

May 2017

## Effectiveness of Neck Strengthening Exercises on Reducing Brain Injury


Amia Gaines

*Bowling Green State University*, [gamia@bgsu.edu](mailto:gamia@bgsu.edu)

Andrea Cripps

*Bowling Green State University*, [acripps@bgsu.edu](mailto:acripps@bgsu.edu)

Follow this and additional works at: <http://scholarworks.bgsu.edu/jsmahs>

 Part of the [Biomechanics Commons](#), [Exercise Science Commons](#), [Motor Control Commons](#), [Other Kinesiology Commons](#), [Rehabilitation and Therapy Commons](#), [Sports Medicine Commons](#), and the [Sports Sciences Commons](#)

---

### Recommended Citation

Gaines, Amia and Cripps, Andrea (2017) "Effectiveness of Neck Strengthening Exercises on Reducing Brain Injury," *Journal of Sports Medicine and Allied Health Sciences: Official Journal of the Ohio Athletic Trainers Association*: Vol. 3 : Iss. 1 , Article 12.

DOI: 10.25035/jsmahs.03.01.12

Available at: <http://scholarworks.bgsu.edu/jsmahs/vol3/iss1/12>

This Undergraduate Student Abstract is brought to you for free and open access by the Human Movement, Sport and Leisure Studies at ScholarWorks@BGSU. It has been accepted for inclusion in Journal of Sports Medicine and Allied Health Sciences: Official Journal of the Ohio Athletic Trainers Association by an authorized editor of ScholarWorks@BGSU.

## ***Effectiveness of Neck Strengthening Exercises on Reducing Brain Injury***

Amia Gaines, Andrea E. Cripps, PhD, AT, ATC

School of Human Movement, Sport, and Leisure Studies, Bowling Green State University

---

### ***CLINICAL SCENARIO***

Mild traumatic brain injuries (mTBI), are serious health conditions affecting athletes. Research has begun to denote that there are detrimental long-term effects of suffering from concussions. Thus advancements to prevent concussions are imperative.

### ***FOCUSED RESEARCH QUESTION***

What is the impact of neck strengthening exercises on preventing or reducing the prevalence of concussions?

### ***SUMMARY OF KEY FINDINGS***

The literature was searched for research studies that investigated the effects of preventative treatment of patients with isotonic and isometric neck exercises in decreasing mTBIs in comparison to those who received no preventative treatment. The search returned three articles that met the inclusion criteria all of which were included (1 cohort study, 1 clinical review, and 1 descriptive laboratory study).

### ***CLINICAL BOTTOM LINE***

There is competing evidence on the effects of neck strength in decreasing mTBIs. Cervical

resistance and stiffness due to increased musculature or cervical inflexibility seems to be the true judge of decreased results in mTBI severity.

### ***REFERENCES***

1. Collins CL, Fletcher EN, Fields SK, et al. Neck Strength: A Protective Factor Reducing Risk for Concussion in High School Sports. *The Journal of Primary Prevention*. 2014;35(5):309-319.
2. Eckner JT, Oh YK, Joshi MS, Richardson JK, Ashton-Miller JA. Effect of Neck Muscle Strength and Anticipatory Cervical Muscle Activation on the Kinematic Response of the Head to Impulsive Loads. *The American Journal of Sports Medicine*. 2014;42(3):566-576.
3. Mccrory P, Meeuwisse W, Johnston K, et al. Consensus Statement on Concussion in Sport 3rd International Conference on Concussion in Sport Held in Zurich, November 2008. *Clinical Journal of Sport Medicine*. 2009;19(3):185-200.
4. Schmidt JD, Guskiewicz KM, Blackburn JT, Mihalik JP, Siegmund GP, Marshall SW. The Influence of Cervical Muscle Characteristics on Head Impact Biomechanics in Football. *The American Journal of Sports Medicine*. 2014;42(9):2056-2066.

**KEY WORDS:** *concussion, Mild-traumatic brain injury, preventative exercises, neck strength*