Surgeons' ratings of an intraoperative stretch web-app: A pilot study

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THE WORK IN CONTEXT

Surgeons are reporting increased musculoskeletal disorders. Specifically, in the surgical suites at this institution, one surgeon had to permanently stop performing surgery due to work-related musculoskeletal disorders and others were in pain. It was determined that one intervention to be tested was periodic intraoperative microbreaks with exercises performed by surgeons within the sterile field. Previous research has shown self-reported improvement for the operative day when microbreaks are incorporated into the surgeon's operating room (OR) routine. The initial work was done by having a 90-second microbreak leader in the room to lead calisthenic-type exercises that didn't break scrub at convenient stopping points during surgery, about every 20 minutes. The surgeons and their teams loved having the microbreaks with exercises; however, their feedback was that the 20-minute period was not long enough and the exercises didn't flow and lasted too long. From the researcher perspective, it also needed to be automated. Since tablets were password-protected and there were already networked computers in the ORs, a web-based application was created. New evidence-based stretches were created that shortened the duration while they focused on the surgeon's primary target pain areas and an adjustable timer alert with snooze was added. This new GDPR compliant intraoperative stretch web-app was created and tested in ORs. This paper discusses the results of the internal roll-out. The free web-app is now available for dissemination.

KEYWORDS

Microbreaks, fatigue, musculoskeletal pain

A brief outline of the work carried out

Surgeons at a quaternary hospital in the United States tested a periodic stretching web-app in their ORs. Each intraoperative microbreak lasted for about a minute with a reminder to stretch that could be set between 25 and 55 minutes during their surgical procedures. The stretches were created to be short, target the surgical postures and to conform to sterile OR constraints. At the end of each surgical day, surgeons were asked to respond to an electronic survey about their physical demand, mental demand, case complexity, degree of case difficulty (patient-based), and case distraction (0=low, 10=high). Surgeons additionally reported any change (better, no change, worse) for physical performance, mental focus, fatigue and discomfort as a result of incorporating microbreaks with stretches. Surgeons could also provide free text comments.

Findings/solutions (the outcome)

For 51 surgical days, participating surgeons returned 40 end-of-surgical-day surveys. They reported that they had improved (better) physical performance (79%) and mental focus (69%), reduced pain/discomfort (87%) and lower fatigue (72%). They also reported moderately high NASA-TLX subscale scores for mental demand (average=6.9/10) and physical demand (average=6.9/10). Procedures were rated as relatively complex (average=7.0/10) and difficult (average=7.1/10); however, surgeons reported low distractions (average=1.6/10) while using the intraoperative stretch

web-app. Of the eighteen comments submitted, 88% were highly satisfied with the web-app. Positive comments noted the use flexibility, short duration, and their reduced pain following use. Critical feedback (n=2) noted timer alerts went off during complex portions of the case, thus increasing distractions.

Impact

The web-app created for intraoperative stretches helped reduce physical pain, fatigue, and improved mental focus with minimal disruption in this pilot study with surgeons across a variety of specialties. Surgeons reported they were performing relatively complex procedures requiring moderately high physical and mental demand. Even with high demand during complex procedures, the web-app didn't appear to increase their distraction. The web-app intervention to reduce surgeon workload appears to be a generally positive addition to their operative day. The web-app could be one tool in the arsenal to reduce work-related musculoskeletal disorders and keep surgeons fulfilling their dream of performing surgery.