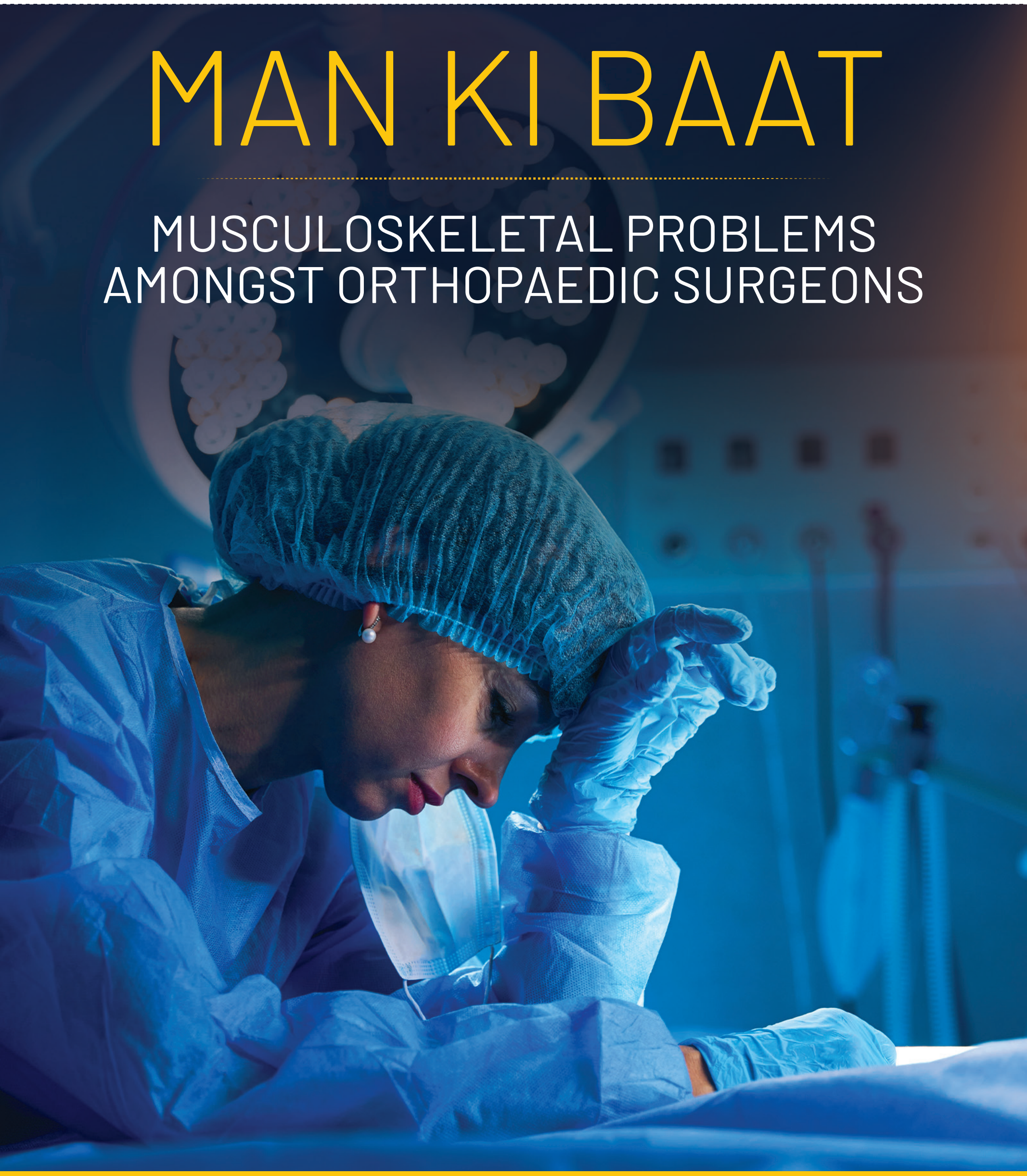
BOMBAY ORTHOPAEDIC SOCIETY

CELEBRATING 60 YEARS OF ACADEMIC EXCELLENCE

MAN KI BAAT

MUSCULOSKELETAL PROBLEMS AMONGST ORTHOPAEDIC SURGEONS



Introduction

Orthopaedic surgery involves a wide variety of procedures, each with its own unique set of physical demands. Joint replacements, fracture fixations, spinal surgeries, and arthroscopies require surgeons to stand for long hours, often in bent or twisted postures, as they work with patients who are positioned in ways that limit the surgeon's access to the operation site. The physical exhaustion caused by such sustained exertion is compounded by the mental stress and concentration required during surgery. With a need to be precise and efficient, surgeons often push through fatigue, disregarding the physical toll on their bodies. This extended physical strain can lead to musculoskeletal injuries, particularly in the lower back, neck, shoulders, elbows and wrists which may lead to pain, discomfort, diminished surgical performance and occasionally career threatening conditions.

Swank et al, reported that most surgeons (86%) suffered from at least one MSK condition, with an average of two conditions per surgeon[1]. 60% of surgeons reported that work worsened symptoms. 54% sought treatment for their condition. Sixty-nine leaves of absence were reported. Surgical treatment was sought most often for cervical radiculopathy (4.6%), lumbar radiculopathy (7.1%) and carpal tunnel syndrome (6%).

