ORIGINAL RESEARCH

An innovative tool for creating trailblazing office ergonomics awareness and skills training amongst office employees for safer use of computers

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ABSTRACT
Background: Office ergonomics is a highly neglected discipline that has the potential to enhance productivity, boost employee morale and significantly reduce musculoskeletal disorders globally. With the alarming increase in use of smaller laptops & hand held devices for office work, globally there is a felt need to spread awareness on office ergonomics. During pandemic employees working with computers suffered from musculoskeletal disorders as work from home was the new normal.The challenge is in educating maximum employees in shortest time on office ergonomics. **Objective:** The primary objective of this study was to train office employees on safe work postures, who then train their colleagues (TTT: Train the Trainer) including new recruits thereby promoting organization culture of embarking an ergonomics lifestyle resulting in a win- win situation. **Methodology:** The present study was conducted from January 2022 to December 2023 (based on my earlier pubmed indexed research of IJOEM) by different methods. The study was conducted using three types of training i.e. a) online training across India during pandemic (n=230), b) 45 minute theatre style training on a mock workstation with a power point projection at office (n=136) and c) 10 to 15 minute on-site live demonstrations on office floors (Do it with me training on existing office workstations. n=308) thus total n=674. **Result:** Responses received from participants on online, theatre style and onsite trainings on different variables showed that overall participants of onsite live demonstration rated variables of training better than participant of online and theatre style training. The findings were statistically significant. Responses received from participants about rating of different training, it was seen that overall 98% participants of onsite live demonstrations rated more 9/10 and above (among them 88% rated it 10/10). **Conclusion:** From the result, it is evident that onsite live demonstration was found superior in providing comprehensive training, knowledge enlargement, skills enrichment, easily replicable and influenced behavior modification.
Key Words- Corporate employees, office ergonomics, safer use of computers, workstation

INTRODUCTION
While training is the imparting of a specific ability to carry out a certain activity, development deals with the overall improvement and evolution of individual capacities through conscious and unconscious learning.[1,2]The main objective of training and development, which aids companies in increasing the effectiveness and efficiency of their human resources, is to improve employee competences and confidence.[3]Armstrong (2009) clearly demonstrated in his book that organizations could benefit from training and development by winning over the "heart and minds" of their employees. This would help them identify with the company, work harder for it, and remain loyal to it, all of which would lower attrition.[4]

Many companies satisfy their training requirements by implementing haphazard, impromptu methods. Training in these organizations is usually haphazard and disjointed. However, other companies identify the type of training they need first, then logically organize and execute training sessions, and last assess the training's results. [5-7]

Long-term static, awkward, and restricted postures at work are widely recognized to cause musculoskeletal stress on a variety of body parts of seated workers, including call center operators, and to play a major role in the development of musculoskeletal disorders (MSDs), which include prolapsed intervertebral discs, neck, back, shoulder, and wrist pain, visual fatigue, and mental stress, as observed in Nigeria and Thailand.[8,9]When using computers, newspaper office workers are more prone to MSDs. The likelihood of sustaining such injuries increases with the duration of participation in this activity. The US Department of Labor released statistics in 2011 showing that 33% of injuries in the US resulting in missed work and sick leave were caused by MSDs (nurses and retail clerks were among the most commonly impacted occupations). Work-related musculoskeletal disorders (WMSDs) in office workers are receiving more attention as a result of numerous initiatives, programs, and trainings.[10,11]Numerous epidemiological studies have shown that 76% of Indian computer workers also reported having MSDs, which include wrist, shoulder, back, and neck pain[12,13]In their 2011 study, Sharan et al. looked at the connection between Indian computer professionals' musculoskeletal problems at work and decreased productivity. They discovered that traits of the work style were a strong predictor of discomfort and lost productivity.[14,15]Assessments of user-centered seating often point out the detrimental impacts of extended sitting, like low back pain, on the user.[16,17]

MATERIALS AND METHODS
Globally, ergonomicists and preventive medicine doctors, often known as PMPs or occupational health medical officers, concur that an employee's work posture and amount of computer usage are major contributors to the development of MSDs. The answer is to teach people how to arrange their workstation's furniture and computer hardware ergonomically based on their body proportions. This will give them a platform to develop their abilities and eventually acquire safer work postures when using computer. In order to implement office ergonomic training, PMPs must plan a framework of awareness-raising, skill-training, and skill-implementation (for changing lifestyle behaviors) among corporate employees. They must also mentor colleagues to make ergonomic working a habit at the office and when working from home.

Amongst few corporate organizations', skills training was imparted from January 2022 to December 2023 (based on my earlier pubmed indexed research of IJOEM)[18] by different methods. The training methods adopted were a) online training across India during pandemic (n=230), b) 45 minute theatre style training on a mock workstation with a power point projection at office (n=136) and c) 10 to 15 minute on-site live demonstrations on office floors (Do it with me training on existing office workstations. n=308) thus total n=674. The type of training methods deployed was based on   like 1) administration departments agenda for the week/month 2) logistics requirement of the skills training and 3) time spent on acquiring the skills training.

