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Protocol

Post-operative rehabilitation after surgical shoulder stabilization with Latarjet procedure: a study protocol for systematic scoping review

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ABSTRACT

Background: Anterior shoulder instability (ASI) is highly prevalent in the general population causing a significant functional decline and increased healthcare burden. Among the surgical stabilization options, the Latarjet procedure is commonly preferred to treat traumatic ASI in young active individuals. Despite the advances in surgical procedures, the research evidence regarding the content of post-operative rehabilitation programmes following a Latarjet procedure for ASI is inconclusive.
Methods: This protocol will adhere on the preferred reporting items for systemic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR) and the Joanna Briggs Institute guidelines. MEDLINE, OvidSP, Embase, Cochrane Library, CINAHL, PubMed, SPORTS Discus and Scopus databases will be searched for relevant studies. Two reviewers will independently screen the results against the eligibility criteria defined by the population concept and context of this scoping review. A PRISMA-ScR flow diagram will be used to present the number of sources of evidence identified. The two reviewers will extract the data aiming to synthesize the results in appropriate tables. The most relevant details of the post-operative rehabilitation programmes will be presented based on consensus on exercise reporting template checklist.
Conclusions: This scoping review can provide critical information regarding the content of the post-operative rehabilitation programmes after shoulder stabilization with a Latarjet procedure in patients with ASI.

Keywords: Glenohumeral dislocation, Glenohumeral instability, Anterior shoulder instability, Rehabilitation exercises

INTRODUCTION

Shoulder instability is an umbrella term that includes the full range of disorders caused of uncontrollable displacements of the glenohumeral joint.[1] It can be either traumatic such as dislocation and subluxation, or non-traumatic due to genetic laxity or reduced muscle control.[2] Static and dynamic stabilizers provide a functional shoulder movement by keeping the head of humerus in the center of the glenoid fossa and once those segments are disrupted rehabilitation should be consider.[3] An incidence of traumatic shoulder instability in the general population ranges between 1.7% and 2% with anterior shoulder dislocation to be the most common, counting approximately for 98% of the cases.[1,2] The most frequently cited mechanism is a traumatic event occurred while the patient's arm in extended, abducted and externally rotated position.[2] These types of injuries are common in collision sport athletes, falling on an outstretched arm and direct collision to the posterior aspect of the shoulder.[2,4,5] Young males and athletes have higher risk for developing anterior shoulder instability as opposed those over forty years old due to the high recurrence rates after conservative treatment.[2,4] These incidents rates are correlated with age-related changes in the relative proportions of types I and III collagen.[2] Surgical treatment is recommended for mature skeletal patients of this age group.[3,5]

Although several surgical procedures have been proposed for the treatment of anterior shoulder instability, the most commonly preferred are the Bankart and Latarjet procedures.[6-8] Bankart repair is an arthroscopic procedure providing stabilisation by tensioning of the capsule and repair of the labral lesion, while open Latarjet procedure involves coracoid transposition in the anterior margin of the glenoid.[9] Recent studies have shown better results with the Latarjet procedure as a first-line treatment in active young patients with a higher risk of recurrent instability.[10,11] Regardless of the surgical procedure used to treat anterior shoulder instability, the role of postoperative rehabilitation is critical in achieving functional stability and appropriate return to activity.[12,13] Postoperative rehabilitation aims to restore shoulder ROM and improve dynamic glenohumeral control using the appropriate therapeutic exercises at every post-operative phase.[14,15] Despite the recent advances in surgical procedures, there are very few evidence-based recommendations regarding the post-operative rehabilitation programmes.[15] Also, the details of these programmes are usually poorly described in the published reports and clinicians are struggling to replicate them in practice.[15,16] Although, a wide range of post-operative rehabilitation programmes after a Latarjet procedure are available through the literature, a formal comparison between these programmes guidelines is lacking.[14,15]

Based on our knowledge, a best evidence synthesis of the content used in post-operative rehabilitation using the Latarjet procedure in patients with anterior shoulder instability is not available yet. We assumed that a scoping review in the current field will provide a better understanding of the different types of post-operative rehabilitation programmes and subsequently, will facilitate the evaluation of their effectiveness.

The primary aim of this study protocol is to identify and evaluate the exercise rehabilitation protocols used in postoperative rehabilitation programs for patients that undergone a Latarjet procedure for anterior shoulder instability. The secondary aim of this study is to develop recommendations for postoperative rehabilitation protocols and optimize outcomes after surgical treatment for anterior glenohumeral instability using the Latarjet procedure.

