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## Principles of Dynamic Force Redistribution (Equilibration) Checklist

### **A. Begin with the End in Mind**

1. Even distribution of bite force throughout dentition.
2. No deflective or flexural force on individual teeth.
3. Balance of arch forces: right to left, front to back.
4. Anterior guidance.
5. Canine rise.
6. Immediate posterior disclusion in excursive movements DTR (Disclusion Reduction Time).
7. Sensory dampening of the neuromuscular feedback loop.
8. Re-establishment of orthognathic driven envelope of function. (Elimination of bite compensation or altered envelope of function)

### **B. Adjustment Principles**

1. Check for percussive forces on anterior teeth:
  - a) Use edge of fingernail and have the patient tap their teeth.
  - b) Consider: heavy occlusion/percussion on front teeth may be the result of posterior deflective interference.
2. Adjust front teeth last. Only after all posterior deflective interferences have been resolved.
3. Adjust ALL contacts on incline planes first.
4. Work to establish cusp to fossa, cusp to marginal ridge contacts.
  - a) Do not adjust cusp tips or contacts in central grooves and marginal ridges until all incline contacts are resolved.
5. If incline contacts are resolved but even force distribution has not yet been established:
  - a) Adjust heavy contacts on cusps, grooves, or marginal ridges.
  - b) Recheck to see if new incline contacts were created.
6. Start considering anterior occlusal forces:
  - a) As posterior forces become refined recheck front teeth using fingernail technique. Forces may be resolved after eliminating posterior deflective forces.
  - b) If not, then begin making adjustments to the anterior as you continue to refine posterior forces, constantly reverifying to make sure new incline contacts are not being reintroduced.
7. Continue process until T-scan readings show even balance and force distribution.



### **C) T-Scan Reading Considerations**

1. A Line - point of initial contact
2. B Line - point of maximum intercuspation
3. C line - first moment of disclusion
4. D Line - total disclusion
5. **A narrow time span A to B** reading is an indicator that muscles are:
  - i) Indifferent to the malocclusion
  - ii) Responding to the force redistribution
    - (a) **Note:** *understanding muscle response (represented by the black line in the force/time scan) is extremely important, especially when dealing with patients suffering with symptoms of TMJ/TMD, chronic facial pain and migraine headaches. The longer the span of initial tooth contact to total force load of the muscle upon teeth, at maximum intercuspation, demonstrates that the musculature is hesitant to load the bite. This occurs when there are heavy or deflective forces (exceeding ligamental support of the PDL) on individual teeth that induce pathology of the neuromuscular feedback loop and alter the envelope of function.*
    - (b) **Note:** *a healthy bite with happy musculature will exhibit a short A to B reading with a steep and steady incline of the black line (time vs. force reading) on the T-Scan reading.*
6. **A long time span A to B** reading is an indicator there is a posterior deflective interference and the muscles are using caution to load the bite (this is an indicator of pathology to the neuromuscular feedback loop).
7. **C to B** reading:
  - i) Healthy muscles with healthy occlusion: will exhibit a steady, consistent black line reading on the scan. The patient will be able to maintain clenching force loads without fatigue or discoordination for the duration of a 2-3 second scan.
  - ii) Heavy anterior occlusion:
    - a) *Remember when back teeth touch it turns on crushing muscles.*
    - b) *When front teeth touch it turns off crushing muscles and turns on small movement muscles.*
    - c) *If your C To B scan shows an early ramp up to maximum force load and a drop off or diminishing decline in muscular contraction (represented in the black T-Scan line), this an indication of heavy occlusion in anterior teeth.*
    - d) *If anterior teeth are mobile due to a history of trauma, readings on the T scan by percentage of force weight may not look accurate because less pressure will occur on the sensor due to displacement of teeth under force load.*



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- e) If you are seeing a decline of force on the time graph, but are not seeing heavy occlusal force load percentages, use the fingernail yet on anterior tooth to see if you can feel the percussion.*
- f) Adjust as needed until the teeth are in occlusion but you are not feeling the percussion in your fingernail bed.*

**Note:** *the ligament of mobile anterior teeth will tighten up over the course of approximately 6 weeks. As ligaments tighten, they will pull the teeth in and up. This may bring the anterior teeth into heavy or traumatic occlusion again. The patient should be informed to return in approximately six weeks for a continuation of adjustments until the traumatic relationship is resolved.*