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Ergonomics for Dental Students

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Introduction

Visit any shopping center and you'll find a number of products labeled, "ergonomic," from can openers bearing squishy handles, to dog food bowls on elevated platforms so that Spot doesn't need to stoop for breakfast. What does "ergonomics" mean and why should dental students care?

In Greek, "Ergo," means work and, "Nomos," means natural laws or systems. Ergonomics, therefore, is an applied science concerned with designing products and procedures for maximum efficiency and safety. Ergonomics modifies tools and tasks to meet the needs of people, rather than forcing people to accommodate the task or tool.

Consider how ergonomics might positively impact dentists throughout their professional lifespan. According to an article published in the January 2005 issue of *JADA*, more than 70 percent of dental students reported neck, shoulder and lower back pain by their third year of dental school. Dentists and dental students often assume awkward physical positions while providing treatment to (a) get a better view of the intraoral cavity; (b) provide a more comfortable position for the patient; and/or (c) operate equipment and reach for instruments and supplies.

Posture isn't the only concern. Because so much of dentistry requires skilled, steady hands, dentists can experience difficulties with hand pain. And because even dental students have a life outside of dentistry, everyday habits can add to the stress on your body and well-being.

One term to get to know is Musculoskeletal Disorder (MSD). MSDs include a number of conditions, such as carpal tunnel syndrome, that involve nerves, tendons and muscles. At one end of the spectrum, an MSD can be mild and infrequent; at the other end, MSDs can be severe, chronic and debilitating. Fortunately, good ergonomic practices can drastically reduce the likelihood that an MSD will slow you down.

Ergonomics and Posture

Tilting sideways, twisting, bending forward and slumping are all poor posture habits that increase the likelihood of MSDs. Good posture means sitting or standing upright, rather than leaning or hunching.

To improve your posture in a clinical environment:

- Position the patient so that your elbows are lower than your shoulders; keep your wrists even with or lower than your elbows.
- Adjust the patient's chair when accessing different quadrants.
- Alternate between sitting and standing.
- Place instruments, materials and medications within easy reach.
- Take breaks! Pausing briefly and frequently can minimize fatigue and the risk of MSDs.
- Schedule patients so that you alternate between long, difficult cases and short, easier cases.

Use a surgical magnification system when necessary. It should allow for a comfortable posture while maintaining a close view of the task at hand.

Ergonomics and Hands

Clinical dentistry involves grasping small tools, holding vibrating handpieces, and performing repetitive motions. For these reasons, keeping your hands comfortable and injury-free is vital to success in dentistry.

The ADA, in collaboration with the Occupational and Safety Health Administration (OSHA), has prepared an informational tip sheet about hand pain, available as a free PDF at www.ada.org/goto/wellbeing. The tip sheet includes helpful photographs that illustrate good and bad techniques for holding instruments, along with suggestions to minimize the likelihood of hand pain. Some of the recommendations include:

- Stretch your wrists and fingers, especially the area between the thumb and index finger.
- Stabilize your hand by resting your elbow on the chair's back or arm.
- Use hand instruments with larger-diameter handles—a larger handle distributes pressure across a larger group of hand muscles.
- Use full-arm motions rather than wrist strokes when possible.
- Avoid coiled cords and hoses—the tension transfers to the hand when you stretch the cord
- Wear gloves that fit and don't restrict movement.

If you experience hand pain for an extended time, get an evaluation from a physician. Many MSDs can be treated conservatively by modifying activities or using splints or anti-inflammatory drugs. Early intervention can reduce the necessity of steroid injections or surgery.

Ergonomics and Everyday Life

Stress is cumulative, so ergonomic principles are just as important outside of the clinical environment. By making adjustments as necessary to your work and play, you can reduce the likelihood of MSDs.

- When sitting at a desk, adjust your chair so that your thighs are parallel to the floor
- When using a computer keyboard, use the padded wrist rest while taking a break, not while typing.
- Monitor your time spent text messaging or playing video games to avoid "Blackberry Thumb."
- Holding your phone between your shoulder and ear can lead to a host of upper body difficulties—use a hands-free device whenever possible.
- Use caution when carrying groceries— carrying multiple plastic bags at once can strain fingers, wrists and elbows. A heavy, plastic bag can concentrate stress in a small area of your hand, increasing the likelihood of injury or damage.
- Some emergency rooms have begun referring to "bagel hand" when describing the ligament and tendon damage they see from bagel-slicing injuries. It is best to lay the bagel flat on a table with your hand flat on top for stability. Use a serrated knife to slice halfway through the bagel. At the halfway point, stand the bagel on its end and finish slicing downward while holding the upper, sliced half.

Ergonomics and You

Risk factors for MSDs affect everyone differently. Two dental students may be exposed to the same risks, at the same degree of intensity, and one will develop an MSD and the other will not. We don't fully understand all of the reasons why this is true.

We do know that many MSDs are cumulative, building up over years or decades. A poor ergonomic choice may not impact you today or even a few years down the road. But over a lifetime, that poor ergonomic choice could result in pain or injury, impacting your productivity and earning potential. Good habits, adopted early, are your best strategy when it comes to ergonomics.

Ergonomics and the ADA

The ADA is one of many organizations that has signed a voluntary agreement with OSHA as part of an arrangement known as the OSHA Alliance. As part of this agreement, the ADA is committed to providing dentists with the information they need to make smart ergonomic choices.

The ADA maintains a series of ergonomic resources online at www.ada.org/goto/wellbeing. And you can access the OSHA website at www.osha.gov where you will find:

- Compliance Assistance Web Page
- Compliance Assistance Quick Start
- Electronic Assistance Tools

Questions About Ergonomics?

For more information, contact the ADA Council on Dental Practice at 1-800-621-8099 ext .2895 or via email at dentalpractice@ada.org.