Common Pain Locations	Prevalence
Neck	66%
Upper Limb Radiculopathy	29%
Shoulder	49%
Elbow	28%
Wrist	26%
Fingers	31%
Back	66%
Lower Limb Radiculopathy	29%

Common Pathologies	Prevalence
Cervical Disc Herniation	24%
Rotator Cuff Pathology	24%
Tennis Elbow	17%
Carpal Tunnel Syndrome	11%
Cmc/ Mcp Joint Arthritis	12%
Lumbar Disc Herniation	20%
Spinal Stenosis	8%
Varicose Veins	20%

Aetiology

Several factors contribute to the high incidence of musculoskeletal disorders among orthopaedic surgeons

Working in confined operating spaces which allow limited mobility and force surgeons to bend over, twist their body, or adopt other unnatural positions to perform delicate tasks.

Long delicate surgeries necessitating prolonged standing or sitting utilizing predominantly 1 set of muscles, place pressure on the lower back, legs, and feet. This can result in fatigue and chronic pain.

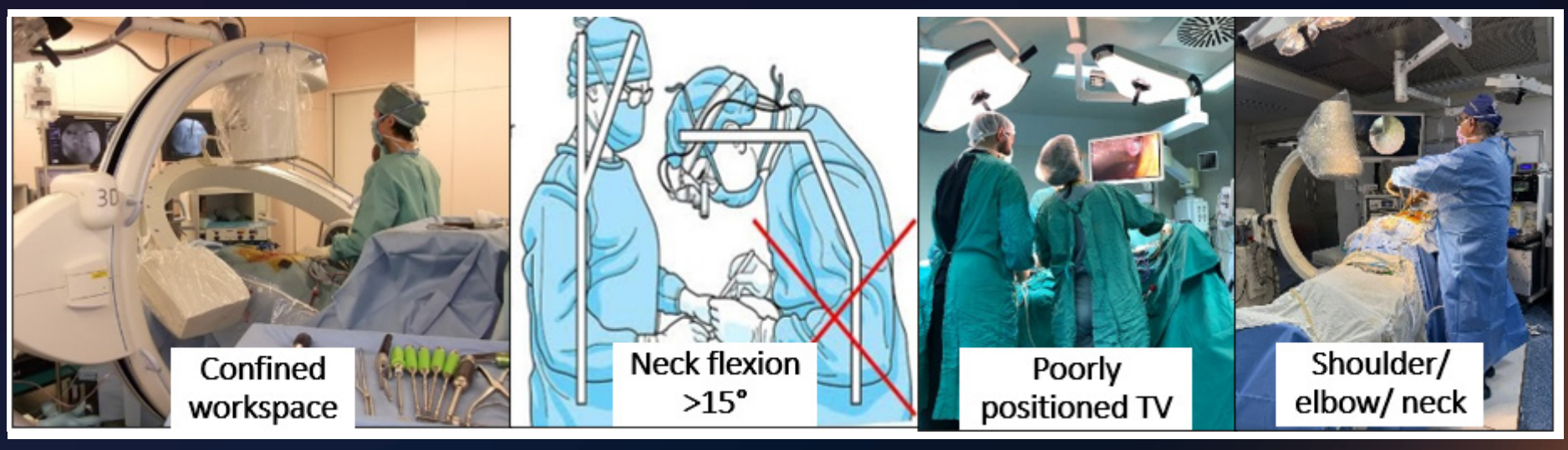
Repetitive movements such as using surgical instruments in the same way and holding them in the same position for hours, places a strain on the hands, wrists, shoulders, and elbows, leading to repetitive strain injuries like carpal tunnel syndrome, tendinitis, or tennis elbow.