RESULTS
The present study was conducted among participates using three training methods adopted a) online training across India on Zoom during pandemic, b) 45-minute theatre style training on a mock workstation with a power point projection at office and c) 10 to 15 minute on-site live demonstrations on office floors. Total 674 participants participated in three trainings.

Each training session ended with the distribution of a feedback form to the participants. Instant feedback was obtained using a pre-tested and validated feedback form (online for online training, on-the-spot for theater-style and on-site live demonstration training), consisting of five structured questions with just thirteen checkpoints regarding the training's usefulness and efficacy. The characteristics on the questionnaire included if the training was thorough, whether it led to an expansion of knowledge or an enrichment of abilities, whether it was useful and repeatable, and whether it affected behavior modification. Regardless of their agreement or disagreement with the aforementioned parameters, the participants could choose any one of the two options. In order to complete the feedback, the form asked for any additional remarks, if any, about what the participants liked and didn't like about the training, as well as suggestions for improvements.

Table 1: Distribution of study participants according to different training methods (n=674)

Training method	Number	Percentage (%)
Online training	230	34.18
Theatre style training	136	20.18
On-site live demonstrations	308	45.70
Total	**674**	**100**

Maximum participants were from on-site live demonstrations 308 (45.70%) followed by online training 230 (34.18%) and theatre style training 136 (20.18%). (Table 1)

Table 2: Responses received from participants on online, theatre style and onsite trainings on different variables (n=674)

	Disagree(%)	Agree(%)	Total(%)	P value
Online training				
Comprehensive training	4.84	95.16	100	
Knowledge enlargement	4.24	95.76	100	
Skillsenrichment	3.24	96.76	100	(P≤0.05) Significant
Practicality and replicability	3.64	96.36	100	
Influenced behavior modification	3.86	96.14	100	
Theatre style training				
Comprehensive training	5.24	94.76	100	
Knowledge enlargement	4.26	95.74	100	
Skills enrichment	4.22	95.78	100	(P≤0.05) Significant
Practicality and replicability	3.68	96.32	100	
Influenced behavior modification	4.18	95.82	100	
On-site live demonstrations				
Comprehensive training	2.12	97.88	100	
Knowledge enlargement	2.24	97.76	100	
Skills enrichment	1.68	98.32	100	(P≤0.05) Significant
Practicality and replicability	2.14	97.86	100	
Influenced behavior modification	1.4	98.6	100	

Responses received from participants on online, theatre style and onsite trainings on different variables showed that overall participants of onsite live demonstration rated variables of training better than participant of online and theatre style training. The findings were statistically significant (p ≤0.05). (Table 2)

Table 3: Responses received from participants about rating of different trainings (n=674)

Rating of different training	No.	Percentage (%)
Online training		
a) 8 on 10	14	6.09
b) 9 on 10	38	16.52
c) 10 on 10	178	77.39
Theatre style training		
a) 8 on 10	8	5.88
b) 9 on 10	20	14.71
c) 10 on 10	108	79.41
On-site live demonstrations		
a) 8 on 10	6	1.95
b) 9 on 10	40	12.99
c) 10 on 10	262	85.06

Responses received from participants about rating of different training, it was seen that overall 98% participants of onsite live demonstrations rated more 9/10 and above (among them 85.06% rated it 10/10). (Table 3)

