

Ouachita Baptist University

## Scholarly Commons @ Ouachita

---

Scholars Day Conference

Scholars Day 2022

---

Apr 27th, 1:45 PM - 3:00 PM

### Comparison of Postural Variable in Division II Athletes and Non-Athlete College Students

Johnathon Callum

*Ouachita Baptist University*

Caleb Woodfield

*Ouachita Baptist University*

Follow this and additional works at: [https://scholarlycommons.obu.edu/scholars\\_day\\_conference](https://scholarlycommons.obu.edu/scholars_day_conference)



Part of the [Kinesiology Commons](#)

---

Callum, Johnathon and Woodfield, Caleb, "Comparison of Postural Variable in Division II Athletes and Non-Athlete College Students" (2022). *Scholars Day Conference*. 20.

[https://scholarlycommons.obu.edu/scholars\\_day\\_conference/2022/posters/20](https://scholarlycommons.obu.edu/scholars_day_conference/2022/posters/20)

This Poster is brought to you for free and open access by the Carl Goodson Honors Program at Scholarly Commons @ Ouachita. It has been accepted for inclusion in Scholars Day Conference by an authorized administrator of Scholarly Commons @ Ouachita. For more information, please contact [mortensona@obu.edu](mailto:mortensona@obu.edu).





# COMPARISON OF POSTURAL VARIABLE IN DIVISION 2 ATHLETES AND NON-ATHLETE COLLEGE STUDENTS

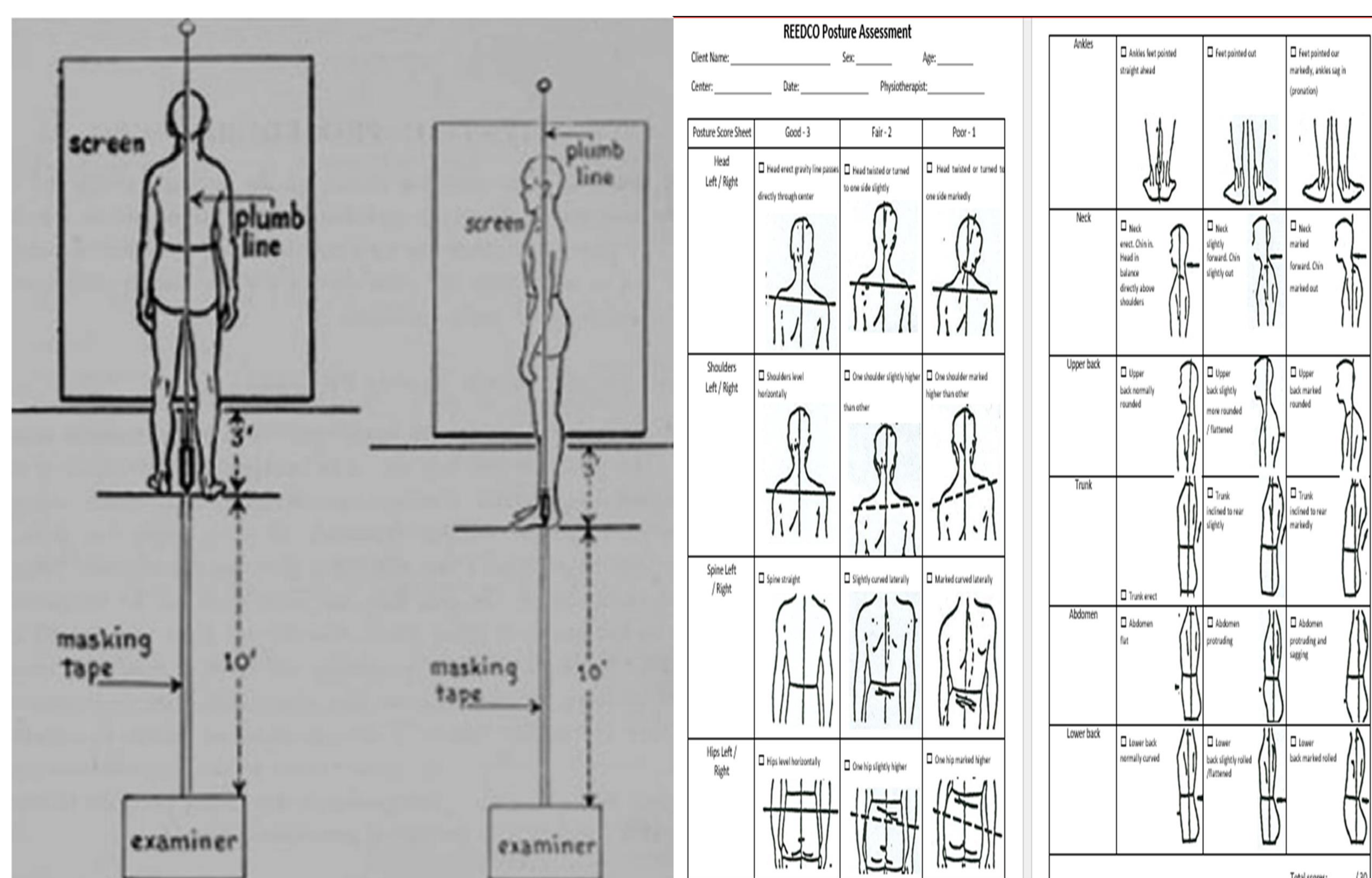
Johnathon L. Callum<sup>1</sup> & Caleb A. Woodfield<sup>1</sup>  
<sup>1</sup>Ouachita Baptist University, Arkadelphia, Arkansas

