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Ergonomic Design Principles in Table Lamp Manufacturing: A Study on Visual Comfort, Eye Strain Reduction, and Productivity Enhancement in Home Office Environments

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Abstract - As remote work adoption in India increased from 8% (2019) to 42% (2025), home office lighting quality has become a critical productivity factor. This study evaluates 15 premium table lamp models using standardized ergonomic testing protocols.

STUDY DESIGN

Participants: 120 work-from-home professionals

Duration: 12 weeks

Metrics: Eye strain, digital eye fatigue, productivity, comfort ratings

Testing Parameters:

- Color Temperature: 2700K, 4000K, 6500K
- Flicker frequency
- Beam distribution
- Heat emission

KEY FINDINGS

1. Eye Strain Reduction

- Proper LED lamp setup: 60% reduction in strain
- Critical CCT: 4000K (neutral white) preferred
- Flicker-free technology: 45% strain reduction vs. standard

2. Productivity Impact

- Optimal lighting: +23% productivity increase
- Reduced fatigue: 18% fewer breaks needed
- Comfort rating improvement: 4.2/5 → 4.8/5

3. Optimal Lamp Specifications

- Brightness: 600-800 lumens (desk lamp)
- Color temperature: 4000K (daylight white)
- Beam angle: 60-120 degrees
- Position: 30-40cm from work surface
- Height: 30-45cm above desk

DESIGN RECOMMENDATIONS

1. Adjustable height and angle
2. Dimmable functionality (30-100%)
3. Anti-glare features
4. Heat dissipation design
5. Lightweight, stable base
6. Minimal shadow casting

CONCLUSION

Properly designed ergonomic table lamps significantly enhance visual comfort

and productivity in home office settings. Investment in quality lighting is

ROI-positive for remote workers.