

Ergonomic Practices on Housekeeper's Performance in Hotel Operation in Umuahia, Abia –State Nigeria.

Juliet Ijeoma Amaechi-Chijioko¹, Juliette Fatmatta Fashakin² and Paul Chidi Uzoho³

^{1a}Department of Hospitality and Tourism Management, Michael Okpara University of Agriculture, Umudike, Abia-State, Nigeria

²Department of Hospitality Management, Lagos State University of Science and Technology, Lagos State, Nigeria

³Department of Tourism and Hospitality Management, Federal University Otueke, Bayelsa State, Nigeria.

^{1a} Corresponding author: amajuliet222@gmail.com

doi: <https://doi.org/10.37745/ejht.2013/vol13n13748>

Published March 09, 2024

Citation: Amaechi-Chijioko J.I., Fashakin J.F. and Uzoho P.C. (2025) Ergonomic Practices on Housekeeper's Performance in Hotel Operation in Umuahia, Abia –State Nigeria, *European Journal of Hospitality and Tourism Research*, Vol.13, No.1, pp.,37-48

Abstract: *This study focusses on the effect of ergonomic practices on housekeeper's performance in hotel operation in Umuahia, Abia –State Nigeria. The specific objectives were to determine the ergonomic training practices carried out by housekeepers, ascertain the extent in which equipment arrangement in an organization affect housekeepers' performance and to examine the influence of ergonomic working conditions on housekeeper's performance. The researchers adopted survey research design. The population of the study comprises of housekeepers of some selected registered hotels in Umuahia metropolis. The sample size for this study was 170 houskeepers and it was statistically determined using Taro Yamane formula. Accessibility sampling technique was use for the study. The researchers made use of well-structured questionnaire in obtaining the needed information from the respondents. To ensure reliability of the instrument, it was subjected to Cronbach Alpha reliability test. Simple descriptive statistics such as frequencies, percentage, mean and standard deviation was used to analyze respondents' personal data and research questions while regression analysis was used to test the hypotheses. The findings showed that the mean ratings of the relationship between ergonomic working conditions and housekeeper's performance was 0.824 and significant at 10%. The study conclude that ergonomics practices play a significant role in improving the performance of housekeepers in hotels. Hotels should promote safe practices in the housekeeping department by facilitating training programs to ensure correct steps are followed at work.*

Keywords: Ergonomics, housekeepers, hotels, equipment

INTRIDUCTION

Ergonomic Practices on Housekeeper's Performance in Hotel Operation in Umuahia, Abia- State Nigeria

Ergonomics constitutes the scholarly examination of individuals within their occupational settings. The implementation of ergonomic principles for employees can be optimized by establishing a comfortable and productive work atmosphere, furnishing appropriate materials and equipment, and fostering a health-promoting environment for the workforce through the application of effective ergonomic configurations (Hedge, Morimoto & McCrobie, 2016). Effective ergonomic design mitigates discrepancies between the tasks and the personnel involved, thereby facilitating an optimal work environment (Krause and Lee, 2014). As posited by Sonmez et al. (2013), the paramount objective of ergonomics is to devise a workplace that accommodates diverslimitations in order to avert the onset of disorders. This field is interdisciplinary, drawing insights from various domains to enhance the synergy between the occupational environment and the individual worker.

Housekeeping services represent one of the most prevalent professions globally, being executed across various organizational contexts. As noted by Agbola and Agbola (2012), the working environments in numerous small hotel establishments in Nigeria lack safety, with a significant number of hoteliers struggling to achieve financial equilibrium due to exorbitant operational expenditures. Housekeeping personnel frequently encounter situations where they must utilize inadequate and, in certain instances, ineffective personal protective equipment and cleaning agents. This predicament may exacerbate the risk of heightened infections and injuries stemming from exposure to toxic substances such as ammonia and chlorine present in certain cleaning products, as well as bacterial infections arising from contact with infectious pathogens during the execution of housekeeping tasks.

