

# 5 Requirements for Occlusal Stability

By Glenn DuPont, DDS

The ability to recognize occlusal instability and to achieve occlusal stability is critical for every dentist to understand. The entire process of treatment planning is to end up at a stable result that is not causing or perpetuating breakdown of the stomatognathic system. When an unstable occlusion is diagnosed and it is determined that correction needs to occur, one of the first questions that every dentist needs to answer is, "What is an ideal occlusion?" In other words, what is the best occlusion to create in order to give each patient's stomatognathic system long term stability, comfort and maintainability?

The following 5 requirements for long term occlusion stability are used to recognize an unstable occlusion as well as how to design an "ideal" stable occlusion and therefore must be a dominant factor in any occlusals analysis. An "ideal" occlusion is one that reduces stress on the whole system. This means that the occlusion reduces stress on the: TMJ's, muscles of mastication, teeth, periodontium, and also any restorations the patient has.

When applying the 5 requirements of occlusal stability it is critical that the TMJ's are evaluated first and determined to be stable and comfortable. Only then can the occlusion be evaluated for long term stability. Only now can the 5 requirements of occlusals stability be utilized to create equilibrium so that the teeth are not at war with the muscles or the TMJ's.

## These 5 requirements of occlusal stability are:

1. **Stable contacts on all teeth of equal intensity in centric relation**
2. **Anterior guidance in harmony with the envelope of function**
3. **All posterior teeth disclude during mandibular protrusive movement**
4. **All posterior teeth disclude on the non-working side during mandibular lateral movement**
5. **All posterior teeth disclude on the working side during mandibular lateral movement**

*The requirements are not new.* They are tried and true over many years by good studies and clinical experience. Let's look quickly at each requirement.

### **Criteria 1: Stable contacts on all teeth of equal intensity in centric relation.**

Centric Relation is defined as the relationship of the mandible to the maxilla when the properly aligned condyle-disc assemblies are in the most anterior-superior-medial position in the Glenoid fossa. This is consistent with the direction the masseter, temporalis and medial pterygoid muscles when they contract in closure of the mandible.

Another part of this first criteria is to create the teeth to hit each other with equal force so that one tooth is not taking more force than another. Also, the contacts of equal intensity need to be in a direction that reduces stress on the teeth and periodontium. Therefore posterior teeth contacts need to be axially directed and not on inclines.



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**Criteria 2: Anterior guidance in harmony with the envelope of function.**

Since the anterior teeth are designed to protect the posterior teeth due to their relation to the fulcrum of the TMJ's, the muscle forces and the known ability for the reduction of elevator muscle activity when the anterior teeth guide in excursions, then anterior guidance takes on a key role. When this is in harmony with the muscles and the function of teeth then it is in harmony with the "Envelope of Function". Therefore, the anterior guidance, designed by the mandibular anterior teeth and the lingual contours of the maxillary anterior teeth, are not interfering with the normal function and movements of the patient's mandible.

With this in mind, when solving occlusal problems, establishing an acceptable anterior guidance is the key initial decision that must be made once the TMJ's are stable.

**Criteria 3: All posterior teeth disclude during mandibular protrusive movement.**

**Criteria 4: All posterior teeth disclude on the non-working side during mandibular lateral movement.**

**Criteria 5: All posterior teeth disclude on the working side during mandibular lateral movement.**

Criteria 3, 4 and 5 are easily looked at together. That is to say that the posterior teeth all contact in centric relation with equal intensity and not on inclines but as soon as the mandible moves in any direction, the posterior teeth immediately disclude.

When considering requirement #5 that all posterior teeth disclude on the working side in mandibular lateral movement, there may be a situation where the posterior teeth in this movement all hit in precise harmony with the anterior teeth. This is not ideal and all of the studies have shown that this will increase elevator muscle activity. This is because our limitations as dentists do not allow us to create "precise harmony" in this excursion. If this precise harmony changes slightly over time then the ideal occlusion will be violated. That is why; immediate disclusion is desired in this excursion as well as the others.

Another consideration that must be addressed and considered when arriving at long term stability is that of the Neutral Zone. When bone and muscle war, bone is malleable and muscle always wins. Also when teeth, which are very hard and do not adapt well, are in a position in the mandible or the maxilla that is at odds with the muscles, then bone (periodontium) will adapt and teeth will move or shift. This will create crowding and occlusal instability.

Therefore, to sum up, when the TMJ's are stable, the muscles comfortable, and the teeth in the neutral zone, then the 5 requirements of occlusal stability can be applied to recognize occlusal instability and treatment plan corrections to fulfill these 5 requirements and arrive at a long lasting stable and comfortable occlusion.