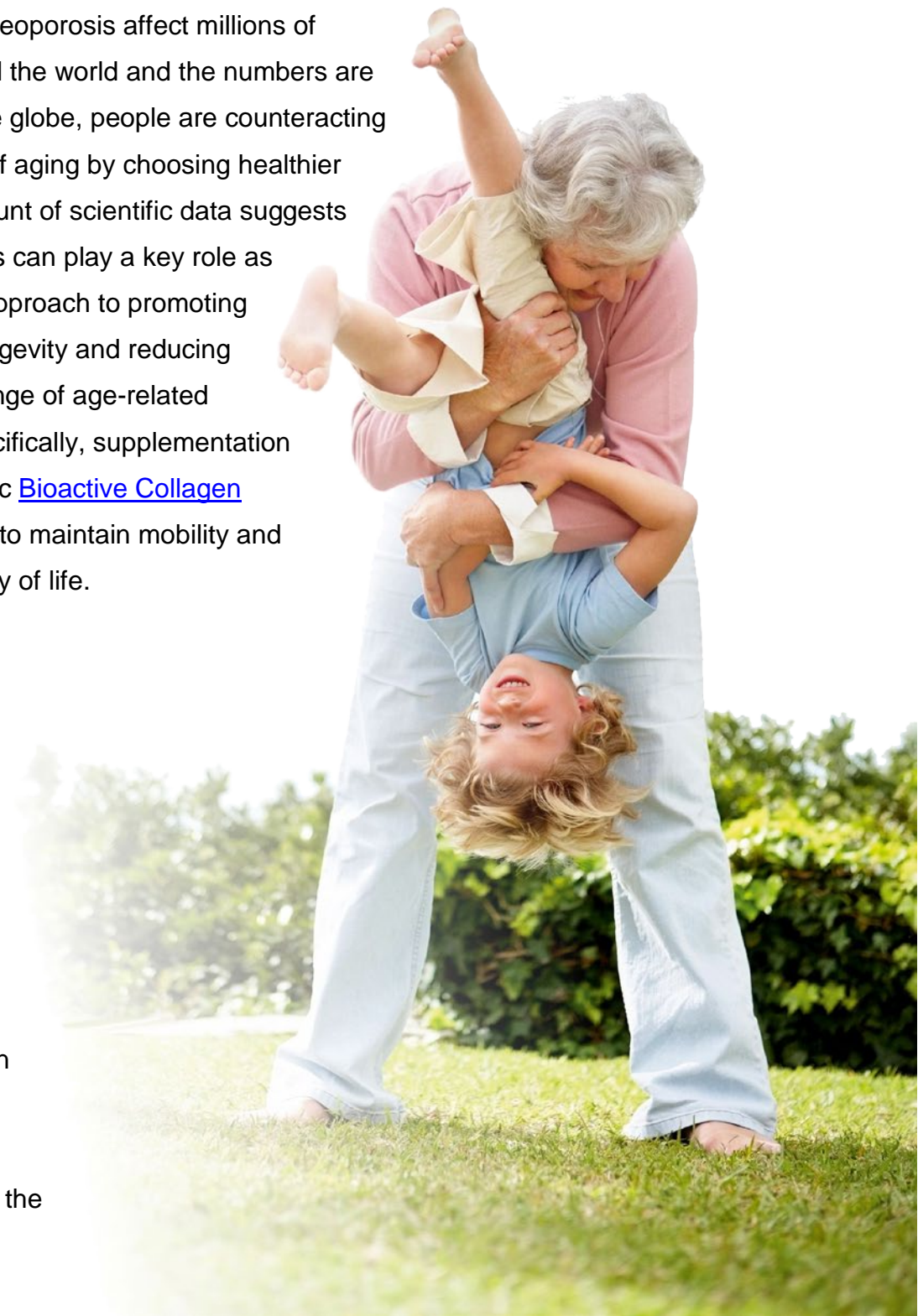
Fighting the unpleasant side-effects of aging

Impact of Bioactive Collagen Peptides® on joint and bone health

Osteoarthritis and osteoporosis affect millions of elderly people around the world and the numbers are rising. Yet, across the globe, people are counteracting the negative effects of aging by choosing healthier diets. A growing amount of scientific data suggests that collagen peptides can play a key role as part of a whole diet approach to promoting health, increasing longevity and reducing the risks of a wide range of age-related conditions. More specifically, supplementation with GELITA's specific [Bioactive Collagen Peptides®](#) could help to maintain mobility and improve overall quality of life.

