LUPUS

(SLE)

What the studies observed — and what that might mean in everyday life.

2004 2008 2015 2024

Doses tested and signs observed.

Doses tested: 3 g/day of MaxEPA • 3 g/day of n-3 PUFA • 4.5 g/day of EPA+DHA • 4 g/day of krill concentrate (equivalent to 1.5 g of EPA+DHA).

Studies have shown signs of: reduced lupus activity, less oxidative stress, improved well-being, better vascular response, and an increase in the Omega-3 Index.

Executive Summary

Four trials, four types of improvement.

2004 • activity

52 people
3 g MaxEPA/day
SLAM-R decreased from 6.12 to 4.69 versus placebo.

2008 • activity + vases

60 people
SLAM-R and BILAG ↓
FMD of the vessels ↑
8-isoprostanes ↓

2015 • Quality of life

50 randomized
PGA has improved significantly.
Favorable signs in the SF-36 and mediators.

2024 • membrane

78 people
Omega-3 Index ~4.4% → 8.05%
Activity decreased among the most active participants.

IN VERY SIMPLE WORDS

The four studies didn't measure exactly the same thing. This is helpful: together they show clues in symptoms, blood vessels, well-being, and cell composition.

Duffy 2004 PMID 15290734 • Wright 2008 PMID 17875549 • Arriens 2015 PMID 26283629 • Salmon 2024 PMID 39009356.

A timeline: what the research has added.

From "Do the symptoms change?" to "What has changed inside the cells?"



2004

Symptomatic lupus activity improved on a clinical scale.

2008

Activity and function of blood vessels, plus oxidative stress, improved in the same RCT.

2015

Global assessment by the physician and signs of quality of life/mediators.

2024

The Omega-3 Index became the primary endpoint: it objectively showed how much EPA+DHA entered the red blood cells.

2004 — first clear clinical sign

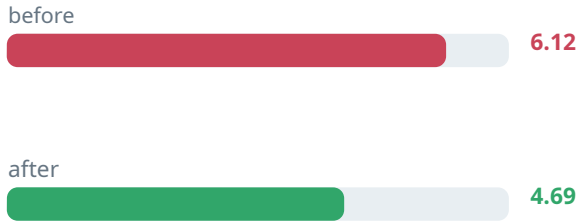
52 people • 24 weeks • double-blind • 3 g of MaxEPA/day

52
participants

24
weeks

3 g
MaxEPA/day

SLAM-R • Lupus activity score (the lower the better)



What is SLAM-R?

SLAM-R is a score created to summarize lupus activity. The numbers 6.12 and 4.69 represent this score: the lower the number, the less active the disease was.

IN VERY SIMPLE WORDS

In very simple terms: 6.12 and 4.69 are the "score" of lupus activity. The lower this score, the less active the lupus was. In this study, the score dropped from 6.12 to 4.69.

Duffy EM et al. J Rheumatol. 2004;31:1551–1556. PMID 15290734.

2008 — a study that looked at four dimensions simultaneously.

60 people • 24 weeks • 3 g/day of omega-3

Activity • SLAM-R

9.4 → 6.3
p<0.001
Lower score = less activity.

Activity • BILAG

13.6 → 6.7
p<0.001
Another scale of activity also improved.

Function of the vessels

FMD 3.0% → 8.9%
p<0.001
The blood vessels were able to dilate better.

Oxidative stress

8-isoprostanes 177 → 90
p=0.007
The score dropped by almost half.

IN VERY SIMPLE WORDS

It wasn't just that "the lupus became less active." The same study saw the disease score drop, blood vessels function better, and a marker of oxidative damage decrease. It's like seeing three different dashboard lights improve at the same time.

Wright SA et al. Ann Rheum Dis. 2008;67:841–848. PMID 17875549.

2008 — Why does the function of vessels matter?

An explanation without technical jargon.

A healthy vase adapts

When more blood needs to pass through, the vessel is able to relax and open slightly. This behavior is called endothelial function.

In the study, openness improved.

FMD increased from 3.0% to 8.9%. This means that the vessel's response to increased flow was much greater after 24 weeks.

And oxidative stress decreased.

8-Isoprostanes are products formed when fats undergo oxidation. The drop from 177 to 90 showed a lower load of this process.

IN VERY SIMPLE WORDS

Imagine a hose that needs to widen when more water passes through it. At first, it opened only a little. Then, it opened much wider. At the same time, there was less "chemical rust" measured in the blood.

2015 — Quality of life and global assessment

50 randomized participants • 6 months • fish oil vs. placebo olive oil

50
randomized

6
months

p=0.015
PGA

ESR ↓
p=0.008

PGA — physician assessment

The median change was favorable to fish oil and significantly better than placebo. The PGA summarizes the overall clinical impression of activity.

