

I N T E R V I E W

Tongue and Posture

Interview with Madame Maryvonne FOURNIER, Physical Therapist, conducted by Frédéric MARQUET

F. MARQUET. Before beginning I should like to thank you for agreeing to make a contribution to this issue devoted to posturology.

In addition to tongue posture, a subject to which we'll return later, what are the principal postural problems that should be considered in orthodontics?

Maryvonne FOURNIER. The head hanging down in a forward position is one of the poor postures that are frequently encountered. It is associated with painful points in the occipital crest and sometimes prevents correction of breathing difficulties and problems with the temporo-mandibular joint.

Mandibular deviations with which scoliosis, or a scoliatic tendency, are frequently associated with or without tendency to favor putting weight on one foot.

Flat feet with disappearance of the inner arch of the foot, with weight placed purely on the posterior part of the foot in certain dental and skeletal Class III cases and exclusively on the anterior part of the foot in certain Class II dental and skeletal cases.

F.M. You're saying that poor weight distribution on the feet can cause dental or skeletal malformations?

M.F. When too much weight is placed on the back of the foot, the child is always

leaning backward, so much so that if we ask them to lean on the front part of the foot they might "break their face" and we need to place ourselves well in front of them to catch them if need be.

In 50% of Class III cases we are going to find that in addition to this posterior weight distribution there is a recurvatum of the knees and a smoothing out of the lumbar, dorsal, and cervical curvatures. But, on the contrary, in Class II cases where patients place more weight on the front part of the foot there will be a flexum of the knee and an increase in the spinal curvatures.

The patients whose thoracic cage tends to be caved in and under-developed usually have Class II Division 1 malocclusions and are mouth breathers.

I cannot say that this type of poor development inevitably leads to dento-facial malformation. Some lateral mandibular deviations cause no postural problems whatever.

F.M. Should we then suspect incorrect weight bearing in the feet in patients whose lumbar regions are excessively curved?

M.F. You are likely to find that patients with considerable curvature have a Class II

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malocclusion and project their heads forward. Nevertheless, we cannot say that hyperlordosis always indicates the presence of dental problems because in all African and South American civilizations women have great curvature, and the men too, but they are all supple and free of lumbar pain. It is clear, then, that this curvature can exist without accompanying dental malformations.

F.M. With today's living conditions, do you think certain postural problems are more prevalent than they were previously?

M.F. Thirty or forty years ago people thrust their heads forward when they were resting or driving. Nowadays some adults and even children keep that position for eight hours a day at work. And for people who wear glasses with progressive lenses the phenomenon is even more pronounced. And the problem is equally grave with teenagers who spend 2 or 3 hours a day text-messaging each other or playing video games.

These disorders should be corrected with postural re-education that will teach people how to keep their bodies in effective positions when they are working on the computer. We also advise them that it is not a good idea to wear progressive glasses when they are busy with computer tasks. Before this re-education begins the scalp and cervical muscles should be massaged to liberate the first cervical articulation and mobilize it so that patients will not, in fact, be blocked from correcting their poor posture.

F.M. How can people be made aware that they do have poor posture?

M.F. Most people don't pay any attention to faulty posture until something begins to hurt. Even athletes who take great care to maintain proper postural procedures in their training and performance can be negligent about sitting and standing correctly when they are not professionally engaged. Despite everything, postural education is a serious undertaking and should not be considered indispensable. Still, orthodontists will find a postural assessment extremely useful. I can present the example of two children whose feet didn't fall into the correct pattern when they were walking who were referred to me when they were 5 or 6 years old. After I taught them to tread on the forward balls of their feet their Class II malocclusions corrected spontaneously. When I talk about re-education I am referring to physical therapy focusing on correct foot placement for which I rarely ask a podiatric or orthopedic specialist to prescribe orthopedic shoes. I have often seen cases of retraining that didn't work even when patients were wearing orthopedic shoes even those with the proprioceptive soles developed by Doctor Bricot. The patient should acquire the proper movements and for that good postural instruction is often useful, even sufficient for correction of flat feet. Orthopedic soles can resolve problems but as a general rule their use should be accompanied by postural re-education.

