With popularity of the television show "Mad Men," 1960's themes such as smoking are memorialized, as are once-common habits such as smoking. Women were marketed in the 1960s with their own cigarette brand that had the catch phrase, "You've come a long way, baby." Following release of Smoking and Health. Report of the Advisory Committee to the Surgeon General of the United States, all smoking-related advertising was banned from TV in 1970.2

Sit-down dentistry also evolved in the 1960's. "You've come a long way, baby" is gone from advertising, but it remains an accurate slogan when it comes to ergonomics in dentistry. We have come a long way, but for many dental professionals, that's still not far enough.

In 1997, pilots developed the concept of the checklist after planes began crashing. Dental professionals may not be crashing in the literal sense, but many clinicians have been forced into early retirement because of musculoskeletal disorders (MSD) or continue to try to work through them. By incorporating a checklist concept similar to that used by air crews, pilots, and race car drivers, dental professionals can be more successful, productive — and able to practice without pain.

Pain in dentistry

Pain of dentistry is a common fear that keeps patients away from the dental office. Pain in dentistry is caused by or nothing to do with the patient. The individuals having pain in dentistry are the practitioners. It is estimated that more than half of practitioners have some kind of painful musculoskeletal disorder that is work related.4

In 2007, the Center for Health Workforce, funded by the American Dental Hygienists Association (ADHA), conducted a sample survey of licensed dental hygienists about a wide variety of issues, including occupational injury or illness related to their work. It was reported that just more than one-third (33.8 percent) indicated had experienced an occupational injury or illness. Figure 1 shows the types and percentages of occupational injury or illness experienced. More than half (53 percent) used medication to control the discomfort and nearly half (49.5 percent) indicated they had shortened their work hours as a result of their injury or illness.4 Ergonomics evolved as a recognized field during World War II. It is the science of adjusting the work environment to the worker.5 The Occupational Safety and Health Administration (OSHA) has links to ergonomic information.6 The American Dental Association (ADA) published an introduction to Ergonomics7 with suggested interventions and in 2011 published Ergonomics for Dental Students.8 The ADA website has an ergonomics section with links to articles about specific problems.9 Even with numerous articles and CE courses (both in person and online) on ergonomics in the five years since the ADHA survey, OHS continue to escalate. Much of this is because of a hand-me-down mentality in many dental offices. For the safest flight, pilots use many checklists. In dentistry, a one-size-fits-all checklist is not enough to evaluate how we do things because of the wide variety of body types, shapes and preferred work styles. This article will develop checklists for dental-operator seating, just one of the many parts creating a healthy ergonomic environment.

Checklists help find the way

In the days of early aviation, pilots were crashing because they could not reach the controls. Investigation found it was pilot error. Pilot error doesn't necessarily mean the pilot did something wrong; it can mean the pilot wasn't familiar with the equipment or the equipment didn't match the pilot. For those who work in a temporary dental situation at multiple offices, ergonomic challenges are huge. When such practitioners walk into a new office, trying to match each individual needs to the available equipment is nearly impossible. Pilot checklists were developed to match the steps needed for the job, making sure that everything is done and nothing is overlooked. Checklists have become fundamental to the aviation industry.10 In a similar way, checklists should become fundamental to the dental industry.

Two books, The Checklist Manifesto: How to Get Things Right11 by Dr. Atul Gawande, a surgeon, and "Safe Hospitals: The Importance of Endpoint"12 by Dr. Peter Pronovost, discuss checklists as an effective way to reduce medical errors. These books are not just about checklists, they are about the culture of medicine and how the checklist can foster better teamwork. Checklists are starting to become common in the dental setting, but not nearly common enough. It takes a change of culture to adopt something that on the surface can seem so simple — as a core strategy for keeping dental professionals in practice.2 A recent success story illustrates the difference checklists can make in medicine. The intensive care unit (ICU) at a hospital is a crucial part of health care delivery and one of the most complex and expensive. The Centers for Disease Control (CDC) reports that every patient admitted to an ICU experiences some type of complication during his or her stay. One example of checklists in dentistry is the Michigan Keystone Project to make patient care safer in more than 100 ICUs in Michigan. The project targeted the expensive and potentially lethal catheter-related bloodstream infections that cost $8,000 when a patient contracts one and causes 24,000 deaths per year. The Keystone team made a checklist, measured infection rates — and changed hospital culture. There was a 66 percent reduction in this type of infection statewide, saving more than 1,500 lives and $200 million in the first 18 months of the program.9 It was the combination of checklists and the culture of teamwork that made the difference.