Adopting awkward postures in order to view the arthroscopy monitor, looking through microscopes/ loupes and bending over the Carm when performing fluoroscopy guided minimally invasive surgeries. Over time, these positions can cause musculoskeletal discomfort in the shoulders, neck, and back.

Exerting physical force for manipulating bones, tightening screws, or performing delicate incisions.

Poorly designed operating rooms, operating tables and OT lights with poor adjustability, non-ergonomically designed surgical instruments, badly positioned arthroscopy & endoscopic monitors, navigation consoles.

Personal protective equipment such as heavy lead gowns, when used during prolonged surgeries in awkward postures can lead to muscle fatigue and strain.



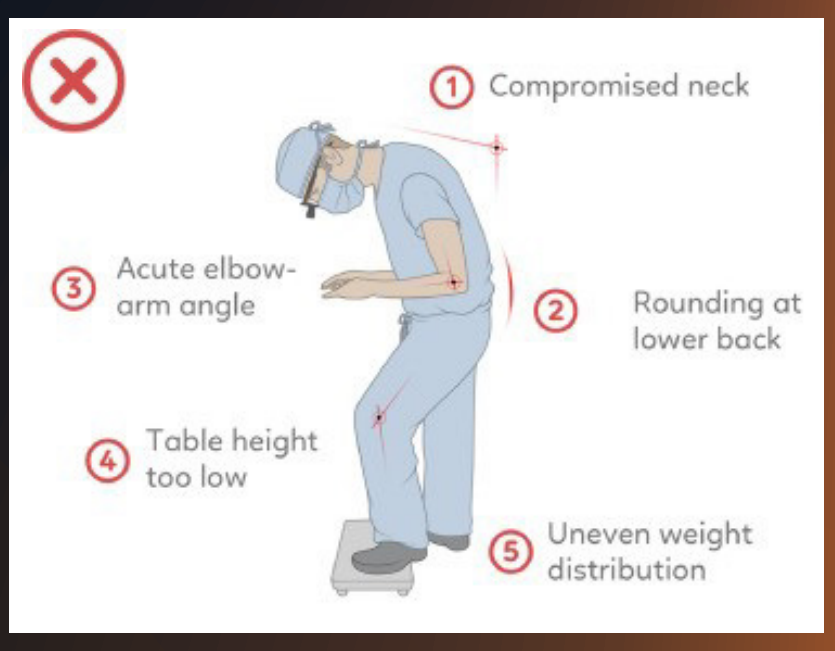
Preventing Occupational Musculoskeletal Problems

