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How Krill Oil Eases Osteoarthritis Pain and Boosts Muscle Strength in Older Adults

Analysis by Dr. Joseph Mercola | June 22, 2026

STORY AT-A-GLANCE

- Krill oil improved knee pain, stiffness, and physical function in people with osteoarthritis, helping participants move more comfortably during daily activities like walking and climbing stairs
- Older adults taking krill oil for six months improved grip strength, knee strength, and muscle thickness, which helps protect against falls, weakness, and loss of independence with age
- Krill oil delivers omega-3 fats in a phospholipid form that blends efficiently into your cell membranes, while its natural astaxanthin content helps protect the oil from oxidation and inflammatory damage
- Cheap, oxidized fish oils and diets high in seed oils worsen inflammation and interfere with healthy cellular energy production, making it harder for your joints and muscles to recover
- Pairing krill oil or omega-3-rich seafood with regular movement, stable dietary fats, and enough protein creates a stronger foundation for preserving cartilage, muscle function, and long-term mobility

Every step hurts when your knees stiffen and your muscles weaken at the same time. Osteoarthritis, meaning the gradual breakdown of joint cartilage, affects more than 32.5 million adults in the U.S. alone.[1] It's characterized by joint pain, swelling, stiffness, and

reduced mobility that slowly turn simple movements into exhausting tasks. At the same time, age-related muscle loss, called sarcopenia, raises your risk of falls, frailty, and loss of independence.

Researchers from The Journal of Nutrition, Health and Aging noted that sarcopenia affects an estimated 10% to 27% of adults over age 60.[2]

These two problems often occur together. Weaker muscles place more stress on already-painful joints, and painful joints discourage the movement that keeps muscles strong. Once that cycle takes hold, mobility tends to slip further with each passing year, and conventional pain medications often add new problems — stomach irritation, kidney strain, and cardiovascular risks — without addressing what's driving the decline underneath.

For years, fish-derived omega-3 fats drew attention mainly for heart and brain health. Now scientists are uncovering something much bigger. A growing body of research suggests that krill oil, a phospholipid-rich source of EPA and DHA, may directly influence both halves of this problem, calming the inflammation that erodes cartilage while also helping aging muscles respond more efficiently to nerve signals, nutrition and daily activity.

That connection between inflammation, muscle performance and joint function explains why researchers are now investigating krill oil as more than a basic omega-3 supplement. Two recent studies offer a closer look at how these compounds influence pain, stiffness, and physical movement inside aging knees, and how they shape muscle strength in adults who have largely stopped exercising. The first study reveals what happened when researchers tracked krill oil's effects on knee osteoarthritis symptoms.

Krill Oil Improved Knee Pain and Daily Movement

Research published in Inflammopharmacology analyzed six randomized controlled trials involving 971 participants with knee **osteoarthritis**.[3] Researchers specifically investigated whether **krill oil supplementation** improved pain, stiffness, and physical

function in adults struggling with chronic knee problems.

Osteoarthritis slowly erodes cartilage, the protective tissue that cushions your joints, which leaves bones rubbing together during movement. The result is swelling, stiffness, grinding sensations and pain that steadily chip away at mobility and independence.

- **Participants experienced improvements in daily movement and comfort —** The review found krill oil significantly improved WOMAC scores by week four. WOMAC stands for Western Ontario and McMaster Universities Osteoarthritis Index, a standardized questionnaire researchers use to measure joint pain, stiffness, and ability to perform normal daily activities.

  Participants reported less discomfort while walking, standing, climbing stairs and moving through everyday routines. That type of improvement matters because pain often creates a vicious cycle — the more your knees hurt, the less you move, and the less you move, the weaker your muscles and joints become.

- **Pain relief appeared alongside better physical function —** Researchers reported the strongest improvements in pain reduction and physical movement, while stiffness also improved at a moderate level. Many people focus only on pain scores, but physical function determines whether you can get out of a chair easily, walk through a grocery store without stopping or keep up with normal household tasks.

  Researchers emphasized that krill oil improved both symptoms and movement together. That combination gives you a stronger foundation for staying active instead of slipping deeper into inactivity and muscle decline.

- **The changes happened without major safety concerns —** Researchers reported no significant adverse events linked to krill oil supplementation. That stands out because many people with osteoarthritis rely heavily on pain medications that often come with stomach irritation, kidney strain, or cardiovascular risks after long-term use. The review described krill oil as a "promising functional food with a favorable safety profile" for symptom management.

- **Researchers also documented important changes in blood markers —** Krill oil supplementation significantly increased HDL cholesterol and omega-3 levels in the bloodstream. HDL is often called "good cholesterol" because it helps transport excess cholesterol away from arteries.

  Higher omega-3 levels also matter because these fats become part of your cell membranes, the protective outer layers surrounding your cells. Healthier cell membranes improve communication between cells and help regulate inflammatory responses throughout the body.

