

Ergonomics, Accessible Technology and Upper Extremity Musculoskeletal Disorders (UEMSDs)

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Psychosocial Factors

The second category, psychosocial factors, refers to specific factors in the work environment that are cultural, organizational or social in nature, and involves how the individual responds to those factors, given the idiosyncratic elements of their personal psychology. While the actual mechanisms, and connection between psychosocial stressors and UEMSDs are not clearly understood, there is growing consensus in the ergonomics research community that these factors seem to have a significant role in the symptoms reported by office workers in general, and call center workers in specific. Some Psycho-Social Stressors that have specifically been associated with call centers include:

- Increased job monotony, repetition and resultant boredom.
- High production standards eliciting increased need for job vigilance.
- Increased job regimentation and/or work pace.
- Low control over job factors such as processes, schedules and/or production requirements, etc.
- Little identification/connection with the end-result of the employee's contribution.
- Decreased job autonomy.
- Lowered job security and/or career development.
- Isolation and/or alienation for co-workers.^{1,2,3}

While it is oversimplifying the issue, it can be said that regardless of the actual combination of physiological and/or psychosocial factors that come together to elicit discomfort, the net result is employee discomfort. People in pain that they perceive to be caused by work cause will engage in some form of avoidance of the workplace.⁴ This "avoidance" can take a number of different forms, from lowering production while on the job, to taking occasional days off sporadically and without pattern, to full-blown worker's compensation cases of varying lengths of time, to employees simply finding other less painful employment. This scenario quickly creates a compelling argument for the use of a well-designed, genuinely multifactorial ergonomics program to combat these risk factors. By implementing a good ergonomics and accessible technology program, a call center will obviously address the biomechanical issues prevalent in their environment but will also more than likely alleviate some of the seemingly

¹ NORMAN, K., TOOMINGAS, A., NILSSON, T., HAGBERG, M., WIGAEUS TORNQVIST, E., *Demands on the Human in a Complex Working Environment - Psychosocial Conditions at One Call Centre in Sweden*, Humans in a Complex Environment: Proceedings of the 34th Congress of the Nordic Ergonomics Society, Kolmarden, Sweden, 1-3 October 2002, Edited by D. Caldenfors, J. Eklund and L. Kiviloog. Division of Industrial Ergonomics, Linköping University, Linköping, Sweden, Volume II, 2002

² ISIC, A., DORMANN, C., ZAPF, D., *Stressors and Resources of Call Centre Jobs* Zeitschrift für Arbeitswissenschaft, 1999 Volume: 53 Issue: 3 Pages: 202-208

³ FERREIRA, M., SALDIVA, P.H.N., *Computer-Telephone Interactive Tasks: Predictors of Musculoskeletal Disorders According to Work Analysis and Workers' Perception*, Applied Ergonomics, 2002 Volume: 33 Issue: 2 Pages: 147-153

⁴ Due to the fact that the state of the science in ergonomics is not complete enough to specify hard cause/effect relationships, nor specific dose-response information for risk factors for developing MSDs, the word "causes" is used in this paper to denote the phrase "causes and/or contributes to". In essence-The actual cause(s) cannot be elucidated and isolated, and thus the term is not technically accurate *per se*. It is used euphemistically for a group of factors coming together to elicit a given anomaly.

ancillary psychosocial issues that can exacerbate the overall problem(s) leading to absenteeism and turnover issues.

In the call center, the “bad news” is that most of the risk factors are generally present, and not all of them are easily dealt with due to the nature of the work.⁵ The list of psychosocial variables above outlines a few good examples. In the biomechanical realm, the repetition involved is another. For example, the actual number of keystrokes, and/or mousing movements are dictated by the volume of customer calls at any given time. While this number can be managed through the use of productivity leveraging accessible technology solutions such as macro keypads, abbreviation expansion software, self-adjudicating program applets, etc., the net result will still be a work load that varies with business and staffing demands. Additionally, the customer relations aspect of the job, combined with the volume-driven workload, contributes to increased stress.