Amaechi-c and Elsie (2019) in their investigation noted that a majority of housekeepers are employed on a casual basis, with their remuneration contingent upon the quantity of rooms they service on a daily basis, particularly in the eastern region of Nigeria. Consequently, due to this circumstance, housekeepers frequently endure protracted working hours in an effort to augment their earnings, and their physical vulnerabilities are exacerbated by the utilization of unsuitable tools and chemicals to perform identical tasks on a daily basis. Furthermore, Amaechi et al. (2019) also indicated that the awkward postures adopted by housekeepers while executing their duties introduce risk factors for muscular strain, such as kneeling and squatting to prepare guest rooms, lifting bags of laundry from damp floors, and maneuvering trolleys, wheelchairs, and carts over uneven concrete surfaces, among other challenges.

In the provision of housekeeping services, despite the fact that technological advancements facilitate enhanced efficiency among housekeeping personnel within a reduced timeframe, the paramount resource remains human labor (Terzioglu, 2018). Consequently, the human component emerges as the critical factor warranting the majority of attention (Kozak, 2011; Agaoglu, 2012). The physical demands placed upon hotel housekeepers encompass a variety of tasks, including the preparation of trolleys with

linens and supplementary amenities, the disposal of waste, the removal and replacement of towels and bed linens, dusting, sanitizing restrooms, vacuuming, mopping floors, and replenishing amenities (Oxenbridge and Moensted, 2011). These activities are essential for ensuring customer comfort, hygiene, and safety. Research conducted by Burgel, White, Gillean, and Krause (2010) indicates a substantial correlation between shoulder pain and psychosocial job-related factors. Psychosocial elements associated with work overload, time constraints, and remuneration systems also frequently contribute to the etiological factors underlying musculoskeletal injuries. Moreover, hotel housekeeping staff experience elevated rates of occupational injuries and endure more severe injuries compared to many other service sector employees. There exist six job-related activities that may potentially lead to injury-inducing adverse work conditions; these include the making of beds, the movement of cleaning carts, the lifting and lowering of loads, restroom cleaning, vacuuming, dusting, and the removal and lifting of trash and furniture (Landers and Maguire, 2014). In the provision of housekeeping services, despite the fact that technological advancements facilitate enhanced efficiency among housekeeping personnel within a reduced timeframe, the paramount resource remains human labor (Terzioglu, 2018). Consequently, the human component emerges as the critical factor warranting the majority of attention (Kozak, 2011; Agaoglu, 2012). The physical demands placed upon hotel housekeepers encompass a variety of tasks, including the preparation of trolleys with linens and supplementary amenities, the disposal of waste, the removal and replacement of towels and bed linens, dusting, sanitizing restrooms, vacuuming, mopping floors, and replenishing amenities (Oxenbridge and Moensted, 2011). These activities are essential for ensuring customer comfort, hygiene, and safety. Research conducted by Burgel, White, Gillean, and Krause (2010) indicates a substantial correlation between shoulder pain and psychosocial job-related factors. Psychosocial elements associated with work overload, time constraints, and remuneration systems also frequently contribute to the etiological factors underlying musculoskeletal injuries. Moreover, hotel housekeeping staff experience elevated rates of occupational injuries and endure more severe injuries compared to many other service sector employees. There exist six job-related activities that may potentially lead to injury-inducing adverse work conditions; these include the making of beds, the movement of cleaning carts, the lifting and lowering of loads, restroom cleaning, vacuuming, dusting, and the removal and lifting of trash and furniture (Landers and Maguire, 2014).

Cleaning can be described as an act of removing of undesired dirt, dust, marks, stains and other extraneous materials from locations where they serve no useful purpose. a clean workplace environment enhances the feeling of wellbeing. Cleaning should be good and effective in order to create a hygienic work environment (Johansson and Ljunggren, 2019). Housekeeping services aim to create a clean, healthy, tidy and safe environment making best use of the organization's human resources (such as knowledge, skill, energy, time) and material resources (such as money, equipment, materials, the building) (Safak, 2017).