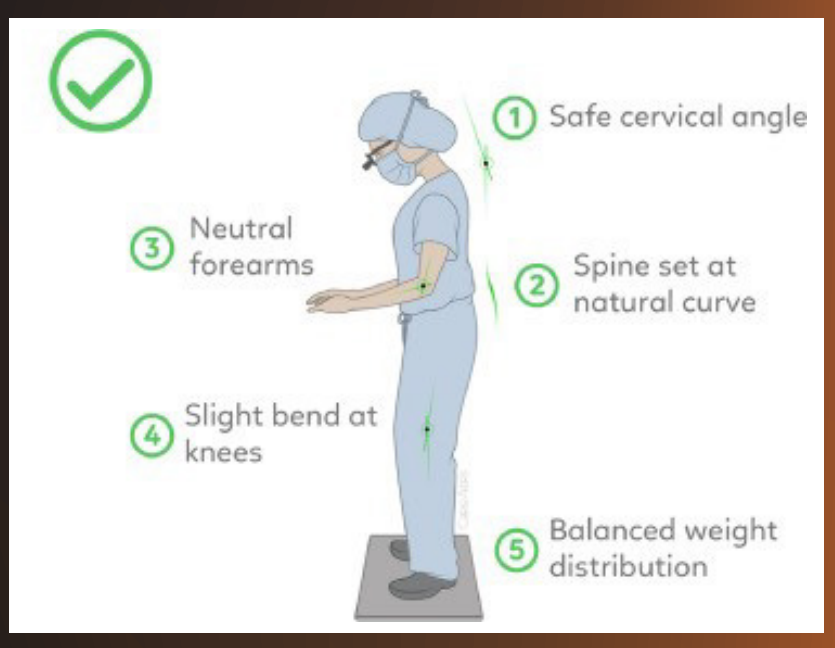
Preventing musculoskeletal disorders in orthopaedic surgeons requires a multifaceted approach that addresses both the physical environment and personal habits.

1. Ergonomic Improvements

Ergonomics is the science of designing the workplace so as to minimize strain, discomfort, and the risk of injury by ensuring that work tasks, equipment, and environments are tailored to the physical requirements of the user. Maintaining a neutral energy-efficient posture is one of the key principles of ergonomics. This involves:

- Standing or sitting upright with the spine in neutral position. Head should be balanced over the trunk with eyes looking forward.
- Neck tilt in flexion/ extension should be <15°. Neck should neither be rotated nor bent to one side or other for prolonged periods.
- Shoulders should remain relaxed. They should be abducted <30° with mild internal rotation and the upper arm should be perpendicular to the floor. Avoid raised or unraised shoulders.
- Elbows should be relaxed. They are held close to the body, flexed between 90- 120° so as to maintain the forearm parallel to the floor and wrist in neutral position.
- When standing, legs should be kept a hip width apart, knees slightly flexed and feet flat on the floor, with the weight equally balanced on the two feet.
- Avoid reaching out for instruments, unnecessary bending or twisting of the back.

