

PROLONGING YOUR CAREER:

Why Ergonomic Design Matters for Eye Care Providers

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“Ergonomics” is not always the first word that comes to mind when eye care providers are planning and setting up their facilities – but it should be much higher on the list of priorities for today’s ophthalmology and optometry practices. Research across multiple medical fields has shown more healthcare providers are experiencing chronic musculoskeletal disorders as a result of hours spent hunched over examination equipment, twisting to reach tools and instruments, or sitting with their knees and elbows at awkward angles during procedures.

Eye care practitioners are particularly vulnerable to this kind of strain and injury, as they perform repetitive tasks requiring fine motor control and close visual focus daily, often under stressful circumstances. These tasks can increase muscle tension in the head, neck, spine and upper extremities, and certain types of equipment in the office, examination room, or surgical suite can require providers to maintain an uncomfortable range of body positions while working in order to accommodate the patient.

It might seem like a brief amount of time to perform these contortions based on the total time spent with each patient, but over the years, this continued strain on the body can cause decreased range of motion, loss of function in critical areas like the hands or neck, reduced grip strength, swelling, cramping, and even permanent musculoskeletal damage.

“Ergonomics is the process of designing or arranging workplaces, products, and systems so that they suit the professionals who use them. This is in sharp contrast to the typical hospital design that assumes that one size fits all.” - IJO

The good news is that that your career doesn’t have to end as a result of years of hunched shoulders and misaligned spinal columns – and you can repair and even prevent this damage from occurring in the first place. Simple adjustments to the daily routine, equipment, and overall health

and well-being practices can make all the difference for a healthier, happier, and more productive career in ophthalmology or optometry.

Musculoskeletal Disorders Among Eye Care Practitioners

A wide range of musculoskeletal disorders (MSDs) are causing more and more optometrists and ophthalmologists to lose valuable time in the office that could be spent caring for patients. In some cases, the damage caused by these small but critical daily movements can even cut a successful career short if not addressed and adjusted in time.



of ophthalmologists have been diagnosed with neck and spine pain



have reported neck/spine pain



have had to curtail their practice as a result of these injuries

More than half of all ophthalmologists and optometrists have experienced at least some signs or symptoms of an MSD, and more than one-third have changed their techniques to avoid further injury. The three most commonly affected areas are the neck, the shoulders, and the back and spine. All of these areas can be impacted depending on how the physician is positioned throughout the day, every day, over many years.

Many doctors have reported experiencing neck pain while operating or using a slit lamp for ophthalmological procedures, and some have had to reduce their number of daily

examinations, surgeries or even quit operating as a result of this chronic pain. The “slit lamp slump” can be a particularly challenging position to overcome, which causes repeated flexion and extension of the neck as the physician leans into the instrument during examination. This motion pushes the neck out of alignment and can result in chronic pain and severe spasms.

In the shoulders, doctors who spend extended periods of time holding their arms bent too high, too low, or completely unsupported during procedures have experienced issues such as tendonitis. In addition, tightness in either the neck or shoulders can affect the other and lead to a constellation of interrelated issues.

The hips and low back can develop problems as a result of poor postures. Tight hip flexors and hamstring muscles can both create stresses in the pelvic area. Some providers have also developed chronic back pain and even disk herniation from standing or sitting in unbalanced, awkward positions for long periods of time throughout the day.

