

How Well do Shoulder Braces Provide Stability at the Glenohumeral Joint in Collegiate Aged Athletes A Systematic Review

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Abstract

Injuries at the glenohumeral joint are common in sports, especially collegiate sports. More athletes are now wearing a shoulder stabilization brace to help restrict motion. Current evidence demonstrates shoulder braces do not maintain their initial amount of motion restriction after physical activity. While there is increased motion with the shoulder brace after activity, the brace still provides stability. More research needs to be conducted to further confirm or deny this information.

Introduction

Shoulder injuries are common among athletes with ninety-five percent of all shoulder injuries being anterior instability related. Both static and dynamic restraints provide stability of the glenohumeral joint. The inferior glenohumeral ligament is stressed most when the shoulder is at ninety degrees of external rotation and abduction (ninety/ninety position), thus making it the main restraint for dislocations (Reuss, Harding, & Nowicki, 2004). Glenohumeral-joint stability braces, more commonly known as shoulder braces, are designed to limit abduction and external rotation of the glenohumeral joint (Weise, Sitler, Tierney, & Swanik, 2004). The lack of muscular control may be due to lack of proprioception which disrupts the shoulder joint's ability to provide feedback. Many different types of braces are used in athletics to increase stability and decrease proprioceptive deficits (Chu, Kane, Arnold, & Gansneder, 2002). This systematic review reviewed articles to determine which shoulder braces provide stability at the glenohumeral joint.

Methodology

The electronic databases of PubMed Central, ProQuest Nursing and CINAHL were searched using the following keywords: *shoulder*, *glenohumeral joint*, *instability*, *brace*, and, *restrict motion*. Articles were included if the participants were between the ages of eighteen and twenty-five, had no recent trauma to the shoulder (within six months), and had no surgical repair of the shoulder. Articles were excluded if the participants were outside of the age range of eighteen and twenty-five, had a recent trauma to the shoulder (within six months), had a surgical repair of the shoulder, or if the articles were another language besides English. There was no specification for gender or for the activity level of the participants, and there was no specification on the date of the articles.



Conclusion

This systematic review reveals the examined braces will loosen up with physical activity and will inevitably be looser than the initial restriction set in place. Most of the time this is due to the material of the braces. Many shoulder braces are made with materials that can move with the athlete to allow for full range of motion in areas where it is warranted outside of the glenohumeral joint. Most braces will keep the shoulder out of the typical ninety/ninety position where most anterior shoulder dislocations and subluxations occur. More research needs to be done on shoulder braces, specifically their impact on a player's active range of motion and how much is limited by the brace. Some of the reported studies postulated the brace will alter the individual's proprioception, which could potentially injure them further. More research is warranted examining more shoulder braces on the market and with different types of activities performed to determine if all shoulder braces lose their ability to maintain their initial restriction, or if there is a shoulder brace more superior to the rest.

Table 1: Research articles and outcomes

Researchers	Braces used	Purpose of brace	Participants	Outcomes
Weise, Sitler, Tierney and Swanik (2004)	Sawa shoulder brace, Denison and Duke Wyre harness	Limit active and passive abduction and external rotation	Fifteen Division I football players	The Sawa shoulder brace restricted motion better than the Denison and Duke Wyre harness
Chu, Kane, Arnold and Gansneder (2002)	Sully shoulder stabilizer	Increase active joint reposition sense	Group 1: twenty (general University population) Group 2: twenty (Division I athletes)	Unstable shoulders had an increased active joint reposition sense while wearing a shoulder brace
McLeod, Arnold and Gansneder (1999)	Sawa shoulder brace, Sully shoulder stabilizer, Douglas Shoulder Sling, and an elastic restraint shoulder strap	Restriction motions of flexion, external rotation and abduction	Twenty Division I football players	Elastic restraint shoulder strap allowed the most motion compared to the other braces.
Ulkar, Kunduracioglu, Cetin, and Guner (2004)	Neoprene sleeve	Increase passive joint position	Thirteen male and thirteen female volunteers	Participants with neoprene sleeve had better ability to detect their arm position