

Neck, Back & Beyond: Evidence-based Strategies to Prevent Pain & Extend Your Career

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The Problem

- Brief history of dental ergonomics
- Impact of CTDs

Signs & Symptoms of CTDs (Cumulative Trauma Disorders)

- Decreased strength or range of motion
- Pain or stiffness
- Numbness or tingling in hands or feet
- Swelling or inflammation
- Shooting or stabbing pain in arms/legs

Contributing Risk Factors in Dentistry

Microtrauma Resulting from Prolonged, Static Postures

- 1.
- 2.
- 3.
- 4.

Safe Postural Working Range (SPWR)



- 1) Head posture: 0 – 20 degrees
- 2) Forward arm reach: 0-25 degrees (≥ 15 degrees requires armrests)
- 3) Forearms parallel to floor, or angled upward 10 degrees
- 4) Hip angle 105 – 125 degrees

PREVENTING LOW BACK PAIN



Two key strategies to maintain the lumbar curve & operate within the SPWR:

1. Hip angle & operator stool adjustment/selection
2. Patient Positioning for upper arch

Patient Positioning: (upper arch)

- Recline the patient to supine position
- Adjust the double-articulating headrest to angle up into the occiput. The occlusal plane of the upper jaw should be up to *20-25 degrees backward* in relation to the vertical plane.
- If using flat headrest, ask the patient to scoot to end of headrest and position with contoured dental cervical pillow (Crescent Dental)
- Position the patient chair so forearms are level or sloping 10 degrees upward. May also be determined proprioceptively.
- Rotate or sidebend the head to view the treatment area.

Traditional Operator Stool Adjustment & Features

- Cylinder height (short, med or tall)
- Adjustable backrest –should not extend above the lower edge of shoulder blade. 8-10 “ high backrest is very adequate to provide lumbar support.
- Textured seat material – place a square of rubber shelving material on seat if worn smooth
- Tilting seat pan – tilted from 5-15 degrees forward
- Lumbar support – should be contoured to fit the shape of the low back
- Armrests (recommended for microscope users, pregnancy, and operators with short arms)

Stool Modifications

- Tall operators – tall cylinder, deep seat pan (≥ 17 ”)
- Short operators – short cylinder, adjust backrest forward, short seat pan (≤ 15 ”);
- Non-tilting seat – retrofit with wedge cushion

Saddle Stool Adjustment

- Adjust seat flat for most users. For users with hyper-lordosis (excessive curvature of the low back), tilt the seat slightly backward. For users with flattened lordosis (no low back curve), tilt the seat slightly forward.
- Adjust the height till the thighs slope downward at a 45 degree angle.
- Adjust armrest height



PREVENTING TENSION NECK SYNDROME

Symptoms include pain and tenderness in the neck and trapezius muscles, between the shoulder blades, and often accompanied by painful muscle spasms or trigger points.

Strategy to operate within SPWR for the head and neck

- Well-selected & adjusted magnification
- Head posture should be ≤ 20 degrees

Magnification Systems

- **Through-the-lens (TTL) loupes (pantoscopic tilt frame)**
- **Flip-up loupes (vertical slide adjustment)**

Ergonomic criteria for selecting loupes

1) Working Distance

Distance from eye to working surface.

2) Declination Angle

The angle at which the scope is inclined downward toward the work area.

3) Frame Size

Affects where scope is placed in relation to pupil.

RESOURCES

Books

Valachi, B. “*Practice Dentistry Pain-free: Evidence-based Strategies to Prevent Pain and Extend your Career.*”

Available at www.posturedontics.com

Finkbeiner, B. *4-Handed Dentistry: A handbook of clinical application and ergonomic concepts.*

Articles

Valachi, B. Over 50 articles on dental ergonomics at www.posturedontics.com

Hokwerda O, Ruijter R, Shaw S. Adopting a healthy sitting working posture during patient treatment. July 27, 2006. PDF download at www.optergo.com.

DVDs /Continuing Dental Education at www.posturedontics.com

Valachi, B. “*Positioning for Success: Ergonomic Guidelines for the Entire Dental Team*” DVD. Patient and operator positioning, stool adjustment, loupes exercise, wheelchair transfers . **Earn 2 CEUs**

Valachi, B. “*Smart Moves in the Operator: Chairside Stretching*” DVD kit with laminated stretching wall charts. **Earn 2 CEUs**

Valachi, B. **NEW!** “*Smart Moves for Dental Professionals on the Ball*” DVD kit with elastic exercise bands/door anchor and ball. **Earn 2 CEUs**

Valachi, B. “*Neck, Back & Beyond: Preventing Pain for Peak Productivity*” lecture DVD. 2 ½ hour lecture with over 100 slides interspersed throughout. **Earn 5 CEUs**

Operator Positioning Aids

Ergonomic wedge seat cushion: www.posturedontics.com

Patient Positioning Aids

Crescent Dental Products: www.crescentproducts.com (neck, lumbar, knee cushions)

Ergonomic Product Reviews

Unbiased reviews of operator stools, loupes, patient chairs, etc... at www.posturedontics.com

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About the Speaker



Bethany Valachi, PT, MS, CEAS is a physical therapist, dental ergonomic consultant and author of the book, ***“Practice Dentistry Pain-Free: Evidence-based Strategies to Prevent Pain and Extend your Career”***. She is CEO of Posturedontics®, a company that provides research-based dental ergonomic education and evaluates dental products. As clinical instructor of ergonomics at OHSU School of Dentistry in Portland, Oreg., she has provided expertise on dental ergonomics to faculty and students at numerous dental universities and hygiene schools, including faculty training at NYU College of Dentistry. As a certified ergonomic assessment specialist, she also consults with practicing dental professionals to improve ergonomics, work more comfortably and extend their careers with preventive strategies both in and outside the operatory.

A member of the National Speaker’s Association, Bethany lectures internationally, and is widely published in the *Journal of the American Dental Association (JADA)*, *Australian Dental Practice*, *Contemporary Oral Hygiene* and numerous other peer-reviewed dental journals. Bethany is author of the ADAA Ergonomic Home Study Course, contributing author to Anna Pattison’s new dental hygiene textbook and has produced chairside stretching and home exercise videos specifically for dental professionals. She lives in Portland, Oregon with her husband, Dr. Keith Valachi, who operates a private dental practice in St. Helens, Oreg.

She welcomes visitors to her website at www.posturedontics.com, where she offers supplemental dental ergonomic education and free newsletters.