Innovative Industrial and Workplace Ergonomics in Modern Organizations

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Abstract:- **Industrial Organizations today are facing multiple challenges to maintain the health and performance of employees while attempting to integrate new technologies and support a wide range of work styles. It is therefore needed to better understand the employees' demands related to their work area and then to evaluate their work areas and make the changes required maintaining a healthy workforce. This is further driven by the need to prevent injuries, improve productivity, retain employees, or comply with local, state, regulatory systems requirements. Five of the proven tools and methods have been explained in this paper to effectively and efficiently improve workplace ergonomics.**

Studies have been conducted by the author in various public and private limited companies to understand the pre-assignment musculoskeletal disorders, where it is seen that the majority are simply resigning after simple training of 90 days or before as they are not in a position to continue to work with their pre-injury in the present work environment which is further getting them into major problems and is one of the reasons for work force erosion.

While ergonomic challenges are increasing, there are also emerging opportunities to reduce injuries. The number of young employees entering the workforce with pre-existing or incipient injuries is increasing. These employees are using more handheld technology, videoconferencing tools, and in many cases, multiple computer monitors. Work styles are becoming more complex, evolving to encompass a wider variety of interactions within a greater diversity of workspace types. Various designs for workstations and seating arrangements have been suggested with proper ergonomic design considerations and future use, in this paper.

Key Words: Ergonomic Injuries, Musculo Skeletal Disorders (MSDs), Ergonomic Seat, Ergonomic Work area, Video Display Terminals (VDTs), Ottomans, Safe viewing distance- Normal Eye-view, Tilt & Swivel.

PREAMBLE

Industrial work environments are highly and extensively dissimilar as they include repetitive assembly environments, non-standard field services and distribution centers and so on. Industrial Organizations today are facing multiple challenges to maintainthe health and performance of employees while attempting to integrate new technologies and support a wide range of work styles.

It is therefore needed to better understand the employees' demands with respect to their work areas and then to evaluate their work areas and make the changes required to maintain a healthy workforce. For this purpose it is necessary to-

➢ Identify ergonomic risks in the industrial workplace.

➢ Explain how primary risk factors contribute to work-related musculoskeletal disorders.

➢ Use the appropriate tools to document ergonomic issues.

Most companies attribute the high incidence of Musculo Skeletal Disorders (MSDs) to the following –

➢ Reduction of other types of injuries with technology growth, as a result of programs focused on reducing and eliminating mechanical, electrical, and chemical hazards, MSDs are emerging as a priority issue.

➢ Increased work demand on individual employees. This is typically attributed to workforce downsizing, production rate changes, cost constraints, and "doing more with less."

➢ Young graduates with Pre-existing Ergonomic Injuries, Aging workforce, Conditioning, and condition of both older and younger employees.

LITERATURE review

Ergonomics is an old issue and there are many studies available therefore very old and current literature from both print and the internet were used for this study. Because of their ubiquity as work environments, office workplaces have endured a great deal of scientific scrutiny almost from the inception of the human factors/ergonomics discipline. However, workplaces with any semblance to current instantiations of the "office" concept have existed for less than two centuries (Creighton, 2007). Human-centered scientific investigation of these "information work" environments began in earnest in the 1960s with the Büro lands chäft (landscaped office) idea, developed and exported by the Quickborner team, located just outside Hamburg, Germany (Voss, 1996). Several strong design

guidelines and many well-established implications for both researchers and practitioners can be drawn from the research literature reviewed in this chapter. For example, design standards and guidelines relevant to office ergonomics have increasingly taken a user-centered rather than a product-centered approach to ensure that musculoskeletal loadings, awkward postures, and the negative aspects of workload have been optimized for the office occupant(s).

Although it featured a decidedly human focus on the quality of indoor environments and included many of the laudable goals of the contemporary "green building" movement (e.g., Pile, 1978), this approach introduced some challenges for occupant-centered design. Compromised privacy and personal control over social access and work processes were perhaps paramount among these concerns, and contemporary research continues to highlight problems such as inability to concentrate, increased perceived workload, and motivational effects (Banbury & Berry, 2005; De Croon, Sluiter, Kuijer, &Frings-Dresen, 2005; Evans & Johnson, 2000).

A number of comprehensive reviews of the Human Factors/Ergonomics literature have appeared in the decades following the spread of landscaped offices, from Germany to Europe, Canada, India and then the United States (e.g., Grandjean, 1987; Helander, 1982; Human Factors and Ergonomics 246 Reviews of Human Factors and Ergonomics, Volume 4 Society, 1988; Smith & Cohen, 1997). These reviews explored human-computer interaction; applied investigations of attitudes and behaviours relative to a variety of furniture, equipment, and settings in office and other work environments; and the design of computer workstations. This latter, somewhat narrow, emphasis is in fact reasonable, because people who work in offices spend more than 50% of their time interacting with personal computers, laptops, or other similar information technology equipment using keyboards, mice, laser-light pens, trackballs, and various other input modalities—including voice recognition and specialized handheld computers (e.g., Brown, Albert, &Croll, 2007).

From an office ergonomics perspective, these reviews summarized both laboratory and field research that related the design of the physical environment and job tasks to predictable consequences for office employees. These outcomes notably included musculoskeletal problems but ranged from physiological conditions and symptoms to psychological results such as job satisfaction and motivation.

The knowledge of relationship between seats, awkward postures and musculoskeletal disorders go back many years. A good seat is one that helps the individual to stabilize his body joints so that comfortable posture is maintained (Bridger 2003; Kelly et al., 2013).Many years ago Grand jean et al., (1973) estimated that50 percent of adults suffer backaches during, at least, one period of their lives. This is due to pathological degeneration of the discs, which lie between the bony vertebrae and act as an elastic

cushion to give the spinal column its flexibility. Improper postures, they mentioned, wear out the disc. He cited Yamaguchi and Umezawa(1970) to have studied the effect of various seat inclinations on the spine.