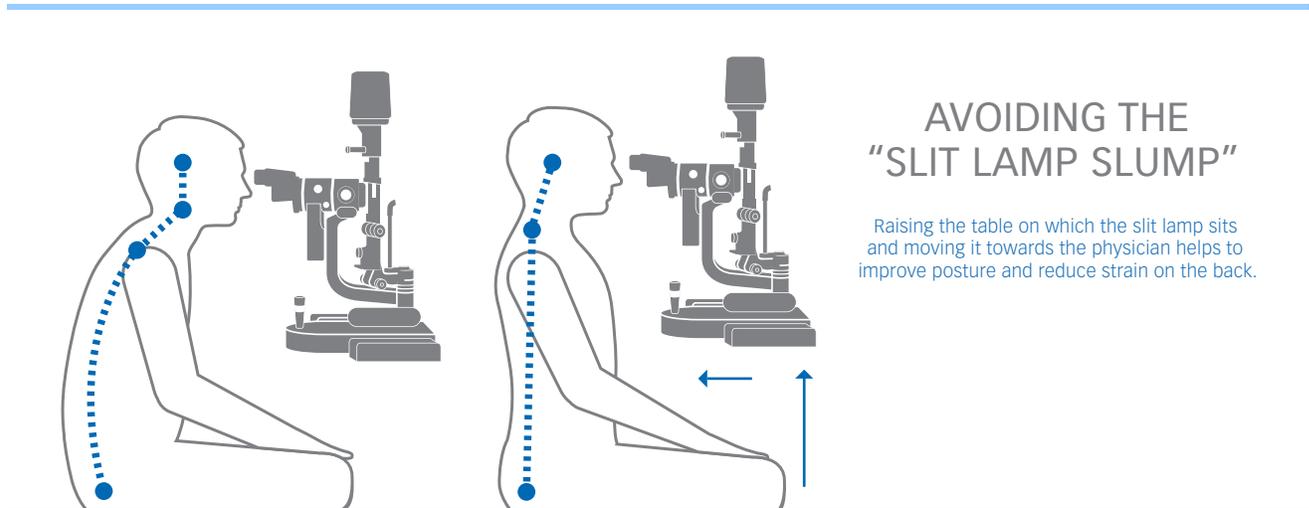
Even procedures performed while seated can cause issues due to the position of the microscope’s foot pedal. If a physician is seated and cannot reach the foot pedal without angling their thighs towards the floor, it becomes much more difficult for the musculature to stabilize the spine,

leading to potential long-term damage.

Beyond day-to-day practices, gender also impacts how eye care providers experience MSDs. With a growing percentage of women ophthalmologists in the industry, this issue has never been more important. It’s necessary for these physicians to find equipment and office layouts that fit their needs, which may not have been considered as part of previous equipment design.

In a recent study, women eye care providers were more likely to report neck pain, upper extremity pain, and muscle weakness. This could be due to the women’s smaller overall stature, shorter arms requiring them to reach further, or even clothing that needs to be accommodated: differences that men may not have to adjust for when using equipment like slit lamps.

The ongoing study of ergonomics has impacted everything from how office workers stand or sit at their desks to the angles at which grocery employees scan items at checkout, but even simple changes may require a substantial learning curve for eye care practitioners. Fortunately, new adjustments in the design and structure of office and procedure equipment, as well as customizable elements, have made it easier for providers to position themselves more comfortably – and prevent MSDs in the process – without sacrificing the quality of their care.



“The patient [may] be a little uncomfortable for two minutes, once a year, instead of the physician being in that awkward position many times every day.” - Martin Wand, MD

Avoiding the Slit Lamp Slump

One of the most common and pervasive culprits of MSDs among optometrists and ophthalmologists is the slit lamp, used in daily examinations and other procedures. One key adjustment to improve user posture is to modify the table on which the slit lamp sits, moving it closer to the examiner than the patient, and to raise the patient chair up to the doctor's eye-level, instead of the other way around. Today's patient chairs are also designed to sit lower, so doctors can keep their knees bent at a comfortable 90° angle.

Not only does the patient need to be vertically aligned with the physician when using a slit lamp, the horizontal distance between them should also be taken into consideration. The physician should be able to get as close to the patient as possible during the exam so they don't have to hunch over the equipment to see clearly. The table used for slit lamp exams therefore can play a critical role in ensuring proper posture.

THROUGHPUT TIP: *Technicians can make equipment adjustments between patients before the doctor enters the room, based on existing requirements provided for each doctor in the practice.*

Slit lamps that include tables can be more ergonomically sound because they usually include built-in power and lamp controls in more easily accessible positions. Traditionally on many slit lamp tables, the on/off switch and brightness control are found under the table, which requires awkward reaching for the doctor to make adjustments. A more ergonomic design would provide adjusters that are at the bottom right side of the table, closer to the patient's left hand for easier access.

The position of the light intensity adjustments for the slit lamp can also play a role in providing a more comfortable position during use. If you are still using an older slit lamp that has a tungsten bulb, consider retrofitting or looking for new equipment with an LED lamp, which will have controls that are easier to reach, instead of positioned under the table.