F.M. Can correct tongue posture play a key role in the success of orthodontic treatment?

M.F. Of course, and orthodontists are becoming more and more aware of it. Ten years ago many people did

not believe the tongue played that kind of important role. When you ask patients to open their mouths and you see the base of the tongue not the upper surface, it is important to begin tongue posture re-training.

Re-training that also encompasses the patient's achieving good nasal breathing and, accordingly, good head posture will help considerably in the treatment of certain Class II or Class III malocclusions. However some orthodontists still think that if they move the teeth into proper alignment the tongue will automatically assume a good position; others think that tongue re-training is valueless. Still others accept a particular conception of correct tongue posture. Docteur Patrick Fellus, for example, believes that the tongue should lie cupped against the palate, which is in fact its rest position.

F.M. What exactly is the rest position of the tongue?

M.F. The tip of the tongue should flick against the palate, contacting the retro-incisal papillae. Adults report that the tongue doesn't actually touch the palate so "flicker" is, in fact, then a good description of the stance. However in deglutition there is definitely solid contact. In myo-functional training we strive to achieve proprioceptive contact.

Children begin to acquire this posture at the age of 6 to 8 months and use it effectively when they are two years old. I did a study of one year olds in the cradle to determine this. Adepts of tai-chi, of chi-cong and usually yoga consciously adopt this notion of good tongue posture and so do most other Asians.

This reminds me of the case of a little girl of 22 months, an Italian living

Paris, who had a very protrusive tongue that she kept between her lips. Practitioners in Italy, the United States, and in France had suggested plastic surgery for her large tongue. It was an orthodontist in Paris who treated many adults who referred her to me. By the time she was three years old she was able to enclose her tongue when she closed her lips although myo-functional therapy had not yet been completed especially in regard to sound production. But she could close her mouth and she had a Class I occlusion. From the time she was 2 years old her mother took charge of speech therapy seeing to it that her daughter did her exercises. I can say that we have been able to correct tongue posture with trisomy, or Downs syndrome patients. Treatment takes longer with them but works out very well.

F.M. What is your over-all concept of the work of tongue re-training?

M.F. We include tongue posture re-education within the framework of global posture correction because, obviously, the two characteristics are intimately related. Some adults tell us that when they place the tip of their tongue against their palates they feel the need to stretch their bodies (children and adolescents have much less sensitivity to such changes). One adult patient told me that he felt "a cerebral relaxation all the way down to his coccyx when he swallowed with his tongue against his palate" proving the connection between specific and general postural behavior. In 100% of orthodontic cases, 100% of craniomandibular disturbances, and 100% of patients with breathing problems,

including sleep apnea, we find that tongue posture is poor. Similarly when old people have chronic pulmonary or bronchial problems we find mouth breathing associated with low tongue posture. This was confirmed by notes collected at the close of a course in physical therapy. We can eliminate serious problems in older people with tongue and breathing re-training. Classical oto-laryngological problems in infants, repeated nasal and pharyngeal infections, otitis, tonsillitis, and repeated bronchial infections, all disappear when tongue posture is corrected, thus making surgical treatment of lymphoid tissue unnecessary.

Unfortunately, too many professionals are unacquainted with this data. I have participated in a great many multi-disciplinary conventions and meetings where tongue posture and re-training were discussed but otolaryngologists were rarely and pediatricians and general physicians practically never in attendance. The principal contribution a patient can make to correcting tongue stance is to be well motivated and to cooperate without fail.

F.M. Is it possible to restore good tongue posture when patients remain mouth breathers?