Seats should have back support and should provide for correct curvature of the lumber or low back area in order to keep the spinal column in a state of balance. It should be so designed that the weight of the body is distributed throughout the buttock region by proper contouring of the seat pan in combination with other features of the seat such as seat height, seat angle and seat back (Gunning et al 2001). Recent work supports the view that a forward hunchback posture cause pain in the upper back and shoulder regions but the pain ceased as soon as a backrest was provided (Kroemer 2009; Dul and Weerdmeester 2008). Hiba (1998) and Bridger (2003) noted that when chairs and work tables cannot be adjusted to fit the worker, they are forced to use movements or positions that may make them uncomfortable or cause aches and pains. For good posture most jobs should be at elbow height, whether the worker is standing or sitting. Elbow height shows how high a work station is (HESIS 2012). Now the innovative approach is studied based on the existing literature and study of the organizations physically and having personal interviews with employees.

EVALUATING WORK AREAS

Various tools that are necessary to drive an ergonomic process based on risk assessment as well as to provide with methods that effectively enhance the job improvement process have been studied. This would also help in evaluating work areas and design effective counter-measures to reduce ergonomic risk factors, while shaping a productive work environment. The specific implements are-

- ➢ Quantify the benefits of ergonomics in the workplace

- ➢ Prioritize ergonomic issues in the workplace

- ➢ Apply ergonomic design guidelines when modifying, specifying or purchasing equipment.

The bottom line is that ergonomics in the workplace is an issue that most companies must address. This may be driven by the need to prevent injuries, improve productivity, retain employees, or comply with local, state, regulatory systems requirements.

TOOLS FOR EFFECTIVE WORK PLACE ERGONOMICS

Some of the proven tools and methods available today to effectively and efficiently improve workplace ergonomics are –

1. Getting Proactive

Fifteen to 30 years ago, the focus of most ergonomics programs was on MSD injuries, and the approach was reactive. Early programs used symptoms and injuries as a measure of problem identification, problem solving and success, used qualitative tools, and tended to react to injuries and employee complaints. Today, leading companies are proactive. They use quantitative tools to measure exposure to MSD risk factors and then focus their efforts on changing the job conditions to reduce the level of exposure—before an injury occurs. This shift is significant, momentous and important; as established ergonomics programs mature, they become more efficient and effective. The proactive approaches routinely draw closer to the organizations by-

- Learning to develop proactive approaches to ergonomic risk mitigation in industrial environments

- Evaluating, quantifying and prioritizing ergonomic risk using ergonomic assessment tools

- Determining the root cause of ergonomic risks and develop effective solutions

2. Integrating the Process

Companies with effective ergonomics program tend to manage ergonomics as a process that is aligned with, or integrated into, existing improvement processes. These improvement processes may include Lean Manufacturing, Six Sigma, Continuous Improvement, and Safety Management Systems. The shift to managing the system as a process engages people across an organizationand ensures that the processes are sustainable with time, keep pace with business needs, integrates the processes into the business operations and ensures that they are not dependent upon a few people. It should provide a logical system for determining and deriving improvement. As the program matures, leading companies are getting transformed into companies with Advanced Ergonomic Approach,with an integrated process that is aligned with continuous and ongoing improvement taking care of natural laws in its stride.

3. Engaging others and Shifting Ownership

Ergonomic processes engage people at all levels of the organization, from the site manager to individual employee. Each person has clearly defined roles that collectively reduce MSD risk factors in the workplace. Ergonomics programs traditionally depended on onsite "experts" who typically were the staff members at Team Management Level. Now, successful organizations have expandedto ownership, involvement, and accountability for ergonomics to the people outside the organization also. This study itself is an example for the same.

Employee involvement and management leadership are two critical elements of safety and environmental management systems. They are also critical components of a successful ergonomics process. Employees typically get involved in several ways: They can adjust their own workstations, become members of an ergonomics or safety team, involving themselves in assessing and improving work conditions, or participate in the Kaizen event for ergonomic design of work environment. Majority of the benchmarked companies establish and train employee teams so that they have the skills to conduct assessments and make workplace changes to improve the organization's ergonomics.

A major change in the management of ergonomics over the past decade has been the shift of ownership to Engineering. Traditionally, safety professionals have driven ergonomic improvements in an effort to reduce injuries, but all along they have not been right people for the said task. Ergonomics is an engineering discipline. Many of the leading organizations and companies have now made the engineering operations group or main stream engineering group responsible for the ergonomic programmes.

4. Moving Upstream

Consistently addressing ergonomics in the design phase of new processes, equipment, layouts, and products is a common practice of advanced organizations. They are able to achieve this by using a common and consistent phase gate review process, standard design guidelines for ergonomics (reach, force, work height, weight limits, etc.), and a system for holding engineers accountable for quality (level of MSD risk factors).The greatest value of good upstream design is linked to the reduced cost of making changes in the direction of ergonomic improvements. The cost of changing equipment and layout once it is in place is more costly than the cost of making the change in the design phase. Progressive leading companies have integrated design criteria in their phase gate review process and hold projects and people accountable for designing workplaces and tasks with low exposure to MSD risk factors and Work place injuries.

5. Addressing the Office

The biggest trend in managing office ergonomics has been the movement toward employee-driven assessments and workplace changes by the organizations with proper understanding of work place injuries and MSDs. By providing online training and self-assessments, employers are enabling and empowering individuals to take the first steps in adjusting their workstations to fit themselves. Importantly, in organizations it is observed that –

- There is less dependency on single person assessments.
- Workstations and chairs have a full range of adjustability.
- Office workstation design is based on computer use.
- Employee training focuses on enabling people to assess and adjust their own workstations.

INNOVATIVE CHANGES IN ORGANIZATIONS

In the modern organizations, the look, feel and design of the workplace are changing. Organizations are opting for collaborative and open space plans, while also trying to reduce their real estate footprint and energy costs. Add in all the innovative technological changes that allow employees to use multiple devices (including their own) at work. The complexity of these changes increases, finally aiming for improved productivity, and to share their predictions for the workplace of the future through-

- Visualizing the research behind open and collaborative workspace plans

- Overcoming the challenges of existing workplace designs for all generations of employees

- Using new tools to develop modern floor plans

- Leveraging communication and technology tools to improve performance.