There is some research that would suggest that this compilation of risk factors appears to in fact have significant effects that are specific to the call center worker. Toomingas, et al looked at the musculoskeletal health status of 57 operators at one call center in northern Sweden for 10 months, and compared it to a reference group of 1226 professional computer users in other occupations. While the call center operators were much younger than the reference group, 86% of female and 68% of the male call center operators reported symptoms, compared to 72% and 50%, respectively, in the reference group. The neck and shoulder regions were most frequently affected.⁶ In another report, Ho et al indicate that in their call center study group the “...incidence of workers' compensation claims between 1 July 1997 and 28 February 1999 were 171 per 1000 employees while the regional average was 101.”⁷

The “good news” is that there can be a plan to work through these issues.

Successful Program Elements

The US Occupational Safety and Health Administration (OSHA) has outlined what they consider to be crucial parts of any good safety program, and specifically, part of any good ergonomics program. Among these are:

1. Management Leadership
2. Employee Participation
3. Job Hazard Analysis and Control

⁵ MENZLER-TROTT, E., *Ergonomics Problems in Call Centres*, Computer Fachwissen für Betriebs- und Personalrate, 1998 Volume: 7 Issue: 12 Pages: 10-16

⁶ TOOMINGAS, A., NILSSON, T., HAGBERG, M., NORMAN, K., TORNQVIST, E.W., *Symptoms and Clinical Findings from the Musculoskeletal System among Operators at a Call Center in Sweden - a 10 Month Follow-up Study*, WWDU 2002 - World Wide Work. Proceedings of the 6th International Scientific Conference on Work with Display Units, Edited by H. Luczak, A.E. Cakir and G. Cakir. ERGONOMIC Institut für Arbeits- und Sozialforschung, Forschungsgesellschaft mbH, Berlin., 2002

⁷ HO, W., MARSHALL, E., CROSBIE, J., *The Extent of Keying, Mouse Use and Writing by Customer Service Officers in One Call Centre*, Ergonomics for Life: At Work, Home and Leisure. Proceedings of the 36th Annual Conference of the Ergonomics Society of Australia, Adelaide, South Australia, 8-11 October 2000, Edited by V. Blewett. Ergonomics Society of Australia, Downer, ACT, Australia

4. Reporting of Injuries/Medical Management
5. Training
6. Proper Recordkeeping/Regular Evaluation of the Program Citation⁸

The reason for this is not that OSHA has come up some sort of Magical Formula, but rather, it simply outlines all of the components that have brought about changes in the most successful ergonomics programs.

As previously mentioned, there are a few generally accepted biomechanical risk factors for developing an ergonomic injury. The usual list of factors include posture, force, repetition and no rest as being items contributing to MSDs. To the extent that a majority of practitioners exclude an accessible technology review, many safety and production enhancement opportunities are never fully realized. Even if all of these issues are addressed at a particular worksite, only one part of the multifactorial issue is being dealt with.

The Role of Accessible Technology

As a rule, most ergonomics professionals would agree that this general approach will bring about the largest, and most sustainable decreases in ergonomic illness and injury. Current innovation that includes using the non-traditional accessible technology solutions described as part of the program steps detailed is allowing for a direct return on investment (ROI) analysis of hardware and training acquisitions. The nature of engineering and IT solutions that boost productivity while minimizing call center workload (keystroking and mousing burden) allows for a measured and conclusive ROI response while addressing the broader issues of UEMSD's.

The Relationship Between Psychosocial And Biomechanical

When one looks at each of the psychosocial stressors associated with the call center environment as cited above, one of two threads seem to permeate most of them in one form or another. The first is the employee perception that their employer is indifferent to their concerns. The common refrain is that "the company doesn't care." The second is that the employee's sense of personhood and/or value to the company is perceived to be less than what they think it should be. Anecdotally, the ergonomist that does any work in a call center can attest that these are common, well entrenched perceptions. This perception surfaces for a number of reasons, and it is not the purpose of this paper to either confirm or deny the reality of the perception; nor is it the purpose of this paper to make a judgment as to whether this should be the case. It is fair to say, however, that this is in fact part of the psychosocial equation in the call center environment as shown by both

⁸ OSHA Standard 1910.900 - Ergonomics Standard Regulatory Text, Final Ergonomics Program Standard, www.osha.gov, November 2000

