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## Abstract

Analyzing and processing surgical specimens at the grossing bench presents unique ergonomic challenges specific to the Pathologists' Assistants craft. Repetitive tasks and improper posturing lead to chronic musculoskeletal disorders, adversely affecting individual wellness. While recent studies have focused on assessing ergonomics within clinical laboratory professions, they often overlook the nuances of grossing specimens at a pathology bench. This research aims to compile and draw attention to personalized methods utilized by current Pathologists' Assistants to mitigate the risk of work-related injuries. Additionally, it seeks to educate both current and future pathology professionals on personalized ergonomic options for their own safety.

A survey was conducted of current Pathologists' Assistants across the United States to gauge their knowledge of ergonomics and assess their workspaces, providing insights into personalized solutions for addressing ergonomic challenges within the gross lab. Results indicate a range of customizable products and practices for creating functional ergonomic environments tailored to the individual. By promoting awareness of available tools and equipment to improve ergonomics, this research strives to safeguard the long-term health of Pathologists' Assistants and improve safety outcomes within the grossing profession.

## Introduction

Pathologist's Assistants (PathAs) are an integral part of the diagnosis of disease and patient care. With increased specimen count and decreased staffing, the ergonomic burden of daily repetitive tasks without proper instrumentation has been overwhelming and has caused increased fatigue and burnout within an already stressed industry. Recently, there has been a focus on exercises and stretches to reduce the risk of musculoskeletal disorders, but there has not been a compilation of current tools in effect that are utilized at the grossing bench. This research has compiled those interventions and highlights personalized changes that can be made to benefit the wellbeing of future and current PathAs.

## Methods

A Microsoft Forms survey was created with separate questions for Pathologists' Assistant students and practicing professionals. This survey was distributed to the greater community through an electronic link and data gathered from participant's responses. A total of 163 responses were recorded. The survey data collection was exempt from IRB review as no identifiable information was obtained.

Also used were informal questions and comments from community members on the Certified Pathologists' Assistant Facebook page to identify types of chronic ergonomic issues faced by practicing professionals. All medical information has been generalized.