A well-designed exam lane will also ensure the attached table is as thin as possible with rounded edges for the comfort of both the doctor and the patient. If the table is too thick, or has a sharp rectangular edge, it could hit the leg of either individual in uncomfortable positions, making it difficult to get close enough for a thorough examination.



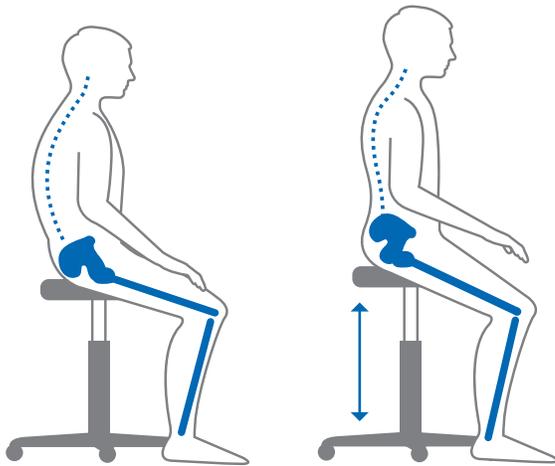
Adjusting the viewing angle 20° on the slit lamp allows the physician to maintain a more natural neck position.

Finally, look for accessories that allow for the viewing angle of the slit lamp to be adjusted by up to 20°, so the physician can position his or her neck more naturally when using the slit lamp. This adjustable angle might require sitting higher up in order to maintain a natural neck position, but this can be addressed by adjusting either the slit lamp table or both of the chairs as needed.

Ideally, the equipment should be set up with the doctor's comfort in mind, with adjustments made only to the patient's position during an examination to meet the doctor's preferred setup. This can be a challenge for multiple providers in a group practice using shared exam rooms, especially if they are all on tight schedules and don't think adjusting equipment for every patient is an efficient use of time. It might seem like these could slow down the examination process and increase the amount of time spent with each patient, but just a few quick changes in position can make all the difference in preventing MSDs from daily strain.

Rethink Your Seating

Another key piece of equipment to consider for ergonomic adjustments is the physician's chair – both in the examination room and in the surgical suite. An ergonomic chair will allow the physician to adjust the height of the seat base so the arms and elbows are supported at a neutral angle



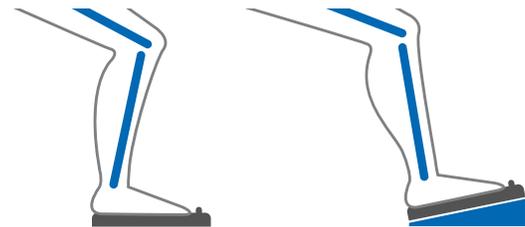
The physician should adjust the height of the seat base so the thighs point slightly downward and the elbows are at a neutral angle. This improves back posture and prevents strain.

when seated at a table. This balances the pelvis and improves back posture to prevent strain. If the chair also has adjustable backrests, these can provide further support for a variety of positions.

In the office or exam room, this kind of central back and spine support is critical to maintaining healthy posture throughout the day. Not only does the design of the physician's chair need to be considered, but the construction of the patient chair can make a difference as well. Many patient chairs for eye care settings have footrests that extend several inches beyond the seat, preventing the doctor from getting close enough for proper examination. Look for patient chairs with rounded footrest corners that allow the physician to position themselves effectively without leaning too far forward or to one side, or for patient chairs with footrests that can be flipped up for easier access during examination. Alternatively, the option to slide the legs of the physician stool under the patient chair footrest also allows the physician to get closer to the slit lamp table and remain more upright.

There are further considerations that need to be addressed for seating in the operating room as well. Office chairs often have pneumatic adjustment controls, but this is not the case for operating room chairs due to requirements for control and stability. A foot pedal at the base of the chair may be included, allowing the doctor to make precise adjustments during a procedure, such as raising or lowering the height of the chair or locking the wheels in place, once comfortable.

However, if the physician is seated and cannot reach the microscope foot pedal without angling the thighs towards the floor, it becomes much harder for the musculature to stabilize the spine, resulting in strain and potential MSDs. For surgical seating, the ideal ergonomic position is with the thighs tilted slightly downward in a saddle seat configuration to lessen the stress on the spine. The legs and feet should also be extended slightly forward to create a better angle for actuation of the ankle joint and create more space under the surgical stretcher.



