

Joint Care Supplement Fact Sheet

for Healthcare Professionals

This fact sheet outlines supporting evidence from scientific research on the nutrients used in Positive Science People's Joint Care supplement and, as such, is intended for use by healthcare professionals only. All ingredients are linked to specific health benefits in peer-reviewed medical journals and research studies, details of which are provided below. In many cases, the ingredients are authorised by the EU in their register of food health and nutrition claims. The nutrients in this formula are scientifically proven to optimise joint health, support strong bones & muscles, act as antioxidants, and support a strong immune system and energy metabolism.

Positive Science People Joint Care is comprehensive, convenient and cost-effective formula, developed for high patient compliance.

Alpha Lipoic Acid (ALA)

ALA is naturally present in the human body, as an essential cofactor for **energy** production, and is also recognised as a potent **antioxidant** and free radical scavenger.

A recent review¹ of ALA's multiple functions and potential benefits concluded it is a "potentially highly effective therapeutic agent for many conditions related with oxidative damage".

Supplementation with ALA has demonstrated significant improvements in blood glucose control, lipid profile², and weight loss³, according to two recent systematic reviews.

Bioperine (Black Pepper Extract)

Piperine, the active ingredient in Bioperine is commonly used to increase **absorption** of various nutrients, including Curcumin, as evidenced in extensive clinical studies⁴.

Several additional health benefits⁵ are also linked with Piperine, such as insulin resistance and anti-inflammatory benefits, especially in chronic diseases.

Boron

Boron has been proven, as outlined⁶ by Integrative Medicine journal, to be an important trace mineral because it is essential for the growth and maintenance of **bones**, beneficially impacts the body's use of vitamin D, boosts magnesium absorption, reduces levels of **inflammatory** biomarkers and raises levels of **antioxidant** enzymes.

In a 2017 pilot study⁷ of 80 patients with Rheumatoid Arthritis (RA), Boron was found to be a useful adjuvant therapy, demonstrating significantly improved clinical scores and reduced anti-inflammatory markers, compared to a placebo.

Boswellia Serrata

According to Versus Arthritis⁸, Boswellia Serrata can **prevent the production** of inflammatory substances in the **joints**, with four randomised controlled trials suggesting it might have **beneficial effects** in treating patients with osteoarthritis of the knee.

In 2018, a meta-analysis⁹ of studies assessing the efficacy of dietary supplements in Osteoarthritis highlighted Boswellia Serrata, as well

as Curcumin, as offering large and clinically important benefits, particularly in the short term. This was further supported by a 2020 systematic review and meta-analysis of Boswellia Serrata supplementation in patients with Osteoarthritis¹⁰.

Calcium

Calcium contributes to the maintenance of normal **bones**, normal **muscle** function and normal **energy-yielding** metabolism as recognised by the European Commission.

Osteoporosis is a common complication of Rheumatoid Arthritis (RA), highlighted in a 2016 study¹¹, where the prevalence of osteoporosis was significantly higher in patients with RA than healthy controls. The study also found that routine supplementation of calcium and vitamin D decreased the risk of **bone mineral density** (BMD) loss, and concluded that it should be recommended for all patients with Rheumatoid Arthritis.



Coenzyme Q10

Coenzyme Q10 is a potent **antioxidant** compound naturally present in the body that can be depleted in certain conditions.

In a 2020 systematic review¹² of CoQ10 supplementation on oxidative stress, CoQ10 was shown to significantly increase key antioxidant enzymes and total antioxidant capacity (TAC), as well as reduce MDA, a key marker of oxidative stress.

In Rheumatoid Arthritis (RA) specifically, a randomized controlled trial¹³ found that CoQ10 supplementation resulted in significant reductions in **pro-inflammatory** mediators and markers of oxidative stress.

Copper

Copper is an essential trace element and a transition metal needed as a cofactor for many **antioxidant** enzymes, but also plays a significant role in iron **metabolism**, antioxidant defense, and immunity, to name a few.

