

## SYSTEMATIC REVIEW

## THE EFFECTS OF OPEN VERSUS CLOSED KINETIC CHAIN EXERCISES ON PATIENTS WITH ACL DEFICIENT OR RECONSTRUCTED KNEES: A SYSTEMATIC REVIEW

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## ABSTRACT

**Background.** There is no consensus among the existing published evidence as to whether closed kinetic chain (CKC) or open kinetic chain (OKC) exercises should be the intervention of choice following an anterior cruciate ligament (ACL) injury or reconstruction. The commonly held belief has been that OKC exercises cause increased strain on the ACL as well as increased joint laxity and anterior tibial translation.

**Objective.** To investigate the effects of OKC and CKC exercises on the knees of patients with ACL deficiency or reconstruction.

**Data Sources.** MEDLINE, ProQuest Medical Library, and CINAHL

**Study Selection.** Six articles were chosen for inclusion in the systematic review. The authors narrowed 50 articles down to 6 by review of titles and abstracts. Included articles were randomized controlled trials written in English, published during 2000-2008, that evaluated the effects of OKC and CKC exercises on ACL deficient or reconstructed knees.

**Data Extraction.** Quality of the included studies was defined by the PEDro scale<sup>1</sup>, which has been found to be reliable.<sup>2</sup>

**Data Synthesis.** Scores on the PEDro scale<sup>1</sup> ranged from 4-6/10. One article found positive significant effects with inclusion of OKC exercises in the rehabilitation program and another found significant benefits with combining OKC and CKC exercises. CKC exercises alone were not found by any studies to be superior to OKC exercises.

**Conclusion.** These studies reveal favorable results for utilization of both open and closed kinetic chain exercises for intervention with ACL deficient or reconstructed knees. However, further research needs to be completed.

**Key Words.** open/closed kinetic chain exercise, ACL

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