Efficacy of Oral Collagen Peptide Supplementation in Reducing Pain Over 6 Months in Adults with Chronic Joint Pain

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Background / Introduction

- Chronic joint pain, especially osteoarthritis (OA), is a major cause of pain, disability, and reduced quality of life, and is a common concern in primary care.
- NSAIDs and acetaminophen relieve symptoms but do not modify joint structure. Long-term use carries GI, renal, hepatic, and cardiovascular risks, especially in older adults.
- Patients often ask about "joint support" supplements. Hydrolyzed collagen (collagen peptides) is well absorbed, and in vitro data show it can stimulate type II collagen and proteoglycan synthesis in chondrocytes.
- **Clinical relevance:** does oral collagen provide meaningful pain relief beyond placebo?

Research Question (PICO)

In adults with chronic joint pain, does oral supplementation with collagen peptides (hydrolyzed collagen), compared with placebo, result in a clinically significant reduction in VAS pain score over 6 months?

P	Adults with chronic joint pain or radiographic knee OA
I	Oral collagen peptides (hydrolyzed collagen)
C	Placebo
O	Clinically significant reduction in VAS pain at 6 months

Design

Evidence-based review. PubMed and EBSCO were searched with: *collagen peptides*, *hydrolyzed collagen*, *osteoarthritis*, *chronic joint pain*, *VAS pain*.
Inclusion: randomized, double-blind, placebo-controlled trials; adults with chronic joint pain or radiographic knee OA; oral collagen peptides with ~6-month follow-up; patient-reported VAS pain outcome.
Seven RCTs were reviewed and narrowed to the three highest-yield studies.

Patient Population & Methods

- 570 adults across 3 RCTs (n = 250, 200, 120), ages 30–81 years, with baseline VAS pain ≥30–40 mm (0–100 mm scale).
- **Settings:** multicenter outpatient trials in Ecuador and Belgium; single-center outpatient trial in Spain.
- **Intervention:** oral collagen peptides, 1.2–10 g/day, vs placebo for 24 weeks (6 months).
- Rescue analgesics (acetaminophen, NSAIDs) were permitted in all studies.

Study	Population	Dose	Primary outcome
Benito-Ruiz 2009 (Ecuador)	n = 250; knee OA, KL I–III; VAS 30–50 mm	10 g/day	≥30 mm VAS reduction
Bruyère 2012 (Belgium)	n = 200; age ≥50; joint pain, VAS ≥30 mm	1.2 g/day	≥20% VAS improvement (responder)
Carrillo-Norte 2025 (Spain)	n = 120; knee OA, KL II–III; VAS ≥40 mm	10 g/day + vitamin C 80 mg	Change in VAS pain

Results

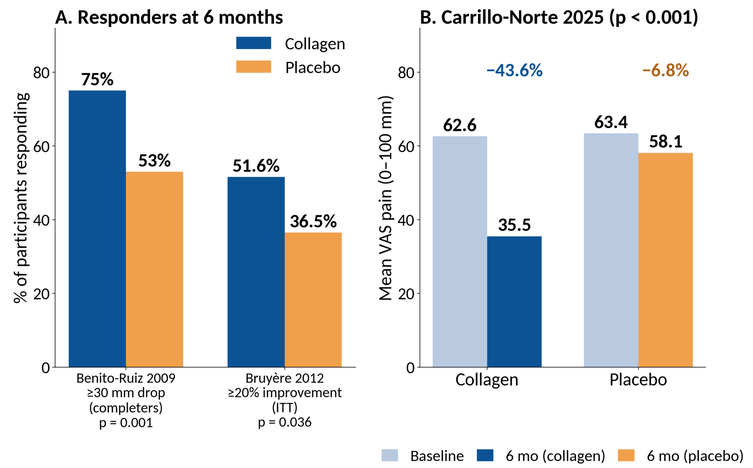


Figure. (A) Proportion of responders at 6 months. (B) Mean VAS pain (mm) at baseline and 6 months in Carrillo-Norte 2025 (relative change shown above bars).