- Additional up gradation of skills to perform with new technology ergonomically.

COMPUTERIZED ORGANIZATIONS

As computing devices proliferate, organizations are simultaneously reducing the traditional planning footprint and offering a greater diversity of spaces for individual and group work—all the while providing a safe and ergonomic working environment. A review of recent ergonomics studies reveals surprising insights about new employees, new technology, and new furniture elements. But on multifaceted observation following issues also got revealed-

1. Disturbing statistics about Young Generation Employees'vulnerability to work place injury.
2. The greater potential for injury in organizations that increase the size and number of computer monitors used in primary workspaces.
3. Need for imparting training in understanding the importance of ergonomic work culture and regular reminders to change posture in reducing work place injury.
4. The role of casual lounge furniture and their need within social and collaborative spaces, which would play a major role in permitting employees to naturally assume healthy postures when using electronic devices.

PRE-ASSUMPTION FOR PRE-INJURIES

Office planners should assume that many Young Generation office employees are entering the workforce with existing ergonomic injuries. The employee turnover rate is on increase because of these pre-existing injuries as they are not in a position to continue to work and the jury is still out on whether this generation, which spends an astonishing8 to 10 hours a day on electronic devices,is inherently more technologically able than its predecessors.

However, one thing is certain,that the intensive use of electronic devices by members of Young Generation will have broad consequences for their long-term health and for the organizations that employ them. Figures from 1 to 4 indicate such pre-injuries and health problems that are common in present young generations.

Figure 1: Young people are entering the work place with pre existing injuries

Figure 2: Young people are entering the work place without knowing safety standards

Figure 3: Young people are entering the work place with ailments like Hypertension

Figure 4: Young people are entering the work place with ailments like Diabetics.

The studies conducted by the author indicate just how alarming are such issues. A private bank in India, with its Back-offices at Hyderabad is recruiting young graduates in to their Banking Operations with a Post Graduate Diploma in Banking Operations as a part of their recruitment process. The entry to the said programme is not with proper medical check-up and many youngsters are suffering with musculoskeletal disorders. It is seen that majority are simply resigning after simple training of 90 days as they are not in a position to continue to work with their pre-injury in the present work environment. It is observed in a cross-sectional study of 2000 people working with various organizations, that 41% of under graduate and post graduate students, experienced pain and discomfort symptoms, while using a computer immediately on joining in the software companies and Banks, with growing computer utilization. In the year 2014 more than 50% of surveyed young engineering graduates joined with various software companies,experienced pain whichthey attributed to extended computer use.

In a sampling study with Indian Engineering Studentsespecially from many private engineering colleges in Andhrapradesh (Combined Andhrapradesh with Andhrapradesh and Telangana in the year 2014) shows that the potential pre-injury problems exists for more than 25% of the youngsters and are observed to have a potential to develop injuries to the upper body, arms and back (upper extremity musculoskeletal disorders) before they even enter the workforce. Further, it's plausible that this group's threshold for re-injury may be much higher than older employees. Thus, organizations should offer furnishings (sit-stand work-surfaces, adjustable task lighting, monitor arms, etc.) and training programs that reduce the risk of further problems while currently recruiting new employees assuming certain incidence of ergonomic pre-injuries.

RISK OF ADDITIONAL WORK-INJURY

Larger, multiple computer displays in the primary workspace increase risk of injury (Figure 6). Organizations today must be flexible enough to explore and implement new technologies, which sometimes demand additional space, training, and planning. It is seen in the Banking Organizations and software companies, the size, and number, of monitors per workspace has increased dramatically in the recent years. Across industries, employees now use multiple monitors and larger screens for trading, scientific, or technical pursuits; for maintaining multiple communication channels in global companies; or for keeping pace with the demands of real time information.

EYE LEVEL – DISTANCE – EYE-LINE – TILT & SWIVEL

Proper adjustment of monitor position has become increasingly important as the use of larger, multiple flat

screens within the workspace becomes more common. The issues to be considered are in respect of -

1. Choosing primary monitor and adjusting the same according to typical working position.

2. Set additional monitors 1-2 inches apart horizontally.

3. Vertical positions of monitors should match primary screen.

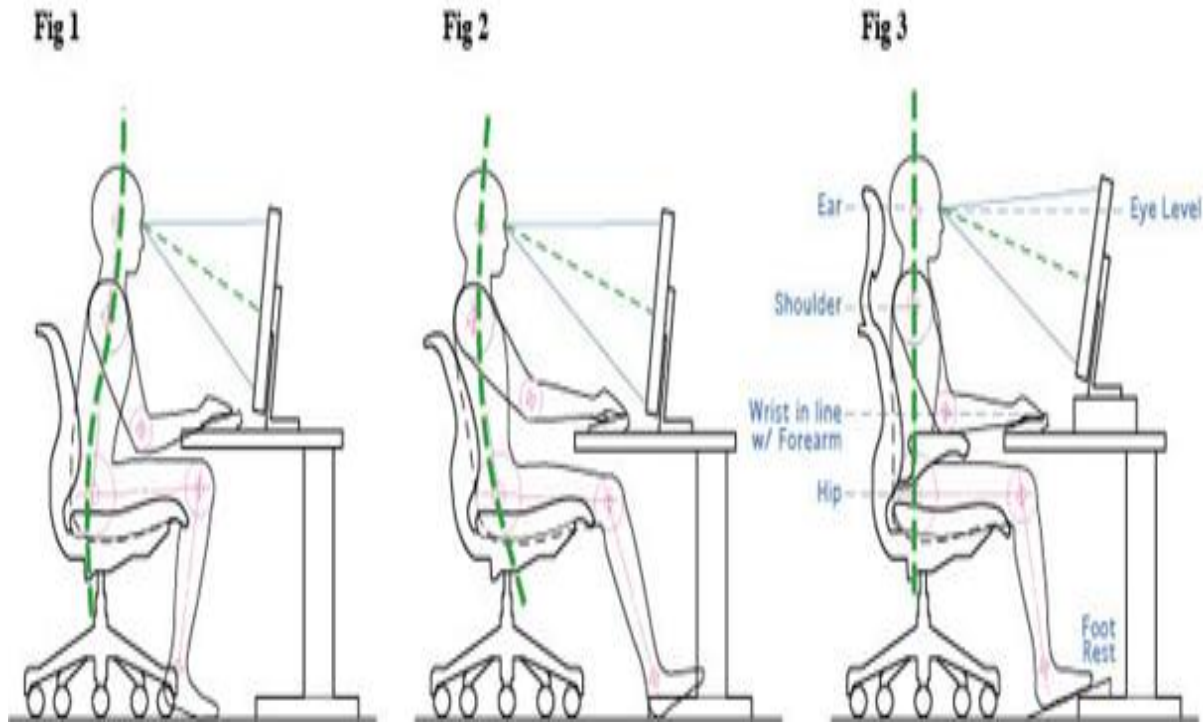4. Tilt and swivel each monitor so that the line of sight is centered and perpendicular to the screen.

