

# Prolotherapy: A Narrative Review of Mechanisms, Techniques, and Protocols, and Evidence for Common Musculoskeletal Conditions

Connie Hsu <sup>1</sup>, Kevin Vu <sup>1</sup>, Joanne Borg-Stein <sup>2</sup>

Affiliations [expand](#)

PMID: 36410881 DOI: [10.1016/j.pmr.2022.08.011](https://doi.org/10.1016/j.pmr.2022.08.011)

## Abstract

Prolotherapy is a nonsurgical regenerative technique that allows small amounts of irritant solution to be injected into the site of painful tendon and ligament insertions to promote the growth of healthy cells and tissues. The goal of prolotherapy is to stimulate growth factors that may strengthen attachments and reduce pain. Prolotherapy injection technique is centered around a focused physical examination and strong anatomic knowledge for maximized results. Prolotherapy is beneficial in a variety of different musculoskeletal conditions, including, but not limited to, lateral epicondylitis, rotator cuff tendinopathy, plantar fasciitis, Achilles tendinopathy, osteoarthritis, low back pain, sacroiliac joint pain, and TMJ laxity.

**Keywords:** Dextrose prolotherapy; Orthobiologics; Prolotherapy; Prolotherapy techniques; Tendinopathy; Treatment.

Copyright © 2022 Elsevier Inc. All rights reserved.

[PubMed Disclaimer](#)

# **Conflict of interest statement**

Disclosure None of the authors have any financial conflicts of interest to disclose.