Study	Primary outcome (6 months)	Collagen	Placebo	p-value
Benito-Ruiz 2009	≥30 mm VAS reduction (completers)	75%	53%	0.001
Bruyère 2012	≥20% VAS improvement (ITT)	51.6%	36.5%	0.036
Carrillo-Norte 2025	Mean VAS change from baseline	−43.6%	−6.8%	<0.001

- **Benito-Ruiz:** greatest benefit in KL grade III and in participants with low habitual meat intake. The 75% vs 53% comparison reflects completers; the ITT analysis was not significant.
- **Bruyère:** no significant difference at 3 months (44.1% vs 39.6%, p = 0.53). Number needed to treat ≈ 7 at 6 months. Disease-specific questionnaires (Lequesne, DASH, EIFEL) were not significant.
- **Carrillo-Norte:** between-group VAS difference −22.6 mm (95% CI −25.8 to −19.5), exceeding the 10–19.9 mm MCID range. Lequesne index −38.8% vs −0.3%. Analgesic/NSAID use at 6 months 3.3% vs 41.7% (baseline 28.3% vs 71.7%).
- **Safety:** no significant differences in adverse events between collagen and placebo in any trial.

Validity of Studies

Study	Randomized	Concealed allocation	ITT	Blinding	Follow-up ≥80%	Conflict of interest
Benito-Ruiz 2009 (N = 250)	Yes	Yes	Yes*	Patients & investigators	Yes (77–88%)	Industry funded
Bruyère 2012 (N = 200)	Yes	Yes	Yes	Patients & investigators	No (~28% attrition)	Industry funded
Carrillo-Norte 2025 (N = 120)	Yes	Yes	Yes	Patients, investigators & analysts	Yes (100%)	Industry funded

**Benito-Ruiz: ITT analysis was performed but showed no significant treatment differences; the primary endpoint above is among completers. Blinding of data collectors and outcome assessors was unclear in all three studies.*

Conclusions

- In adults with chronic joint pain, 6 months of oral collagen peptides produced statistically significant reductions in patient-reported pain vs placebo in all three RCTs.
- Collagen peptides appear safe and well tolerated and may serve as an adjunctive therapy, particularly for knee OA.
- Carrillo-Norte 2025 showed the strongest effect: −43.6% vs −6.8% VAS change (p < 0.001).

Clinical recommendation	SOR	Reference
In adults with chronic joint pain, oral supplementation with collagen peptides results in a clinically significant reduction in VAS pain score over 6 months.	**B**	Benito-Ruiz 2009; Bruyère 2012; Carrillo-Norte 2025

Discussion

- **Strengths:** all three were randomized, double-blind, placebo-controlled trials with a consistent direction of benefit.
- **Limitations:** small-to-moderate samples; industry funding in all three; rescue medication allowed (used by ~70–78% in Bruyère), which may dilute effect; ~28% attrition in Bruyère; single-center design in Carrillo-Norte; heterogeneous doses (1.2–10 g/day) and patient-reported outcomes; long-term and structural benefit unknown.
- **Why not SOR A?** Few high-quality trials, heterogeneity, and sponsor involvement.
- **Practice:** a reasonable counseling point for patients with chronic joint pain or knee OA asking about supplements. Set expectations: benefit is modest-to-moderate and may take several months. Frame as adjunctive to exercise/PT, weight optimization, and appropriate medications, not a replacement.

STEPS approach

Safety	Well tolerated across all trials; no major adverse events reported
Tolerability	High adherence (100% completion in Carrillo-Norte); minimal side effects
Effectiveness	Modest but consistent reduction in VAS pain over ~6 months
Price	Over-the-counter, not insurance-covered; roughly $10–30 depending on size
Simplicity	Once-daily powder or capsule; easy to add to a routine

Future Research

- **Long-term outcomes:** are benefits sustained beyond 6 months? Effect on function and joint structure, not just pain?
- **Optimal use:** ideal dose, formulation, and duration.
- **Patient selection:** OA severity, baseline dietary collagen intake.
- **Comparative effectiveness** vs NSAIDs, physical therapy, and other supplements.

References

1. Benito-Ruiz P, Camacho-Zambrano MM, Carrillo-Arcentales JN, et al. A randomized controlled trial on the efficacy and safety of a food ingredient, collagen hydrolysate, for improving joint comfort. *Int J Food Sci Nutr.* 2009;60(Suppl 2):99–113. doi:10.1080/09637480802498820
2. Bruyère O, Zegels B, Leonori L, et al. Effect of collagen hydrolysate in articular pain: a 6-month randomized, double-blind, placebo-controlled study. *Complement Ther Med.* 2012;20(3):124–130. doi:10.1016/j.ctim.2011.12.007
3. Carrillo-Norte JA, Gervasini-Rodríguez G, Santiago-Triviño MÁ, García-López V, Guerrero-Bonmatty R. Oral administration of hydrolyzed collagen alleviates pain and enhances functionality in knee osteoarthritis: results from a randomized, double-blind, placebo-controlled study. *Contemp Clin Trials Commun.* 2025;43:101424. doi:10.1016/j.conctc.2024.101424