The physical workload of hotel housekeepers involves tasks such as packing trolleys with linen and other amenities, emptying bins, stripping and replacing towels and bed linen, dusting, cleaning bathrooms, vacuuming, mopping floors and replacing amenities, bed making, buffing, and vacuuming, emptying garbage, tidying, dusting and cleaning floors among others (Oxenbridge and Moensted, 2011). These tasks are important for customer comfort, hygiene, and safety and satisfaction. All these jobs are physically demanding and can internal or physical injury to housekeepers.

Objectives of the Study

The main objective of this study is to determine the effect of ergonomic practices on housekeeper's performance in hotel operation in Umuahia metropolis. The specific objectives sought;

- Determine the ergonomic training practices carried out by housekeepers
- To ascertain the extent in which equipment arrangement in an organization affect housekeepers performance
- To examine the influence of ergonomic working conditions on housekeeper's performance

Hypotheses of the Study

The following hypotheses were formulated to focus the study:

- **H₀₁:** There is no positive relationship between ergonomic training practices and housekeeper's performance
- **H₀₂:** There is no positive relationship between equipment arrangement and housekeeper's performance in an organization
- **H₀₃:** There is no positive relationship between ergonomic working condition and housekeeper's performance

REVIEW OF RELATED LITERATURE

Ergonomics is defined as the design of the workplace, equipment, machine, tool, product, environment, and system, taking into consideration the human's physical, physiological, biomechanical, and psychological capabilities, and optimizing the effectiveness and productivity of work systems while assuring the safety, health, and wellbeing of the workers (Sonmez *et al.*, 2013).

Hazards faced by hotel housekeepers are physical, chemical, biological and psychosocial have been studied by many researchers (Hsieh, Apostolopoulos and Sonmez, 2013).The physical hazards faced by hotel housekeepers are caused due to repetitive housekeeping functions (Amaechi *etal*, 2019). The daily task of housekeepers are making beds (repeated forward trunk flexion and rotation), moving cleaning carts (pushing and pulling), lifting and lowering loads (repeated trunk flexion/extension and rotation with poor body mechanics), cleaning bathroom, i.e. tubs, floor and toilet (repeated forward trunk flexion and rotation, poor body mechanics, lifting), vacuuming, dusting and cleaning (poor body mechanics, lifting, forward trunk flexion and rotation), trash removal and lifting/ repositioning furniture (repeated lifting with trunk flexion/extension and rotation) (Landers and Maguire, 2014).

Exposure to chemicals used for cleaning toilets and, sinks can irritate the skin and cause other respiratory diseases (Powel and Watson, 2016). Other possible practices of volatile organic compounds include respiratory problems and cancer and exposure to solvent- based products can be damaging to kidneys and reproductive organs. Biological hazards such as exposure to broken glassware and medical waste left by guests can create infectious diseases such as hepatitis.

Kumar and Singh, (2015) in their work stated that the hotel industry is facing challenges at the management level, operational or technical level but human issues takes the center stage, with issues such as, poor employee training, employee turnover, job and employee skills mismatch. These results in health hazards of hotel housekeepers which made them face grave safety and health practices at the workplace. Hotel housekeepers suffer from preventable injuries and illness due to lack of union as to where to report. As the global tourism industry continues to grow, hotel housekeepers need effective safety and health (Occupational Safety and Health (OSH)) mechanism to protect their health and well-being in the workplace.

In today's hectic housekeeping department, particularly in Nigeria, where abilities must meet or above department standards to complete work in a way that pleases guests, training is crucial. Beyond training, housekeepers must be effectively scheduled in order to achieve corporate objectives. Achieving objectives requires effective scheduling and motivation with strong incentives (Common Health of Virginia, 2015). Nonetheless, (Amaechi et al., 2019) suggests that in order to educate the housekeeping crew about ergonomics procedures and the risks they pose to hotel operations, they should receive on-the-job training. Good working practices can prevent health dangers, hence it is important to look into how housekeepers' safety is affected by their working environment (Oxenbridge and Moenstead, 2011).

