



Mission Health Orthopedics in Asheville is a regional leader in using advanced nonsurgical, regenerative medicine and minimally invasive procedures. The goal is to provide personalized care based on a patient's unique needs.

FOCUS ON: ORTHOPEDICS

SITTING IS THE NEW SMOKING

Office ergonomics can have a huge impact on employees' health and wellness.

Have a seat.
Or maybe don't.

With more Americans confined to desks and computer screens, there has been a surge of research into the role of ergonomics on employee abilities, productivity and long-term health.

"Sitting is the new smoking," says Carol Green, a physical therapist at Charlotte-based OrthoCarolina who has spent the majority of her 33-year career studying ergonomics. "Research shows that it is just as dangerous for

your health and can take up to seven years off your life."

Workplace or industry ergonomics involves adapting the environment to make it safe and efficient for employees. This can include proper sitting techniques or the use of standing desks to reduce back, neck and shoulder pain — something an estimated 75% of workers who use a computer have reported, according to Ergotron, a company that builds kinetic office furniture.

Green has seen the societal shift in acknowledging the importance of ergonomics in the workplace, which gained momentum after the Americans with Disabilities Act passed in 1990.

"Companies started to have problems with employee injuries," she says. "We started to see a lot of carpal tunnel and lifting injuries in

warehouse settings, so executives started to pay attention."

Green's work primarily involves evaluating individual workstations and suggesting changes that can be made for the employee's well-being. These may seem like minor details, but Green says unhealthy workplace habits, such as sitting for long periods incorrectly, can have long-lasting impacts.

OFFICE ERGONOMICS AND MSDS

According to the U.S. Department of Labor, poor ergonomics frequently develop into musculoskeletal disorders such as arthritis, carpal tunnel syndrome, torn rotator cuffs or ACLs, and chronic back and neck pain. Typically, MSDs require treatment through orthopedics, physical therapy, medication and surgery.



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FOCUS ON: ORTHOPEDICS



At the Joint and Spine Center at Carteret Health Care in Morehead City, orthopedic surgeons are relying more on robotic-assisted surgery.

"The most common musculoskeletal disorders treated in FirstHealth's rehabilitation clinics are spine and extremity diagnoses," says Kathy Holder, a physical therapist and certified ergonomic assessment specialist at FirstHealth of the Carolinas, a not-for-profit health care provider network based in Pinehurst. "Therapists develop and implement a patient-specific plan of care."

At OrthoCarolina, Green says she often sees neck, back, shoulder and leg pain due to poor seating habits and a lack of lumbar support. Carpal tunnel is another common issue associated with typing and repetitive wrist motions in offices.

These issues ultimately have an effect on business. The U.S. Bone and Joint Initiative reports 264 million lost workdays in one year due to back pain alone. The Centers for Disease Control and Prevention estimates that 34% of lost workdays and workers compensation costs are directly due to MSDs.

There has also been a dramatic increase in the cost of treatment for MSDs such as osteoarthritis, carpal tunnel syndrome and tendonitis. The aggregate total cost of treatment rose 117% from 1996 to 2011 to an estimated \$796.3 billion, according to the bone and joint group. The approximate cost for treatment plus the money lost due to time off work amounts to a staggering \$873.8 billion each year.

An MSD can make completing even simple tasks incredibly painful or impossible. When surveyed, about

half of respondents with an MSD confirmed that they have trouble completing routine activities due to their condition, affecting employee productivity.

Research shows that there are multiple factors involved in each MSD diagnosis, but contributors generally fall under ergonomic risk factors and individual risk factors.

Ergonomic risk factors deal primarily with the safety of the physical work environment. Individual risk factors focus on the individual's general health practices and overall condition. Things that play a role in a person's individual risk factors include diet, fitness, unrelated medical conditions and overall health habits.

Green says executives have noticed this and are starting to take a holistic approach in combating poor health habits of their employees in response to the surge of MSDs.

"Companies are taking a bigger look at the person, not just as a worker, but looking at the person as a whole," Green says. "Let's not only fix the person's desk, but what are healthy lifestyle changes we can help the employee with?"

Some corporations use incentives to encourage regular doctor appointments, implement fitness programs, keep a nursing staff on duty or run health contests throughout the year. Employers can also bring in ergonomic consultants like Green and Holder to evaluate workstations.