## Abstract

Research has indicated a possible difference in the development of posture deformities in athletes and non-athletes. **PURPOSE:** This study was to identify posture differences in division 2 collegiate athletes and non-collegiate athletes and provide a two-week intervention to reduce discrepancies found. **METHODS:** 16 male athletes, 10 male non-athletes, 12 female athletes, and 13 female non-athletes participated. During the assessment, participants were evaluated from posterior and sagittal views with an adjusted REEDCO Posture Assessment. They were scored on a scale of 3 to 1 with 3 being good and 1 being poor in 10 categories with 30 being the max score. The volunteers were provided 4 stretches: neck extension, doorframe stretch, shoulder tuck, sitting up straight in a chair. They completed an anonymous survey indicating how often they did the intervention. **RESULTS:** The initial plumb line test average score for male athletes was 28.37, 27.10 for male non-athletes, 27.16 for female athletes, and 26.92 for female non-athletes. The final scores for male athletes were 28.93, 28.10 for male non-athletes, 29.16 for female athletes, and 28.69 for female non-athletes. 6% of the population said they did the intervention for 2 weeks, 23% did it for a week and a half, 51% did it for 1 week, and 20% didn't do it at all. After conducting a one-way ANOVA test with the average scores of the final plumb line test a p-value of 0.1723 was found. Most group's scores on average increased by 1.33 points after participating in the intervention. **CONCLUSION:** A difference in posture scores for the populations being tested was observed. Athletes had better initial and post posture scores than non-athletes. The intervention improved scores for most participants. A Limitation of the study includes not monitoring volunteers' adherence to the intervention. When conducting future research keeping track of the exact sport or activities the athletes and non-athletes participate in would be beneficial.

## Methodology

- 16 male athletes, 10 male non-athletes, 12 female athletes, and 13 female non-athletes participated.
- The participants were initially briefed by the researchers about the study.
- Next, they were asked to remove any hoodies or baggy tops that could skew or hinder the evaluator's view of their posture.
- Then, the researchers demonstrated how to stand beside the plumb line so that participants were centered when being evaluated from both frames of reference.
- During the initial and post assessments, participants were evaluated from a posterior and sagittal view with an adjusted REEDCO Posture Assessment.
- They were scored on a scale of 3 to 1 with 3 being good and 1 being poor in 10 categories with 30 being the max score. The 10 categories included head, shoulder, spine, hips, ankles, neck, upper back, trunk, abdomen, and lower back alignment.
- After their initial test the volunteers were provided 4 stretches: neck extension, doorframe stretch, shoulder tuck, sitting up straight in a chair to perform for 2 weeks straight as their intervention.
- Lastly, After the two-week intervention was completed, participants completed an anonymous survey indicating how often they did the provided intervention.