According to Liladrie (2010), housekeeping is a physically taxing work that exposes employees to stress, musculoskeletal diseases, and numerous illnesses since it requires forceful movement, uncomfortable body postures, lifting heavy mattresses, and tile cleaning. once again revealed that 86% of the sample said they did not experience significant discomfort before they started working as housekeepers, whereas 91% of housekeepers said they experience bodily pain while on the job. DaRos (2011) linked joint and spine injuries to exhausting activities. Skin irritation and other respiratory illnesses can result from exposure to chemicals used to clean sinks and toilets (Powel and Watson, 2016). Additional potential uses of volatile organic chemicals include cancer and respiratory issues, and exposure to goods based on solvents can be harmful to the reproductive organs and kidneys. Infectious diseases like hepatitis are spread by biological dangers including coming into contact with broken glassware and visitor medical waste.

METHODOLOGY

This researcher adopted survey research design. The population of the study comprises of housekeepers of some selected registered hotels in Umuahia metropolis. The total population is 235. The sample size for this study was statistically determined as follows using Taro Yamane model for sample population. The sampling technique used for this study is accessibility sampling technique. The researchers made use of well-structured questionnaire in obtaining the needed information from the respondents. To ensure reliability of the instrument, it was subjected to Cronbach Alpha reliability test and a reliability coefficient of 0.78 was obtained after undergoing the re-trial test confirming the usability of the instrument.

Simple descriptive statistics such as frequencies, percentage, mean and standard deviation was used to analyse the data.

Research Questions

Research Question 1: What is the ergonomics training practices carried out by housekeepers in the study area?

Table 4.1 showing the ergonomics training practices carried out by housekeepers in the study area

Training Practices	SA	A	U	D	SD	Total No.	Total Score	Mean	Remark
Work in neutral postures	27 (18%)	56 (37.3%)	38 (25%)	21 (14%)	8 (5.3%)	150	523	3.4	Accepted
Keep everything at reach	11 (7.3%)	5 (3.3%)	21 (14%)	4 (2.7%)	109 (72.7%)	150	255	1.7	Not Accepted
Work at proper height	5 (3.3%)	77 (51.3%)	14 (9.3%)	41 (16%)	13 (8.7%)	150	470	3.1	Accepted
Reduce excessive motions	11 (7.3%)	0 (0%)	8 (25.3%)	24 (33.3%)	77 (51.3%)	150	204	1.4	Not Accepted
Provide clearance (Work area should have enough clearance)	17 (11.3%)	32 (21.3%)	32 (21.3%)	58 (38.7%)	11 (7.3%)	150	436	2.9	Not Accepted
Move, exercise and stretch (It is better to take intervals between the works and stretch and move along)	32 (21.3%)	29 (19.3%)	16 (10.7%)	46 (30.7%)	27 (18%)	150	443	2.9	Not Accepted
Maintain a comfortable environment (This concerns good lightening, space, cool air and many more).	18 (12%)	35 (23.3%)	28 (18.7%)	40 (26.7%)	29 (19.3%)	150	423	2.8	Not Accepted
Grand Mean								2.1	Rejected

SA = strongly agreed; D = disagree; U = undecided; A = agree; SD = strongly disagree - criterion 3.00

Table 4.1 shows that the frequency and mean responses of the ergonomics training practices carried out by housekeepers in the study area. The result showed that 1 out of 7 items under this category were accepted with a grand mean of 2. which was rejected. Items under training practices such as work in neutral postures, maintain a comfortable environment (This concerns good lightening, space, cool air and many more). Move, exercise and stretch (It is better to take intervals between the works and stretch and move along), work at proper height and provide clearance (Work area should have enough clearance) were all accepted at 3.4, 1.4, 2.9, 2.9 and

2.8 respectively. But with an overall mean score was below the bench mark (2.1).

