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UNIVERSITÀ DEGLI STUDI DI PALERMO

# The influence of the stomatognathic apparatus in athletic performance: the effects of the palatal exteroceptors stimulation in football players

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## Aim

Previous studies demonstrated that the hard palate is richly supplied with a variety of mechanoreceptors. The aim of this study was to examine the possible effects on explosive strength which might derive from the stimulation of the palatal exteroceptors through the voluntary press of the "spot-tongue".

## Method

A number of sixty football players voluntarily participated to the study (Age: 24,3 ± 7,2 yrs; Height: 174,3 ± 8,6 cm; Weight 63,7 ± 7,6 kg). Each participant was invited four times to perform the explosive strength test "Squat Jump test - SJ". After the first attempt for the familiarization, the SJ was administered in three different occlusal conditions: SJ with the tongue at the palatal spot (PS- SJ); SJ with the tongue at the palatal spot and the increase of the mandible's verticality (VPS-SJ); SJ with the tongue supported behind the teeth (BT- SJ). One day data collection was adopted with the different occlusal conditions administered randomly. A p value lower than 0.05 was considered to be statistically relevant.

## Results

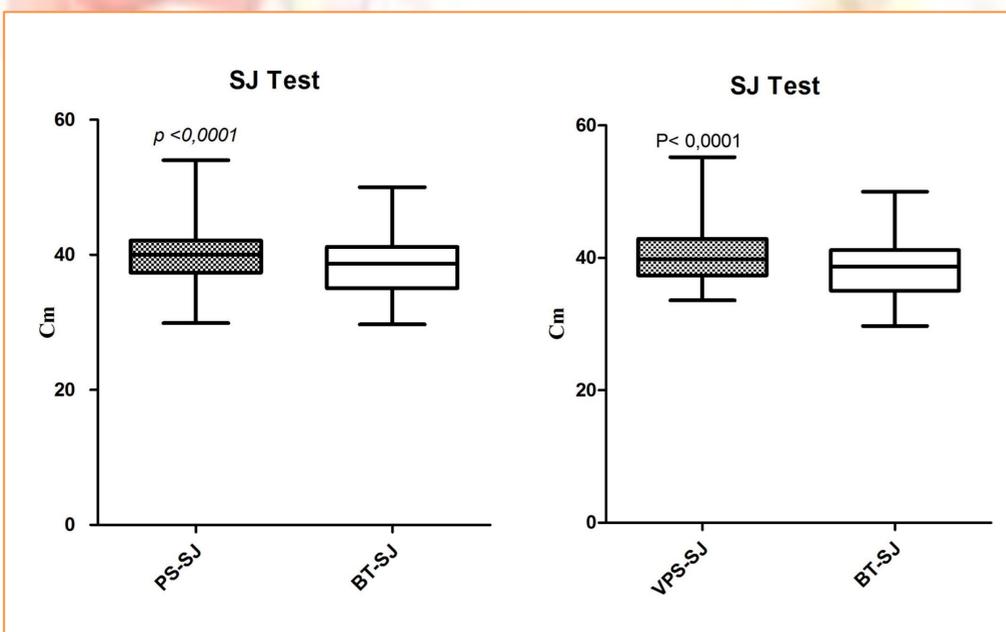
The performances of BT-SJ were generally lower than to performances both in PS-SJ and VPS-SJ. Significant differences were identified between BT-SJ vs VPS-SJ (p < 0,0001) and PS-SJ vs VPS-SJ (p < 0,0001). Interesting differences were found between PS- SJ vs BT- SJ without scientific significance.

PS-SJ	VPS-SJ	BT-SJ
40.1 ± 4 cm	40.4 ± 4,1 cm	38.5 ± 4 cm



## Conclusion

This study showed how the stimulation of the palatal exteroceptors and the lingual occlusion can influence the performance. The tongue supported behind the teeth represents a negative stimulus and by contrast, the tongue at the palatal spot, with and without the mandible's verticality, can give a positive stimulus improving the performances, in particular explosive strength. However, our results have to be confirmed and supported by other studies.



## References

1. Halata Z, Baumann KI: Sensory nerve endings in the hard palate and papilla incisiva of the rhesus monkey. Anatomy and embryology 1999, 199:427-437.