CoQ10: from energy to evidence



Original conceptual illustration; not a scientific diagram.

What would make a supplement worth taking: a persuasive explanation of cellular energy, or a measurable difference in what we can do? The Arising’s October 31 full article asked that question of CoQ10. The review it covered was published in September; this is a fresh reading of existing research, not a new trial announced today.

The question the review tested

Researchers gathered 33 randomized trials involving 3,317 participants; 21 contributed to quantitative pooling. Eligible studies had a mean or median age of at least 40, which does not mean every participant was over 40. Populations ranged from healthy adults to people with chronic disease. CoQ10 was compared with placebo, no supplementation or an otherwise equivalent control. Treatment periods ranged from 17 days to 60 months, with different formulations and doses.

The number behind the headline

Only five studies, involving 172 participants, contributed to the primary pooled estimate of relative peak oxygen uptake. The average difference favored CoQ10 by 0.73 mL/kg/min, but the 95% confidence interval ran from -0.07 to 1.54. That interval includes no benefit. The authors rated this evidence low certainty. The total of 3,317 participants should not be mistaken for the sample behind this particular result.

Uncertain does not mean proven useless

The primary estimates for walking capacity, strength, chair-rise performance and muscle quantity also remained uncertain. Evidence across key outcomes was low or very low certainty. An expanded oxygen-uptake analysis that used additional statistical assumptions favored CoQ10, but it did not replace the primary analysis or establish a clinically meaningful benefit. The review cannot settle every disease-specific use or identify a reliable responder subgroup.

A mechanism needs a functional test

CoQ10 has a role in mitochondrial energy production. That makes it a reasonable research question; it does not demonstrate that taking more improves everyday function. The authors found frequent risk-of-bias concerns and sparse evidence for individual outcomes. Frail older adults with sarcopenia were not specifically represented as a target population. No lifespan-extension claim follows from these findings.

The next useful question

Better studies should specify which people might benefit, measure meaningful physical outcomes and report harms alongside efficacy. This review is not a comprehensive safety assessment, and we did not independently audit every underlying trial or supplement. It provides no basis here for personal instructions to start or stop CoQ10. In our strength collection, it sits beside articles on activity, rehabilitation, muscle preservation and cognition: different outcomes, each requiring its own evidence.

Sources, limits & connected reading

Adapted from The Arising, October 31, 2026, feature 05, pages 15-17: “CoQ10 Not Shown to Improve Muscle or Fitness in Older Adults.” Source PDF FILE_9321.pdf. Primary source: Liu et al., Antioxidants 15(10):1219; DOI 10.3390/antiox15101219; PMID 42939793. PubMed dates publication September 22, 2026; the publisher’s version record also records September 22. This October 31 review checked the PubMed abstract and PMC main text. Supplements and individual trials were not independently reanalysed. Funding: Fundamental Research Funds for the Central Universities (2026KYPT05 and 2026KYPT06); authors declare no conflicts. Underlying-trial funding was not independently audited. Claim IDs AR-20261031-COQ-01-04. Earlier booklet articles retain their original review dates.

PubMed record · Full primary review

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Educational writing by John Griffin, MD. Public introductions are distinct from private manuscripts and shared applications.

Exercise and thinking skills in mild cognitive impairment

Strength for the long run · Updated reading collection · Version 1.2



What the researchers studied

The review combined 38 randomized studies in adults aged 60 or older with mild cognitive impairment. Comparators included usual care, low-intensity activity or another exercise approach. The researchers examined working memory, cognitive flexibility and inhibitory control: skills involved in holding information in mind, switching tasks and resisting automatic responses. People with dementia were excluded.

What the model suggested

The authors used a Bayesian network meta-analysis to compare exercise approaches and model dose-response patterns across studies. Gains tended to rise and then flatten. Moderate doses were associated with more reliable improvements; higher modeled ranges showed plateaus or modest declines. Exercise combined with cognitive training was most consistent for working memory, while walking and broader physical training showed more stable effects on flexibility and inhibitory control.

Why this is not a universal exercise target

The dose ranges came from a model combining different studies, not one trial that randomly assigned everyone to several directly comparable weekly doses. They should not be read as a personal prescription or evidence that more exercise generally harms the brain. The certainty ranged from low to moderate. The accessible abstract does not provide pooled effect sizes, total participant numbers, follow-up duration across studies or enough information to judge the practical size and durability of the benefits.