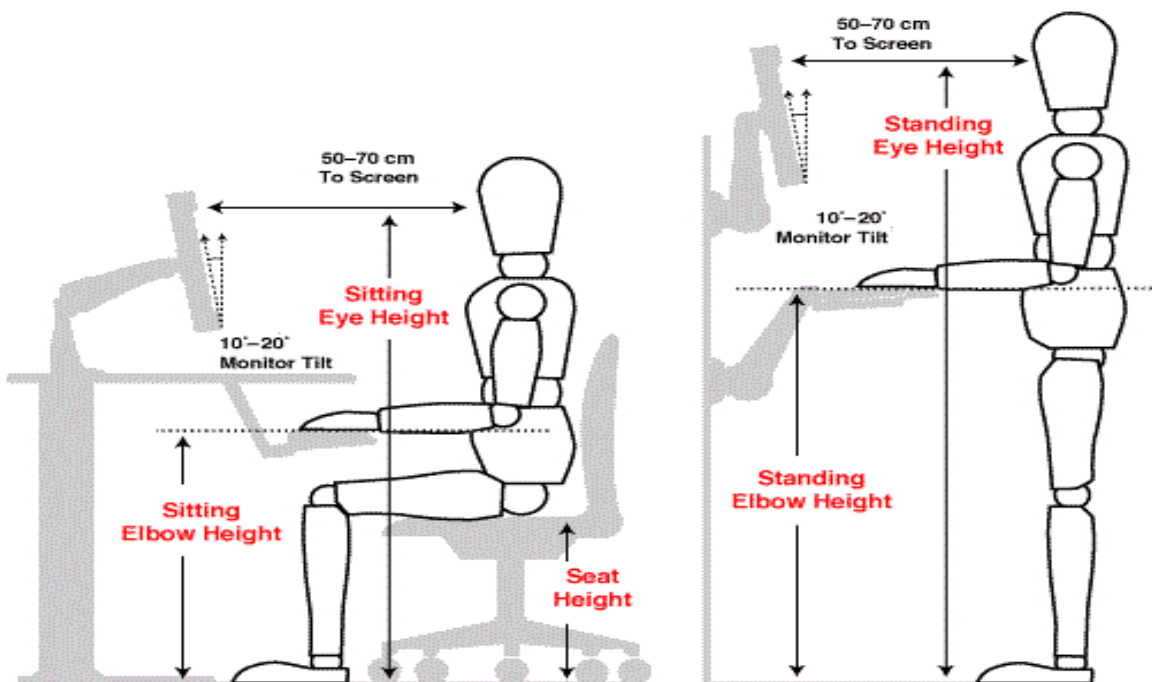Figure 5: Proper adjustment of monitor position for working on computer at workplace

Figure 5: Sitting and Standing Eye- Height adjustments to avoid Ergonomic Injury.

Figure 6: Multiple Monitors - Distance – Eye Line – Tilt &Swivel

Basic guidelines for setting up a Ergonomic Computer Workstation

Workstations that include Video Display Terminals (VDTs) are now being ergonomically designed for both computer and non-computer work. VDT workstations are also made as adjustable ones, so that users can easily change their working postures, and are equipped with the following:

1. Adjustable and detachable keyboards;

2. Display screens that tilt up and down;

3. Brightness and contrast controls;

4. Flexible copy-holders that reduce the distance between the screen and source material; and

5. Proper lighting and anti-glare filters to prevent glare from the VDT screen.

6. VDTs should be placed in the workspace in such a way as to minimize or diminish glare.

Figure 7: Bad postures plausible for an Ergonomic Injury especially in a Moving Vehicle

