Influence of Facial Profiles, Posture and Balance

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Abstract

Introduction: Participants in our study were evaluated according to photography in the sagittal plane to determine facial profile. The aim of our study is to evaluate the facial profile and identify the correlation with posture and balance in static and dynamic. Methods: This is a pilot study developed from December 2021. It took place in the Physiotherapy laboratory at Aleksandër Moisiu University, Durrës. With participants (N = 7), the tests applied in the study was the Romberg test, the Tandem test. Results: In our study dominates orthognathic profile 57.3%, then we have the Retrognatic profile. Regardless of the face profile patients have the lowest scoring on the dynamic test compared to the static test. The orthognathic profile is characterized by a better static and dynamic balance. Conclusions: We note conection between the facial profile and the balance of the participants. The orthognathic profile is considered the profile with the best balance in static and dynamic.

Keywords: *Facial profiles, TJM problems, occlusion abnormalities, static & dynamic balance*

1. Introduction

In the definition e facial profile helps us or a lateral cephalometric radiography or a photograph according to the lateral plane [1]. As in our study where facial assessment was performed through lateral plane photography. There are different forms of facial profiles for both women and men. The most ideal profile has been the statue of Apollo Belvedere [1], while profiles with poor facial aesthetics have a convex face [3]. On the other hand, a large number of studies have been conducted which show the correlation between malocclusions of facial profiles and body posture. Forward neck displacement is associated with scapula abduction with neck pain and over time changes in the curvature of the back [4]. There is also a correlation between posture and mandibular position, as all patients who participated in the study had posture specifics based on mandibular positioning and specific facial profiles [5]. However a contribution also exists between dental oculation and balance postural in addition to postural control [6]. The evaluation of patients in our study

referred to the results of studies of 7,8,9 according to which posture is affected by, visual system, n.trigeminal afferent, propioception and neck position that comes as a result of facial profiles. Neural pathway damage plays a role in the processing of visual, vestibular and propioceptive information directly affecting the motor control response and static and dynamic human balance [10]. The purpose of our study is to evaluate the facial profiles of the participants, the posture in the sagittal plane and the evaluation of the balance in static and dynamic. Identify a correlation between facial profiles and postural and balance problems.

2. Materials and Methods

Our study is a pilot study, which was conducted with the participation of third year students of Physiotherapy, at Aleksandër Moisiu University,

Durrës. Evaluation of participants was performed in the Physiotherapy Laboratory, the age of the participants was (21-22 years old). The total number of participants was N = 7, of which, two males and 5 females. In this study as evaluation tests were used. Sagittal plane photography, frontal plane photography and static and dynamic balance tests, Sharpended Romberg, Tandem test. All participants were informed of the aims and procedures of the study and any written consent was obtained in accordance with the Helsinki Declaration.

2.1 Procedure

Photography according to the sagittal plan, which specifies the face profile for each participant.Two tests were used to assess balance: the Sharpended Romberg test which assesses static balance for each participant. Each of participants initially it was explained to them what would happen to them with their consent. Next, each of participant was asked to cross their arms over chest, join feet together, and with his eyes closed, stand still for 30 seconds. During this time it was seen whether or not the participant had sway [10]. This test is also used in Patients with brain damage [10]. The Sharpended test was performed only once, it does not repeat. Each of the participants was wearing orthopedic shoes. Another test applied was the Tandem test, which evaluates balance in dynamics. Each participant was asked to take a walk near the walkway, where each toe was placed in a line one after the other, while the participant had to look straight. During this test measured the amount of time that the participant can hold this position, measured for up to 30 seconds [11 12].

2.2 Inclusive Criteria

Our study included the absence of problems such as:

i. Cranio-mandibular disorders
ii. Postural problems
iii. Visual problems
iv. Trauma or interventions affecting posture.

2.2.1 Exclusion Criteria

In our study were patients with:

i. Brain problems
ii. Balance problems due to musculoskeletal trauma
iii. Age over 22 years
iv. Postural disorders such as kyphosis
v. Hearing problems.

3. Results

Table one presents the general demographic characteristics of the study participants.