## Results

### Ergonomic Issues Seen in the Gross Room

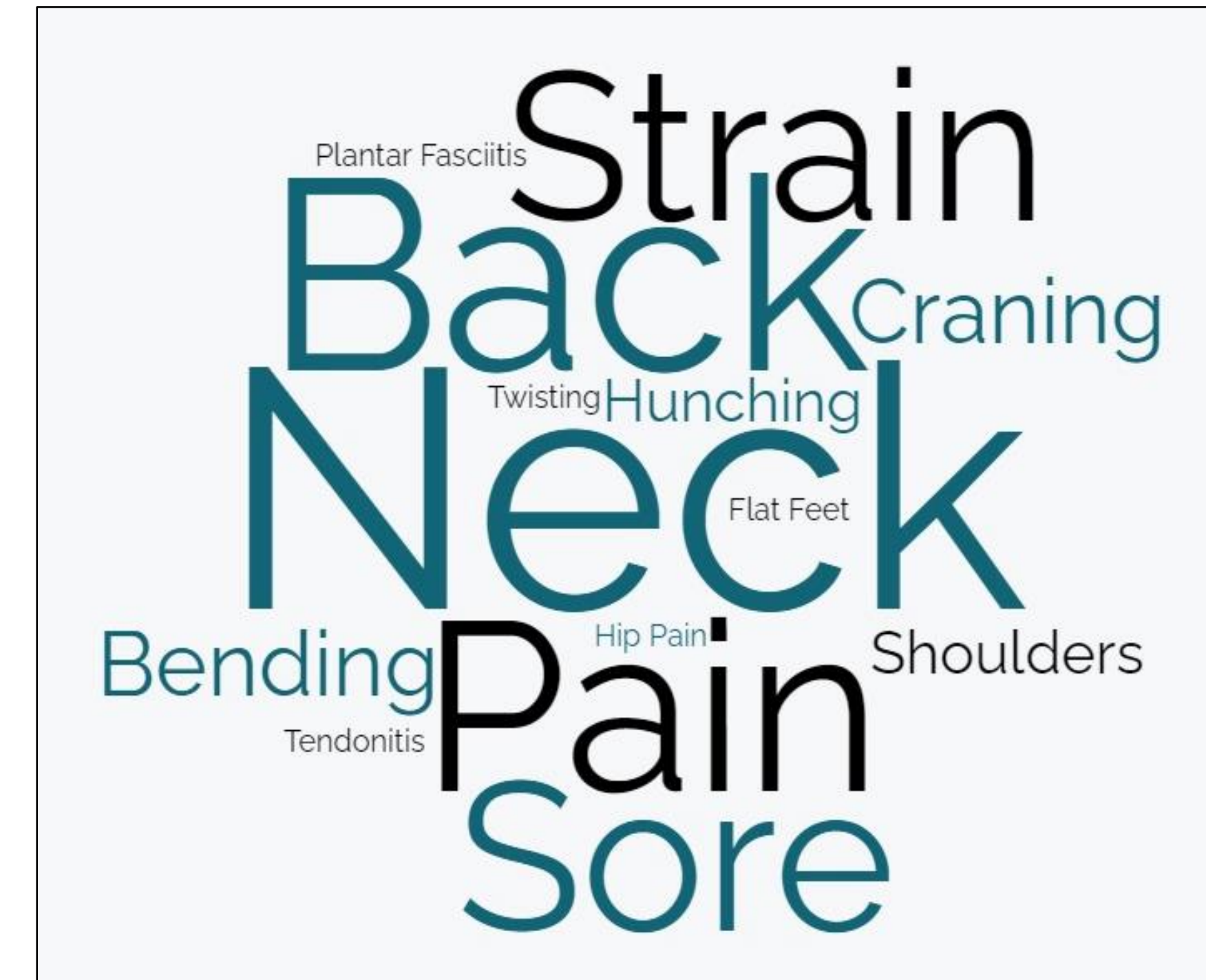


Figure 1. Word cloud created from survey responses regarding ergonomic issues and repetitive motion tasks related to adverse health outcomes at the grossing bench

### Daily Repetitive Tasks Performed



Figure 2. Survey results of tasks performed daily at the grossing bench that repetitively strain muscles, with the potential to lead to long-term musculoskeletal disorders