According to the European Commission's authorised claims, Copper supports maintenance of normal **connective tissues**, contributes to normal **energy-yielding** metabolism and to normal **iron transport** in the body.

Curcumin/Turmeric

Curcumin, a naturally occurring polyphenol and active component of the turmeric plant, has been extensively researched and is of particular interest for its **antioxidant** and **anti-inflammatory** properties. According to a 2017 review¹⁴ of its effects on human health, Curcumin has been found to increase antioxidant enzymes and reduce markers of inflammation and oxidative stress, both of which are enhanced in many chronic diseases, including rheumatoid and osteoarthritis.

A 2016 meta-analysis¹⁵ of randomised controlled trials (RCTs) assessing Curcumin efficacy in patients with arthritis, found that curcumin supplementation significantly reduced arthritis-related symptoms, and concluded that the evidence supports the efficacy of Curcumin in the treatment of arthritis. Furthermore, recent RCTs¹⁶ and a 2021 systematic review in Rheumatoid Arthritis¹⁷ have since supported these findings.

Magnesium

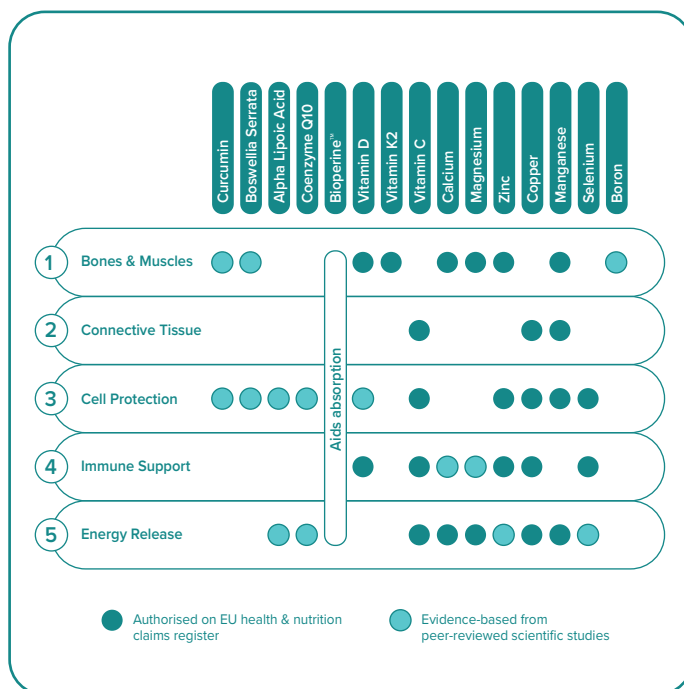
Magnesium contributes to normal **muscle** function, maintenance of normal **bones**, a normal **energy yielding** metabolism and a reduction in **tiredness and fatigue**, according to the European Commission.

Known to mediate inflammation and pain signalling, magnesium is also involved in Vitamin D **metabolism**. Without adequate Magnesium, Vitamin D metabolism could be compromised.

Yet, a recent study¹⁸ found that 68% of men and 44% women with Osteoarthritis of the knee were consuming below the daily estimated average requirements for Magnesium. Researchers found that low magnesium intakes were strongly associated with increased knee pain and function, a correlation which remained significant after adjusting for age, gender, ethnicity, BMI, lifestyle factors and medication.

Manganese

Manganese is an essential mineral that functions as a cofactor for several enzymes, including antioxidant enzymes. It contributes to a normal **energy-yielding** metabolism, the maintenance of normal



bones, the normal formation of **connective tissue** and the protection of cells from **oxidative stress**, as recognised by the European Commission.

Selenium

Selenium is an important mineral and co-factor for essential **antioxidant** enzymes. As such, the European Commission recognises selenium's contribution to the **protection of cells** from oxidative stress and to the normal functioning of the **immune** system.

Indeed, a recent systematic review¹⁹ of 13 randomised controlled trials demonstrated that selenium supplementation significantly increased antioxidant enzymes and total antioxidant capacity, while reducing markers of oxidative stress.

