

# Developing Musculoskeletal Surgeons' Operating Theatre Ergonomics to Prevent Work-Related Orthopedic Injuries

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## DESCRIPTION

Orthopaedic surgery is distinguished by strenuous, repeated surgical operations that necessitate the surgeon's stamina. Occupational injuries in orthopaedic surgery are frighteningly widespread, with two-thirds of all surgeons reporting a work-related musculoskeletal (MSK) injury throughout their career. One of the primary causes of the high rate of MSK injuries among orthopaedic surgeons is a lack of operating room ergonomics. In other high-risk sectors, implementing an ergonomic procedure has been demonstrated to be successful in lowering the chance of acquiring MSK diseases. We examined well-established and successful ergonomic recommendations from the industrial workplace in order to identify the relevant concepts that may be translated to the operating room to assist minimize the frequency and severity of typical orthopaedic work-related MSK injuries. Occupational injuries are projected to cost more than 190 billion dollars in lost productivity in the United States each year when direct and indirect expenses are added together. The Occupational Safety and Health Administration (OSHA) defines a work-related injury or disease as one caused or contributed to by an incident or exposure in the workplace, or severely worsened a pre-existing condition. Orthopaedic surgery is a physically demanding surgical profession that predisposes orthopaedic doctors to musculoskeletal (MSK) injuries at work. This is most likely related to the physical nature of the procedure as well as inadequate ergonomics in the workplace. A job-related physical injury to a surgeon can result in time away from work, which can have a temporary financial and psychological impact on the practicing surgeon, as well as a lasting impact on the surgeon's career [1].

In the operating room, where uncomfortable postures, high task repetition, and strong exertions are widespread, ergonomics is especially crucial for reducing the risk of damage. The term ergonomics is derived from the Greek terms "ergon," which means "labour," and "nomos," which means "natural laws or patterns." It is the study of individuals at work and how the workplace is constructed to accommodate the worker. Currently, there is a scarcity of operating room ergonomic research. The majority of the literature on optimizing ergonomics to reduce

MSK damage has been connected to video endoscopic surgery. Some of the most difficult ergonomics difficulties are the poor architecture of the operating room and the maintenance of unpleasant static body positions. The working circumstances of surgeons have been likened to those of some industrial employees, thus it is not unexpected that several ergonomic concepts from non-medical sectors have supplied some helpful guidance for surgeons in the operating room. These include the significance of maintaining proper body posture to reduce pressure on the neck and lower back, as well as patient positioning and table height. Occupational injuries in orthopaedic surgery are disturbingly widespread, with two-thirds of all surgeons reporting a job-related MSK injury throughout their career, with 27%-31% requiring time off work ranging from a single day to forced retirement. The neck and lower back are the most commonly reported MSK injuries, followed by upper extremity injuries such as shoulder and rotator cuff disorders, lateral epicondylitis tendinitis, and carpal tunnel syndrome. The absence of operating room ergonomics is one of the primary causes of the high rate of MSK injuries among orthopaedic surgeons. In other high-risk sectors, implementing an ergonomic procedure has been demonstrated to be successful in lowering the chance of acquiring MSK diseases. Despite the availability of several studies on the ergonomic environment in the operating room, clear and simple guidelines are lacking [2,3].

We analyzed well-established and effective ergonomic recommendations from the industrial workplace in this paper and found the relevant concepts that may be translated to the operating room to assist minimize the frequency and severity of frequent orthopaedic work-related MSK injuries. To identify these ergonomic rules and standards in the workplace, we evaluated the ergonomic recommendations produced by the principal government institution responsible for workplace safety and public health in both the United States and Canada [4].

The field of orthopaedic surgery is a physically demanding one, with a high rate of musculoskeletal damage. To reduce the frequency of musculoskeletal injuries in this high-risk profession, optimizing the occupational environment and employing well-established ergonomic principles from industry is both feasible and

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practicable in the operating room. Maintaining a neutral posture, using the correct hand tools, limiting lower extremity fatigue by wearing suitable footwear, and keeping the floor in good condition may all assist to minimize some of these injuries. These instructions are basic, effective, and simple for orthopaedic surgeons to follow in order to reduce their chance of developing a work-related injury [5].

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