### Knowledge and Practice of Good Ergonomics Amongst Pathologists' Assistants

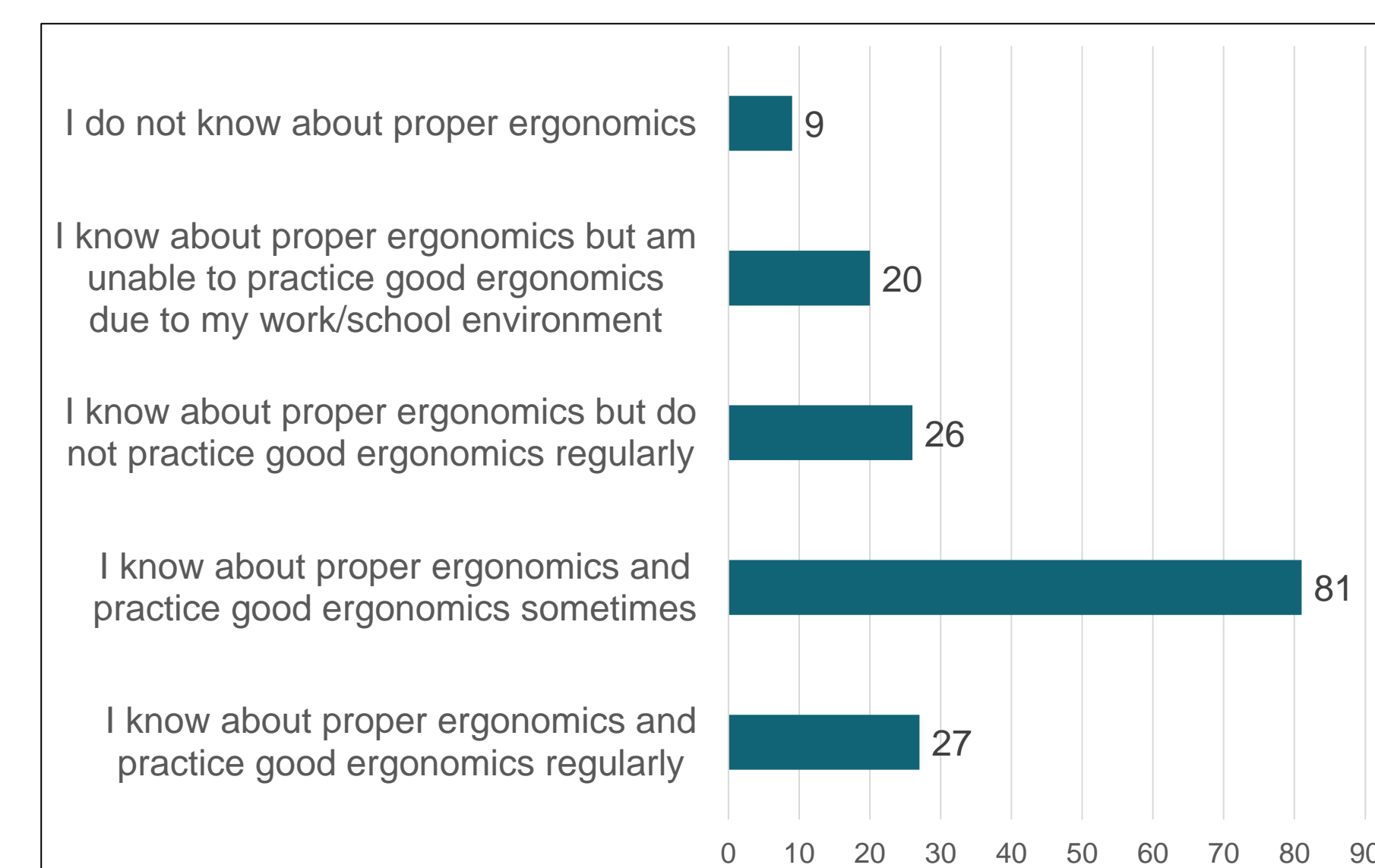


Figure 3. Survey results demonstrating current PathA's knowledge of ergonomic practices and the ability to practice good ergonomics within their workplace