METHODS

The present protocol and scoping review will be conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews and the preferred reporting items for systematic reviews and meta-analyses extension for scoping review (PRISMA-ScR), respectively.[17,18]

Eligibility criteria

We will focus on studies including rehabilitation programmes after surgical shoulder stabilization with a Latarjet procedure in patients with anterior shoulder instability. Studies published from year 2000 to 2023 will be considered eligible for inclusion.

Inclusion criteria

Participants

We will focus on studies including patients of both sexes, older than 16 years old with atraumatic or atraumatic anterior shoulder instability who have undergone surgical stabilization with a Latarjet procedure for the first time.

Concept

Any exercise-based, post-operative rehabilitation programme used to restore function and facilitate patients' 'return to activity' or 'return to sports' will be considered and evaluated in this review.[14,19] Based on the consensus on exercise reporting template (CERT) checklist, the most relevant details from exercise interventions will be extracted including exercise type, dosage, repetitions, frequency, volume, equipment, and provider.[20]

Context

We will not apply any limitation regarding geographical location, settings, ethnicity, or cultural factors. The included studies will describe exercise protocols conducted in a variety of settings such as home-based exercise programmes, clinic-based programmes, general guidelines for the postoperative management or any other setting.

Type of evidence sources

In this scoping review we aim to include randomized controlled trials (RCTs), non-RCTs, quasi-experimental studies, cohort studies, case-control studies, case series and cross-sectional studies.

Exclusion criteria

Studies that do not discuss exercise-based rehabilitation protocols, systematic reviews, individual case reports, editorials, letters and cadaveric studies will be excluded from this review. Studies including individuals with other concomitant injuries (rotator cuff tear, superior labral anterior-posterior [SLAP] lesion), bony instability, neurological disorders involving the shoulder girdle and previous surgery will be excluded. Also, studies that include patients having a revision surgery will not be considered for evaluation.

Search strategy

According to the recommendation by JBI a three-step search strategy will be conducted.[17,18] First, an initial limited search will be applied using the PubMed database aiming to identify relevant articles to the topic of interest.

Based on the titles and abstracts of the retrieved articles we will able to have a better insight of the search terms to be used in the second step of the search.

The second step will include a thorough search using the appropriate key terms will be performed using the MEDLINE, OvidSP, Embase, Cochrane Library, CINAHL, PubMed, SPORTS Discus and Scopus databases. A full description of the electronic search terms and combinations are presented in Table 1.

The third step will involve searching the reference lists of key studies and other sources including gray literature databases and Google Scholar (the first 100 sources will be screened to identify relevant articles).

Table 1: Search strategy.

No.	Search strategy
#1	Anterior shoulder instability OR shoulder instability OR glenohumeral instability OR Latarjet procedure
#2	Physiotherapy OR rehabilitation program OR rehabilitation protocol OR postoperative exercise OR postoperative rehabilitation program OR exercise OR exercise rehabilitation OR exercise protocol
#3	#1 AND #2

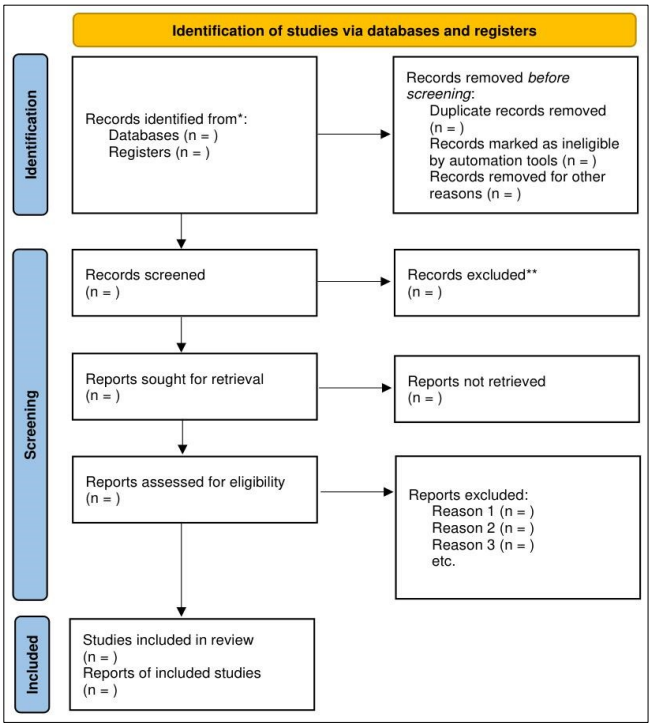

Figure 1: The prisma 2020 flow diagram for systematic reviews.

