Posturographic changes in university students with temporomandibular dysfunction

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Introduction:

Temporomandibular dysfunction (TMD) is a problem which is increasing in general population. It is considered a multifactorial problem, which can become from biomechanical, neuromuscular, biopsychosocial or neurobiological factors. It is associated with risk of occlusion, parafunctions, stress, trauma and hypermobility. The treatment of this pathology is based on teamwork, where Physiotherapy has a significant role (1). In recent years, the relationship between TMD and posturographic changes has been studied. Despite numerous studies have been published it is not clear yet if postural imbalances are etiological or perpetuating agents of TMD. Evidence from most of the studies shows that muscle and postural disorders are more frequent in patients with TMD and seem to be a correlation between the type of occlusion, the existence of signs and symptoms of dysfunction and postural imbalance (2). The purpose of this study was to observe if there is a relationship between the level of TMD and posturographic changes in college students aged between 18 and 30 years old. Additional objectives included the analysis of a possible relationship between the TMD variable and the maximum distance that the patient can intentionally displace his center of pressure (COP); and the ability to rhythmically move their COP and the velocity of postural oscillation.

Materials and Methods:

Sixty students were assigned into two groups. Group 1 (n=30) who presented moderate or severe TMD dysfunctions and group 2 (n=30) who had no symptoms of TMD. All subjects completed a sample characterization questionnaire and the Fonseca Questionnaire to identifying the prevalence of symptoms and severity of TMD. The selected subjects were submitted to four tests (figure 1, 2, 3 and 4) to measure the position of the center of gravity on several static and dynamic positions, on bilateral and unilateral podal stance with their eyes open and closed. All subjects signed an informed consent before participating. This study followed all the principles of the Declaration of Helsinki

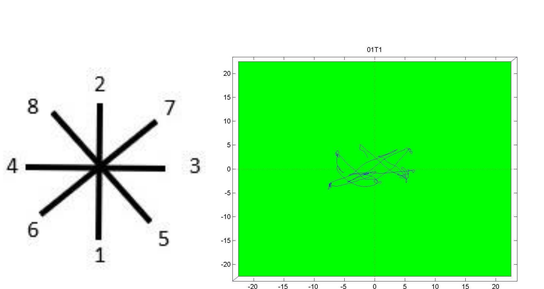

Figure 1 – Test 1: maximum distance that the patient can intentionally displace his COP

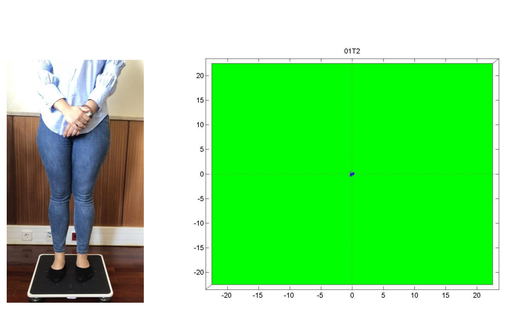

Figure 2 – Test 2 and 3: ability to rhythmically move your COP with open eyes (T2) and closed eyes (T3)

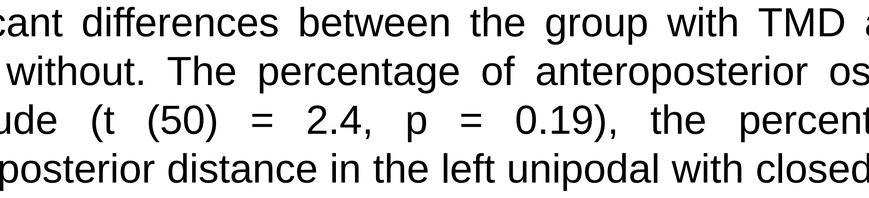

Figure 3 – Test 4 and 5: the velocity of postural oscillation in right unipedal with open eyes (T4) and closed eyes (T6)

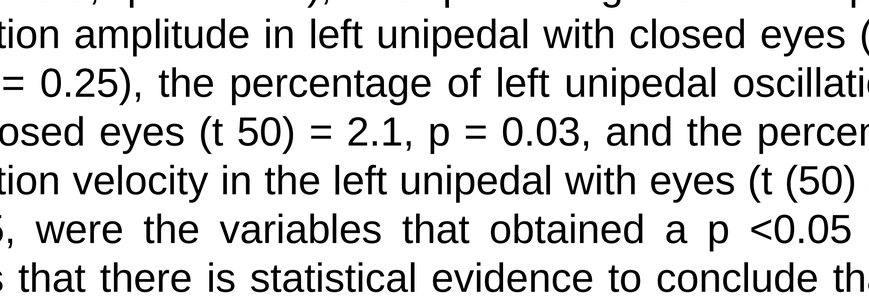

Figure 4 – Test 6 and 7: the velocity of postural oscillation in left unipedal with open eyes (T5) and closed eyes (T7)

Results:

A total of 63 variables were studied. Of these, only 5 obtained significant differences between the group with TMD and the group without. The percentage of anteroposterior oscillation amplitude (t (50) = 2.4, p = 0.19), the percentage of anteroposterior distance in the left unipodal with closed eyes (t (50) = 2.1, p = 0.45), the percentage of anteroposterior oscillation amplitude in left unipedal with closed eyes (t (50) = 2.3, p = 0.25), the percentage of left unipedal oscillation area with closed eyes (t 50) = 2.1, p = 0.03, and the percentage of oscillation velocity in the left unipedal with eyes (t (50) = 2.1, p = 0.45, were the variables that obtained a $p < 0.05$, which means that there is statistical evidence to conclude that there is a significant difference between the two groups.

Discussion and Conclusions:

The most common way to study postural control is to observe the behavior (especially the oscillation) of the body during any task. The observation can be both qualitative and quantitative, with the aid of measuring instruments (4). The presence and severity of TMD, in addition to the presence of pain on palpation and the masticatory and cervical muscles, do not influence changes in variables related to postural balance (5). What we conclude with our study, and according to the literature already studied, was that there is no relationship between the moderate and severe TMD variables and the changes in the center of pressure. The relationship between moderate and severe TMD with changes in the center of pressure is an approach that is poorly studied and poorly developed (4).

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