## Results

### Interventions for Standing Fatigue and Better Posturing

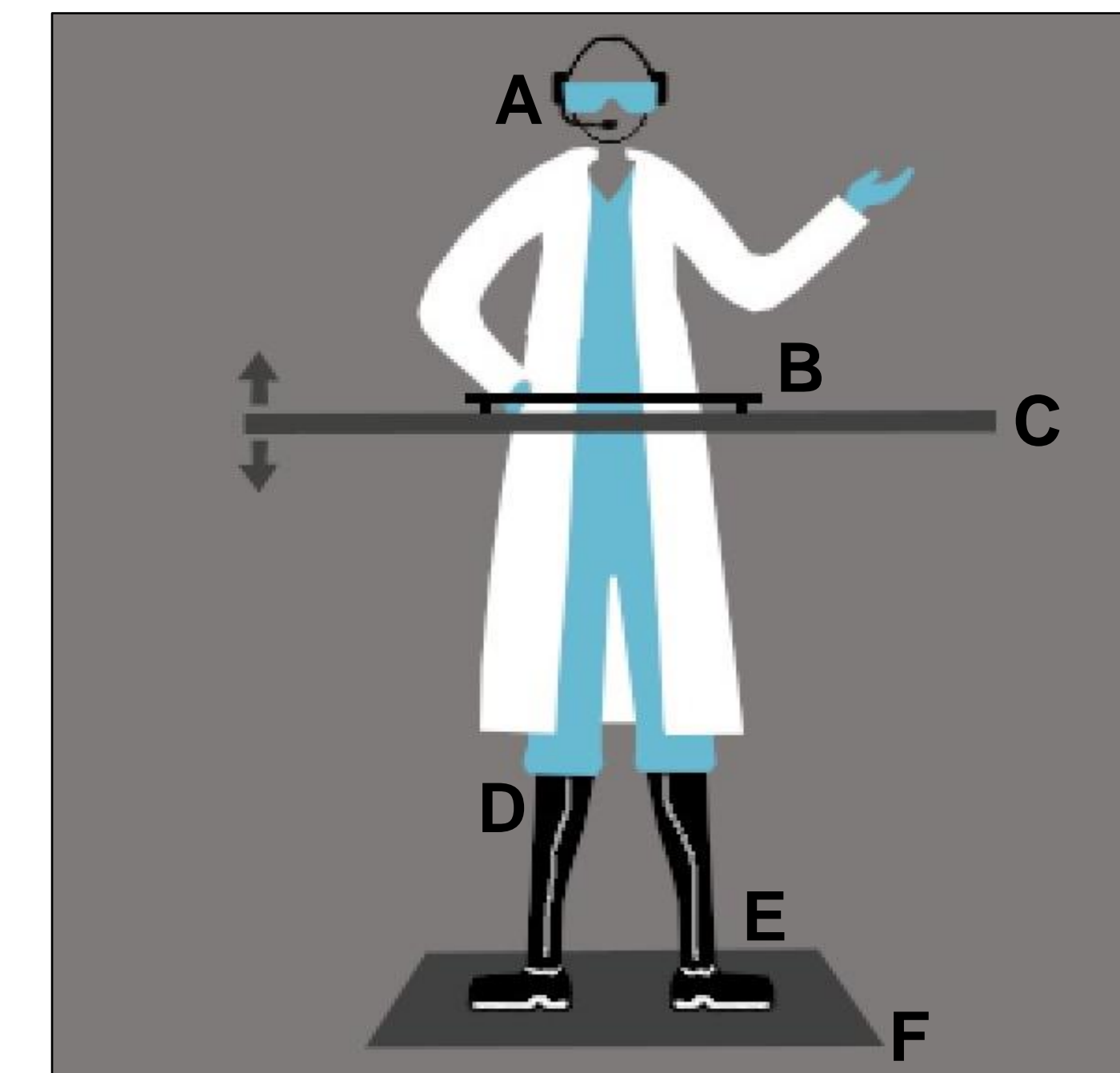


Figure 4. (A) Hands-free dictation software (B) Raised cutting board (C) Adjustable hydraulic bench (D) Compression socks (E) Supportive shoes for standing (F) Anti-fatigue Mat