*Consider, if feasible, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers), **if automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools

Study/source of evidence selection

The selection process will be conducted following the PRISMA-ScR guidelines and will be presented through a flow diagram in the scoping review (Figure 1). Duplicate search results will be removed using the EndNote version X9 programme. Two authors (SZ and NA) will thoroughly review the titles, abstracts and full-texts against the eligibility criteria in a two-stage process. In the first stage, the two reviewers will independently screen the titles and abstracts applying the eligibility criteria. The reviewers will cross-check their findings and in case of disagreements a third reviewer will be consulted (SK). In the second stage, the reviewers will screen the full-text of the remaining studies against the eligibility criteria. The reasons for full text exclusion will be recorded and reported in the scoping review. Again, disagreements between reviewers will be resolved through a consensus process by consulting a third independent reviewer (SK).

Data extraction

Data extraction will be conducted by the same reviewers using a standardized data extraction form. The first reviewer (SZ) will extract all relevant information and variables including authors, publication year, sample size, rehabilitation programmes, comparative interventions, outcomes, follow-up and results. Subsequently, the second reviewer will monitor the accuracy of the data collected. Any disagreement arised will be resolved through a discussion with a third reviewer (SK).

The current scoping review does not aim to assess the methodological quality or to evaluate the risk of bias in evidence sources. Instead, the authors intend to map the existing evidence regarding the rehabilitation programmes following a Latarjet procedure in patients with anterior shoulder instability and provide a best evidence-synthesis of an exercise-based rehabilitation programme for the current patient group.

Data analysis and presentation

We will provide an overview of the key findings, phases and criteria for 'return to activity' or return to sports' based on the research recommendations found. We aim to provide the available information in appropriate tables and diagrams.

DISCUSSION

Although post-operative rehabilitation programmes after Bankart repair have been widely reviewed through the literature, similar studies on exercise-based rehabilitation

after Latarjet procedure are limited.[21] DeFroda et al in their systematic review on physical therapy protocols after Bankart repair highlighted the fact that rehabilitation protocols are highly variable and underlie a high risk of confusion among therapists and patients.[22] In the same vein, a contemporary scoping review suggested that both accelerated and conventional protocols are equally effective after the Bankart procedure with most protocols following 4 phases of rehabilitation.[23] Although there were some similarities in terms of the rehabilitation phases after Bankart repair, an increased heterogeneity existed regarding the immobilization phases and return to play timelines ranging from 12 to 16 weeks.[16,24,25] A comparison of physical therapy protocols between Bankart and Latarjet repair in patients with anterior shoulder instability suggested again a high degree of variability with regard to exercises and motion goal recommendations.[12]

Based on some researchers the rehabilitation phases recommended in Latarjet protocols might occur earlier compared with Bankart post-operative programs.[10,26] Hence, patients after Latarjet procedure might return to play earlier than Bankart repair.[27-29] Nevertheless, the available research results are based on low quality studies and reports with non-standardized description of the rehabilitation programmes.[12,30] Therefore, the present protocol aims to provide clear and specific recommendations with regard to post-operative physical therapy instructions after the current surgical procedure. A record of a broad overview of the existing literature regarding the exercise-based rehabilitation programmes after Latarjet surgery will be provided including the different parameters of the rehabilitation programme based on the CERT checklist. The results of this scoping review can further be used to identify gaps in the literature and provide guidance to future studies on the effectiveness of post-operative rehabilitation programmes following a Latarjet procedure for anterior shoulder instability.

Some limitations may apply in the present protocol. First, the inclusion of different types of evidence sources and the lack of a quality assessment might affect the quality and depth of information in the particular topic. Second, only papers published in English will be included in this scoping review.

CONCLUSIONS

The present protocol can provide a broad overview of the research data regarding the content of post-operative rehabilitation programmes of patients treated with Latarjet repair. We aim to synthesize the evidence regarding the best available training programme including details such as the type, mode and dosage of exercises to inform clinical practice.

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