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Effects of upper lip closing force on craniofacial structures.

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Force generated by the perioral musculature is known to be a potent factor that can affect tooth position and malocclusion. To evaluate the influence of the force of the orbicularis oris muscle on incisor position, we determined the maximum and average strengths of the upper lip of male Class I malocclusion patients with a Y-meter, which was devised to measure the vertical closing force of the lip with a load cell. The skeletal structures and incisor angulation were recorded by lateral cephalograms. Correlation and stepwise regression analyses were performed to determine whether a relationship existed between lip force levels and craniofacial morphology. The average value of the upper lip closing force (AVE) was 7.16 N. Our results showed that the upper incisor angulation was related to the perioral muscle force. The maxillary incisor to Frankfort horizontal angle showed r values of -0.681 (at AVE) and -0.652 (at maximum lip closing force) as determined by correlation analysis. Stepwise regression analysis also showed that the maxillary incisor to Frankfort horizontal angle was more related to the upper lip closing force. Disuse atrophy of the orbicularis oris seems to be an important factor in the development of malocclusion.

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