### Ergonomic Hand Tools

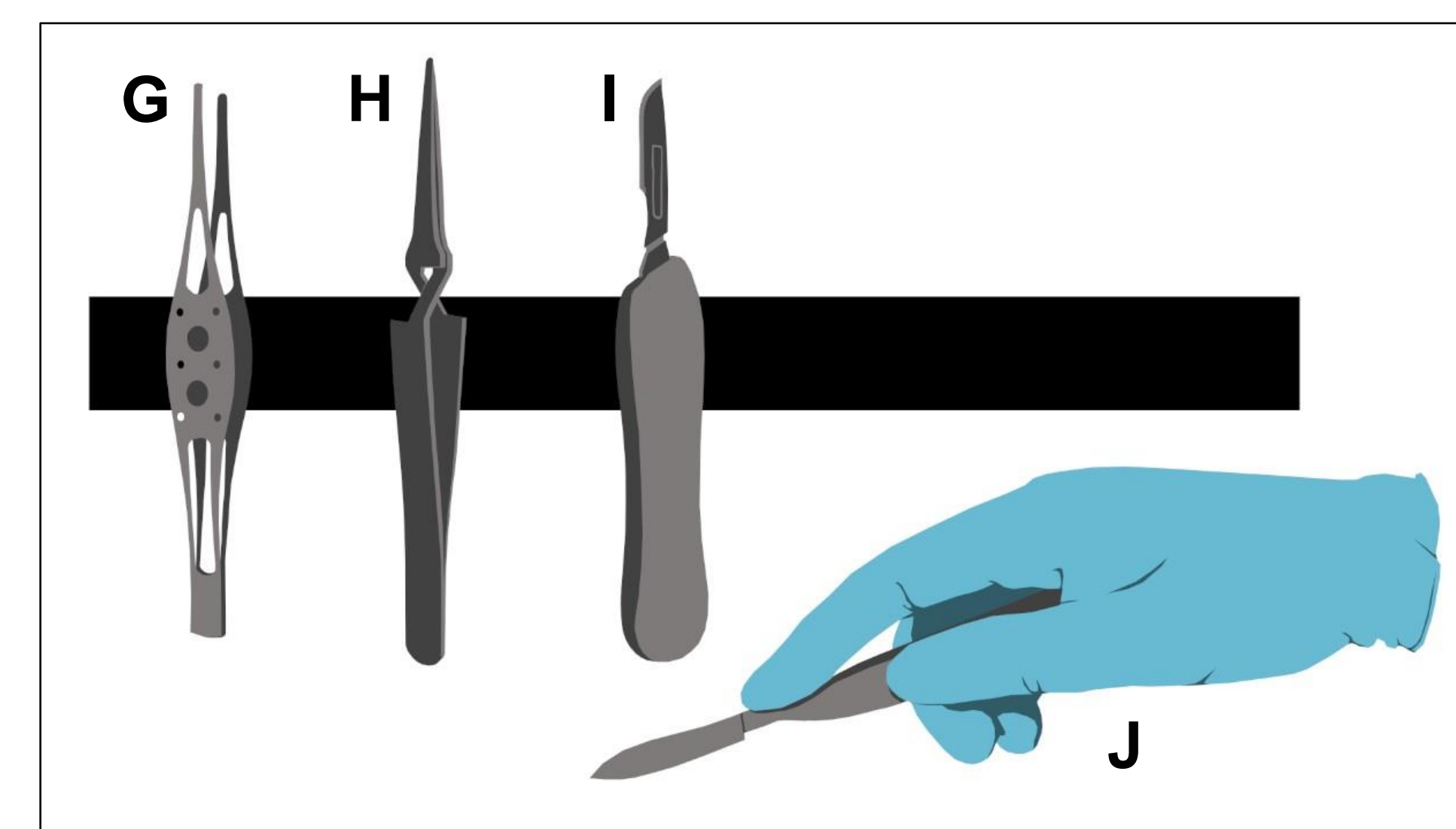


Figure 5. (G) Low tension forceps (H) Reverse action forceps (I) Large scalpel handle (J) Use tools with a neutral joint position

