

# EFFECT OF CERVICAL STABILIZATION USING MALPEZZI PARABITE IN A PROFESSIONAL FOOTBALL PLAYER

BioI Giovanni, DDS<sup>1</sup> ; Malpezzi Piero, MD<sup>2</sup>

<sup>1</sup>BioDent ,Center of dental medicine, Arzignano, (VI) Italy; <sup>2</sup>Center of dental medicine, Bologna, Italy

## INTRODUCTION

A growing number of football players have been using occlusal bites in the past years both as a mouthguard but also to improve their sports performance (1). The purpose of this case report is to show how the custom-made Malpezzi Parabite allows the best stabilization of frontal cervical muscle and consequently solves sprains and muscle strain in lower limbs. The occlusal plaques (bite), already worn by the player, could not solve the problem.

## CASE REPORT

A male Italian defender (29 years old; 1.84 m; 76 kg) in the Italian Serie B continued suffering from frequent muscle sprains to his calves (soleus muscle) and adductors. In the previous two years, he played very little due to continuous muscle strains sustained even during light training. He wore an occlusal bite and orthotics for these conditions, without a complete effect on the leg and thigh muscles.

## Injury History

The defender broke his left ACL and meniscus in July 2008. He was operated of selective external meniscectomy on his left knee in November 2008. One month later he was operated on his left knee with reconstruction of Anterior Cruciate Ligament (ACL) with Allotraft. From January to March 2009 he did rehabilitation therapy (massages, swimming, gym) and recovery in the field (5 assisted rehabilitation phases according to the protocol of Isokinetic Bologna - Italy). Four months later, in August 2009, he went back to the field. Once he started playing again, he continued suffering from frequent muscle sprains to his calves and adductors, limiting his trainings and playing time during matches.

On 15 June 2010, the athlete requested sports gnathologic investigation (a dentistry branch specialised in head-neck masticatory problems in athletes) to know if his dental occlusion could affect his condition.

## Tab.1. Footballer's games played during championships. Before and after treatment.

Input symptoms: he reported tendinopathy of the left and right soleus muscle. The physical examination showed severe dental-skeleton malocclusion with mandibular morphological asymmetry.

The activity of masticatory muscles (Anterior Temporalis and Superficial Masseters) assessed by a surface electromyographic exam (sEMG) - (EasyMyo - TFR technology, Italy) showed a highly unbalanced dental occlusion with a reduction in the elevation force of the jaw of -92%.

## Functional dysmetria present in the left leg.

Following use of a diagnostic dental device (Intraoral Gothic Arch - AGE), an **occlusal equalizer splint Malpezzi Parabite** was prepared to improve frontal cervical stabilization (2). sEMG exam and Meersseman kinesiology test (leg dysmetria was recorded with and without teeth clenching, from Meersseman J. P.) were carried out. The athlete was advised to wear the Malpezzi Parabite both during training and competitions. Tests were carried out again before the beginning of the next championship adding the Deltoid muscle force test with an electronic dynamometer. The last follow up was after 4 years.



Old occlusal Bite

Old Bite with occlusal contacts

Tab 1	YEAR	CATEGORY	GAMES	GOALS
	2006/07	C1	22	3
	2007/08	C1	28	0
<b>INJURY</b>	2008/09	C1	9	0
<b>TREATMENT</b> (June)	2009/10	B	8	0
<b>RETURN</b>	2010/11	C1	21	1
	2011/12	B	14	1
	2012/13	C2	16	0
	2013/14	C1	12	0
	2014/15	C	13	0



Parabite Malpezzi

## RESULTS

In July 2010, upon wearing and setting the Malpezzi Parabite, the electromyography showed good balance of the masticatory muscles, but especially the jaw elevation force went from 8% to 140%.

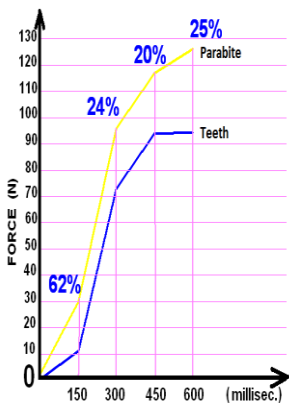
Left leg dysmetria disappeared wearing the Malpezzi Parabite. (See Tab2)



Clenching teeth

Clenching Parabite Malpezzi

Fig.3. Leg dysmetria was recorded with and without teeth clenching, from Meersseman J. P. Three months later, in October, the footballer said he felt better and that he always wore the Malpezzi Parabite during training and the match. The Italian championship had just started. The sEMG showed excellent muscular balance and muscular force of the jaw. The deltoid muscle force test showed an increase in the explosive force of the arm elevation of +62% in the first 150 milliseconds (explosive force time).



Tab.2. Electromyographic results during test time. § normal score is 0%. Ç normal score is 100% *Unhealthy number. ^Very unhealthy number.	Occlusal clench JUN '10	Old bite JUN '10	Malpezzi Parabite JUL '10	Malpezzi Parabite OCT '10	Malpezzi Parabite JUL '11	Malpezzi Parabite Dec '14
<b>ASYMMETRY</b> (right vs left occlusal balance) §	22% ^	28% ^	3%	3%	2%	4%
<b>ACTIVATION</b> (anterior vs posterior occlusal balance) §	27% ^	27% ^	20%*	0%	2%	11%
<b>TORQUE</b> (strength of cross elevation Right vs Left) §	58% ^	22% ^	1%	0%	1%	0%
<b>IMPACT</b> (Jaw impact elevation force on 100% of maximal) ç	8% ^	74%*	140%	110%	97%	89%

Fig.4. Graph showing the increase in explosive force of Parabite Vs ClenchTeeth.

One year after the follow up, in July 2011, the footballer announced he was pleased with the functional recovery achieved and concluded by saying "Thanks for giving back to me the pleasure of playing". At the end of the championship, his presence in games went from 8 of the previous year to 21 with one goal scored. sEMG tests showed that the occlusal balance and the elevation force of the jaw were preserved.

The latest follow up was in July 2015 and past symptomatology and kinesiological tests were negative.

## CONCLUSIONS

Frontal cervical stabilization is essential in the different positions of a football player. This can be achieved only thanks to correct balance of the jaw elevator being able to go back to play: these are the best results a therapist could wish for. His career was not over! muscles, upper and lower hyoid, which also need correct contact between the upper jaw and the lower jaw with dental occlusion.

This athlete showed up with strong muscular-skeleton imbalance of upper jaw and lower jaw, developing low elevation muscular forces of the jaw and not only, in the muscles of his head, but also of his arm. The Malpezzi Parabite was needed to equalize the occlusion and stabilize the frontal pillar and the cervical area. This was not possible with the occlusal bite because it was not balanced (see Tab. 1 Occlusal bite JUN '10).

The continuous accidents not only prevented him from playing, but blocked him during training. The results of this case report show that gnathologic treatment can help a footballer to reduce muscular injuries and re-injuries.

The player was delighted for having finally found a solution and for b

## REFERENCES

•Camilli Meletani S. Epidemiologia degli infortuni muscolari degli arti inferiori in pazienti con disfunzione dell'articolazione Temporo Mandibolare. Doctoral Thesis in Sports Medicine University of Bologna, 2015  
 •Malpezzi P., Uliari S., Myers J., Spiridonova M., Grossi G., Terranova F., Collini G., Amabile L., Bernardi E., Mazzoni G., Conconi F., and Grazzi G. Influence of a custom made maxillary mouthguard on gas exchange parameters during incremental exercise in amateur road cyclists. Journal of Strength and Conditioning Research 2015; 29(3): 672-677