

# Need for ergonomics curriculum in general surgery residency to address musculoskeletal symptoms

Emily Cerier, MD<sup>1</sup>, Sara Mills, MD<sup>1</sup>, Andrew Hu, MD<sup>1</sup>, Annie Goldring<sup>2</sup>, Monica Rho<sup>2</sup>, Swati Kulkarni, MD<sup>1</sup>

<sup>1</sup>Department of Surgery, Northwestern Memorial Hospital, Chicago, IL <sup>2</sup>Department of Physical Medicine and Rehabilitation, Shirley Ryan Ability Lab, Chicago, IL



Ergonomics pertains to designing and arranging things people use so that the two interact most efficiently and safely<sup>1</sup>

Over 80% of surgeons experience generalized injuries exacerbated by operating with less than half seeking treatment<sup>2,3</sup>

Ergonomic principals have not been incorporated into surgical practice with less than 6% of surgeons receiving formal ergonomics training<sup>4</sup>

Less than 15% of surgeons report being aware of any ergonomic guidelines<sup>5</sup>

Poor adherence to ergonomic principles in the operating room leads to increased muscle fatigue and injury which can lead to career changes or early retirement<sup>4</sup>

## Research Objectives

1. Investigate the prevalence of and risk factors for musculoskeletal symptoms among surgical residents
2. Assess surgical resident ergonomics knowledge
3. Increase surgical resident awareness regarding ergonomic principles in the operating room

## Methods

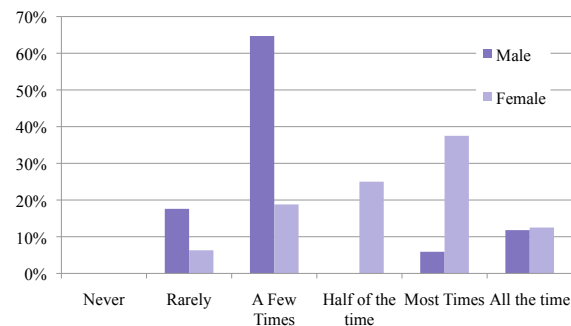
- A 35-question voluntary survey, developed by a multidisciplinary team including physiatrists and surgeons, was distributed via anonymous link to all general surgery residents at an academic surgical residency
- Survey assessed resident demographics, musculoskeletal symptoms and ergonomics knowledge
- Results were analyzed using Chi-squared and Pairwise Z-tests

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## Results

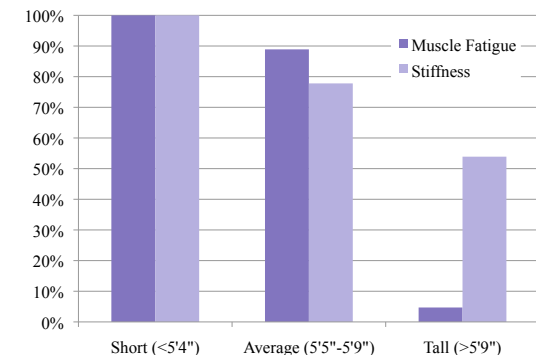
- **33 out of 35 (94%) of surgical residents responded**
- **100% reported experiencing musculoskeletal pain**
- Most common injuries included:
  - Neck (79%)
  - Back (76%)
  - Shoulder (61%)
- Senior residents (≥PGY 3) were more likely to report back pain compared to junior residents (100% vs 66%,  $p=0.04$ )
- Females experienced more muscle fatigue than males (100% vs 73.3%,  $p=0.03$ )
- Surgery residents attributed their injuries to:
  - Prolonged standing
  - Poor posture
  - Table height
- **100% of surgery residents reported having little to no knowledge of ergonomics**
  - 68% reported ergonomics was rarely to never discussed in the operating room
- 86% reports that applying ergonomic principles in the OR would improve their well-being

Figure 1. Frequency of Musculoskeletal Pain by Gender



Female surgery residents reported higher frequencies of musculoskeletal pain than males ( $p=0.01$ )

Figure 2. Percent of Surgery Residents reporting Muscle Fatigue and Stiffness by Height



Prevalence of stiffness and muscle fatigue decreased with increasing height

## Conclusions

- A significant number of surgery residents experience musculoskeletal symptoms associated with operating
- Gender and height are associated with different symptoms
- Residents' ergonomics knowledge is poor
- There is a clear need for a personalized surgical ergonomics curriculum and integration of ergonomic principles into the operating room

## References

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