

Meta-analysis in Contracture Reduction of the Lower Extremity

John Furia, MD; F Buck Willis, PhD; Sarah Curran, PhD; Ram Shanmugam, PhD

Background: Joint contractures are relatively common disorders that can result in significant long term morbidity. Initial treatment is nonoperative and often entails the use of mechanical modalities such as dynamic and static splints. Although widely utilized, there is a paucity of data that supports the use of such measures. The purpose of this systematic review was to evaluate the safety and efficacy of dynamic splinting as it is used to treat joint contracture, and to determine if duration on total hours of stretching had an effect on outcomes.

Methods: Reviews of Pubmed, Science Direct, Medline, AMED, and EMBASE websites were conducted to identify the term ‘Contracture reduction’ in manuscripts published from January 2002 to January 2012. Publications selected for inclusion were controlled trials, cohort studies, or case series studies employing prolonged, passive stretching for lower extremity contracture reduction. A total of 354 abstracts were screened and eight studies (487 patients) met the inclusion criteria. The primary outcome measure was change in active range of motion (AROM).

Results: The mean aggregate change in AROM was 23.5° in the eight studies examined. This home therapy treatment showed a direct, linear correlation between the total number of hours in stretching at end-range and restored AROM.

Conclusions: Dynamic splinting is a safe and efficacious treatment for lower extremity joint contractures. The joint specific stretching protocols accomplished greater durations of end-range stretching which is considered responsible for connective tissue elongation.