

BASIC PRINCIPLES

Reviewing and practicing the basic principles of hand-scaling instrumentation is of utmost importance as this technique requires excessive use of small hand muscles, forceful repetitive motions of the fingers and wrist, and maintaining the body in one position for extended periods of time

Musculoskeletal disorders (MSDs) are significant occupational health issues for dental practitioners as awkward postures are often adopted by clinicians due to improper adjustment of the clinician's chair, improper patient position in relation to the clinician, incorrect positioning of dental equipment and incorrect working techniques.^{1,2}

NEUTRAL POSITION

The recommended clinician position is called neutral balance seated position³ and requires that the seated clinician use a neutral spine position to maintain the natural curves of the spine. This position is established first and then everything else is adjusted to facilitate maintenance of this balanced position. See Figure 1.

The recommended patient position for dental treatment is the supine position, but only if the patient has no medical contraindications or physical limitations.³ The patient should be asked to adjust his or her head position to meet the needs of the dental practitioner.

ERGONOMICS

Ergonomics is defined as "an applied science concerned with the "fit" between people and their technological tools and environment."³ Following and implementing the principles of ergonomics will help reduce stress and eliminate injuries and disorders associated with the overuse of muscles, bad posture, and repetitive tasks during hand-activated periodontal instrumentation.^{2,3}

Ergonomics in the dental office starts with the clinician assuming a neutral, balanced body position and then adjusting the patient's position and the dental equipment to avoid awkward postures and the overuse of certain muscles.³

CLINICIAN & PATIENT POSITION



Figure 1. Neutral Balanced Clinician Position

PERIODONTAL INSTRUMENTS

Periodontal instruments are divided into two major categories: assessment instruments, which include the mouth mirror, periodontal probes, and explorers; and calculus removal instruments, which include sickle scalers, curets, and periodontal files. Each instrument has a different function, indicated by its design characteristics.³⁻⁵

Clinicians should select instruments that are designed according to ergonomic specifications and consider the design characteristics of the handle, shank, and working-end instead of choosing instruments based on their personal preferences.

ADEQUATE SUPPLY OF PERIODONTAL INSTRUMENTS



1. Having an explorer with a design-type for root surface assessment, such as an 11/12 and Orban will help you with subgingival calculus detection since you have to rely on the sense of touch



2. Having a combination of different types of instruments provides a better access to sulcus and periodontal pockets while minimizing trauma to the surrounding tissues



3. Working with sharp instruments instead of dull instruments will minimize wrist strain and hand fatigue.

INSTRUMENT GRASP & MOVEMENT

The modified pen grasp is the recommended method for holding a periodontal instrument since it allows for precise control of the working-end, a wide range of movement, and good tactile sensitivity and conduction.²⁻⁴ This type of grasp requires precise finger placement on the instrument. Incorrect or split fulcrum makes it difficult to control the instrument, reduces hand stability, and stresses the muscles of the hand.

Wrist-rocking motion is the recommended technique when using intraoral fulcrum.² This motion activation involves moving the hand, wrist, and arm as a unit to produce the pivoting and rotating motion necessary to move the working-end across a tooth surface.

MODIFIED PEN GRASP & WRIST MOTION

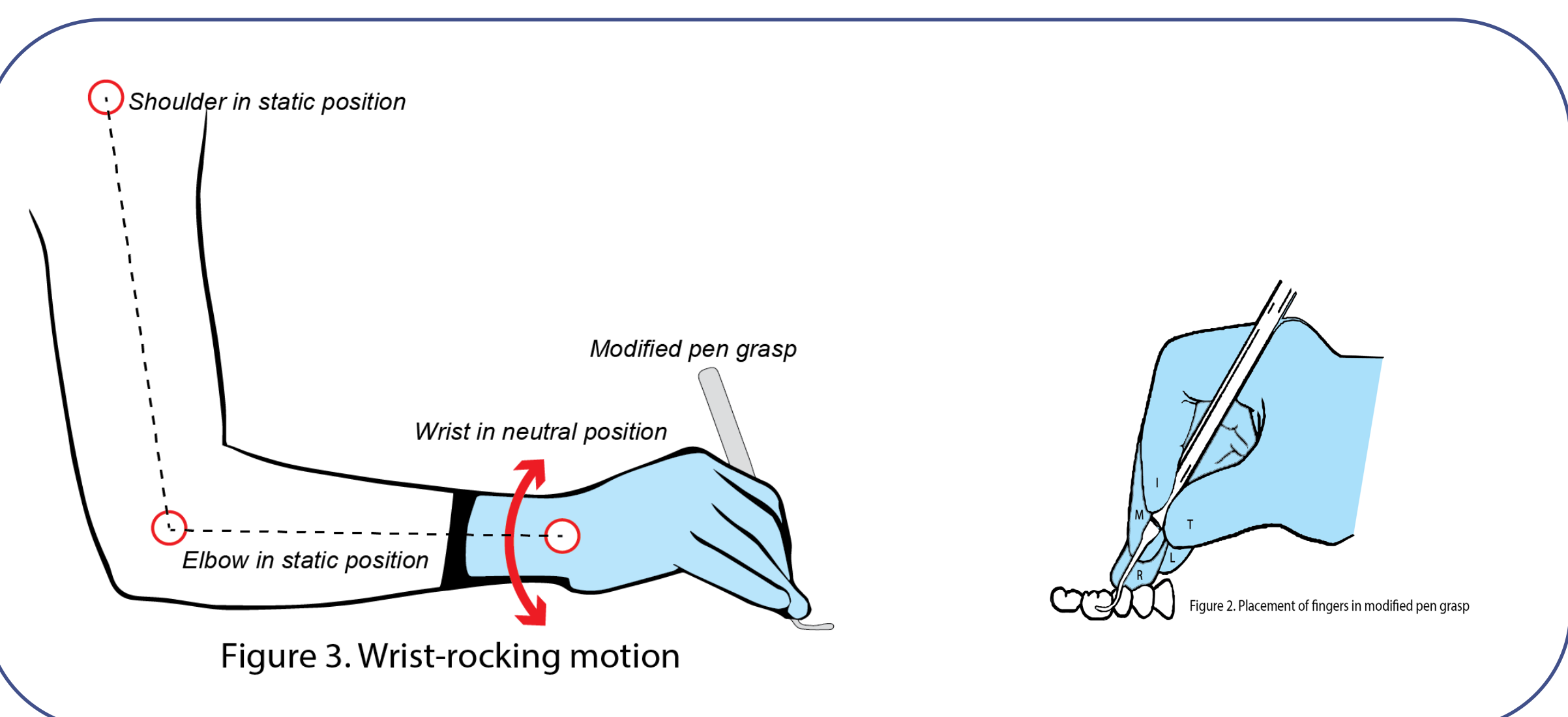


Figure 3. Wrist-rocking motion

RECOMMENDATIONS

1. Apply pressure on your fulcrum, NOT in the "pinch force"
2. Establish proper face-to-tooth surface angulation
3. Adapt the cutting edge of the instrument, this results in being able to successfully remove calculus deposits with fewer strokes and less "pinch force"
4. Relax fingers between strokes
5. Keep your instruments sharp, dull instruments increased the likelihood of musculoskeletal stress

REFERENCES

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