As long as nasal breathing has not been achieved, the tongue cannot occupy a good position. But, having said this, I do believe that it is not a good idea to begin treatment by focusing on breathing because in 50% of the cases when patients correct tongue behavior and place the tips of their tongues against the palate, breathing becomes nasal by itself. Sometimes, of course, good tongue posture alone is not sufficient.

The nasal passages have to be carefully cleaned in both anterior and posterior regions so that the nose can become fully functional, that is so that the nostrils open properly on inspiration. I do not consider treatment finished until patients are able to run with their mouths closed. For me, there is no such thing as mixed breathing, that is just a form of mouth breathing. Sometimes patients seem to be closing their mouths but are only doing that so they won't look foolish. If you keep watching them steadily you will see that from time to time they open their mouths wide and gulp in the air they need. You can observe the same thing on television with some performers who finish every sentence by opening their mouths regularly. These patients evidently breathe through the mouth and have dry mouths in the morning.

In order for patients to learn to breathe nasally their tongues must be properly placed and they should know how to use tissues to keep their anterior and posterior nasal passages clear so their nostrils can function normally. Myo-functional therapists working with the tongue can also include exercises for the lips by having them hold a tongue depressor with clothes pins attached near the lips, then further away, and then, as the lips strengthen, attached at the outer extremity of the tongue depressor.

F.M. Should orthodontists understand some tongue exercises and show their patients how to use them?

M.F. Yes and no. Exercises are an integral part of myofunctional therapy and for them to work the therapists must see the patient once a week to

check progress in the patient's automatically placing the tongue in correct rest position and in eliminating noxious speech and swallowing habits. And sometimes the therapist has to help patients correct immature function. It is difficult if not impossible for practitioners to help patients at this level when they are seen only once a month.

Correction of tongue posture would then consist solely of patients' performing a few random exercises. It is more complicated than that. Patients must realize that tongue re-training requires daily attention without which nothing can be accomplished. And, as they dutifully perform tongue exercises, patients should feel changes begin throughout their bodies. Exercises should aid in their awareness of this beginning transformation but even that is not sufficient. The awareness must become acute because it is primordial and must, in addition, be accompanied by the toning up of certain muscles and the relaxation of others until what has been learned becomes automatic. One way orthodontists can attempt to make up for the long gap between visits is to have patients record in a notebook the number of times per day they have thought about placing their tongues against their palates to swallow saliva.

F.M. Should orthodontists be aware of the improvements that myofunctional therapy can bestow on patients?

M.F. Of course! Unfortunately the parameters have not yet been precisely defined. But orthodontists

should know about the importance of this field and also that methods of self relaxation exist. There are, in fact, programs where they can receive training at Montrouge and Garancière as well as at Nantes, Montpellier and at other facilities. Speaking just of tongue retraining, which is only a part of myofunctional therapy, good tongue posture can be a great aid to orthodontic therapy and results are there to prove that. Orthodontists should share the success of their treatments more freely. They are eager, for example, to try to persuade young patients to stop sucking their thumbs but when this approach fails and patients continue this harmful habit day and night, relaxation therapy aimed at relieving global tension and not just focused on the thumb may very likely provide a happy solution. In my therapy I try to deal with problems of tension if there are any, such as sleep disturbances, abdominal pain, or headaches. An occlusal "liberating" splint will relieve bruxism but will not cure it. For that the afflicted patient has to learn deep relaxation techniques.

In many cases, then, we can say that physical therapy can be a useful adjunct to orthodontic treatment and help to avoid relapses.

Some malocclusions and some of the need for myofunctional therapy would disappear if parents were not so prone to allow their children to suck on pacifiers. Perhaps orthodontists don't pretest against them sufficiently. I have even seen advertisements for pacifiers published in an orthodontic journal. The morning nursing bottle that some children cling to until the age of 10 or 12, even 13 is another

grave affront to good orthodontic health.

F.M. We have auxiliary appliances available for use such as bi-maxillary splints with various adjunctive guides for urging the tongue into good position. In your opinion, how effective are they?