Table 1:

General Characteristics			
Numbeof participants N= 7 Gender F= 5, 71% M=2, 29%			
Length (meter)	Average= 165,1 cm Weight (kg)	Average = 63,4kg BMI (kg\m2)	Average = 21,2 kg\m2

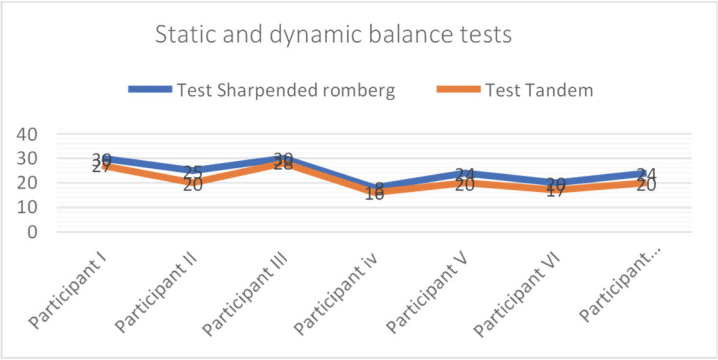
In the second table are expressed in percentage each of the three facial profiles. We notice dominance of the orthognatic profile, then we have the Rethrognatik profile. Only 14.2% are included in the prognathic facial profile.

Table 2:

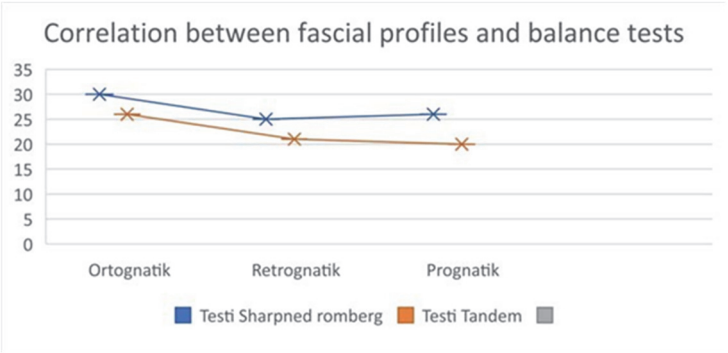
Fascial Profiles	(%)
Orthognathic	57,3%
Retrognathic	28,5%
Prognathic	14,2%

In the third graph, the correlation between each patient and the balance tests is presented. We notice a smaller scoring of participants in the dynamic test compared to the static one, regardless of their facial profile.

Graph number 3:



In the graph number four, presents the correlation between facial profiles and static and dynamic balance tests.We notice a higher score in participants with orthognathic face profile, for both balance tests. The difference in their scoring is not very large, this and due to young age and absence of postural problems that overlap with increasing age. The smallest score on the Tandem test has the prognathic profile. We also notice that the retrognatic profile has a moderate scoring, a factor that has influenced it are the visual problems of some of the participants in this group. Visual problems are important in maintaining postural balance, affecting body vibrations during laboratory tests [13].



4. Discussions

In many studies there is a close relationship between the posture and the position of the mandible, often the imbalances of locomotor system associated with postural modifications and with pathological involvement of the temoporomandibular joint[5]. As in our study in which we observe the connection between posture and facial profiles. The posture is not a static equilibrium but is considered an active phenomenon[5]. On the other hand, the correlation between dynamic balance and jaw positioning and facial profiles is also shown. Postural stability is also associated with neck, head and chewing muscle balance [14]. Directly there is a connection between the positioning of the mandible and the maxilla and the facial profiles. There is a close relationship between postural swing and the position of the mouth open and tight compared to the jaw in the resting position during open and closed eye tests [6]. The ocular system also affects postural equilibrium control, disrupting equilibrium[15], the same as in our study where three of the participants belonging to the retrognatic facial profile had a lower scoring in static and dynamic equilibrium tests.

5. Conclusion

There is a close correlation between facial profiles, body posture, visual system, propioceptive system, vestibular system. Like a large number of previous studies we note a close link between the facial profile and the balance of the participants. The orthognathic profile is considered the profile with the best balance in static and dynamic.

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