Quality of life

The RAND SF-36 showed favorable signs, especially in energy/fatigue and emotional well-being.

Mediators and inflammation

ESR dropped significantly, and there were also changes in circulating mediators, including IL-13 and IL-12.

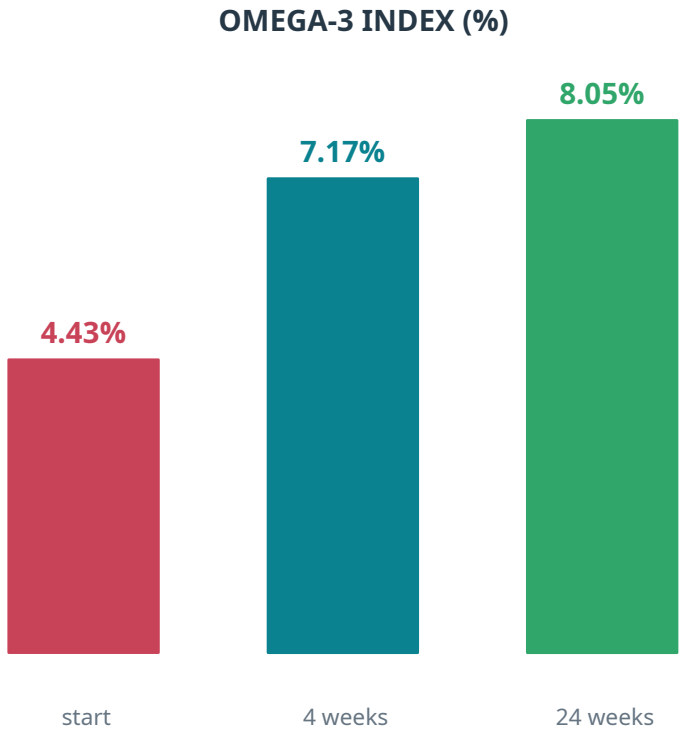
IN VERY SIMPLE WORDS

Here the study asked something very human: “Overall, does the doctor think the disease is improving? Does the person feel more energetic or well-being?” The response showed favorable signs in these areas.

Arriens C et al. Nutr J. 2015;14:82. PMID 26283629.

2024 — for the first time, the Omega-3 Index was the focus of the study.

78 adults • multicenter • randomized • double-blind • 24 weeks + extension



Quick response

The index rose from approximately 4.4% to 7.17% in just 4 weeks.

24 weeks

The average reached 8.05%, showing a high incorporation of EPA+DHA into red blood cells.

Most active disease

In participants with SLEDAI-2K ≥9, activity decreased significantly at 4, 8, and 16 weeks versus placebo.

IN VERY SIMPLE WORDS

The study didn't need to guess whether omega-3 "entered" the body. It directly measured EPA+DHA within red blood cells and saw the index almost double. In the most active patients, disease activity also decreased.

Salmon J et al. Lupus Sci Med. 2024;11:e001201. PMID 39009356.

2024 — what does “4.4% to 8.05%” mean?

Explaining the Omega-3 Index as if it were a recipe.

At the beginning

Of every 100 "parts" of fatty acids in the red blood cell membrane, approximately 4.4 were EPA+DHA.

After 4 weeks

This ratio was already around 7.17 out of every 100 parts.

After 24 weeks

The average reached 8.05 per 100 parts. In other words, the composition of the membrane itself has changed significantly.

IN VERY SIMPLE WORDS

Imagine a box containing 100 pieces. Initially, only 4 or 5 were blue. Then, 8 were blue. The box still contained 100 pieces, but the mixture changed significantly. The Omega-3 Index measures precisely this change in the membrane's mixture.

What improved in all four studies?

Organized by something that an average person can recognize.

Area	2004	2008	2015	2024
General lupus activity	SLAM-R ↓	SLAM-R ↓ • BILAG ↓	PGA improved	SLEDAI ↓ in the most active group
Blood vessels	—	FMD 3.0% → 8.9%	—	—
Oxidative stress	—	8-isoprostanes 177 → 90	—	—
Quality of life / well-being	—	—	SF-36 with favorable signs	assessed in the study
Cell composition	—	platelet membrane measured	—	O3I ~4.4% → 8.05%

IN VERY SIMPLE WORDS

No single study tells the whole story. Together, they form a mosaic: less activity on a clinical scale, better functioning vessels, less oxidative stress, signs of improved quality of life, and a major shift in the EPA+DHA content of cells.

In practice: what might it mean for someone with lupus to take 3 to 4.5 g/day of omega-3?