Thinking-test gains are not dementia prevention

These findings concern performance on executive-function measures in people who already had mild cognitive impairment. They do not establish prevention of dementia, independence in everyday life or longer lifespan. Those outcomes need their own evidence. The authors call for trials that directly compare multiple exercise doses.

How this fits the collection

The earlier articles in this booklet discuss activity patterns, frailty, cardiac rehabilitation and muscle preservation. This new article adds cognition as a separate outcome. Together they encourage attention to what a program actually measures: strength, walking capacity, a cognitive score and a clinical diagnosis answer different questions.

Sources and review limits

Adapted from The Arising, October 27, 2026, story 10 of 21, pages 26-27: Moderate Exercise Doses Linked to Best Executive Function Gains in MCI. Primary record: PMID 42921532; DOI 10.7717/peerj.21805, PeerJ 14:e21805 (2026; exact publication day not verified). The primary abstract was checked October 29. Full text and supplements were inaccessible in this check; harms, funding and conflicts were not established. No individualized exercise advice. Earlier articles retain their original review dates.

Open the primary PubMed record

Strength for the long run

Keeping the capacity to participate.



Activity, rehabilitation and muscle preservation, explored through three full articles. Keep the distinction between a trial, an association and a review in view.

3 full articles | 25 October 2026 | Version 1.1

An editorial reading booklet, distinct from The Arising book manuscript. Educational material, not an individual treatment plan. Source qualifications remain with each article.

The strength to keep going

What long-term activity patterns tell us about frailty

Newsletter: October 20, 2026. Study publication: August 11, 2026.

Adults who stayed physically active over the years were less likely to become frail than those who remained inactive. People who became more active also did better. For longevity, that is a useful place to begin: with the capacity to continue participating in life.

The finding comes from a systematic review and meta-analysis by Sgouropoulou and colleagues in Geriatrics. The review included 10 prospective cohort studies following 111,714 community-dwelling adults in Europe, Asia and North America. Six studies contributed to the pooled analysis. This was observational evidence, so it identifies an association rather than proving that exercise caused the difference.

The pattern over years

The researchers looked beyond a single report of how much someone exercised. They compared people who remained active, people whose activity increased, and people who remained inactive. The studies used repeated measurements or activity trajectories and validated definitions of frailty.

Persistent activity was associated with a risk ratio of 0.56 for future frailty, with a 95% confidence interval of 0.42 to 0.76. That is a 44% lower relative risk. Increasing activity was associated with a risk ratio of 0.62, or a 38% lower relative risk, with a confidence interval of 0.57 to 0.68. These are relative comparisons, not the number of people out of every hundred who would avoid frailty.

The authors rated the persistent-activity evidence as moderate certainty and the increasing-activity evidence as low certainty. Results were similar in populations younger and older than 60 at the beginning of follow-up.

Why this matters

Frailty concerns reserve: how well a person can withstand illness, injury or another stress. Its consequences can include disability and loss of independence. An activity pattern that persists through ordinary weeks and years may therefore matter more than an impressive but brief burst of effort.

That is an interpretation of the evidence, not an exercise prescription. The review does not establish a particular routine, intensity or weekly target. Nor can it tell an individual how much their own risk will change.

What remains uncertain

People who stay active may also differ in health, income, diet and access to care. Illness can itself reduce activity, making cause and effect difficult to separate. Pooling studies with different methods adds uncertainty.

The encouraging finding is that the association was not confined to people who had always been active. Rising activity also tracked with lower frailty risk. The next step is to test how real programs help people build and sustain that change - and whether those programs preserve function over the long term.

Primary source: https://pubmed.ncbi.nlm.nih.gov/42645008/

A stronger heart-rehabilitation program includes the rest of the body

Aerobic and resistance training address different parts of physical capacity

Newsletter: October 20, 2026. Study publication: August 3, 2026.

Heart rehabilitation has long centered on aerobic exercise such as walking or cycling. A systematic review in Sports Medicine-Open asks what happens when resistance training joins it. The answer points toward a broader view of recovery: fitness, strength and the ability to do more in daily life.

Gois and colleagues gathered 61 randomized controlled trials involving 5,388 randomized participants with coronary heart disease. The trials compared combined aerobic and resistance training with aerobic training alone, resistance training alone, usual care without exercise, or other combined programs. Different comparisons answer different questions and should not be treated as interchangeable.