Race car drivers and race cars take quite a beating during a race, both physically and mechanically. Like pilots, car drivers need to use checklists. The teamwork of a pit crew during a race is a strategy to watch that is fostered by checklists. Steve Knight, a professional Le Mans race car driver (Fig. 2) and business turnaround specialist, has taken lessons from racing and brought them to dentistry. His goal is to turn around the world of seating for dental hygienists and all dental professionals.

Seating risk factor checklist

Before Knight got into Le Mans car racing there were many considerations to be addressed. An impression of the driver's body is taken to ensure a perfect fit into the seat of the car for optimal performance. This mold creates "proper leg-stretch to reach the clutch, accelerator and brake; comfort in reaching and holding the steering wheel, and most important, the ability to sit comfortably for long periods of time while driving around the race course. Success for a top-level race car driver is driven by a strict regimen for eating, exercise and nearly all activities of daily life so they can be done shape physically. It is the total package, including the racing team and pit crew all using checklists, that creates this success.

The idea of a form-fitting chair may seem so simple — as a core strategy for keeping dental professionals in practice, yet think of the possibilities these same ideas can be brought into the medical setting. The concept of the "Seating Risk Assessment Checklist" table (Fig. 3) is shown in the Michigan Keystone Project to make patient care safer in more than 100 ICUs in Michigan. The project targeted the expensive and potentially lethal catheter-related bloodstream infections that cost $8,000 when a patient contracts one and causes 24,000 deaths per year. The Keystone team made a checklist, measured infection rates — and changed hospital culture. There was a 66 percent reduction in this type of infection statewide, saving more than 1,500 lives and $200 million in the first 18 months of the program.9 It was the combination of checklists and the culture of teamwork that made the difference.

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Recline/incline seating

Passengers are required to sit upright at take off and landing on any plane (Fig. 4). Most passengers can't wait to hear the announcement that the cruising altitude has been reached so the seats can be leaned back for more comfort. Unfortunately, dental professionals tend to sit in this upright position all day. When seated in this position for long periods of time, practitioners both elongate and shorten different muscle groups in the legs. It is a more balanced position, has a better fit completely upright and especially not for a long day in the office. A more comfortable seating position for most is in a reclined position (Fig. 5). Think of your comfortable recliner in front of the television, after a long day of work or the experience sitting in a first-class seat on a plane. Reclining is so very comfortable. This is the way race car drivers sit, but it’s not very practical for treating dental patients.

Now that reclined position and rotate the torso axis to create the inverse position, called an inverted position (Fig. 6). Incline is the automatic position created when sitting on a horse or a saddle stool. It is a more balanced position. This balance helps preserve the hips and spine in the proper position. It is designed for an open back position that is more comfortable, less harmful and allows for proper lumbar cur...
Static vs. dynamic seating

For sitting positions, there are two more checklist considerations. In traditional chairs, the practitioner sits in a static position that does not provide much movement or stimulation. Getting stuck in the same position for an extended period of time can cause muscle imbalance and strain on one side and elongating on the other. This results in misalignment of the spine and joints, and in this case, the hip joint. When a person sits properly on a saddle chair, the pelvis is kept properly positioned and stabilized, so the body naturally and automatically assumes the least-stress position.

