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# OCCUPATIONAL ALERT

Release Date:	August 14, 2006
Principle Researcher:	<b>Jackie Pickering, CRC</b>
Occupation:	Dentist and Dental Hygienist
Update:	<p>Scaling and other repetitive procedures have long been considered a major cause of CTS and other repetitive stress issues for professionals in the dental field. The advent of ultrasonic scalers was seen as a great opportunity to eliminate this issue, until discussion regarding the negative effects of vibration. A 2004 study determined the effects of finger rest positions on hand muscle load and pinch force in simulated environments seem to ease some concerns. Dr. Meador, DDS, developed the BioCentric Technique (BT), which places the back of the hand in a vertical plane with the palm to the side, a neutral position for the rotational motion of the elbow.</p> <p>Dr. Meador 's first strategy involves keeping the joints (shoulder, elbow, and wrist joints) in a neutral position as much as possible during instrumentation. The second strategy entails maintaining flexibility for shifting the workload to different muscle groups, which allows the operator to work indefinitely without fatigue (because each muscle group has fresh energy to continue the task). This includes combinations of instrument grasp, finger rests, chair position, and power strokes. BT employs three instrument grasps: the standard/modified grasp that has been used for many years, the conventional and the extended. In the conventional grasp, the instrument is held between the pads of the first two fingers at a 90-degree angle to the long axis of the forearm (LAOF), whereas the extended grasp uses the pad of the middle finger and the "notch" at the base of the forefinger, with the instrument held at a 30-degree angle to the LAOF. The ideal grasp is within this 60-degree zone between the two positions, allowing for a great deal of flexibility for the operator. The BioCentric Technique is a full-arm motion technique. The goal of power strokes - including rocking, pumping, swinging, and push-pull - is to use the large and durable muscle groups of the arm and shoulder rather than those of the forearm and hand only. The third strategy involves varying positioning of the patient chair to allow varied positioning of the dental professional.</p>
Select References:	<p>Dong, DDS, M.P. H.; Alan H. Barr, Engineer in Ergonomics; Peter Loomer, DDS, Ph.D.; David Rempel; MD, MPH - Journal of Dental Education, April 2005.</p> <p>Harold L. Meador, DDS - Ergonomics: Pain Management vs. Pain Elimination, RDH, February 2006</p> <p><a href="http://www.jdentaed.org">http://www.jdentaed.org</a></p>