Joint health

With its extensive product range, GELITA offers collagen peptides with confirmed efficacy in various applications. [FORTIGEL®](#) has been scientifically demonstrated to measurably stimulate the



synthesis of cartilage tissue. Thus, it counteracts the wear and tear on the joint cartilage caused by factors such as aging, excessive weight bearing or extensive physical exercise. Taken orally, these specific collagen peptides effectively combat the progressive degeneration of cartilage tissue. Its considerable advantage compared with other ingredients typically offered to [improve joint conditions](#) is that FORTIGEL[®] treats the actual cause of the problems rather than just the symptoms.

Proven efficacy

After oral administration, FORTIGEL[®] collagen peptides pass the mucosa, enter the bloodstream in an intact form and subsequently accumulate in the joint cartilage. Once in the cartilage, they stimulate the cartilage cells (chondrocytes) to increase the production of both collagen and proteoglycans — the two major components that make up approximately 90% of cartilage dry mass.

To detect the possible mode of action, a study was conducted with patients with mild osteoarthritis of the knee joint.¹ The objective of this investigation was to detect and confirm structural changes in the joint cartilage, which was evaluated using dGEMRIC (a magnetic resonance imaging technique). Although a progressive loss of cartilage was observed during the 1-year study period in the untreated placebo group, the subjects receiving FORTIGEL[®]



¹ McAlindon TE, et al.: Change in knee osteoarthritis cartilage detected by delayed gadolinium enhanced magnetic resonance imaging following treatment with collagen hydrolysate: a pilot randomized controlled trial. *Osteoarthritis and Cartilage* (2011), online 3 January 2011

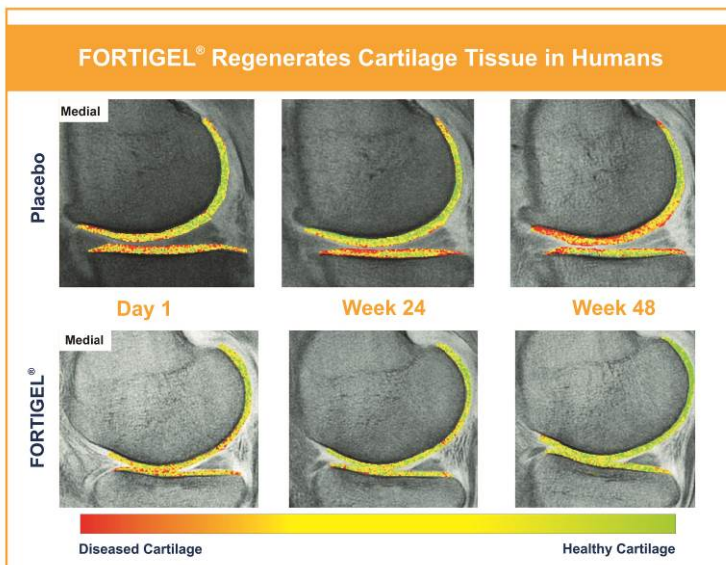


Figure 1: The amount of proteoglycans was statistically and significantly increased in FORTIGEL®-treated osteoarthritic patients when compared with a placebo. The positive effect of Bioactive Collagen Peptides® was clearly visualized using the magnetic resonance imaging technique, dGEMRIC.

showed significantly reduced degeneration of the extracellular cartilage matrix. As a result, it was shown for the first time in humans that orally administered collagen peptides have a direct influence on cartilage structure (Figure 1).

To establish a symptomatic improvement in osteoarthritic patients after BCP (Bioactive Collagen Peptides®) treatment, a total of 14 clinical studies have been conducted to date. In the process, more than 2500 individuals have been treated with Bioactive Collagen Peptides®. It can be concluded that collagen peptide supplementation leads to significant pain reduction, a reduced need for analgesics and an improvement of joint mobility.