PREVENTION

Brian Waterman, an associate professor of orthopedic surgery at Wake Forest Baptist Health, stresses that it is easier for businesses to take steps toward prevention today rather than treatment down the road. "Preventative measures are always more cost-effective than reactive ones, particularly as it relates to musculoskeletal health," he says.

Some of these solutions are cost-effective for employers, like encouraging employees to follow what Green calls the 90-90-90 rule. This sitting position puts the elbows, knees and lower back to hips each at a 90-degree angle to eliminate stress on the body by keeping it in a neutral position.

Standing desks are becoming more popular, and there are plenty of options on the market that transform a seated desk into a standing one, Green says. In addition, the use of footstools and chairs with lumbar support encourages a healthy posture.

Waterman says movement throughout the day is also imperative. "Frequent breaks to stretch or briskly walk around the office for five or 10 minutes can be incredibly helpful," he says. "Rather than using the elevator, take the stairs."

Green says some companies get insurance breaks for implementing health programs for their employees to prevent issues before they get out of hand. Once symptoms bother someone for a lengthy period of time, more expensive measures may be required, and these costs can affect the individual as well as the company through lost workdays and more expensive health insurance.

However, with the right ergonomic programs and education, Waterman says more expensive treatment is rare.

"Contrary to popular belief, I spend the majority of my office time treating patients without surgery," he says. "As an orthopedic surgeon, it gives me great satisfaction to treat patients with the care they need, and we always attempt to resolve a problem at the lowest level." ■

— Lindsey Chase is a freelance writer based in Charlotte.



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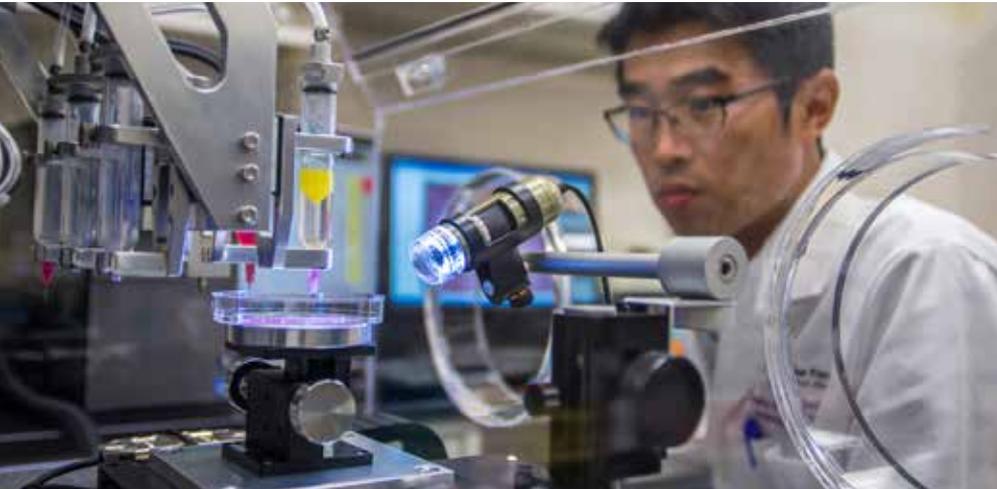
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INNOVATION IN ORTHOPEDICS

Orthopedic centers across the state are changing the ways they care for patients.



Researchers at Wake Forest Institute for Regenerative Medicine in Winston-Salem used 3D technology for a new tissue and organ printing system.

With the number of people seeking treatment for orthopedic issues rising, experts across North Carolina are using cutting-edge technology to change the health industry.

This includes healing musculoskeletal trauma through regenerative medicine, using robot-assisted surgery to reduce recovery time, working on clinical trials developing preventative products and using artificial intelligence to determine risk factors.

Professionals are noticing the increase in patients they see each year. Thomas Bates, director of the Joint and Spine Center at Carteret Health Care, has been with the hospital for 14 years and says this is due to the aging

baby-boomer generation, but younger patients are increasing, too.

“We used to think hip and knee replacement was for older patients — patients in their 60s, 70s and 80s — but we are seeing a lot younger patient population that need surgery for hip and knee replacement,” Bates says.

The U.S. Bureau of Labor Statistics found that 31% of nonfatal occupational injuries in 2015 were due to conditions such as arthritis, tendonitis, fibromyalgia, bone fractures and others, resulting in days off, decreased productivity and increased health costs. To solve this, new treatment techniques are necessary.