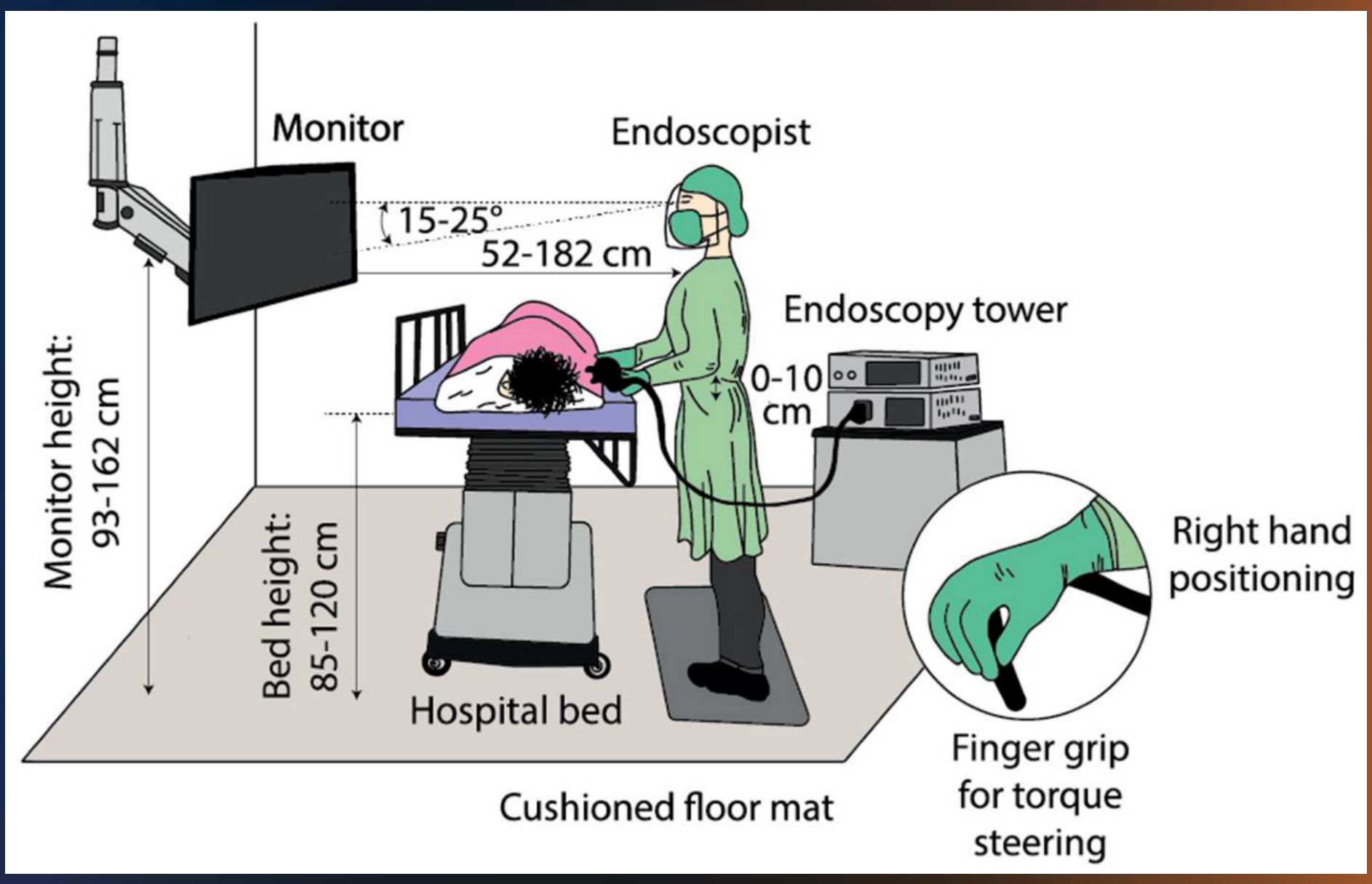




An ergonomically efficient OT fulfills the following requirements:

- Large operating rooms, at least 400 square feet, preferably 600 sq feet in size, with a good floor to ceiling height (at least 12 feet).
- OT Lights should be of good quality and must be adjustable so that they can be positioned efficiently to reduce glare or stress on the eyes. Proper lighting helps the surgeon maintain a steady focus and reduces the need for frequent adjustments to their head or body position.

- OT table should be placed such that it allows adequate room for positioning and movement of Carms, microscopes, monitors, navigation, robot, and above all instrument trolleys, suction and cautery.
- OT tables should be adjustable in height and inclination to allow optimum positioning of the shoulders and elbows while maintain a neutral spine posture. The surgeon should not have to lean forwards, tilt the neck excessively or bend awkwardly. Similarly, when sitting during surgery, the height of the chair must be adjusted for optimum comfort. The knees should lie at a level slightly higher than the hips. Chairs must preferably have a lumbar support.
- Monitors should be placed at a distance of about 4-6 feet in front of the surgeon. The top of the monitor should be at the eye level. The surgeon should not have to strain the eyes or tilt/ rotate the head in order to view the monitor.
- Efficiently positioning instruments and tools around the surgical field ensures that the surgeon has everything within reach and minimizes the need for excessive stretching or bending.
- Surgical instruments should be designed to reduce the physical strain on the surgeon's hands and wrists. Ergonomically shaped handles, lightweight tools, and instruments with optimal grip can help reduce fatigue, particularly in procedures requiring repetitive motions.



