

# **Relationship of Maximum Bite Force with Craniofacial Morphology, Body Mass and Height in an Iraqi adults with Different Types of Malocclusion**

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### *Abstract*

In orthodontic diagnosis, clinical documentation is indispensable for analysis of malocclusion. The material required plaster models, various radiographs for dentition and facial skeleton, however, they do not represent the dynamic state of the maxillofacial and intraoral environment. The purposes of this study were to measure and compare the maximum bite force, body height and weight in normal occlusion and malocclusion groups (CII, CI II, CI III) in both gender and to evaluate if there is a correlation between maximum bite force and (body height, body weight and craniofacial morphology).

The sample consists of 100 Iraqi adult subjects aged 18-25 years. It was classified in to four groups: cl I normal occlusion, cl I malocclusion, cl II malocclusion, and cl III malocclusion according to the value of ANB angle. Each group consist of 25 (13 male, 12 female), Maximum bite force was measured by a digital device (**GM10, Naganokeiki, Japan**) by putting the sensor part of occlusal force meter on first molar region, Bite force was calculated in Newton and displaced digitally, body height and weight were measured by using the Length and Weight Measuring Standard (**Tanita, 2008**) and craniofacial measurements were achieved by analysis of cephalometric radiograph. The following results were found:

- 1) The highest mean value of maximum bite force was found in class I normal occlusion followed by class II malocclusion and then class I malocclusion and the lowest value was found in class III malocclusion .
- 2) Regarding the gender, mean values of maximum bite force are higher in male than female in normal occlusion and malocclusion groups.

## Abstract

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- 3) Regarding body structure (height and weight): male exhibit significantly larger values of height than female in normal and malocclusion groups, while for body weight, the sample of cl I skeletal relationship exhibits larger values of body weight than cl II & cl III relationship.
- 4) There is a positive correlation between maximum bite force and body structure (height and weight) in class I normal occlusion and class I malocclusion, while there was a weak or no correlation in class II and class III malocclusion group.
- 5) In class I normal occlusion, there is a positive correlation between maximum bite force and length of maxillary base, Ramus plane, mandibular plane, posterior facial height, cranial base, dentoalveolar height, while there is a negative correlation with anterior facial height.
- 6) In class I malocclusion group, there was a positive correlation between maximum bite force and upper anterior facial height, anterior cranial base, while there is a negative correlation with Go° angle.
- 7) In class II malocclusion group, there is a positive correlation between maximum bite force and mandibular plane.
- 8) In class III malocclusion group, there is a positive correlation between maximum bite force and ramus plane, posterior facial height, cranial base, lower dentoalveolar height and a negative correlation with anterior facial height.