Figure 1: Distribution of respondents according to their opinion regarding different variables in online, theatre style and onsite live demonstration trainings
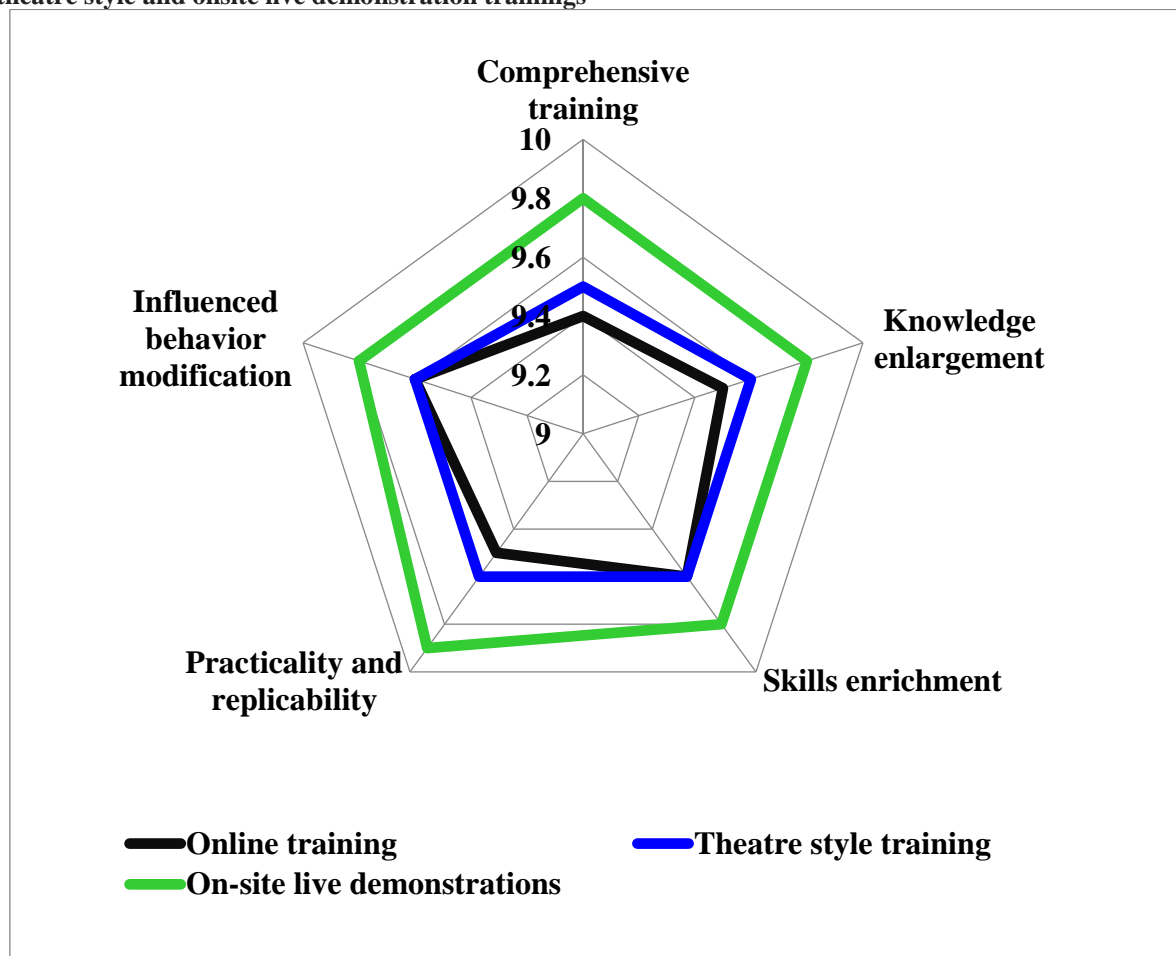
When we compared feedback of all participants of all three categories by converting their responses in a scoring pattern, it was observed that most parameters achieved high scores for onsite live demonstrations. Participants were more comfortable and appreciated the onsite live demonstrations (also evident by their comments in feedback forms) in comparison with online and theatre style training. (Figure 1)

DISCUSSION

In the present study maximum participants were from on-site live demonstrations 308 (45.70%) followed by online training 230 (34.18%) and theatre style training 136 (20.18%).

In the current study, participant answers to onsite, online, and theater-style trainings on various factors revealed that, overall participants in the onsite live demonstration evaluated training variables higher than those in the online and theater-style training. The findings were statistically significant ($p \leq 0.05$). To summarize, as less participants attend the online and theatre style training on office ergonomics, the onsite live demonstration is a promising, very practical novel intervention as it is brief, undertaken at the workstation, enhancing awareness in maximum employees in a short time, also instilling a feeling of caring and bonding, which is vital for a successful and robust office ergonomics control program. Short intermittent reminders in the form of a card with few tips on ergonomic arrangement of workstations, modular chair adjustments, and a link address featuring a video on desk stretches could serve as an excellent handy desk-reminder emphasizing safer work postures and could augment behavior modification.

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There is evidence that using of sit-stand workstation can play an important role in reduction of musculoskeletal disorders, reduce sedentary behavior and improve workers' health and productivity.[19]

CONCLUSION

The aforementioned result makes it clear that in terms of comprehensive training, knowledge expansion, skill enrichment, practicality, and behavior modification influence, onsite live demonstrations were determined to be superior ($P < 0.05$). The onsite live demonstration is very promising because fewer employees attend online and theater-style training. It is practical, replicable, increases awareness with a wider employee coverage in a shorter amount of time, and instills a sense of caring and confidence toward a robust office ergonomics program. All corporate workplaces worldwide could adopt this low-cost method to raise awareness of office ergonomics and encourage behavior changes for safer working.

In order to ensure maximum employee coverage in the shortest amount of time, this study showcasing polar graphs has shown to be incredibly helpful by opening our eyes to highly practical and affordable methods for improving office ergonomics awareness and skill enrichment among office personnel.

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