## Results

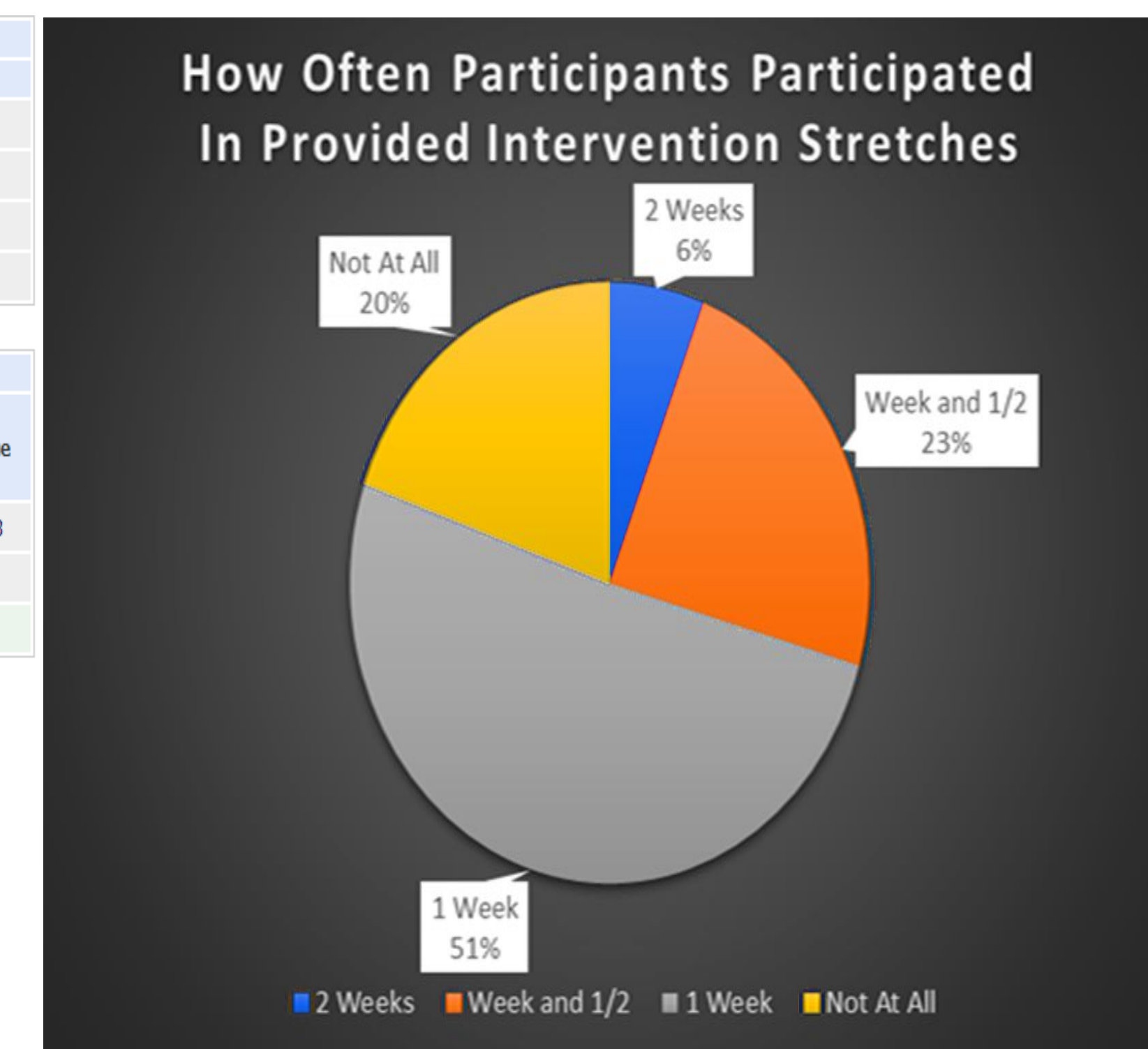
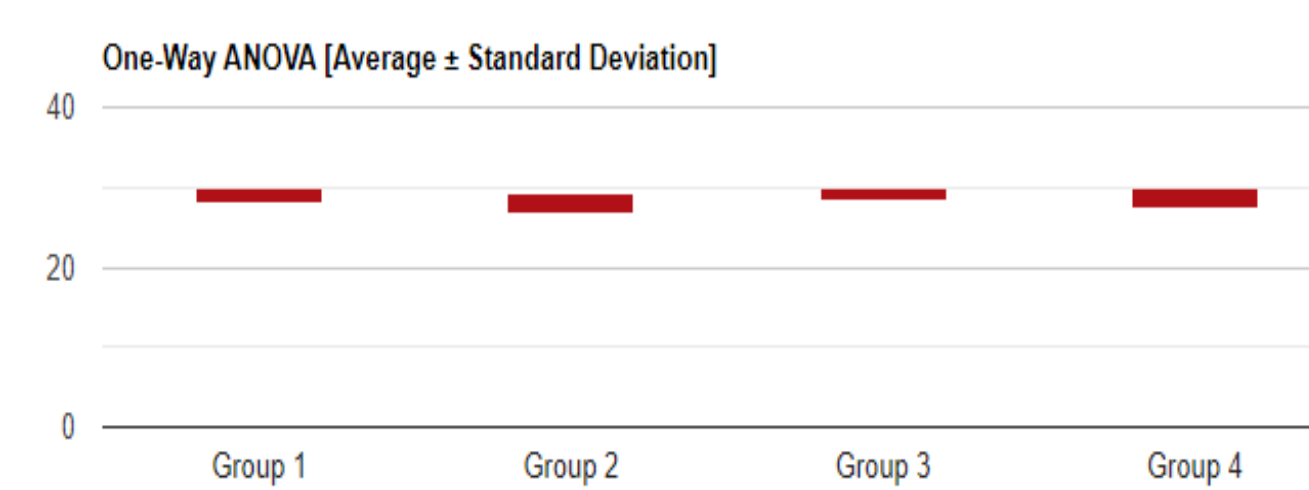
- Initial and post plumb line test individual and average group scores:
- Average increased by a mean of 1.33 points after two-week intervention.

