

## **Supplemental Digital Content 1 – Institutional Survey Questions**

1. What is your surgical subspecialty?  
Colorectal, General, ENT, Neurosurgery, Plastics, Urology, Vascular
2. What is your surgical title?  
Resident, Fellow, Attending
3. How many years of surgical training and/or practice have you completed?
4. Have you ever felt like your body was in an awkward position in the operating room causing discomfort, muscle aches, or pains while retracting, assisting, or operating?
5. How often do these aches and pains occur?  
Yearly, Monthly, Weekly, Daily, Every Case
6. Please estimate the timeframe of symptom onset?  
<30min, 30min to 1hr, 1-3hrs, 3-6hrs, >6hrs, post-surgery, the following day?
7. What areas of your body are most bothersome? Please rank from most to least bothersome, with 1 = most bothersome, 8 = least bothersome.  
Neck, Shoulders, Back (thoracic or lumbar), Hips, Legs, Feet, Arms, hands
8. Does the use of specific surgical equipment elicit symptoms more frequently?  
Headlight, robot, laparoscopic equipment, loupes, microscope, Other (please specify)
9. Have you ever incurred a musculoskeletal injury in the operating room?
10. Did this injury prevent you from performing clinical or surgical duties?
11. Did this injury prevent you from performing activities outside of the hospital or clinic setting?
12. Have you ever taken time off of work due to musculoskeletal pain/injury?
13. Have you ever seen any of the follow for treatment or consultation? Select all that apply.  
massage therapist, personal trainer, physical therapist, chiropractor, PM&R physician, or surgeon
14. Do you routinely implement risk reduction strategies in the OR to help alleviate musculoskeletal issues?  
Examples: Stools, Standing pads, Timed-Breaks, Intraoperative stretching,  
Other: please specify

15. Do you routinely stretch or exercise specific muscle groups outside of the operating room to improve trouble areas?

16. Have you had any formal training, lectures or discussion regarding the following areas? Check all that apply.

Posture/body mechanics in the OR head position, shoulders, spine, pelvis?

Ergonomic set up of operating table, microscope, robot?

Patient transfer techniques?

Free text elaboration: \_\_\_\_\_

17. Do you feel that medical student and surgical resident training in these areas appropriate/sufficient?

18. What suggestions do you have for improvement in the longevity and physical well-being of future surgeons?

Examples: improved education in ergonomics and posture, direct observation/videotaping and assessment of habits in OR, access to physical therapy at the hospital, massage therapy, not having surgeons/residents move/lift patients (dedicated moving staff).

19. After watching the brief postural video please select the areas that apply to you while operating. <https://www.youtube.com/watch?v=2Dp7mOtC6ig>

- Head forward/down positioning
- Internally rotated shoulders
- Kyphotic thoracic spine
- Flat lumbar spine
- Anterior pelvic tilt
- Posterior pelvic tilt
- Inability to reach 90 degree waist bend with neutral head and non-kyphotic spine
- Inability to perform latissimus dorsi stretch
- Inability to perform external shoulder rotation stretch