

## Strategies for injury prevention to the hands and arms while scaling

The following recommendations are worth consideration for implementation while practicing to help prevent pain and injury to a clinician's hands and arms and to enhance scaling efficacy with biomechanical and ergonomic principles.

- Establish a modified pen grasp where the thumb and finger oppose one another and the instrument handle is visible between the fingers
- All fingers should work together as a unit while scaling
- Use wider, lighter instruments to reduce excessive pinch force
- Always establish a neutral hand, wrist and arm position while scaling
- Orient the instrument with the tooth surface to be instrumented taking into consideration the angulation of all teeth
- Keep the instrument parallel to the long axis of the surface of the tooth being worked on. This will encourage a neutral hand, wrist and arm posture
- Utilize intraoral and extraoral fulcrums to enhance a neutral position of the hand, wrist and arm
- Avoid flexion and extension of the hand as much as possible while scaling
- Avoid sustained awkward wrist postures to prevent carpal tunnel syndrome
- Practice palm up fulcrums as often as possible and avoid palm down fulcrums that increase strain on the hand and wrist
- Establish a "built-up" fulcrum keeping fingers together as a unit while scaling
- Keep the ring finger straight, with the tip of the finger supporting the weight of the hand when using intraoral fulcrums
- Pivot on the fulcrum finger to support the hand to allow for hand repositioning
- Utilize advance reinforced fulcrums using intraoral and extraoral rests to gain access to root surfaces and to prevent hand stress and strain
- Incorporate the non-dominant hand by pressing on the instrument for more lateral pressure, power and precision
- Implement thumb-to-thumb reinforcement for more stability and precision and to engage the use of the larger muscle groups in both arms while scaling
- Consider bringing the elbow out and over the patient at times to keep wrist in alignment with the long axis of the forearm
- Keep hand neutral to prevent radial and ulnar deviation while scaling
- Utilize fulcrum pressure equal to the pressure of the instrument blade against the root surface being scaled
- Increase fulcrum pressure if slipping or lack of lateral pressure occurs
- Implement pull strokes instead of side to side rocking strokes in order to enhance instrument placement to the epithelial attachment and reduce repetitive motions
- Use sharp instruments to minimize lateral pressure and number of strokes
- Consider utilizing instruments with wider handles to reduce pinch force
- Consider using sharpen-free instruments to always have sharp instruments which will help to reduce repetitive strokes
- Make every stroke count to reduce repetitive motion injuries
- Implement intermittent rests between strokes to prevent pain and injury
- Listen to your body and take mini-breaks to avoid prolonged, static postures
- Stretch hands, arms and upper body routinely to prevent pain and injury