REGENERATIVE MEDICINE

Brian Waterman, associate professor of orthopedic surgery at Wake Forest Baptist Health, is certain the next frontier of orthopedic care is regenerative medicine, or using engineered tissue to regrow bone, cartilage and ligaments.

Stem cell regenerative treatment has

the potential to work well in cases of musculoskeletal trauma, where bone, tendon and ligaments have been worn down. Waterman has seen results in using regenerative medicine to treat tennis elbow, patellar tendinitis or “jumper’s knee,” and cartilage injuries such as arthritis.

These advancements are promising, but Waterman says there’s work to be done.

“While the enthusiasm and marketing surrounding this technology is quite prevalent, we are working through how best to use this technology in an evidence-based manner with modest health care costs,” Waterman says.

ROBOT-ASSISTED SURGERY

At the Joint and Spine Center at Carteret Health Care, orthopedic surgeons are relying more on robotic-assisted surgery. The center was recently recognized as one of the best hospitals nationwide for orthopedics by the Women’s Choice Award, a marketing research company.

Though the hospital has been using robotic-assisted surgery for about eight years, the center has been applying the technology to more difficult surgeries as it’s advanced. Starting with partial knee and hip replacements, it’s only within the last two years they’ve done total knee replacements.

“We’re the only place east of Raleigh that’s doing the robotic hip and knee surgery,” Bates says. “It’s definitely more accurate when it comes to placement of the components and alignment of the knee.”

Others see the benefits of robotic-assisted surgery, too. EmergeOrtho was created in 2016 through the merging of four different orthopedic practices. Now, it has 49 offices in 21 counties across the state.

David Musante, a back, neck and spine surgeon at the Durham EmergeOrtho office, says his division, formerly known as Triangle Orthopedics, was among the first in the state to begin using robotic-assisted surgery.

“We have an outpatient joint replacement program where patients are going

home the same day after surgery because of this innovation in techniques," he says.

CLINICAL TRIALS

Created through EmergeOrtho's partnership with Wake Research Partners, M3-Emerging Medical Research is responsible for numerous orthopedic clinical trials at any given moment.

For example, it is conducting a trial for lumbar disc herniation, one of the most common back surgeries. Lumbar herniation is a ruptured disc in the back that causes pressure on nerves and severe pain down legs. The trial is testing an anti-scar gel that would reduce scar tissue and adhesions around the affected nerve, limiting post-operative pain.

Another trial focuses on end-stage knee arthritis, a severe bone-on-bone arthritis that requires knee replacement. The study is testing a product that's injected in the knee to alleviate pain and delay the knee replacement.

Knee replacements only last 15 years,

so if someone younger requires one, they're typically looking at three or four additional surgeries.

"Knee replacement is an epidemic with an aging population," Musante says. "Once you have a knee replacement, you have an artificial knee with a life span, so if you can delay knee replacement for as long as possible, you're reducing revision surgeries."

Other clinical trials focus on rheumatoid arthritis, artificial disc replacements in the neck, osteoarthritis of the hip and knee, and others. The goal with each, Musante says, is to identify the issues plaguing the most people.

ARTIFICIAL INTELLIGENCE

Some experts are turning to artificial intelligence — machine programs that involve learning, reasoning and self-correction to produce better results — to make informed decisions for patients.

Novant Health Charlotte Orthopedic Hospital opened in 2017 and is using

a digital program that analyzes all data from patients to identify risk factors for issues down the road.

Bryan Edwards, the senior vice president of the Orthopedic and Sports Medicine Institute at Novant, says this helps focus on all the factors impacting treatment and recovery processes and enables doctors to make better decisions based on data.

"For example," Edwards says, "we know that if your [body mass index] is under a certain number and if you're not a smoker, your outcomes for your procedure will be a lot better."

This will expand to include a smartphone app called Cared Companion, allowing patients to keep doctors updated on any issues pre- or post-operation and enable real-time communication.

"The future for us at Novant Health Orthopedics is to be able to engage with our patients throughout the entire care continuum," Edwards says. ■

— Lindsey Chase and Alyssa Pressler.

Just as **Carteret Health Care** heals and offers compassionate rehabilitation care for orthopedic patients,

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