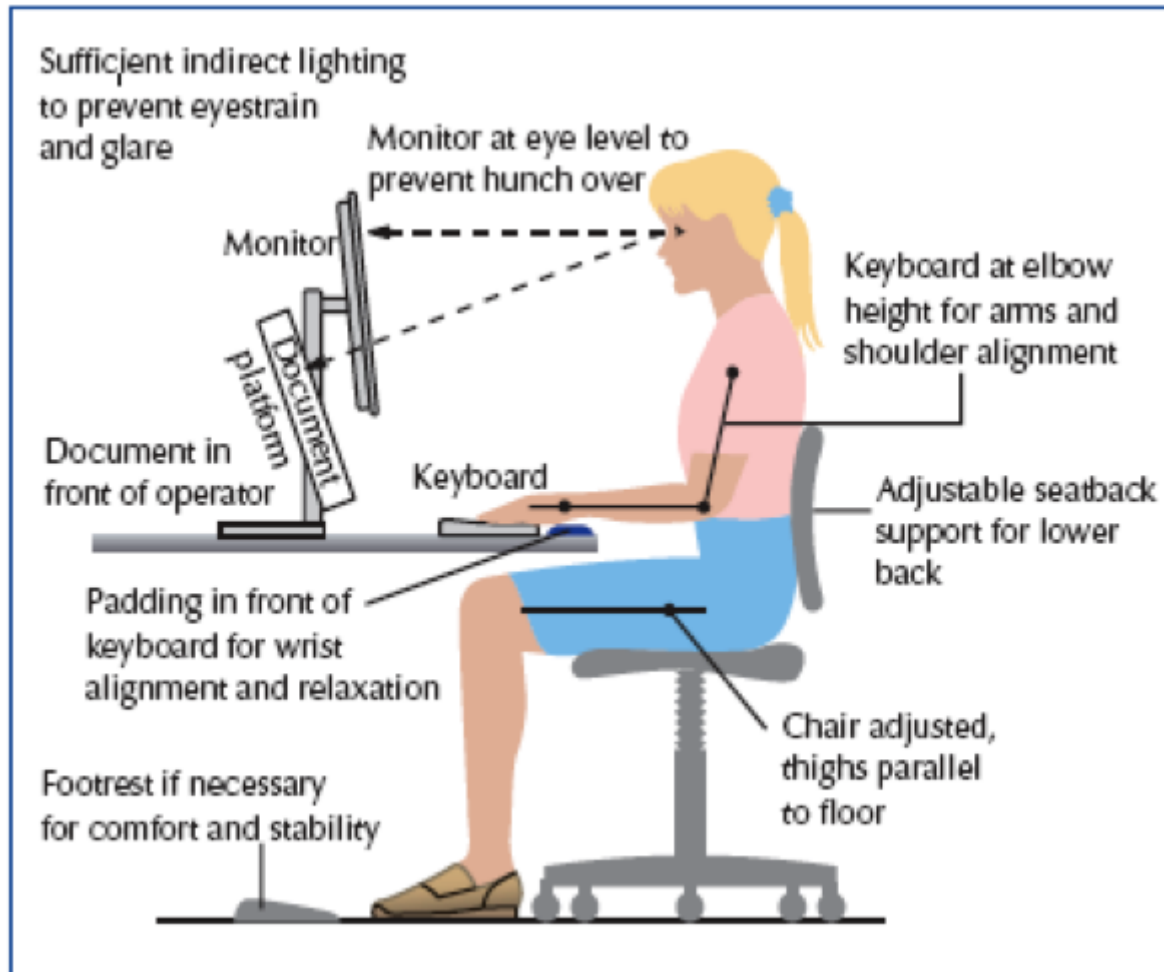| Horizontal Location / Vertical Location	Close: 0-12"	Intermediate: 12-24"	Far: 24-31"
Shoulder to 12" above shoulder	24	No known safe limit	No known safe limit
Knuckle to chest	31	20	11
Shin to knuckle	20	15	4
Floor to shin	No known safe limit	No known safe limit	No known safe limit

Table 1: Ergonomic Safe Limits – in front of computer

Figure 8: The workspace, training and furniture must work together to provide good ergonomics

DESIGN OF OFFICE WORKPLACE CHAIR

When an employee spends eight to ten hours in the chair, the height of the chair and the work surface are critical. The human body dimension that provides a starting point for determining correct chair height is the "popliteal" height. This is the height from the floor to the crease behind the knee. The chair height is correct when the entire sole of the foot can rest on the floor or a footrest and the back of the knee is slightly higher than the seat of the chair. This allows the blood to circulate freely in the legs and feet. The various parts may be summarized as follows-

Armrests: Armrests should be large enough to support most of the lower arms but small enough so they do not interfere with chair positioning. Armrests should support the lower arms and allow the upper arms to remain close to the torso and made of soft material and have rounded edges.

Backrests: Backrests should support the entire back including the lower region. The seat and backrest of the

chair should support comfortable postures that permit frequent variations in the sitting position. The backrest angle should be adjustable but lock into place or have a tension adjustment.

Seats: Seat pans should be height adjustable and have a user adjustment for tilt. (users adjustment for tilt, is defined as any method of activating the movement of the seat pan/backrest). This can be either through the use of manual devices (e.g. levers, knobs, adjustments) or by movement of the body/body weight. Seat pans should be padded and have a rounded, "waterfall" edge, wide enough to accommodate the majority of hip sizes.

Base: Chairs should have a strong, five-legged base and casters that are appropriate for the type of flooring at the workstation.

Figure 9: The Ergonomic computer work table

ERGONOMIC WORKSTATION DESIGN

Augmentation of display technology is a challenge for organizations that seek to guarantee employee safety. A recent study at a bank's back-office work station in Hyderabad, suggests that the use of various kinds of large-scale and multiple-screen displays leads more quickly to physical discomfort for employees in traditional work settings.

Further, the study indicates that many and frequent small adjustments must be made to maintain an optimal spatial relationship between the display and user, as the display area grows and the number of monitors proliferate. Employers seeking to combat potential harmful effects of multiple, large monitors may find that the introduction of adjustable monitor arms can address some of the risk factors identified by these studies. Such innovations support flexible work styles and ease of interacting with others (such as when sharing information on a display).

It is true that a proper setup of monitor and workstations would help the organizations to meet ergonomic requirements for safety and to reduce the risk of injury to the employees. Figure 5 and 6 and Table 1 indicate the ergonomically suitable set-up. Figure 7 indicate the bad posture which can cause ergonomic injury or pre-injury before the youngsters enter into the organizations.