M.F. They can help the orthodontist or speech therapist to guide patients into good tongue posture in 30% of the cases. One of the problems in their use is the refusal of some patients to wear them and the inability of other patients to keep them in place throughout the night.

Sometimes cemented tongue guards that are supposed to keep the tongue from thrusting forward have to be removed because patients are beginning to thrust their tongues under it instead of against it and thus risk developing swallowing patterns more noxious than the ones they started with.

But other appliances like the nocturnal lingual envelope, Planas pistes or equiplanes, or trainers can achieve very good results for some patients. However for those patients for whom they are ineffective, myofunctional therapy should be tried. This can happen, for example, with patients who need to have the tone of their mylo-hyoids improved (a deficiency practitioners cannot note in itself but that shows up when appliances don't work) or with patients that have a variety of other problems (low tongue posture, poor pronunciation of "ch" or "se", and an immobile upper lip) with mouth breathers, and with patients that have over-all postural difficulties. For simple cases unassisted

appliances can often lead to excellent outcomes.

On the other hand, I don't believe in using lingual envelopes at night is as "insurance retainers" for patients whose harmful habits have been corrected by myofunctional therapy. Doing that would be like asking patients who had learned to walk well again after some accident to keep on using their crutches, "just to be on the safe side." Still patients should be carefully watched. I always ask my patients to come in for a check-up visit two weeks after their full-banded appliances have been removed.

F.M. You wanted to tell us something about your general thoughts on posture.

M.F. When I was a student in physical therapy, Doctor Boris Dolto, the director of the physical therapy school frequently repeated his belief that we should never treat lumbar pains, back pains, or even headaches without seeing what was happening to the patient's feet.

When professor Delaire invited me to participate in the treatment of orofacial problems about forty years ago, he asked me to do exactly the same thing: study the patient's over-all posture and, in particular, the feet. And what I found was, in fact, that, by and large, patients who consulted orthodontists because of malocclusions or cranio-mandibular problems did have postural anomalies. So, of course, I treated these patients to re-establish facial and global equilibrium.

I frequently see patients who hold their heads forward resting on their necks; this does not result from cervical hyper-lordosis but is a type

of head posture. In earlier years I found this phenomenon primarily in patients who spent many hours in automobiles, today it occurs more frequently in people who work eight hours per day in front of a computer screen.

Sometimes this posture is maintained throughout the day. And it is often associated with pain points in the occipital crest that reflect tension in the upper spinal column (C0-C1, C1-C2, and C2-C3). The patient is advised that he should be alert to the situation and that he should advance his chin at appropriate times. This region, the scalp, and the neck need to be massaged and then the upper spinal column, especially C1-C2 needs to be mobilized in an upright stance with menton advanced slightly to relax this joint. But if the chin is thrust too far forward the effect will be manifested not there but in the C4 region. So it is important for the patients to feel the movement at the level of the occipital crest.

We frequently find this type of poor posture in patients with Class II malocclusions and in mouth breathers. As soon as menton assumes its correct position it becomes easier for these patients to breath nasally. In very instance where patients complain that their nostrils get clogged up overnight we discover on interviewing them that after lying on their backs their chins have slipped forward. When they learn to keep a 90° angle between neck and chin, breathing problems decrease considerably. Similarly deglutition improves when the spinal column is held erect. Tongue exercises such as the piston, the tongue held back, the tip of the tongue kept pointed, can only work

readily when spinal column posture is over corrected.

It is very important in cases of lateral mandibular deviation to look for scoliosis or a tendency toward it. To evaluate this possible problem the examiner should look to see if:

- one shoulder is higher than the other or more advanced as the patient pivots around the spinal column;
- the head is held tilted to the right or the left;
- there is a rotation of the pelvis.

