

Neck Flexors Bilateral Symmetry in Baseball Pitchers: A Unilateral Perspective

CEREN ACIK, STEFAN KESLACY, CHRISTINE DY, & LEILA RAHNAMA

Musculoskeletal Lab; School of Kinesiology; California State University Los Angeles; Los Angeles, CA

Category: Masters

Advisor / Mentor: Rahnama, Leila (lrahnam@calstatela.edu)

ABSTRACT

This study examines the potential asymmetry in flexor neck muscle characteristics, including thickness, size, strength, and neck flexion range of motion (ROM), in baseball players. Baseball involves repetitive unilateral actions, which may subject players to one-sided stress and strain due to the sport's explosive and high-speed movements. Specifically, pitchers and catchers, who perform frequent arm activities, are at higher risk of upper extremity injuries. **PURPOSE:** The study aimed to investigate if repeated throwing movements in baseball induce trophic changes in the neck muscles, particularly on the dominant side used for throwing. **METHODS:** Thirteen college baseball players and fifteen healthy controls participated in the study. Measurements included neck flexion ROM, flexor MVC, and muscle thickness and cross-sectional area (CSA) of the Longus Colli (LC) and Sternocleidomastoid (SCM) muscles. **RESULTS:** Results indicated normal data distribution except for the CSA and symmetry index of LC. Baseball players exhibited comparable neck flexion range of motion (ROM) ($52.4 \pm 11.48^\circ$) and normalized neck flexors MVC (1.22 ± 0.44 N/Kg) compared to the control group (ROM: $44.37 \pm 8.78^\circ$, MVC: 0.92 ± 0.35 N/Kg). Likewise, baseball players demonstrated symmetry in their neck flexor muscles, whether in terms of CSA of LC or the thickness of the SCM. **CONCLUSION:** This finding suggests that upper extremity activities do not significantly impact neck flexor development. Furthermore, symmetry was observed in the neck flexor muscles, including CSA and SCM thickness, highlighting the absence of substantial asymmetry in baseball players' neck muscle characteristics. The findings of this study provide evidence that even in baseball pitchers who engage in unilateral activities, flexor neck muscles maintain bilateral symmetry. This suggests that it might not be necessary to focus on unilateral training for the neck muscles in case of injury or training activities. These findings contribute to understanding the biomechanical aspects of baseball-related injuries and may aid in injury prevention strategies among baseball players.