

# INPLASY PROTOCOL

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**Review Stage at time of this  
submission:** Data extraction.

**Conflicts of interest:**  
None declared.

## Efficacy and safety of intra-articular injection of platelet-rich plasma for frozen shoulder: a systematic review and meta-analysis

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**Review question / Objective:** The primary objective of this study was to investigate the effectiveness and safety of intra-articular injection of platelet-rich plasma for the treatment of frozen shoulder.

**Condition being studied:** Frozen shoulder (FS) is a common condition with a high incidence. It is estimated that FS occurs in 3-5% of adults and can seriously affect the quality of life of patients. The optimal treatment for frozen shoulders is inconclusive. Intra-articular corticosteroids are one of the most common ways to freeze the shoulder, but corticosteroids can also cause tissue necrosis. Platelet-rich plasma is a new technology that contains a variety of different growth factors and other cytokines that can stimulate the healing of soft tissues and has become one of the treatment options for frozen shoulder. Therefore, with the emergence of new technologies, it is necessary to explore the effectiveness and safety of this technology.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 24 October 2022 and was last updated on 24 October 2022 (registration number INPLASY2022100095).

### INTRODUCTION

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freeze the shoulder, but corticosteroids can also cause tissue necrosis. Platelet-rich plasma is a new technology that contains a variety of different growth factors and other cytokines that can stimulate the healing of soft tissues and has become one of the treatment options for frozen shoulder. Therefore, with the emergence of new technologies, it is necessary to explore the effectiveness and safety of this technology.

## METHODS

**Participant or population:** Patients between 18 and 70 years of age, with a history of frozen shoulder for more than 1 month, and more than one-third of the patients with limited active flexion, internal rotation, and external rotation of the shoulder.

**Intervention:** Platelet plasma is injected into the articular cavity.

**Comparator:** Intra-articular injections of corticosteroids or saline or physical therapy.

**Study designs to be included:** All the randomized controlled trials which is stated the “randomization” phrase will be included, regardless of allocation concealment, or used of blinding. The language will be restricted in Chinese or English.

**Eligibility criteria:** Diagnostic criteria for frozen shoulder.

**Information sources:** PubMed, Cochrane Library, EMBASE, Web of science, Chinese National Knowledge Infrastructure, Chinese Biomedical Literature Database, Wanfang Database, the Chongqing VIP Chinese Science and Technology Periodical Database.

**Main outcome(s):** SPADI, UCLA, VAS score, shoulder range of motion SPADI, UCLA, VAS score, shoulder range of motion.

**Quality assessment / Risk of bias analysis:** The assessment will be conducted by 2 reviewers with the risk-of-bias assessment method from Cochrane Reviewer's

Handbook 5.0.24. The main contents comprise 7 items: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other sources of bias. The studies will be evaluated as being of “low risk of bias,” “high risk of bias,” or “unclear risk of bias.”

**Strategy of data synthesis:** STATA 26.0 software will be used to through the GeMTC package will be used to perform NMA to synthesize direct and indirect evidence.

**Subgroup analysis:** scores were analyzed separately according to four categories: SPADI, UCLA, VAS score and shoulder range of motion.

**Sensitivity analysis:** If heterogeneity exists, continue with sensitivity analysis after excluding heterogeneity.

**Country(ies) involved:** China.

**Keywords:** platelet-rich plasma, frozen shoulder, Total efficiency

### Contributions of each author:

Author 1 - Wang Bing - analyzed the data and drafted the manuscript.

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