O que o estudo encontrou	Quanto mudou	O que isso pode representar no dia a dia
Atividade global do lúpus ↓	SLAM-R 6,12 → 4,69 (≈23%) SLAM-R 9,4 → 6,3 (≈33%) BILAG 13,6 → 6,7 (≈51%)	Doença menos “pesada”, com menor intensidade global dos sintomas e menor impacto do lúpus na rotina.
Dor	SF-36 dor: +10 pontos	Pode significar menos impacto da dor no dia a dia e mais conforto nas atividades normais.
Energia / fadiga	SF-36 energia: +10 pontos	Pode significar mais disposição e menos sensação de esgotamento ao longo do dia.
Bem-estar emocional	SF-36 bem-estar emocional: +16 pontos	Pode significar sentir-se melhor, mais estável e menos consumido pelo peso diário da doença.
Vasos e stress oxidativo	FMD 3,0% → 8,9% 8-isoprostanos 177 → 90 (≈49%)	Melhoria “por dentro”: menos stress oxidativo e melhor resposta dos vasos, mesmo sem sensação imediata.
Omega-3 Index / membranas	4,43% → 8,05% (≈82%)	Mudança objetiva nas próprias células; no grupo mais ativo, a atividade já melhorou nas semanas 4, 8 e 16.

Duffy 2004 PMID 15290734 • Wright 2008 PMID 17875549 • Arriens 2015 PMID 26283629 • Salmon 2024 PMID 39009356.

In summary: what could this mean when taking the tested doses?

Considering the doses studied: 3 g/day, 4.5 g/day of EPA+DHA and 4 g/day of krill concentrate.

IN REAL LIFE

In real life, taking the doses tested in the studies could mean a less burdensome illness: less pain, more energy, less intense inflammatory manifestations, better well-being, and fewer days when lupus interferes with normal activities.

IN SIMPLE TERMS

In simple terms, with the doses tested in the studies, researchers found signs of reduced lupus activity, less daily suffering, and improvements within the body at the same time.

In other words, studies suggest that, for some people, taking the tested doses of omega-3 may help lupus become less active and less burdensome on a daily basis, while also showing favorable changes within the body.

Duffy 2004 PMID 15290734 • Wright 2008 PMID 17875549 • Arriens 2015 PMID 26283629 • Salmon 2024 PMID 39009356.

How are these connected?

A simple explanation of biological logic.

EPA+DHA enter

through feeding or intervention

Membrane changes

the proportion of fatty acids within the cells changes

Messengers change

the cell then has a different mixture of raw materials

Inflammation changes

some inflammatory and oxidative pathways respond

Symptoms/measurements change

Scales, vessels, well-being, and reduced disease activity reflect this change.

IN VERY SIMPLE WORDS

Think of cells as factories. Amino acids, EPA, and DHA are the raw materials. When the stock of raw materials changes, so does what the factory can produce. In the body, this means that the cell becomes able to produce a different combination of inflammatory and regulatory signals.

The simple explanation — lupus on one page.

The main message of the studies

The body is fighting with itself.

In lupus, part of the immune system mistakes the body for an enemy. This can cause inflammation in many places.

Studies have changed the "ingredients"

The researchers administered sources of omega-3 and then measured symptoms, blood vessels, blood, and cell membranes.

Several things have improved.

Different studies have shown less activity, better functioning vessels, less oxidative stress, signs of well-being, and more EPA+DHA in the membranes.

PRACTICAL SUMMARY — LUPUS

At the doses tested — 3 g/d MaxEPA; 3 g/d n-3 PUFA; 4.5 g/d EPA+DHA; and 4 g/d krill concentrate — the following were observed: reduced lupus activity, improved vascular function, less oxidative stress, better overall assessment, signs of improved quality of life, and a higher Omega-3 Index.

Scientific references

Key clinical trials

1. Duffy EM et al. The clinical effect of dietary supplementation with omega-3 fish oils and/or copper in systemic lupus erythematosus. J Rheumatol. 2004;31:1551–1556. PMID 15290734.

2. Wright SA et al. A randomised interventional trial of omega-3-polyunsaturated fatty acids on endothelial function and disease activity in SLE. Ann Rheum Dis. 2008;67:841–848. PMID 17875549.

3. Arriens C et al. Placebo-controlled randomized clinical trial of fish oil's impact on fatigue, quality of life, and disease activity in SLE. Nutr J. 2015;14:82. PMID 26283629.

4. Salmon J et al. Correction of omega-3 fatty acid deficiency and improvement in disease activity in SLE treated with krill oil concentrate. Lupus Sci Med. 2024;11:e001201. PMID 39009356.

5. Borges MC et al. Omega-3 fatty acids, inflammatory status and biochemical markers of patients with SLE: a pilot study. 2017. PMID 29173690.

6. Systematic review: The effect of Omega-3 fatty acid supplementation in systemic lupus erythematosus patients. PMID 35023407.

SCIENTIFIC VALIDATION:

The numbers presented on the previous pages come directly from these human studies.