What improved

Compared with non-exercising usual care, combined training improved peak oxygen consumption, strength measures and health-related quality of life. Peak oxygen consumption rose by an average of 2.20 milliliters per kilogram per minute. This is a measure of exercise capacity, not a direct measure of years of life gained.

The comparison with aerobic training alone is especially relevant to existing rehabilitation programs. Combined training generally performed better on oxygen uptake, six-minute walking distance, several measures of muscle strength and quality of life. The pooled difference in six-minute walking distance was about 22 meters.

Against resistance training alone, the combined approach also improved peak oxygen consumption. Together, the findings suggest that aerobic and strength work can contribute complementary benefits rather than requiring an either-or choice.

Read the mortality claim carefully

The review reported fewer mortality events with combined training than with non-exercising usual care. That comparison does not isolate the effect of adding strength work to an aerobic program. It should not be turned into a claim that a particular lifting routine prevents death or extends an individual's lifespan.

The trials varied in their programs, participants and follow-up. Many programs were relatively short, and women were underrepresented. Supervised rehabilitation also differs from attempting a new program alone after a cardiac event. The review cannot settle the safest or most effective mix for every patient.

The useful question

For someone entering cardiac rehabilitation, a practical conversation is whether the program develops both aerobic capacity and strength, and how the team adapts those elements to their condition. Exercise after a heart event belongs within an individualized rehabilitation plan.

The larger longevity idea is straightforward. Recovery is about more than a test result. Walking farther, carrying something comfortably and feeling capable in the world are outcomes worth measuring. Longer follow-up will help show how durable the gains are and which program designs deliver them most safely.

Primary source: https://pubmed.ncbi.nlm.nih.gov/42543470/

Muscle preservation begins with the foundations

A large nutrition review puts protein and resistance training ahead of speculative fixes

Newsletter: October 24, 2026. Study publication: October 21, 2026.

Maintaining muscle is part of maintaining independence. A systematic review in The Journal of Nutrition brings together evidence on nutritional approaches to sarcopenia, the age-related loss of muscle mass, strength and physical performance. Its strongest support goes to familiar foundations: protein-centered nutrition paired with resistance training, and correcting vitamin D deficiency when present.

Dharmansyah and colleagues included 248 studies concerning adults aged 60 and older. The collection comprised 236 primary studies and 12 systematic reviews or meta-analyses. Among the primary studies were 100 randomized trials, along with observational and other designs.

A synthesis, not one giant experiment

The authors did not pool all the studies into a single treatment effect. They used a synthesis without meta-analysis, examining the direction of findings and grading certainty. That distinction matters when a large study count appears in a headline.

For example, the review reported a favorable direction of effect in 84% of single-nutrient randomized trials. This is not an 84% chance of success for an individual, and it does not tell us the average size of benefit. Studies can differ in population, outcome and magnitude while pointing in the same direction.

Where the support was strongest

The authors rated protein-anchored strategies, including adequate intake and resistance training, as moderate-to-high-certainty approaches. Their discussion includes protein intakes around at least 1.0-1.2 grams per kilogram per day and leucine-enriched approaches. Those are research and guideline-context figures, not a personal prescription; needs and restrictions differ with clinical circumstances.

Vitamin D repletion in deficient older adults was also strongly supported within the review's framework. That is different from assuming that more vitamin D is better for everyone.

Mediterranean-style dietary patterns came next, with moderate certainty and evidence that was largely observational. Such associations support further study but do not establish that the diet alone prevented muscle loss.

The gut-muscle connection remains developmental

Approaches aimed at the gut microbiome were interesting but much less certain. Results tended to be favorable yet varied substantially, and the authors rated the evidence as low to very low certainty. They described microbiome targeting as a research priority rather than current prescriptive practice.

The review also found inconsistent diagnostic criteria and outcome reporting. That makes confident comparisons harder and limits firm clinical recommendations. A large literature can still leave important questions unresolved.

A useful order of attention

The editorial implication is to give established foundations sustained attention while newer mechanisms are tested. The goal is not only a scan showing more lean tissue, but strength and function that carry into daily life.

Future trials should use clearer, more consistent definitions and measure outcomes people recognize: mobility, capability and independence. The research is most useful when the measurements remain connected to those purposes.

Primary source: https://pubmed.ncbi.nlm.nih.gov/42906854/

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