

# Does Age and Body Mass Index Predict Forward Head Posture in a Cohort of Latino Patients Seeking Chiropractic Care?

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## INTRODUCTION

A growing interest in understanding the role of the cervical spine configuration in the sagittal plane in health and disease has been developing among clinicians and researchers. Forward head posture (FHP) is considered the most common alteration of the cervical spine in the sagittal plane and is defined as the position of the neck in which the tragus of the ear is located forward to the middle of the shoulder joint. FHP has been linked to various musculoskeletal (MSK) conditions. US Latinos experience high levels of both MSK conditions and obesity (1,2,3). These trends are particularly concerning and relevant for clinicians and strength and conditioning professionals given that Latinos comprise the largest ethnic minority sector in the US (55.4 million or 17.3% of the total population) and are expected to reach 119 million (28.6%) by 2060. While the relationship between FHP, age, and body mass index (BMI) has been explored in other populations (4), no study has explored the effects of age and BMI on FHP in a Latino sample.

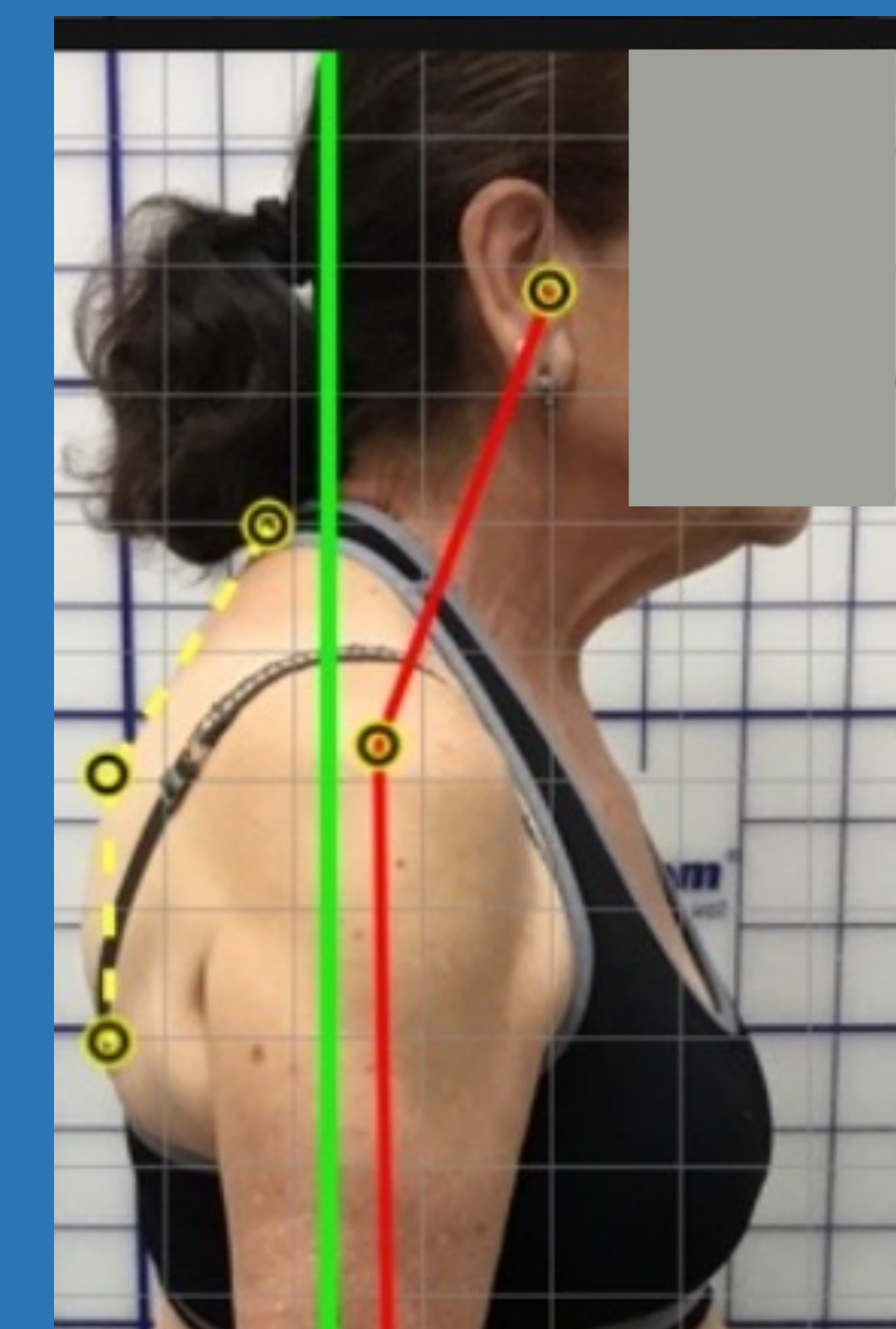
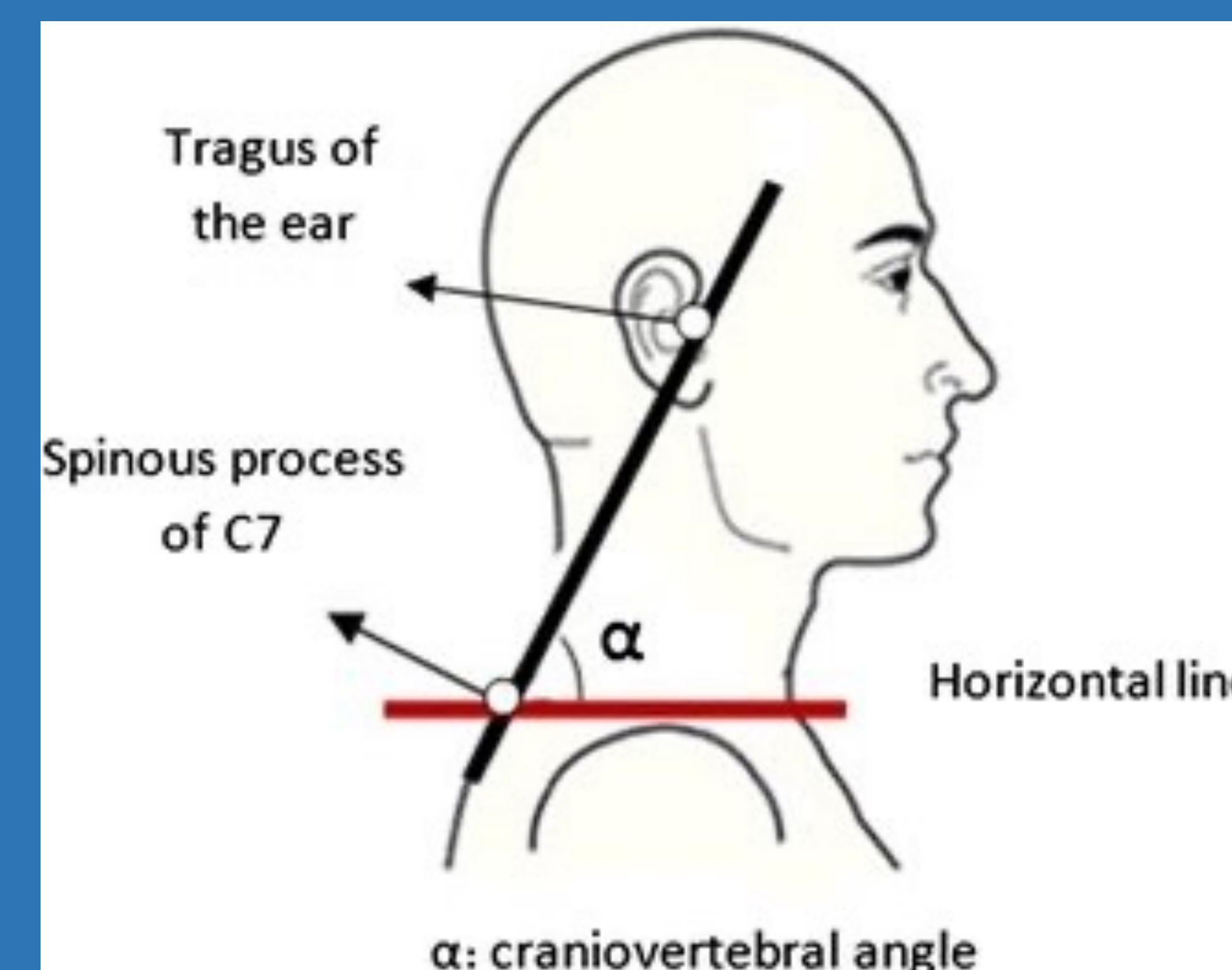
## PURPOSE