2. Regular Exercise and Stretching

Stretching exercises targeting the neck, back, shoulders and wrists, and exercises to strengthen the core, back and shoulder muscles should be incorporated into the daily routine. Regular physical activity can improve posture, flexibility, and muscle strength, which in turn can reduce the risk of injury. Stretching before and after surgery can help alleviate muscle tension, improve blood circulation and prevent strain. This limits the physical toll of the procedure, preventing injuries related to tight or overstressed muscles.

3. Adjusting Work Load

Adjusting work load by reducing number of surgeries per day, or scheduling surgeries so that the number of strenuous or long duration surgeries in one day are minimized, can reduce muscle fatigue and strain. Working in teams helps reduce stress, strain and fatigue among individual team members.

4. Breaks and Positioning

Taking microbreaks during surgery is important to reduce the strain of prolonged standing and awkward postures. Surgeons should take the time to change positions, stretch, and rest during long procedures and between procedures whenever possible. Movement prevents static muscle loading, lactic acid accumulation and fatigue.

5. Technology Integration

Recent advancements in technology and surgical tools have provided innovative solutions to improve ergonomics in orthopaedic surgeries. Robotic surgery systems allow surgeons to perform procedures with greater precision while sitting in more comfortable positions. These systems use robotic arms controlled by the surgeon, which reduces the physical strain on the surgeon's body and allows for more delicate, accurate movements. Augmented reality and Virtual reality provide 3D visualization during surgery thereby reducing the need for uncomfortable postures. Wearable devices, such as exoskeletons, are also being explored to assist surgeons in maintaining good posture during prolonged surgeries, reducing muscle strain. These devices are designed to support the body, especially the spine so as to avoid awkward postures that could lead to injury.

6. Training and Awareness

Surgeons should receive training on proper body mechanics, posture, and ergonomics. Raising awareness about the risks of musculoskeletal disorders and the importance of prevention can help reduce the incidence of these conditions.

"Take care of yourself, so that you can help others"

Musculoskeletal disorders among orthopaedic surgeons are a serious and prevalent issue that affects both the health of the surgeon and the quality of patient care. The physical demands of the job, long hours, repetitive motions, and awkward postures all contribute to the development of musculoskeletal problems. By understanding the causes, consequences, and preventive measures for MSDs, we can maintain our health, improve surgical performance, and prolong our career. Implementing ergonomic practices in the operating room, promoting regular exercise, and fostering a culture of awareness and prevention are essential steps in addressing this issue.

References

1. *Swank KR, Furness JE, Baker E. A Survey of Musculoskeletal Disorders in the Orthopaedic Surgeon: Identifying Injuries, Exacerbating Workplace Factors, and Treatment Patterns in the Orthopaedic Community. J Am Acad Orthop Surg Glob Res Rev. 2022 May 1;6(5):e20.00244*

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BOS NEWS

From the President`s Desk...