Vitamin C

Vitamin C is another critical **antioxidant** with anti-inflammatory and immune supporting functions. It is recognised by the European Commission as supporting normal **collagen formation** for healthy **cartilage function** and **bones** (both vital for health joints).

It also contributes to the **reduction of tiredness and fatigue**, a normal **energy-yielding** metabolism and the normal function of the **immune** system, as per the EU authorised claims register.

Patients with Rheumatoid Arthritis have been found²⁰ to have reduced blood concentration of Vitamin C and other **antioxidants**, alongside increased markers of oxidative stress, when compared to healthy controls. However, after 12 weeks' supplementation of Vitamin C and other antioxidants, blood concentrations improved significantly with an associated reduction in markers of oxidative stress.

Vitamin D

Vitamin D contributes to normal muscle function, the maintenance of normal **bones** and the normal function of the **immune system**, according to the European Commission.

In fact, Vitamin D has been found to regulate the physiological behaviour of over 36 different cell types in the body. It has been shown to down regulate **pro-inflammatory** compounds responsible for inflammation, and in Rheumatoid Arthritis in particular, serum Vitamin D is inversely associated with disease activity, according to a recent review article²¹. A 2020 systematic review and meta-analysis of Vitamin D supplementation in Rheumatoid Arthritis also concluded that vitamin D supplementation appears to be an effective intervention for patients with rheumatoid arthritis²².

Vitamin K2

Vitamin K2 contributes to the maintenance of normal **bones**, as recognised by the European Commission. Vitamin K2 specifically shows promise²³ in the treatment of **osteoarthritis**. Evidence shows it may be a useful adjunct for the treatment of **osteoporosis**, along with vitamin D and calcium, rivaling bisphosphonate therapy without toxicity. It may also significantly

reduce morbidity and mortality in cardiovascular health. Vitamin K2 appears promising in the areas of diabetes, cancer and osteoarthritis.

A 2020 meta-analysis²⁴ of randomised controlled trials looking at the combination of Vitamin K and Vitamin D supplementation on human bone quality, concluded that this combination leads to significantly increased total Bone Mineral Density (BMD) and reduced Osteocalcin levels (which are responsible for the breakdown of bones).

Zinc

As an antioxidant, Zinc contributes to the **protection of cells** from oxidative stress and to the normal functioning of the **immune system**, according to the European Commission. They also recognise its contributions in the maintenance of normal **bones**.

In fact, Zinc plays a key role in over 300 enzymes, and as highlighted above, a critical role in regulating the immune system. Yet, a recent systematic review²⁵ of 62 studies identified a consistent pattern of zinc deficiency in patients with autoimmune conditions, including Rheumatoid Arthritis, when compared to healthy controls.

Nutritional Information

Serving Size: 4 Capsules. Servings Per Container: 30.

	Amount Per Serving	% NRV
High Strength Curcumin from Turmeric Root (95% Curcuminoids)	400mg	†
Boswellia Serrata (65% Boswellic Acids)	100mg	†
Alpha Lipoic Acid	70mg	†
Coenzyme Q10	70mg	†
Black Pepper Extract (Bioperine®)	4mg	†
Vitamin D3	25µg	500%
Vitamin K2 MK-7 (as Menaquinone-7)	121µg	162%
Vitamin C	450mg	563%
Calcium	120mg	15%
Magnesium	187.5mg	52%
Zinc	5mg	50%
Copper	0.25mg	25%
Manganese	0.5mg	25%
Selenium	50µg	91%
Boron	2.5mg	†

NRV = Nutrient Reference Value

† Nutrient Reference Value Not Established

Ingredients: Magnesium Citrate, Calcium Citrate, Capsule Shell (Hydroxypropyl Methylcellulose), Ascorbic Acid, Turmeric Root Extract, Bulking Agent (Stoneground Brown Rice Flour), *Boswellia Serrata* Extract, Alpha Lipoic Acid, Coenzyme Q10, Zinc Glycinate, Sodium Borate, Vitamin K2, Vitamin D3, Selenomethionine, *Piperine* Extract, Manganese Glycinate, Copper Glycinate.

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