Elevated, angled surgical foot pedals allow for a more natural position for the leg.

The surgical microscope adjustment foot pedals themselves can also be utilized to improve ergonomic design in this setting. Instead of a completely flat foot pedal that forces the leg into unnatural positions to make adjustments, look for elevated, angled surgical foot pedals – similar to a car's gas pedal – to help alleviate stress on the lower back while seated.

EXPERT OPINION: *“Historically, the focus of equipment design was on the comfort of the patient as the primary selling point, but recently we’ve seen a shift of focus to helping the doctors be properly aligned and balanced...We’ve never been more aware of how important it is to take ergonomics into account when designing equipment. Over the past decade, people have really begun to see this as an issue affecting eye care providers, and are looking for solutions to protect their health and their practice.”*

- Gary Schwaegerle, R&D Engineer, Reliance Medical Products, Inc.

Additional Ergonomic Considerations for Eye Care Practitioners

While the slit lamp and exam chair positioning can make the most immediate improvements in ergonomic support for ophthalmologists and optometrists, there are other small changes that can be made to increase comfort and accessibility for practitioners throughout the day.

For the growing number of women ophthalmologists in the field, there are new, more customizable equipment designs that can be adjusted to fit a wider range of body types and sizes. For example, women often sit lower in chairs on average due to height differences, so increased adjustability could be a critical ergonomic factor for their comfort. Even minor adjustments can give her better access to the patient with less uncomfortable leaning or stretching that can lead to MSDs.

Newer, manually reclining chairs will also take into consideration the weight of the equipment, the size of the controls, and the location of grips for physicians of all shapes and sizes. All eye care providers should look for equipment designed with built-in counterbalances in the form of additional weights, strategically-placed pivot points, or centering the rotation of the recline mechanism. All of these options help the doctor exert less physical effort to position both the patient and the equipment during examination.

PHYSICIAN PERSPECTIVE: *“Ophthalmologists are caregivers. We feel like we’re here to take care of our patients and make them comfortable, and we’ll just deal with our own discomfort in order to do so. In light of our understanding of the importance of good ergonomics, it is more crucial than ever for physicians to take care of ourselves, too.”*

- Anup K. Khatana, MD; Director, Glaucoma Service, Cincinnati Eye Institute

Greater adjustability and customizable equipment features can deliver positive ergonomic changes for every eye care provider as well. New tables offer improved instrument delivery, putting all instruments within the physician’s reach so they don’t have to lean over or twist unnaturally

to access both the patient and necessary tools. Motorized patient chairs are now available with foot pedals for more precise adjustment, reducing back-and-forth movements for the physician and allowing for easier and faster patient height and incline adjustments during examinations or procedures.

PHYSICIAN PERSPECTIVE: *“As an ophthalmologist, there’s nothing more important than ergonomics, especially if you develop neck and spine disease. I’ve been proactive on this approach for more than twenty years. If you look at improving ergonomics in your practice, you’ll be able to do a better job, your patients will benefit from better care, and you’ll be in a better mood while you’re working.” - Michael E. Snyder, MD, Board of Directors, Cincinnati Eye Institute*

Ergonomics Can Make a Difference in Your Career

No matter how long you’ve been practicing or where you are in your career as an eye care provider, choosing ergonomically-designed equipment helps you guarantee you’re in the best condition to care for your patients, no matter if it’s for a routine annual checkup or for an intensive surgical procedure.

Daily aches and pains are not part of the job description for becoming an ophthalmologist or optometrist, and these seemingly innocuous issues can be potentially debilitating job hazards. A large number of eye care professionals have lost valuable office time due to MSDs, and a substantial percentage have had to cut their careers short – all of which could have been prevented with the proper alignment and ergonomic considerations.