Male Ath	Pretest	Posttest	Male Non-Ath	Pretest	Posttest	Female Ath	Pretest	Posttest	Female Non-Ath	Pretest	Posttest
1	30	28				1	27	29	1	28	29
2	25	28	1	20	28	2	25	30	2	28	30
3	27	27	2	28	26	3	28	29	3	29	28
4	29	27	3	28	30	4	24	28	4	28	29
5	30	29	4	26	27	5	27	28	5	26	26
6	27	30	5	28	27	6	28	30	6	30	26
7	27	29	6	29	28	7	27	29	7	24	30
8	30	30	7	27	29	8	28	30	8	26	29
9	30	30	8	29	30	9	25	29	9	18	28
10	30	29	9	27	28	10	29	30	10	30	29
11	27	28	10	29	28	11	28	28	11	26	30
12	30	30				12	30	30	12	29	30
13	29	29				Average F-A:	27.16667	29.16667	Average F-NA:	26.92307692	28.692308
14	26	30									
15	27	30									
16	30	29									
Average M-A:	28.375	28.9375	Average M-NA:	27.1	28.1						

- One-way ANOVA test using the average scores of the post plumb line test P-Value = 0.1723.

Data Summary				
Groups	N	Mean	Std. Dev.	Std. Error
Group 1	16	28.9375	1.0626	0.2657
Group 2	10	28.1	1.2867	0.4069
Group 3	12	29.1667	0.8348	0.241
Group 4	13	28.6923	1.3775	0.382

ANOVA Summary					
Source	Degrees of Freedom	Sum of Squares	Mean Square	F-Stat	P-Value
Between Groups	3	6.9034	2.3011	1.7368	0.1723
Within Groups	47	62.273	1.325		
Total:	50	69.1764			



- Group 1 represents Male Athletes, Group 2 represent Male Non-athletes, Group 3 represents Female Athletes, and Group 4 represents Female Non-athletes.

## Conclusion

Based upon the following data collected during this study a difference in posture scores for the populations being tested was observed. It was found that on average athletes had better initial and post posture scores than their non-athlete counterparts. However, based upon our p-value the following results were not statistically significant. This means our data is more likely to occur randomly or by chance instead of being attributable to a specific cause. The data also showed that the intervention improved scores for most participants. A few limitations of the study include not monitoring volunteers' adherence to the intervention, not making proper attire a requirement to participate in the study and providing a more detailed and muscle specific intervention for participants. When conducting future research keeping track of the exact sport or activities the athletes and non-athletes participate in, collecting a larger sample size of the population being tested, and increasing the duration of intervention would all be beneficial to see the effectiveness of the intervention.

## References

- Alsufyani, M. B., Lohman, E. B., Daher, N. S., Gang, G. R., Shallan, A. I., & Jaber, H. M. (2020). Non-specific chronic low back pain and physical activity: A comparison of postural control and hip muscle isometric strength: A cross-sectional study. *Medicine*, 99(5), e18544, 1-10.
- Coelho, J. J., Graciosa, M. D., de Medeiros, D. L., Pacheco, S. C., da Costa, L. M., & Ries, L. G. (2014). Influence of flexibility and gender on the posture of school children. *Revista Paulista de pediatria: official organization of the Society of Pediatrics of Sao Paulo*, 32(3), 223-228.
- Cutrufello, P. T., Gadowski, S. J., & Ratamess, N. A. (2017). An Evaluation of Agonist: Antagonist Strength Ratios and Posture Among Powerlifters. *Journal of strength and conditioning research*, 31(2), 298-304.
- Esen, H. T., & Arslan, F. (2020). The examination of postural variables in adolescents who are athletes and non-athletes. *International Journal of Applied Exercise Physiology*, 9(5), 140-147.
- Grabara, M. (2014). A comparison of the posture between young female handball players and non-training peers. *Journal of Back and Musculoskeletal Rehabilitation*, 27(1), 85-92.
- Grabara, M. (2015). Comparison of posture among adolescent male volleyball players and non-athletes. *Biology of Sport*, 32(1), 79-85.
- Grabara, M. (2018). The posture of adolescent male handball players: A two-year study. *Journal of Back and Musculoskeletal Rehabilitation*, 31(1), 183-189.
- Obembe, A. O., Mbada, C. E., & Ogunbowale, O. E. (2013). Assessment and determinants of lumbar flexibility in athlete and non-athlete university undergraduates. *Sports Medicine: Journal of Romanian Sports Medicine Society*, 9(1), 2035-2042.
- Olsen, B., Freijomil, N., Csonka, J., Moore, T., Killelea, C., Faherty, M. S., & Sell, T. C. (2021). The Relationship Between Hip Strength and Postural Stability in Collegiate Athletes Who Participate in Lower Extremity Dominant Sports. *International journal of sports physical therapy*, 16(1), 64-71.
- Stošić, D., Milenković, S., & Živković, D. (2011). The influence of sport on the development of postural disorders in athletes. *Facta Universitatis-series: Physical Education and Sport*, 9(4), 375-384.