### Workspace Organization

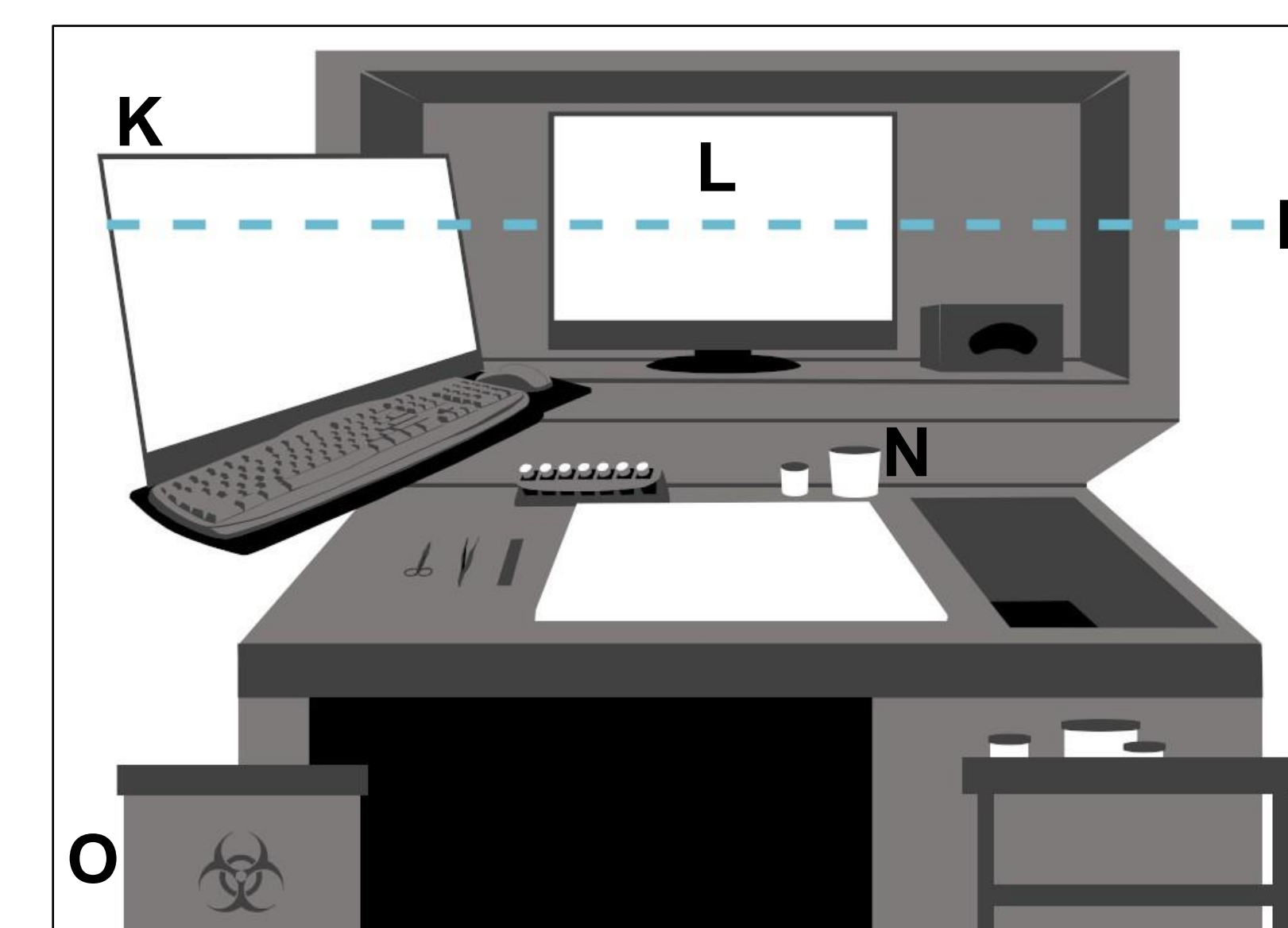


Figure 6. (K) Computer and keyboard together on swing arm (L) Second monitor for dictations (M) Keep monitors at eye level (N) Utilize small cups to keep supplies within working zone (O) Keep trash close (P) Keep samples on a cart with wheels

## Discussion

The repetitive tasks related to grossing specimens include holding forceps and blades when cutting into specimens, opening small containers and biopsy jars, typing dictations, standing or sitting, looking at a computer monitor from odd angles, and other dexterous tasks. These motions lead to back and neck strain, tendonitis, and other body soreness and pain as felt by current practicing PathAs.

The grossing room setup is frequently standardized throughout different laboratories due to the nature of grossing specimens and laboratory safety guidelines, but each gross bench varies in arrangement and tools that are provided. With this variability, the bench can be customized to the individual and can promote better ergonomics. Personalized tools are available through ergonomic programs within hospitals and/or can be purchased by the individual or the lab.

There are several personalized ergonomic techniques that counteract standing fatigue, improper posturing, tendonitis, and muscle strain. The most discussed techniques center around workspace organization to decrease the amount of twisting, reaching, and neck craning by keeping the body centered. Personalized hand tools have ergonomic models that ease the strain of tendonitis while grossing specimens. Using a neutral joint position when utilizing these tools also decreases hand fatigue.

Most PathAs know about proper ergonomics but have difficulty practicing good ergonomics due to their work environment or set up. While not all labs can accommodate these interventions due to budgeting or previous design, a balance of proper ergonomic awareness as well as small interventions to decrease the repetitive motion stressors can increase the success of pathology professionals.

## Future Prospects

This survey is limited to assessing the current ergonomic tools used by a small percentage of Pathologists' Assistants within the greater community. It also does not evaluate ergonomic tools based on their effectiveness over time. Future studies could include ergonomic considerations in autopsy pathology and other specialized laboratory or workplace settings where chronic musculoskeletal disorders are common. Also important is evaluating the cost of implementing said interventions and tracking health outcomes for medical conditions related to working with and without intervention at the gross bench.

## Acknowledgements

Laboratory Ergonomics Checklist from Duke  
<https://www.safety.duke.edu/sites/default/files/Electroniclabchecklist.pdf>

Certified Pathologists' Assistants Facebook Page  
<https://www.facebook.com/groups/124273270516>