Bone health

Besides joint problems such as osteoarthritis, bone-related ailments including atrophy, loss of bone density and stability, and osteoporosis, are also major public health concerns. Based on WHO diagnostic criteria, approximately 22 million women and 5.5 million men



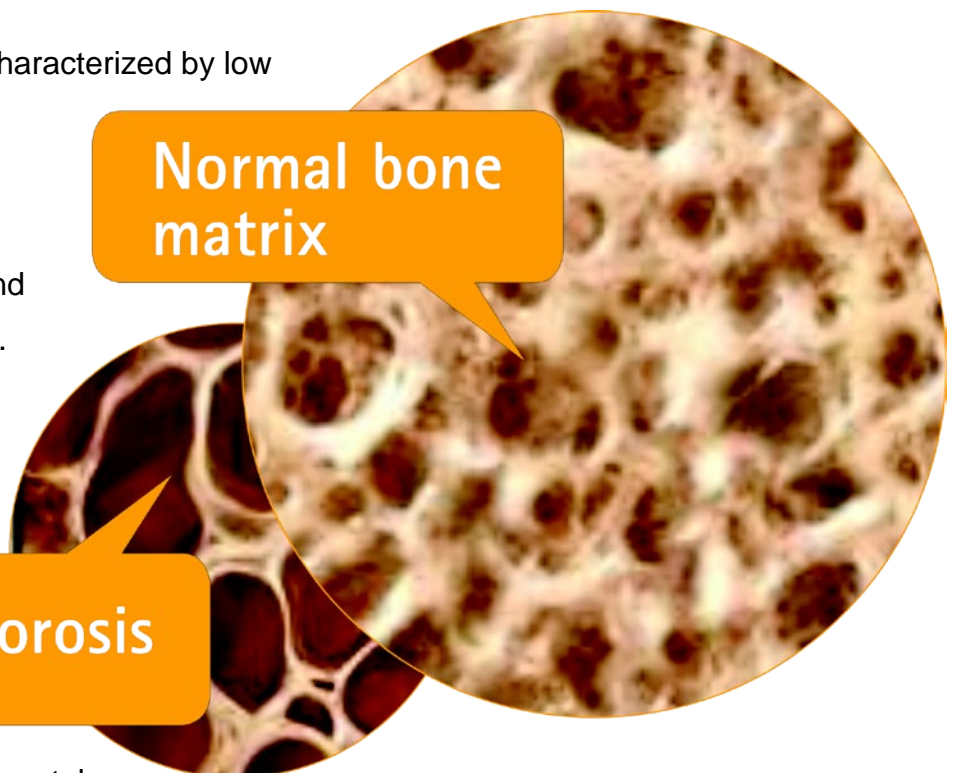
aged between 50 and 84 years of age are estimated to have osteoporosis in the EU (2010 figures). Owing to changes in population demographics, the number of men and women with osteoporosis in the EU is expected to rise from 27.5 million in 2010 to 33.9 million in 2025, corresponding to an increase of 23%.²

Osteoporosis is a condition characterized by low bone mass and the micro-architectural deterioration of bone tissue that leads to enhanced bone brittleness and an increased risk of fractures.

Usually, when we think of healthy bones, we think of calcium; but our bones need more than just calcium.

Bone is a mixture of mineral crystals held in an organic collagen matrix. On their own, the minerals would be extremely brittle and prone to breakage. Collagen makes up 95% of the organic bone matrix and is essential for [bone health](#).

Specific collagen peptides have been optimized to support bone health from within. These collagen peptides ([FORTIBONE®](#)) stimulate osteoblast activity to increase the production of the extracellular bone matrix, which is the essential framework for calcium mineralization. In addition, they regulate the degenerative processes that affect bones by reducing osteoclast-based protease production. Hence, these ingredients supply the body with the basic components needed for a strong and stable bone structure, supporting overall bone stability and flexibility.



² www.iofbonehealth.org/facts-statistics#category-22.