The purpose of this study was to investigate if BMI and age predict FHP in a cohort of two hundred and five Latino patients seeking chiropractic care. A secondary aim was to observe if the effect of BMI on FHP was exacerbated by age.

## METHODS

Data for this study were obtained retrospectively from the patient files of 205 Latino patients seeking treatment at a private chiropractic clinic (*M* age: 48.6 ± 13.5 years, *M* body mass: 77.4 ± 17.4 kg, height: *M* 161.3 ± 8.3 cm, gender: 152 females). The craniocervical angle (CVA) measurement was utilized as it is one of the most common measures of FHP utilized in the literature and it is obtained by measuring the angle between the C7 vertebrae, the tragus of the ear, and a horizontal line. Less than 50 degrees was considered as having FHP.

## BMI and age predict forward head posture for Latino patients; BMI is the strongest predictor.



*Note.* The craniocervical angle (CVA), which measures the forward head posture (FHP) is obtained by measuring the angle between the C7 vertebrae, the tragus of the ear, and a horizontal line. FHP is considered at < 50°.

## RESULTS

First, a simultaneous multiple regression analysis was performed to determine if BMI and age predicted CVA. Results were significant,  $F(2, 202) = 27.6$ ,  $p < .001$ ,  $R^2 = .214$ , and accounted for 21.4% of the variance in CVA. Both BMI ( $b = -0.34$ ,  $p < .001$ ) and age ( $b = -0.06$ ,  $p = .016$ ) were significant predictors; of the two predictors, BMI was the strongest. A moderation analysis was then performed to determine if the relationship between BMI and CVA was exacerbated by age. BMI and age were standardized prior to running the regression. Results from step 1, age and BMI were entered as predictors and accounted for 21.4% of the variance in CVA,  $F(2, 202) = 27.6$ ,  $p < .001$ ,  $R^2 = .214$ . Both BMI ( $b = -.341$ ,  $p < .001$ ) and age ( $b = -.057$ ,  $p = .016$ ) were significant predictors. In step 2, the interaction term representing BMI x age was entered and it did not contribute any additional variance in CVA,  $\Delta F(1, 201) = .010$ ,  $p = .919$ . This suggests that the moderating effect was not supported by the data.

## CONCLUSIONS/ APPLICATIONS

The results of this study showed that both BMI and age predicted FHP, with BMI being the strongest predictor. Furthermore, age did not exacerbate the effects of BMI on FHP. These results are useful for clinicians and strength and conditioning professionals as they can aid in the process of patient treatment. These results also remind us of the importance of multidisciplinary/collaborative care among professionals in different fields.

## REFERENCES

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