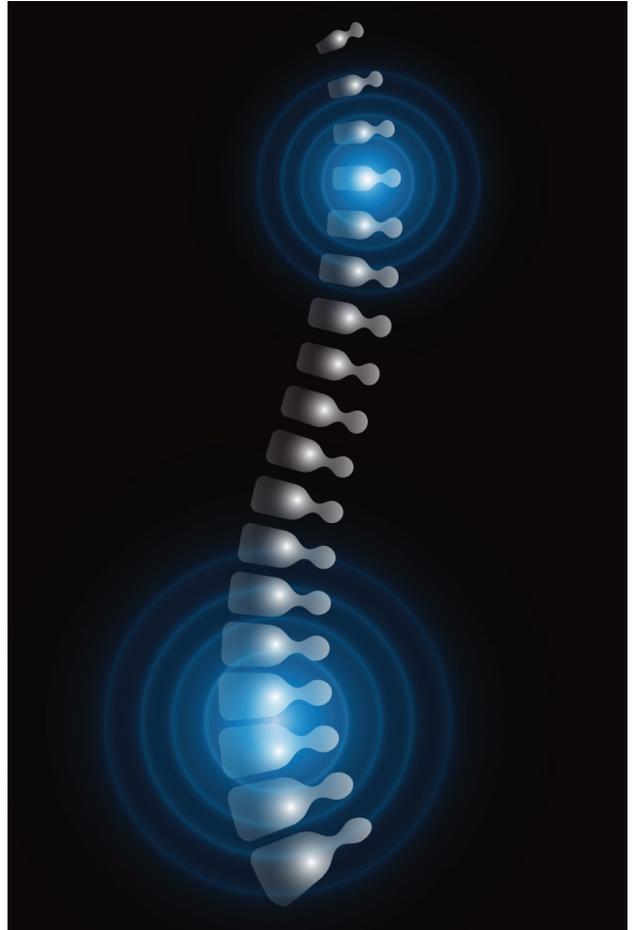
As you build your practice and design your office, look for equipment that’s just as invested in your long-term success and well-being as you are. Combining simple changes to your daily practice with world-class ergonomic design can make all the difference in the quality of care you provide and your own quality of life across your entire career.

An Easy Prescription for Ergonomic Adjustments

With the continued rise in healthcare services necessitated by an aging population, it's now more critical than ever for physicians to consider their own well-being as much as their patients' to continue delivering quality care into the future.

In addition to looking for ergonomic equipment, eye care practitioners can take the following actions to prevent MSDs and invest in their overall health and happiness:

- Take microbreaks to stretch between patients.** No matter how packed your schedule might be, taking just a few minutes to stretch and loosen up your muscles between patients can help reduce tension in the neck, shoulders, and spine that can accumulate throughout the day.
- Consider your office layout.** If you find yourself twisting or bending to reach for keyboards and instruments while talking to patients, think about how you could change the layout of your office or exam room to accommodate a more natural position. This could be as simple as moving your keyboard from the left side of your desk to the right side if it means you won't have to twist your neck or spine to talk to a patient while you type.
- Get active.** No matter how busy you may be, regular exercise improves not only your overall strength and stamina, it can also increase your energy levels, and help improve efficiency and productivity throughout your day. A personal trainer can help you learn proper form so you're less likely to hurt yourself while training and help you focus on strengthening your core and other key muscle groups. Look for light to moderate cardiovascular and resistance training several times a week to keep yourself in top form so you can provide the best possible care for your patients.
- Increase core stability.** A strong core can help to relieve posture-related strain by stabilizing the trunk. This includes not only abdominal muscles to support the spine, but also the muscles of the lower back and shoulders.
- Always adjust.** Whenever possible, make sure to adjust your seat, your table and your equipment in both the examination room and the procedure room to ensure neutral spine alignment with normal curvature. Be cognizant if you find yourself hunching, leaning, or twisting and try to shift your position as needed to ensure proper posture throughout the day.
- Go see a professional.** If you're already experiencing some symptoms of MSDs due to poor ergonomics, it might be time to call in an expert. Consider seeing a physical therapist or even a sports doctor to help you adjust and strengthen problem areas while actively working to improve your postures and positioning during procedures.



ABOUT THE EXPERTS

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ABOUT HAAG-STREIT USA

Headquartered in Bern, Switzerland, with its US headquarters in Mason, Ohio, Haag-Streit manufactures optical instruments for ophthalmologists and optometrists. The company has a 150-year history, and for more than a half a century, the Haag-Streit slit lamp has been regarded as the standard instrument for ophthalmic diagnosis. For more information, visit www.haag-streit-usa.com.