Workspaces must accommodate a wide range of work postures through furniture and training. Figures 8, 9 and 10 indicate such ergonomic designs giving proper adjustments with respect to a particular employee at work. Recent studies show that a safe working environment requires more than just ergonomically designed furniture, suggesting that training and behavioural cues may be required to address the ergonomic challenges of today's office staff.   Figure-11 depicts various situations of exposure to physical loads and its short term and long term effects. Figure 9 when looked along with Figure 11 indicate the importance of the natural law of ergonomic posture while sitting.
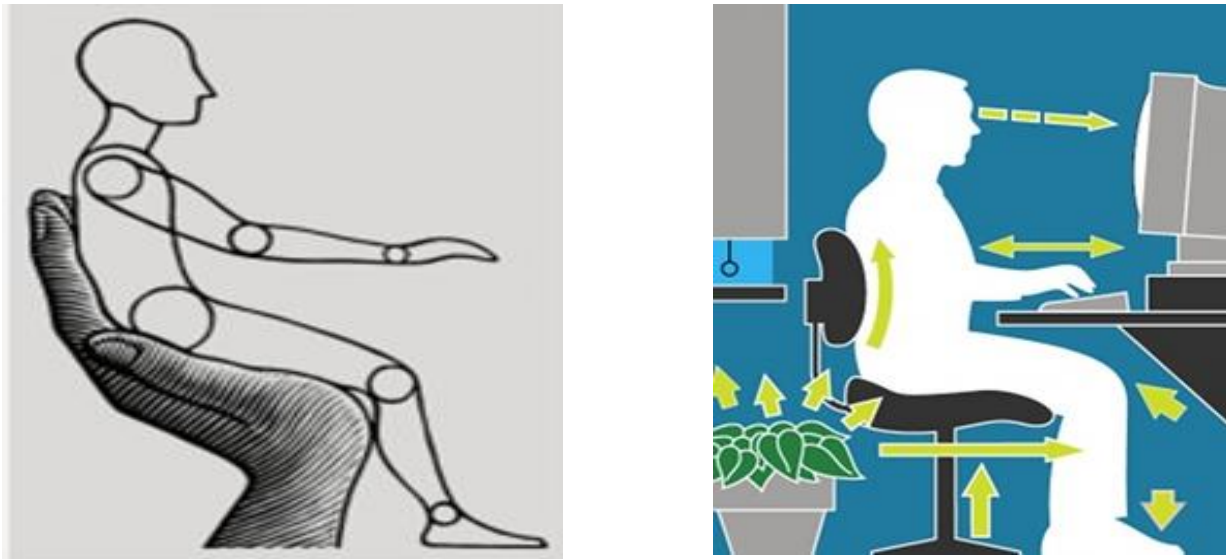
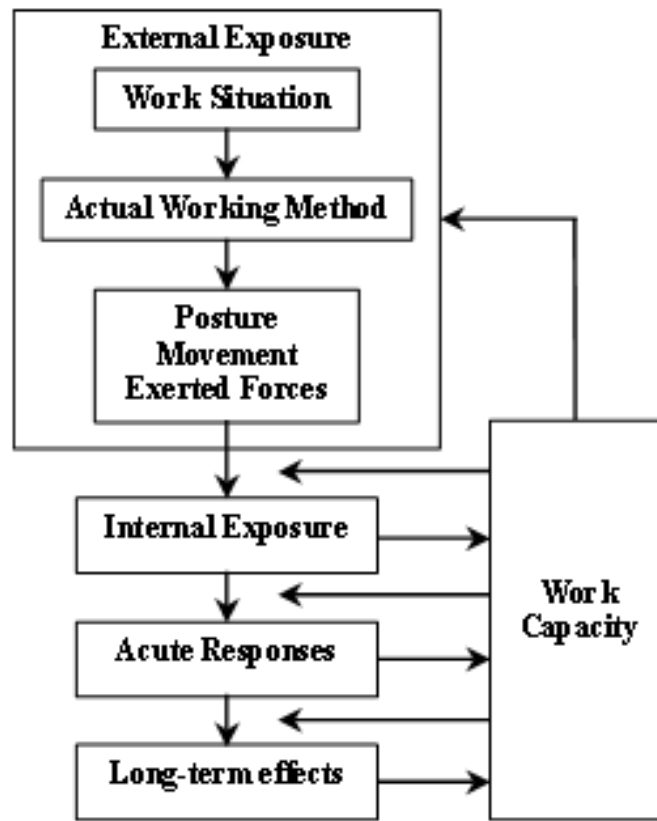Figure 10: The Ergonomic Work place – for computer work

Figure 11 : The exposure to physical loads and its short term and long term effects
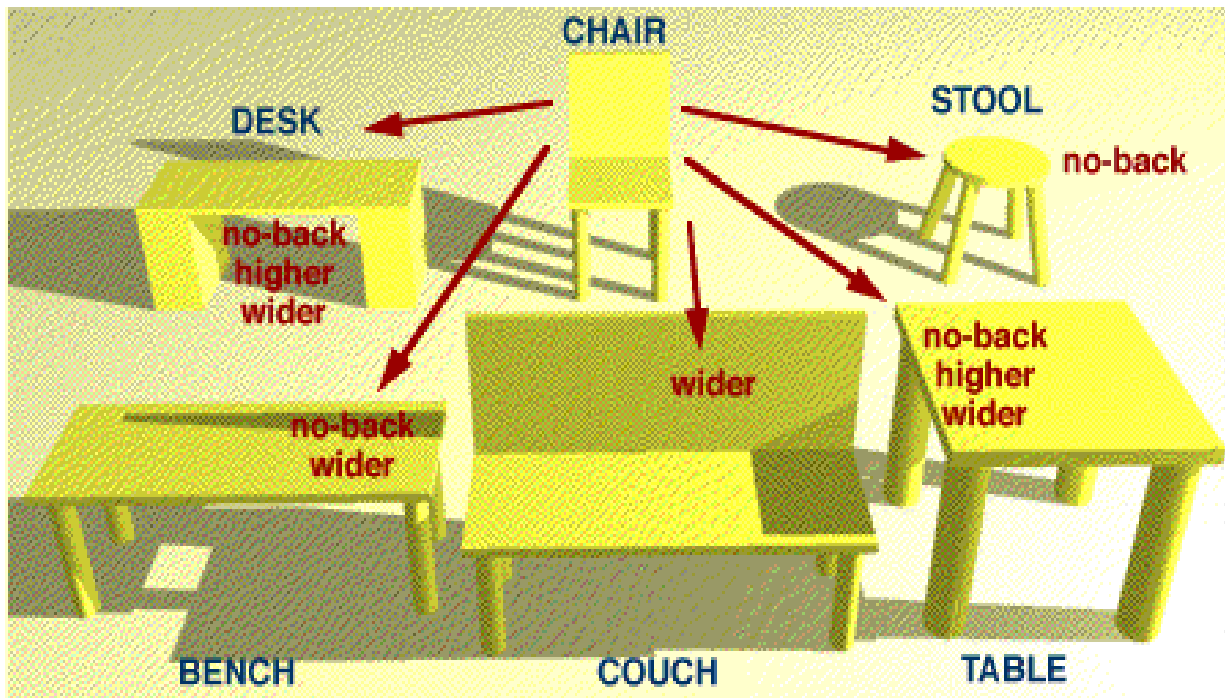
Figure 12a: Non-traditional seating options, such as lounge furniture, helps people naturally assume safe postures when using their technology devices

