Evidence-Based Practice Group Answers to Clinical Questions

Efficacy/Effectiveness of Prolotherapy in Treating Wrist Sprain/Strain or Repetitive Strain Injury (RSI)

A Rapid Systematic Review

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About this report

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About the Evidence-Based Practice Group

The Evidence-Based Practice Group was established to address the many medical and policy issues that WorkSafeBC officers deal with on a regular basis. Members apply established techniques of critical appraisal and evidence-based review of topics solicited from both WorkSafeBC staff and other interested parties such as surgeons, medical specialists, and rehabilitation providers.

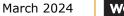
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Objectives

• To determine whether there is any evidence to support the efficacy/effectiveness of prolotherapy in treating (wrist) sprain/strain/repetitive strain injury (RSI).

Methods

- A systematic and comprehensive literature search was conducted on March 6, 2024.
- The search was done on commercial medical literature databases, including Cochrane Database of Systematic Reviews (2005 to February 28, 2024), ACP Journal Club (1991 to February 2024), UK York University Database of Abstracts of Reviews of Effects (1st Quarter 2016), Cochrane Clinical Answers (February 2024), Cochrane Central Register of Controlled Trials (January 2024), UK NHS Health Technology Assessment (4th Quarter 2016), UK NHS Economic Evaluation Database (1st Quarter 2016), BIOSIS Previews (1969 to 2008), Embase (1974 to 2024 Week 09), Medline and Epub Ahead of Print, Medline In-Process, In-Data-Review & Other Non-Indexed Citations, Medline Daily and Medline (1946 to March 05, 2024), Joanna Briggs Institute Evidence Based Practice Database (Current to February 28, 2024), that are available through Ovid platform.
 Combination of keywords were employed in this search. These keywords included:
 - 1. (repetitive strain injury) **AND** wrist **AND** prolotherapy
 - 2. (repetitive strain injury) **AND** prolotherapy
 - 3. (sprain **OR** strain) **AND** wrist **AND** prolotherapy
 - 4. (sprain **OR** strain) **AND** prolotherapy
- No limitation, such as on the language and year of publication, was implemented in this search.
- Manual search, on the references of the articles that were retrieved in full, was also done.

Results

- Search results:
 - No published study on the application of prolotherapy in treating RSI, on the wrist or other part of the extremities, was identified from search #1 and #2.
 - One(¹) published study was identified from search #3 while search #4 identified further thirty-four(²⁻³⁵) published studies. Hence, overall, thirty-five(¹⁻³⁵) studies were identified in this systematic review.
 - Upon examination on the titles and abstracts of these thirty-five(¹⁻³⁵) studies, five(^{1,4,16,27,28}) studies were thought to be relevant and were retrieved in full for further appraisal. No further study was identified from manual searches.
 - Of these five(^{1,4,16,27,28}) studies that were retrieved in full, one(¹) study was a case report (level of evidence 4. Appendix 1) on tendinosis and two(^{27,28}) studies were an expert review (level of evidence 5. Appendix 1) and did not provide any relevant data. Hence, these three(^{1,27,28}) studies will not be discussed further.
- In a case report (level of evidence 4. Appendix 1), Ada and Yavus(⁴) reported on the application of prolotherapy to treat medial collateral ligament (MCL) in a rugby player. A 21-year-old male rugby player sustained stress trauma to the knee valgus. He had severe pain over the medial side of his right knee and a swollen knee joint. His pain dramatically increased with any weight bearing and, on physical examination, notable tenderness was observed over the MCL. Magnetic resonance imaging (MRI) showed a grade 2 sprain of the MCL, subchondral bone marrow edema, and contusion at the



corner of the lateral tibial plateau. with prolotherapy and home-based exercise. The patient received three prolotherapy treatments for three weeks at 1-week intervals. A total of 4 - 5 mL of solution consisting of 15% dextrose and 0.2% lidocaine were used per injection session. After the first injection, isometric and active range of motion (ROM) exercises—3 sets of 8 repetitions, up to 3 times daily—were given as an initial exercise program. The patient reached 1200 ROM on the 5th day post-injection and started progressive resistance training and was able to walk without knee pain at the 10th day post-injection. By day 21 post-injection, the patient was pain free with a full active ROM. *It should be noted that it was unclear why this patient was selected and reported; further, there was a potential of effect of exercise co-intervention.*

In an abstract only form, Kajbaf et al⁽¹⁶⁾ presented the application of prolotherapy in treating chronic medial collateral ligament (MCL) sprain. A 40-year-old male, with past medical history of post-traumatic stress disorder and two arthroscopic meniscal surgeries, presented with chronic left knee pain that began 15 years ago after a military injury. Physical examination revealed point tenderness of the MCL and pain with valgus stress testing. The patient was then offered prolotherapy injections as a treatment option. Four, monthly, 2cc injections, that were composed of 1cc 50% hypertonic dextrose and 1cc normal saline to the MCL, was applied in this patient. The patient reported exponentially improving pain relief after each injection, with near resolution after completion of the series (*it was not clear how pain was measured, and no functional effect was reported*). It should be noted that it was clear why this patient was selected to be reported and it was not clear whether there were any other treatment modalities implemented in this patient.

Summary

- At present, there was no study reporting the application of prolotherapy in treating RSI on the wrist or any other parts of the extremities.
- At present, there was no published study reporting the application of prolotherapy in treating sprain/strain on the wrist.
- At present, there is some evidence, in the form of two, low level (level of evidence 4. Appendix 1) low quality (due to potential selection bias as well as potential effect of cointervention), case report on the effectiveness of prolotherapy in treating knee sprains (acute or chronic). Based on these two case reports, it should be noted on the variability of the reported prolotherapy protocols.



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5

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Appendix 1

WorkSafeBC — Evidence-Based Practice Group levels of evidence (adapted from 1-6)

1	Experimental, randomized controlled trial (RCT), systematic review RTCs with or without meta-analysis.
2	Evidence from controlled trials without randomization (quasi-experimental studies) or systematic reviews of observational studies.
3	Evidence from cohort or case-control analytic studies, preferably from more than 1 centre or research group.
4	Evidence from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments.
5	Opinions of respected authorities, based on clinical experience, descriptive studies or reports of expert committees based on scientific evidence.

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