- **Krill oil's benefits were linked to anti-inflammatory and antioxidant effects inside the joint environment —** Antioxidants help neutralize unstable molecules called free radicals that damage cartilage and joint tissue over time. Omega-3 fats from krill oil also help calm inflammatory signaling pathways that drive swelling, pain and tissue breakdown.

  At the same time, healthier fats inside cell membranes improve flexibility and communication between joint tissues. Think of it like replacing cracked, brittle rubber seals with flexible new ones that move more smoothly under pressure. That cellular support helps explain why participants experienced less pain alongside easier movement.

- **Improved movement creates a compounding effect throughout the body —** Once your knees hurt less, you move more naturally. Better movement improves circulation, supports muscle maintenance and reduces the downward spiral that often accompanies chronic joint pain.

  Every extra walk, stair climb or daily activity becomes easier to repeat. That consistency matters because inactivity accelerates metabolic dysfunction, weakens muscles and increases joint instability. Researchers highlighted krill oil as a nutraceutical intervention, meaning a food-derived compound that delivers measurable therapeutic effects beyond basic nutrition.

Krill Oil Helped Older Muscles Stay Stronger

A study published in The Journal of Nutrition, Health and Aging followed 94 adults over age 65 who performed less than one hour of structured exercise per week.[4] Researchers wanted to see whether krill oil improved muscle size, strength and nerve-to-muscle communication differently depending on age, sex or body weight. Participants took 4 grams of krill oil daily for six months while researchers tracked changes in grip strength, knee strength, muscle thickness and physical performance.

This mattered because aging muscle loss steadily reduces stability, endurance and confidence during everyday movement.

- **Strength gains appeared across almost every group studied —** Researchers found older adults improved muscle strength and muscle size regardless of whether they were male or female, younger-old or older-old, lean or overweight. That finding stands out because many interventions work only in narrow populations. In this trial, the improvements remained remarkably consistent across multiple groups.

- **Grip strength increased in a measurable way —** Female participants gained roughly 6.5 pounds of grip strength compared to controls; males gained about 9 pounds. That's the difference between struggling with a stuck jar lid and opening it on the first try. Grip strength sounds simple, but researchers treat it as one of the strongest predictors of healthy aging and long-term survival.

  Weak grip strength often reflects broader muscle decline throughout the body. Stronger grip usually means better physical resilience, steadier balance and greater ability to perform daily tasks without assistance. Opening jars, carrying groceries and getting up from the floor all depend on this type of strength reserve.

- **Leg strength and muscle size also improved over time —** Researchers measured knee extensor maximal torque, meaning the force generated when straightening the knee against resistance. Women taking krill oil showed noticeably stronger knee strength, while men experienced even larger gains compared to people who did not take krill oil.

Muscle thickness inside the vastus lateralis, one of the large muscles along the front of your thigh, also increased in both men and women. Stronger thigh muscles stabilize the knee joint, improve walking mechanics and reduce the physical strain placed on aging joints during movement.

- **Researchers uncovered evidence of improved nerve-to-muscle signaling —** One of the most interesting discoveries involved something called the M-wave, which measures how efficiently electrical signals travel from nerves into muscle tissue during contraction.

  Researchers found males taking krill oil showed significant improvements in M-wave activity, while control groups trended downward over time. The muscles responded faster and more effectively to nerve signals. Think of it like replacing a weak electrical wire with a cleaner, stronger connection that delivers power more efficiently.

- **The omega-3 index climbed during supplementation —** Participants taking krill oil experienced large increases in their omega-3 index, which measures the amount of omega-3 fats incorporated into red blood cell membranes. Male participants rose from 5.8% to 9%, while females increased from 7.1% to 10.8%.

  Researchers saw no comparable improvements in control groups. Healthier cell membranes improve flexibility, nutrient transport and cellular communication throughout muscle tissue. Better membrane health supports stronger contractions and more efficient recovery from physical stress.

- **Researchers linked the effects to muscle membrane function and anabolic signaling —** The study discussed earlier evidence showing long-chain omega-3 fats increase muscle protein synthesis, meaning the process your body uses to build and repair muscle tissue.

  Researchers also referenced "anabolic resistance," a condition where aging muscles stop responding efficiently to protein intake and exercise signals. Krill oil appeared to improve the muscle environment enough to partially overcome that resistance.

Use Omega-3s Strategically to Calm Inflammation and Protect Aging Joints

The type of omega-3 you choose matters just as much as the amount you take. Inflamed joints, stiff muscles and declining mobility all trace back to damaged cell membranes, oxidative stress and chronic inflammatory overload.

Focus first on improving the quality and stability of the fats entering your body so your cells finally receive the raw materials they need to repair tissue, support movement and reduce the stress that accelerates joint degeneration over time.

1. **Switch to krill oil if you want omega-3s your body actually uses efficiently —** Not all omega-3 supplements behave the same once they enter your body. Unlike fish oil, krill oil delivers EPA and DHA attached to phospholipids, which are fat compounds that blend directly into your cell membranes. That structure improves absorption and helps your cells put those fats to work faster.

