

TECHNICAL PROFILE

AN INSIDE LOOK FROM THE MANUFACTURER

RGP Dental Addresses Ergonomic Factors Affecting Dentistry

Four-handed dentistry, widely adapted in the United States in the 1960s to address fatigue and discomfort associated with single-person techniques, has given rise to new and unanticipated health concerns. While American dentists were adapting to the new practice of sitting during dental procedures, proper seating techniques were being researched and implemented in Europe to help slow the rising tide of costly injuries. These advancements were largely neglected in the United States, where private-practice dentists dominated the landscape and, without a viable alternative, dentists were forced to accept the higher injury rates as a “cost” of the profession.

After experiencing the benefits of improved ergonomics in Europe, RGP Dental Inc was founded in 1996 to introduce ergonomic seating to the US dental profession. In the 1980s and 1990s, the US Occupational Safety and Health Administration (OSHA) conducted extensive studies that resulted in the introduction of the OSHA Ergonomic Standard in 2000. These elaborate studies focused on the causes and factors that led to ergonomic injuries associated with musculoskeletal disorders (MSDs). The studies identified common factors that, alone or in combination, were considered to have given rise to higher incidences of MSDs.

In 2004, in its first report on the subject to the ADA Council on Dental Practice, the ADA Ergonomics and Disability Support Advisory Committee (EDSAC) concluded that typical occupational risk factors leading to MSDs included repetition, force, mechanical stress, and posture. At that time, RGP Dental Inc adapted its product design guidelines to ensure that all new RGP products were designed to either eliminate or lessen the practitioner’s exposure to these common risk factors as follows.

REPETITION

All RGP stools are designed to be intuitive, fully-adjustable, and possess a “free-float” position to allow “active seating,” or movement, by the practitioner during dental procedures. This allows unrestricted, supported movement during repetitive procedures, resulting in less muscle inflammation and increased blood flow (Figure 1). The ability to easily adjust the stool and lock it into any position ensures that the practitioner does not sit static for long periods of time.

FORCE

Force is the mechanical or physical effort to accomplish a specific movement or exertion. In the case of dentistry, the amount of force required can be exponentially

increased as the arms are elevated more than 30° from the body’s trunk. RGP’s stools (both Relax and Hydro) support the arms and allow unobstructed movement as the stools maintain their position well within the 30° “caution-zone” (Figure 2).

MECHANICAL STRESS

Mechanical stress is defined as impingement or injury by hard, sharp objects, equipment, or instruments when grasping, balancing, or manipulating them. For example, mechanical stresses are encountered when working with the forearms or wrist against the edge of a desk or work counter. RGP’s product guidelines ensure the elimination of mechanical stress by design and function. All surfaces are designed to “cradle” the practitioner, while supporting them during their procedures.

POSTURE

Current research indicates that 85% of dental professionals are suffering from the pain and discomfort of a musculoskeletal disorder and 30% are retiring prematurely as the result of a musculoskeletal injury.^{1,2} Dating back to the origin of the dental profession, dentists primarily stood during all procedures; this changed as studies began to show the deleterious effect of standing during treatment. Unfortunately, since dentists have begun sitting, musculoskeletal injuries of the upper extremity and low back have remained prevalent and problematic.³

Two of the primary causes of musculoskeletal injuries are static positioning and poor posture. Regrettably, these two risk factors occur on a consistent basis with dental professionals. A forward-slouched position is one of the most common postures observed and this increases pressure on the discs in the back, thus increasing risk for injury. The human body is not made to sit in a static position for a long period of time. The spinal discs require changes in pressure to receive proper nutrients and remove waste products. Therefore, no matter how good it feels,

sitting in a static position for a long period of time is detrimental and can promote long-term degenerative disc disease.

To minimize the risk of injury, frequent positional changes and preservation of a neutral posture are essential for the dental professional. Even with the strongest core, an individual sitting for 8 hours cannot maintain correct posture all of the time. Consequently, it is necessary to have equipment to support the structural components of the body to safeguard against injuries. For the dental stool, this should provide an adequate amount of support from the back rest to maintain the normal lordosis curve but not so much pressure that the result is hyperlordosis or an increase in lumbar curvature. The seat base should provide tilt options to assist with positioning of the pelvis into an anterior tilt, which promotes a neutral posture of the spine. Free-float options on the stool allow for frequent positional changes within the work environment. RGP Dental Inc is one of the only stool manufacturers that has designed equipment that meets these characteristics and promotes a safer and more efficient work environment for the dental professional.

REFERENCES

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3. Visser JL, Straker LM. An investigation of discomfort experienced by dental therapists and assistants at work. *Aust Dent J.* 1994;39(1):39-34.

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Relax Armrest

Hydro Armrest

Figure 1 Free-floating 400-D stool.

Figure 2 RGP articulating arm rests.

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