Figure 12b: Non-traditional seating options, such as lounge furniture, helps people naturally assume safe postures when using their technology devices
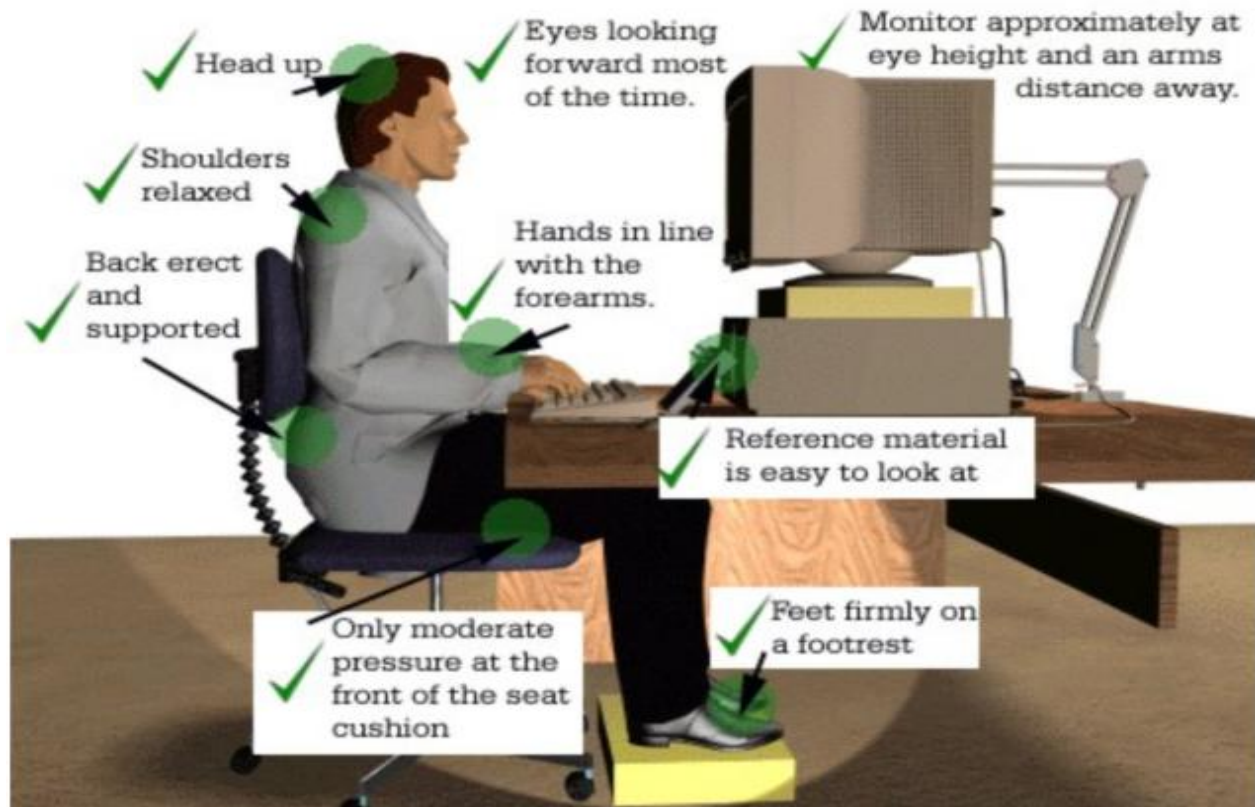
Figure 14: Ergonomic Indicators at work station

ERGONOMIC WORK STATION PARAMETERS

Correct work station height depends upon the user of a work station and upon the chair and other factors that interact with the user and table. The ideal is for the user to be able to sit at the work station with the keyboard in place and be able to easily maintain a 90-100 degree elbow angle and straight wrists while keying. The height of an adjustable keyboard support should adjust between 23" and 28" to accommodate most-but not all-users. 26" is a recommended compromise position while leg clearance must still be considered.

1. Leg room: Knee spaces should allow a employee to feel un-crowded and to allow some changes of position even with the keyboard support lowered to the correct level for use. The knee space should be at least '30" wide by 19"deep by 27" high' to comply with the requirements for safe posture. For those using a footrest, clearance must be calculated with the legs in place on the footrest. Likewise, depth of the "clearance envelope" for both legs and toes should be evaluated while the user is in a normal working position at the work station (determined by the design of the seating system and the way the user sits). Drawers and support legs (for furniture) should not go where human legs need to fit.

2. The work station top should be big enough to allow space not only for all computer-related necessary equipment, but also for paperwork, books, and other materials needed while working at the computer. Working with materials on chairs and at odd angles has the potential for neck and other body strain. Frequently used items should be kept close to avoid long reaches. A general recommendation is that the work area top should be at least as big as the standard office desk - 30 inches by 60 inches. A depth of at least 30 inches allows flexibility in use/reuse of the work area. Usable space may be maximized by good wire/cable management.

3. Thickness of work surface: minimum one inch

SPECIAL ERGONOMIC FURNITURE

Ergonomic research long ago has indicated that office seating should support frequent shifts across a wide range of postures and that a standing position places far less stress on the spine than in sitting.Recent studies agree with these findings, highlighting the comparative metabolic and overall health effects of a work style that includes both standing and sitting. The discomfort due to long periods of intense office work can be mediated by regular postural change.

The combination of ergonomic furniture and experimental software applications designed to prompt shifts from seated positions to standing positions, was found to produce the most dramatic reduction in discomfort. In short,

organizations need to make it not only possible for employees to vary their postures (through furnishings), but also to make it easy through training.