   Krill oil also contains **astaxanthin**, a naturally occurring antioxidant that protects the oil from oxidation and gives your tissues extra defense against inflammatory stress. That stability matters if your knees ache or your muscles recover slowly. Inflamed joints already deal with constant oxidative damage. A more stable omega-3 source helps calm that stress instead of adding to it with damaged fats.

2. **Get more omega-3s from real food instead of relying entirely on capsules —** Your body responds best when nutrients arrive packaged inside whole foods. Wild-caught fatty fish such as sardines, anchovies, mackerel, and Alaskan salmon provide omega-3 fats alongside highly usable protein and trace minerals that support muscle maintenance and joint repair.

   Eating these foods regularly helps strengthen your omega-3 status naturally without forcing your body to process large amounts of concentrated oils. If your goal is better mobility and less stiffness, combining nutrient-dense seafood with regular

movement gives your joints and muscles far more support than isolated supplements alone.

3. **Stop buying low-quality fish oils that oxidize before they help you —** Cheap fish oils often sit for long periods in warehouses, on store shelves and inside hot shipping trucks before you ever swallow them. During that time, the fragile fats oxidize and break down. Once oxidized, those oils fuel the same inflammatory pathways you're trying to calm.

   Krill oil resists that damage far better because its astaxanthin content acts like a built-in natural preservative. If you already struggle with joint discomfort, swelling or muscle fatigue, adding unstable oils to your system only deepens the problem.

4. **Keep your omega-3 intake balanced instead of chasing megadoses —** Many people assume more omega-3 automatically means more protection. That mindset often backfires. **Extremely high omega-3 intake**, especially from fish oil supplements, has been linked to **atrial fibrillation**, a serious disturbance in heart rhythm. Your body thrives on balance, not overload.

   You don't need massive doses to support healthy joints, muscles and metabolism. Moderate krill oil intake combined with omega-3-rich foods gives your cells the support they need without pushing your system into unnecessary stress.

5. **Remove inflammatory seed oils so omega-3s can finally do their job —** Omega-3 fats struggle to work properly when your diet still floods your tissues with **linoleic acid** (LA) from soybean, corn, canola, and sunflower oils. These industrial fats are unstable and prone to oxidation once they enter your cells. They displace healthier fats in cell membranes and disrupt the mitochondria, the tiny structures inside your cells that turn food into energy.

   Focus on removing those oils before expecting supplements to deliver meaningful results. Once you replace **seed oils** with more stable fats like grass fed butter, tallow and ghee, omega-3s from krill oil and seafood become far more effective at supporting cartilage, muscle recovery and joint comfort.

FAQs About Krill Oil for Osteoarthritis and Muscle Strength

Q: How does krill oil help knee osteoarthritis?

A: Krill oil helps reduce the inflammation and oxidative stress that damage cartilage and worsen joint stiffness over time. Research published in Inflammopharmacology found people with knee osteoarthritis experienced improvements in pain, stiffness, and physical function after taking krill oil.[5] Participants reported easier movement during daily activities like walking, climbing stairs and standing from a chair.

Q: Why does krill oil work differently from regular fish oil?

A: Unlike standard fish oil, krill oil carries omega-3 fats attached to phospholipids, which integrate more efficiently into your cell membranes. Krill oil also naturally contains astaxanthin, an antioxidant that helps protect the oil from oxidation. This makes krill oil more stable and less likely to form inflammatory compounds that work against your joints and muscles.

Q: Can krill oil improve muscle strength in older adults?

A: Yes. A study published in The Journal of Nutrition, Health and Aging found older adults over age 65 improved grip strength, knee strength and muscle thickness after taking krill oil for six months.[6] Researchers also found improvements in nerve-to-muscle signaling, which helps muscles contract more efficiently during movement.

Q: What foods naturally support healthier joints and muscles?

A: Wild-caught fatty fish such as sardines, anchovies, mackerel, and Alaskan salmon provide omega-3 fats along with protein and minerals that support muscle maintenance and joint repair. At the same time, removing seed oils like soybean, corn, canola, and sunflower oil helps lower inflammatory stress that damages cartilage and interferes with healthy cellular energy production.

Q: Why does movement matter so much for osteoarthritis?

A: Pain often causes people to move less, but inactivity weakens the muscles that stabilize your joints. Once muscles weaken, your knees absorb more mechanical stress with every step, which accelerates stiffness and loss of mobility. The studies highlighted in this article showed that reducing pain and improving muscle function creates a positive cycle where movement becomes easier, helping preserve independence and physical resilience with age.

Sources and References

- [1] Arthritis Foundation, Osteoarthritis
- [2, 4, 6] The Journal of Nutrition, Health and Aging January 2026, Volume 30, Issue 1, 100747
- [3, 5] Inflammopharmacology April 22, 2026, Volume 34, Pages 3445-3454