

For surgeons in the OR, a way to fight bad posture

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Credit: Douglas Levere.

The psychological stress that surgeons face is well-documented. Less understood is the physical stress they endure from spending hours in awkward positions in the operating room.

It's not uncommon for surgeons to report shoulder, neck and lower back pain—ailments that can result in sick days, decreased quality of care and early retirements.

To prevent these complications, a team of engineers and doctors is developing a tool to identify poor posture and, ultimately, correct these awkward positions in the [operating room](#). Early results indicate that it's effective at spotting pain-inducing positions—an initial step toward making surgery safer for surgeons.

"Everyone knows that surgeons operate in a high-stress environment. Our research looks at something less obvious: the long-term risks that surgeons face by putting themselves in uncomfortable positions in the OR," said Victor Paquet, PhD, associate professor in the Department of Industrial and Systems Engineering at the University at Buffalo, who co-
led the research.

To develop the tool, which the team calls ErgoPART (short for ergonomics postural assessment in real-time), Paquet and other UB researchers paired with vaginal surgeons at MedStar Washington Hospital Center in Washington, D.C. According to recent studies, vaginal surgeons are more likely to suffer chronic pain compared to other surgeons.

The team decided against attaching sensors to a surgeon because the devices could interfere with the surgeon's work. Instead, they relied upon four observers—two ergonomics researchers, a female pelvic medicine and reconstructive surgery fellow, and a pre-medical undergraduate.

The observers entered their data into a software program that records information about the surgery, the surgeon's positioning, task information, operating room features and more. The software provides users visual feedback and other help to reduce the likelihood of coding

errors.

"With this tool, surgeons, as well as occupational and health safety workers, will have immediate access to a report on when and how long they remain in non-neutral positions during surgery. This information can be used to help individual [surgeons](#), as well as to develop recommendations on how surgeries can be improved for the doctor and patient," says Xinhui Zhu, PhD, who co-led the research as a graduate student at UB and now works as an assistant professor of industrial engineering at Oregon State University.

More information on the research is available in the study "ErgoPART: A Computerized Observational Tool to Quantify Postural Loading in Real-Time During Surgery," published in the journal *IISE Transactions on Occupational Ergonomics and Human Factors*.

More information: Xinhui Zhu et al, ErgoPART: A Computerized Observational Tool to Quantify Postural Loading in Real-Time During Surgery, *IISE Transactions on Occupational Ergonomics and Human Factors* (2016). [DOI: 10.1080/24725838.2016.1276032](https://doi.org/10.1080/24725838.2016.1276032)

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