



# THE RELATIONSHIP BETWEEN THE MAXIMUM BITE FORCE AND THE AMOUNT OF OVERJET AND OVERBITE IN ANTERIOR OPEN BITE PATIENTS: A PILOT STUDY

Suthinun Suksutthiphan<sup>1</sup>, Wisama Withayanukonjij<sup>2</sup>, Pannapat Chanmanee<sup>3</sup>, Chidchanok Leethanaku<sup>3</sup>

<sup>1</sup>Residency Training in Orthodontics, <sup>2</sup> Ph.D. candidate (Oral Health Sciences),

<sup>3</sup>Department of preventive dentistry, Faculty of Dentistry, Prince of Songkla University



## Introduction

Bite force is one of the masticatory performance indicators. It reflects the geometry of the jaw's lever system. The maximum bite force is resulted from the action of jaw muscles which are modified by craniomandibular biomechanics. Patients with long-face craniofacial morphology, who frequently present in anterior open bite malocclusion, the bite force is reduced compare with patients with normal vertical morphology. Bite force also acts as an important factor in the vertical stability after orthodontic treatment and prevents the relapse after anterior open bite correction.

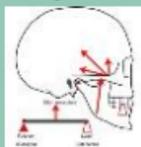


Figure 1: Schematic diagram showing the TMJ as a third-class lever

## Objectives

The objective is to study the relationship between the maximum bite force and the amount of overjet and overbite in anterior open bite patients.

Maximum  
Bite Force



Amount of Overbite  
Amount of Overjet

## Materials and Methods

17 anterior open bite patients (overbite 0-4 mm), 14 females and 3 males aged  $26.18 \pm 1.93$  years were included in this study. Lateral cephalograms were taken and the maximum bite forces were measured before treatment by Flexiforce Taskan. The relationship between the maximum bite force and the amount of overjet and overbite were analyzed by Spearman rank correlation coefficient.

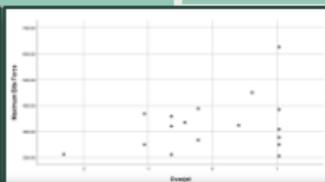
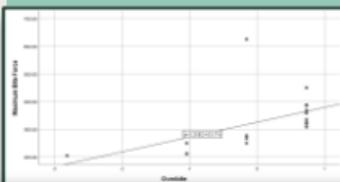


## Results

The maximum bite force and the amount of overbite showed statistically significant positive correlation ( $r=0.753$ ,  $P=0.000$ ). But for overjet, trivial negative correlation with no statistically significant ( $r=-0.159$ ,  $P=0.543$ ) were found.

## Conclusions

There is a very strong positive relationship between the amount of overbite and the maximum bite force but no statistically significant relationship found on amount of overjet in anterior open bite patients.



		Maximum bite force	Overbite
Maximum bite force	Correlation Coefficient	1.000	.753 <sup>*</sup>
	Sig. (2-tailed)	.	.000
	N	17	17
Overbite	Correlation Coefficient	.753 <sup>*</sup>	1.000
	Sig. (2-tailed)	.000	.
	N	17	17

Figure 2: Scatter plot of overbite and maximum bite force

Figure 3: Scatter plot of overjet and maximum bite force

Table 1: Correlation between overbite and maximum bite force