Research Question 2: To what extent does equipment arrangement in an organization affects housekeeper's performance in the study area

Table 4.2 showing the what extent does equipment arrangement in an organization affects housekeeper's performance in the study area

Equipment Arrangement	SA	A	U	D	SD	Total No.	Total Score	Mean	Remark
Proper arrangement of equipment saves time which therefore improves performance	1 (11.3%)	32 (21.3%)	32 (21.3%)	58 (38.7%)	11 (7.3%)	150	356	2.3	Accepted
Proper arrangement of working equipment's ensures employee safety	5 (3.3%)	28 (18.7%)	111 (74.0%)	6 (4.0%)	0 (0%)	150	482	3.2	Not Accepted
Effectiveness of housekeeping efforts can make or break guest accommodation business	17 (11.3%)	32 (21.3%)	60 (40.0%)	40 (26.7%)	1 (0.7%)	150	474	3.2	Not Accepted
Proper equipment arrangement makes a housekeeper more efficient.	24 (16.0%)	19 (12.7%)	48 (32.0%)	49 (32.7%)	10 (6.7%)	150	448	2.9	Accepted
Grand Mean								2.9	Rejected

SA = strongly agreed; D = disagree; U = undecided; A = agree; SD = strongly disagree - criterion 3.00

Table 4.2 shows that the frequency and mean responses of the equipment arrangement in an organization affects housekeeper's performance in the study area. The result showed that 3 out of 4 items under this category were accepted with a grand mean of 2.9 which was rejected. Items under equipment arrangement such as proper arrangement of equipment saves time which therefore improves performance (3.0) and proper equipment arrangement makes a housekeeper more efficient (3.0). The overall mean was 2.9 which is below the benchmark.

Research Question 3: What are the ergonomics working conditions that influence housekeeping performance in the study area?

Table 4.3 showing the ergonomics working conditions that influence housekeeping performance in the study area

Working Conditions	SA	A	U	D	SD	Total No.	Total Score	Mean	Remark
Working position (posture)	4 (2.7%)	23 (15.3%)	24 (16.0%)	77 (51.3%)	22 (14.7%)	150	360	2.4	Accepted
Natural light	16 (10.67%)	8 (5.3%)	22 (14.7%)	70 (46.7%)	33 (22.0%)	150	351	2.3	Accepted
Plenty of breaks	17 (11.33%)	11 (7.3%)	31 (20.7%)	59 (39.3%)	32 (21.3%)	150	372	2.4	Accepted
Have everything used frequently in reach	38 (25.33%)	38 (25.3%)	1 (0.67%)	73 (50.0%)	0 (0.0%)	150	491	3.3	Not Accepted
Provide clearance	5 (33.33%)	20 (13.3%)	38 (25.3%)	33 (22.0%)	54 (36.0%)	150	339	2.3	Not Accepted
Safety (eg conditions, substance that can injure a worker like from height, spill on the floor etc)	35 (23.33%)	41 (27.3%)	29 (19.3%)	25 (16.7%)	16 (10.7%)	150	492	3.3	Accepted
Grand Mean								2.6	Rejected

SA = strongly agreed; D = disagree; U = undecided; A = agree; SD = strongly disagree - criterion 3.00

Table 4.3 shows that the frequency and mean responses of the ergonomics working conditions that influence housekeeping performance in the study area. The result showed that 2 out of 6 items under this category were accepted with a grand mean of 3.2 which was accepted. Items under equipment working conditions such as working position (posture) (2.4), natural light (2.4), plenty of breaks (3.3), safety (2.3). The overall mean was which is below the benchmark was rejected.

Hypothesis Testing

H₀: There is no positive relationship between ergonomic training practices and housekeeper's performance in the study area?