Scientific background

Numerous experimental studies have been done that address the impact of collagen peptides on bone density. Investigations have predominantly focused on the age-related metabolic and degenerative processes involved in bone formation and mineralization. Two clinical studies have shown that supplementation with specific collagen peptides led to a statistically significant reduction in the amount of excreted bone collagen breakdown products (compared with a placebo)³. Collagen peptide intake also statistically and significantly down-regulated serum levels of both bone degradation markers (UPD and UDPD) (Figure 2)^{4,5}.

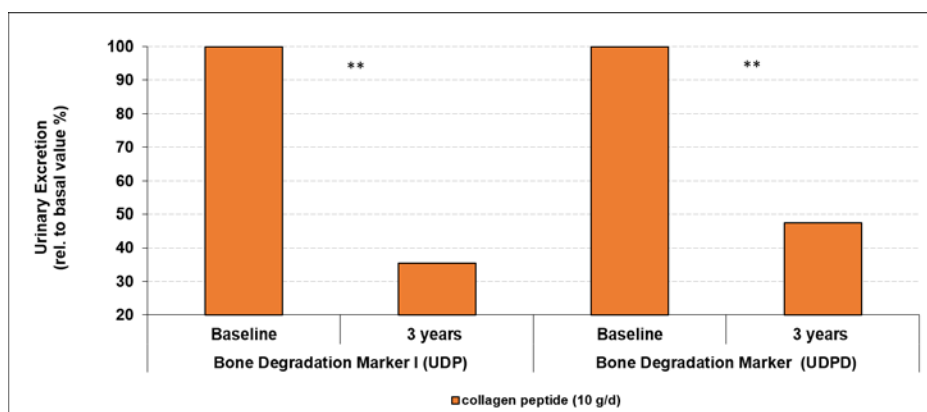


Figure 2: The excretion of bone degradation markers was statistically and significantly reduced after 3 years of oral ingestion of collagen peptides compared with baseline.

The latest study in this field investigated the impact of GELITA's specific collagen peptides FORTIBONE® on postmenopausal healthy women suffering from osteopenia or milder forms of osteoporosis. During this single-center, prospective, randomized, double-blind, placebo-controlled trial, 180 healthy women with a bone mineral density ≤ -1 and ≥ -2.5 T-value were treated with 5 g of FORTIBONE® daily during a time period of 12 months.

The initial results of this study indicate an anabolic effect — as they revealed a pronounced increase in bone mineral density after FORTIBONE® supplementation in subjects suffering from osteopenia or osteoporosis. In the femoral neck, a significant

³ Adam M, Spacek P, Hulejova H, Galianova A, Blahos J (1996) Postmenopausal osteoporosis. Treatment with calcitonin and a diet rich in collagen proteins. *Cas Lek Cesk* 135:74-78

⁴ Adam M, Spacek P, Hulejova H (2002) What is the effect of collagen peptides peroral administration in postmenopausal osteoporosis. *Ces Reumatol* 10:131-137

⁵ Adam M, Spacek P, Hulejova H, Galianova A, Blahos J (1998) May Collagen Hydrolysate Rich Diet (CHRD) Extend The Effect of Calcitonin in Postmenopausal Osteoporosis? *Connective Tissue Diseases* 17:25-36

improvement in bone mineral density (6.3% after one year of BCP treatment) was observed. The bone mineral density in the spine showed a significant improvement of 5.3% at the end of the treatment phase. Hence, this new data supports the assumption that FORTIBONE[®] seem to be an interesting option for the prevention, treatment and adjuvant treatment of degenerative bone diseases.

Completely safe with no adverse side-effects

In addition to their scientifically proven efficiency, Bioactive Collagen Peptides[®] also have excellent safety profiles. They are exceedingly well tolerated and no adverse reactions have been noted. As FORTIGEL[®] and FORTIBONE[®] comprise various short-chain linear peptides, their allergenic potential is extremely low. As they are hydrolyzed to a certain extent, collagen peptides are readily absorbed by the body, easily digestible and highly bioavailable. Additionally, they are free from fat, cholesterol, carbohydrates and gluten, and do not contain purines. Collagen peptides are completely safe, non-allergenic and free from E-numbers, so are perfect for the development of clean label products.

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