DR. GAUTAM ZAVERI

BOS EVENTS HELD IN AUGUST 2025

AUGUST 3 DR. K. V. CHAUBAL CLINICAL MEETING

Venue: **Sion Hospital**

Convener: **Dr. A. B. Goregaonkar**

Delegates: 150

Started with excellent, well worked up cases by the host institution.
Post refreshments, the meeting broke up into **3 specialty case discussions**.
Post lunch, a **PG teaching program received excellent delegate participation.**

Sponsor: **INTAS INARA**

AUGUST 7 & 8 BOS SESSIONS AT TRAUMACON

Conveners: **Dr. Sushrut Babhulkar, Dr. Gautam Zaveri**

Session: **Periprosthetic Fractures**

Moderator: **Dr. Girish Dewnany**

Session: **Open Fractures**

Moderator: **Dr. Aditya Menon**

Faculty: **Dr. Sachin Bhonsle, Dr. P. B. Bhosale, Dr. Ameet Pispati, Dr. S. S. Mohanty, Dr. Vidyanand Raut, Dr. Gautam Chakraborty**

Session: **Challenging Trauma Cases**

Moderator: **Dr. Satish Mutha**

Faculty: **Dr. Jairam Jagiasi, Dr. Sudhir Sharan, Dr. Avinash Date, Dr. Dhrumin Sangoi, Dr. Parag Munshi, Dr. Raman Umralkar**

The BOS sessions at Traumacon were well attended and appreciated by all.

AUGUST 9 & 10 BOS OUTREACH PROGRAM

Venue: **Bhubaneswar**

Collaborating Association: **Orissa Orthopaedic Association**

Topic: **Musculoskeletal Infections**

Conveners: **Dr. Gautam Zaveri, Dr. Satya Ranjan Patra**

Faculty: **Dr. S. S. Mohanty, Dr. Rujuta Mehta, Dr. Aditya Menon, Dr. Mala Kaneria, Dr. Rajendra Chandak**

Attendance: 45 on both days

Sponsor: **Intas Aquila**

AUGUST 10 BOS WORLDWIDE WEBINAR

Collaborating Association: **Singapore Hand Society**

Convener: **Dr. Parag Lad**

Faculty: **Dr. Pankaj Ahire, Dr. Rohan Habbu, Dr. Prashant Kamble, Dr. Bipin Ghanghurde**

Sponsor: **Torrent Pharma**

AUGUST 23 & 24 BOS OUTREACH PROGRAM

Venue: **Nanded**

Topic: **Upper & Lower limb Trauma**

Conveners: **Dr. Gautam Zaveri & Dr. Vinod Kagane**

Faculty: **Dr. Sangeet Gawhale, Dr. Harshad Argekar, Dr. Abhijit Kale, Dr. Sachin Kale, Dr. Prashant Kamble**

Attendance: 65 on both days

Was largely **case based**. Was hugely appreciated with excellent delegate participation.

Sponsor: **Intas Aquila**

UPCOMING BOS EVENTS IN SEPTEMBER 2025

SEPT. 7 L. N. VORA MASTER CARES & MASTER SHARES SERIES

Venue: **KEM Hospital**

Conveners: **Dr. Pradeep Nemade, Dr. Mohan Desai**

Topic: **Failed Fracture Fixation - Lower Limb**

Sponsor: **Aareen Healthcare**

SEPT. 13 BOS WORLDWIDE WEBINAR

Venue: **Bhubaneswar**

Collaborating Association: **British Association of Spine Surgeons**

Topic: **Lumbar Disc Prolapse - Unusual Situations**

Conveners: **Dr. Samir Dalvie & Dr. Rajat Varma**

Sponsor: **Torrent Pharma**

SEPT. 14 BOS LIVE ANKLE FOOT SURGERY SYMPOSIUM

Venue: **Jupiter Hospital, Thane**

14 common ankle - foot procedures demonstrated by nationally acclaimed ankle - foot surgeons and telecast to 20 different centres across India.

Sponsor: **Intas Aquila**

SEPT. 21 BOS OUTREACH PROGRAM

Collaboration: **Rajkot Orthopaedic Association**

Topic: **Pathologies of Wrist & Hand**

Faculty: **Dr. Pankaj Ahire, Dr. Parag Lad, Dr. Rohan Habbu, Dr. Bipin Ghanghurde**

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