Casual lounge furniture allows employees to naturally assume healthy work postures. Organizations are offering a wider range of casual open and enclosed collaborative spaces that include casual, lounge furniture. Employers planning such workspaces will be pleased that recent research indicates countless low-stress computing positions can be achieved using non-traditional furnishings. The present study suggests that certain seated postures on couches—increasingly common in office environments—are characterized by "neutral" shoulders and "neutral" elbow flex angles. Additionally, the right casual furniture can allow employees to naturally adopt one of countless "safe" positions (Figure 12a, 12b and 14). Ottomans, illustrated at Figure 16 and 17, which provide support for legs, often contribute to positions that are relatively neutral.
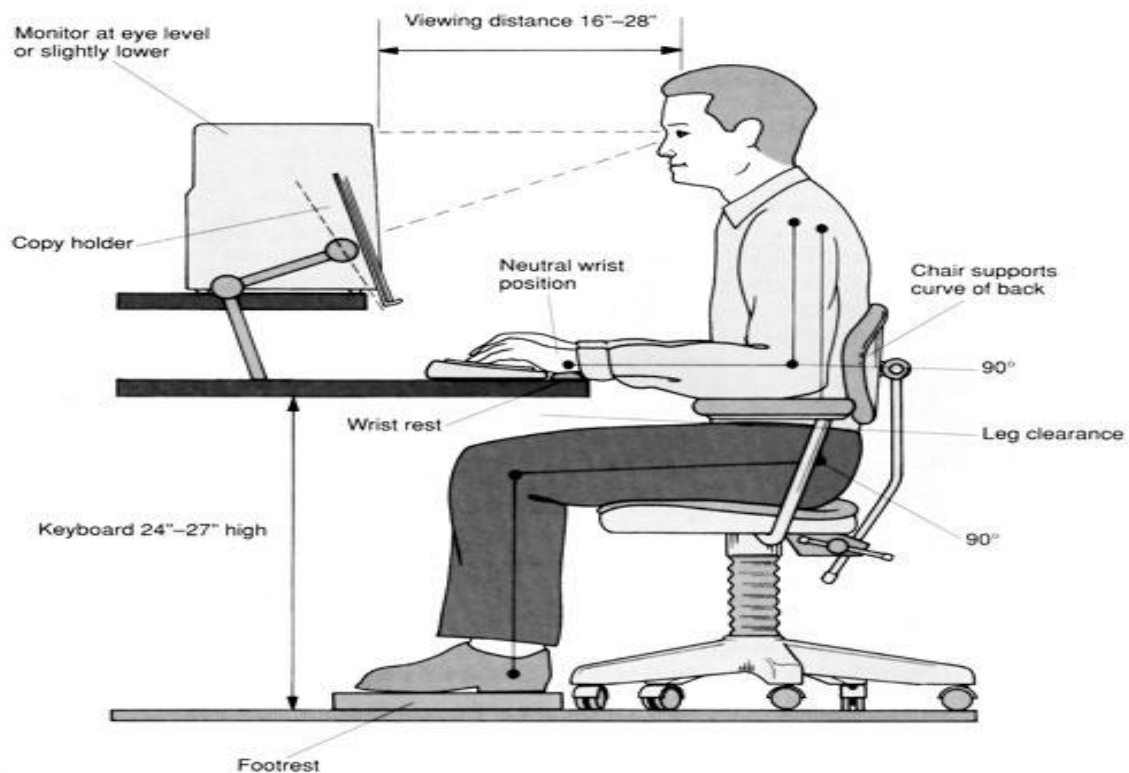

Figure15: Safe Viewing Distance and ergonomic adjustments while sitting

Figure 16: Ottomans

Figure 17: Ottomans

(An **ottoman** is a piece of furniture consisting of a padded, upholstered seat or bench, usually having neither a back nor arms, often used as a stool, footstool or, in some cases, as a coffee table. Ottomans are often sold as coordinating furniture with armchairs or gliders. An ottoman can also be known as a footstool, tuffet, hassock, pouf or pouffe. Ottomans can be used in many rooms; they can be used in the bedroom, gaming room, family room and guest room. Leather and bench ottomans are used as alternatives to sofas)

ERGONOMIC CHALLENGES - EMERGING OPPORTUNITIES

While ergonomic challenges are increasing, there are also emerging opportunities to reduce injuries. The number of young employees entering the workforce with pre-existing or incipient injuries is increasing. These employees are using more handheld technology, videoconferencing tools, and in many cases, multiple computer monitors. Work styles are becoming more complex, evolving to encompass a wider variety of interactions within a greater diversity of workspace types. All of these factors elevate ergonomic hazards to office employees now and in the future.

Organizations may be able to counteract employee health risks by implementing some of the insights from the studies reviewed in this paper. Employees are encouraged to assume a wider range of postures in traditional spaces by thoughtful selection and placement of monitor arms, and training on their use. Software prompts could coax employees out of their chairs, for example, suggesting a brief walk or just a change in posture. Offering more options for non-traditional seating (such as lounge furniture - Ottomans) could lead to safer postures for people interacting with hand held devices.

Casual furniture placed in open meeting spaces could offer a change from traditional desk-bound postures. Thus, in the process of adapting the workspace to meet Young Generation needs and better support technology, organizations have the potential to create safer environments for employees of all ages.

CONCLUSION

It is in the interest of all modern day business organizations to improve the ergonomic conditions of their work places. In the contemporary business scenario with high emphasis on instant information and enormous dependence on electronic gadgets and computerized technology, only those companies that have pro-active ergonomics programme will only be able to have a high retention rate of skilled workforce with reduced turnover of employees. This will also have a direct impact on the quality of the output of the company and also good adherence to time schedules, which in turn translates into greater customer satisfaction and also better profits.

Better ergonomics leads to higher stability and injury free performance from the employees which translates to better overall work culture and productivity. This also enhances the company's image among potential employees, there by attracting more competent and skilled human resources into work force. All these above lead to greater stability and viability in the long run.

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