It is very important to check how patients are putting weight on their feet when one of these lateral defects in posture, if not actual scoliosis, is detected. Patients, even as young as four year olds, are capable of telling whether or not he is leaning to one side. In every case the examiner should have an ophthalmologist check to see if heterophoria is present. If the patient suffers from this ocular defect in defining the horizontal plane an ophthalmologist can prescribe corrective lenses. But the dental specialist and the physical therapist should remember that most ocular specialists prefer to deal with heteroporia *after* any faulty tongue position has been corrected.

Re-education

Patients should start slowly with short exercises performed in front of a mirror to aid proprioception. Next the patient-therapist dyad should concentrate on the feet and the patient's ability to sense any poor distribution of weight. I've had four or five year old patients tell me they could very clearly feel that one foot was bearing down more than the other. The next step is to ask them to even out the allocation of pressure and to stand evenly on

their two feet for 3 seconds 10 times in a row. And in addition, they should think about this all day long. The next week I ask them to support their whole body weight on just one foot without contracting the deep abdominal muscles. To do that they place their hands on the iliac crest and note that it is more difficult on one side where there is insufficient support. When this is a familiar procedure and they no longer feel weaker on one side than the other, I ask them to raise their heel on one side and keep that pose for 3 or 4 seconds. Next they should raise the whole free foot without bending the knee and stay balanced that way for 10 more seconds without tipping. Next I want them to stay on one leg and raise the other twenty times without tipping. Finally I want them to rotate their bodies without losing their balance. After doing this they can keep their weight equally distributed on their two feet all day long.

When in my examination I discover the patient has flat feet with complete loss of the internal arch I start re-education immediately without waiting for the assistance of corrective shoes.

First of all I take note of the faulty positioning in which there is no weight placed on what is called the fifth level and I ask the patient to rest on this external part of the foot so that the internal "flat" portion can be raised. This puts tension and sometimes causes pain on the lateral peroneal area.

In repeating this postural exercise every day for 3 seconds 10 times successively, the tension disappears. The next step in the re-education consists of asking the patient to take four steps resting weight on the

external edges of the feet, then the internal edges, then on the tip of the toes, and finally on the heels in order to regain global equilibrium of the feet. Patients must also, to achieve this equilibrium, make what will seem to them risky forward thrusts, then backward, then to the side, and at angles, first with the eyes open and then with the eyes shut.

In 50% of the Class III cases, we find abnormal pedal weight placement; if we take a position behind the patients and watch them walking we can see that they start well by a first push from the heels but they do not proceed using the whole foot right up to the toes. That their steps are limited to half the foot is easy to see. We can make patients aware of this at an age as young as 4 years. They can only feel weight placed on the back part of the foot; if we ask them to use all the foot they lose their balance and would fall forward if we hadn't already taken the precaution of stepping in front of them. These patients are also incapable of resting their weight on their toes so that they run in clumsy flat-footed fashion.

True re-education begins when patients understand the details of their poor posture and begin to learn good posture and that they must practice every day with sets of ten 3 second repetitions. They must learn how to walk with rolling movement of the foot until the big toe is felt and serves as a rudder for walking. Then we add standing on tip toes, which leads into walking on the tip of the toes forward and backward without knee bending, which is the usual compensation adopted for these difficulties. The movements some of these patients perceive as risky are quite interesting.

In a certain number of Class II cases, but less frequently than with the posterior lean of the Class III, some patients lean too far forward when they walk. In this gait we don't see the sole of the shoe because they don't begin by a heel thrust but by pressing from the middle part of the foot. They too must come to an understanding of

their gait and to help with that we ask them to rest braced on the whole plantar part of the feet which tend s to make them fall backwards. Next we ask them to rest on their heels and raise their toes and, finally, to walk that way, from front to back. And we ask them, too, to take what seem to them daring thrusts in unfamiliar directions.

Maryvonne Fournier,

*Thank you very much for your greatly appreciated contribution to our journal.
Your thoughts will certainly make our colleagues "posture-conscious".*