Seating materials

A chair can be made of rubber, plastic, leather, mesh or other man-made materials that may or may not be breathable. The materials for a chair can make a difference in comfort depending on the amount of support the patient needs. If there is high humidity in the office, a practitioner might complain about the material of the seat. If there is sweating while sitting, the seat may not allow the legs and back to breathe. These materials can be uncomfortable and/or embarrassing. Asking the manufacturer about options for breathability is the best choice. There are new fabrics that control odor and stain causing bacteria.

With or without arms

Many practitioners wonder if they should have arms on their chairs. The answer depends on how the chair will be used. If the practitioner’s arms are always flapping in the breeze because the patient isn’t seated properly, then arms on the chair will not help. It is imperative for the patient to either lay back in the appropriate position, or the practitioner must stand. One suggestion is to start saying, “I’ll put your chair back and get started.” The practitioner says, “Let’s put the chair back and get both of us comfortable. They are very similar phrases with very different meaning. Patients are not the only ones who need to be comfortable; the best work can happen when everyone is comfortable. How many times during the day do practitioners stop to get comfortable? Usually none. Health care providers often worry more about patient comfort and end up compromising themselves all day long, leading to pain and injury.

Goldthwait theories of seating

Chairs are often inherited from someone else who first felt engaged with a Goldthwait theory. The office chair is one of the most common places we sit for extended periods of time, creating a decreased blood flow to the muscles. Blood flow eventually leads to pain and health issues by delivering oxygen to the muscle and removing waste products from the muscle that otherwise cause localized, intense pain (Fig. 1). A Goldthwait theory is the old story, sometimes it’s no stress short and no matter how much it is adjusted, it is still just not right. Not getting just the position right will lead to pain and other issues. Many companies can exchange the cylinder in a stool, or for different heights to make it just right. Checking with the supplier of the same manufacturer or the stool is the best way to find out if the cylinder can be changed to create a comfortable sitting position. The important lesson is, don’t just try to live with it, it hurts the practitioner, the patients and eventually, the practitioner’s bottom line.

Considerating alternative seating

May be the best choice. Creating a checklist for buying a new chair (Table 2) can help you find the best one for your needs. A chair may need to be included because some chairs can’t be easily moved, which can fit other issues also play a part. Some patient chairs are extremely wide, or our patients can be very broad. This can make it impossible to work close enough when seated in a traditional stool. The arm of a traditional stool allows much closer access to the patient, so tasks like taking X-rays can be more easily done.

The professional should not have to reach more than 15 inches. The light, instruments on the bracket tray, the handpieces, the computer or anything needed for patient care should be close to hand. So setting the chair high enough away from the walls, the equipment should be placed at a height that the arm of a chair can reach. The professional should not have to reach more than 15 inches. The light, instruments on the bracket tray, the handpieces, the computer or anything needed for patient care should be close to hand.

Checklists and the culture of teamwork

Hospitalchecklists are saving lives and money. Pilots use several different checklists for every flight to prevent error and crashes. Winning race car teams and race car drivers use checklists for every crucial check. Dentistry can use checklists to great advantage. It can reduce the number of errors and help keep the dental team safe. Checklists are a necessary part of a healthy and ergonomic armamentarium.

References

17. Gilkey, D. Occupational Ergonomics. Available at: www.rnctm.coastalstate.edu/webtec

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Questions to ask

Does the seat suit your body shape? What kind of height adjustment do you have? What kind of hand support? Does the chair have at least five casters? Is the chair static or dynamic? Which is best for the individual? Do your patients love the chair? How will the chair fit with your patient chair? Does the company have fabric options? Is the chair reflux resistant? Can young patients use it? Does the manufacturer offer an opportunity to try it for a few days before you buy it?

Table 2. Checklist for buying a new chair

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Figure 4. Traditional upright seating. Notice how this causes a stretching in the thigh muscles. (Drawing/Provided by Crown Seating)

Figure 5. Reclined seating

Figure 6. Inclined seating

Table 3. Seating Risk Assessment Checklist (Table adapted from the Occupational Safety and Health Administration’s Checklist for Ergonomic Risk Factors)