Table 4.10 showing the relationship between ergonomic training practices and housekeeper's performance in the study area

		Ergonomic Training Practices	Housekeeper's performance
Ergonomic Training Practices	Spearman's rho Correlation coefficient	1.000	0.768***
	Significance (2-tailed)	150	150
	N		
Housekeeper's performance	Spearman's rho Correlation coefficient	0.768***	1.000
	Significance (2-tailed)	150	150
	N		

Source: Field survey, 2022

Table 4.10 showed that the mean ratings of the relationship between ergonomic training practices and housekeeper's performance was 0.768 and significant at 1%. This means that 77% of the relationship between the variables was explained. This implies that we reject the null hypothesis and accept the alternate hypothesis which states that there is no significant difference between ergonomic training practices and housekeeper's performance in the study area.

H₀: There is no positive relationship between equipment arrangement and housekeeper's performance in an organization in the study area;

Table 4.11 showing the relationship between equipment arrangement and housekeeper's performance in an organization in the study area

		Equipment Arrangement	Housekeeper's performance
Equipment arrangement	Spearman's rho Correlation coefficient	1.000	0.588**
	Significance (2-tailed)	150	150
	N		
Housekeeper's performance	Spearman's rho Correlation coefficient	0.588**	1.000
	Significance (2-tailed)	150	150
	N		

Source; field survey data, 2022

****correlation is significant at the 0.01 level (2-tailed)**

Table 4.11 showed that the mean ratings of the relationship between ergonomic arrangement and housekeeper's performance was 0.588 and significant at 5%. This means that 58% of the relationship between the variables was explained. This implies that we reject the null hypothesis and accept the alternate hypothesis which states that there is no significant difference between ergonomic equipment arrangement and housekeeper's performance in the study area.

H₀: There is no positive relationship between ergonomic working condition and housekeeper's performance in the study area;

Table 4.12 showing the relationship between ergonomic working condition and housekeeper's performance in the study area

		Ergonomic working condition	Housekeeper's performance
Ergonomic working condition	Spearman's rho Correlation coefficient	1.000	0.824*
	Significance (2-tailed)	150	0.001
	N	150	150
Housekeeper's performance	Spearman's rho Correlation coefficient	0.824*	1.000
	Significance (2-tailed)	0.001	150
	N	150	150

Source; field survey data, 2022

***correlation is significant at the 0.01 level (2-tailed)*

Table 4.12 showed that the mean ratings of the relationship between ergonomic working conditions and housekeeper's performance was 0.824 and significant at 10%. This means that 82.4% of the relationship between the variables was explained. This implies that we reject the null hypothesis and accept the alternate hypothesis which states that there is no significant difference between ergonomic working conditions and housekeeper's performance in the study area.

CONCLUSION

ergonomics practices play a significant role in improving the performance of housekeepers in hotels. Housekeeping tasks involve repetitive and physically demanding activities that can cause musculoskeletal disorders (MSDs). Therefore, ergonomics practices can reduce the risk of MSDs and promote the overall health and safety of housekeepers.

Several ergonomic interventions can be implemented in hotels to improve housekeepers' performance. These interventions include the use of ergonomically designed equipment and tools, work schedule adjustments, training on safe lifting techniques, and the implementation of ergonomic work stations. Ergonomics practices are crucial in promoting the health and safety of housekeepers and improving their performance in hotels. Therefore, hotels should prioritize the implementation of ergonomic interventions to promote a safe and healthy work environment for their housekeeping staff.

RECOMMENDATIONS

Based on the findings of the study a number of recommendations were made that would improve ergonomic practices, housekeepers performance and improve the level of hotels in the study area.

- This study can be an instrument to motivate hotel managers to practice diversity management and in-corporate policies and procedures for effective communication among hotel housekeepers and management.
- Hotels should promote safe practices in the housekeeping department by facilitating training programs to ensure correct steps are followed at work

REFERENCES

- Agbola, G. and Agbola, A. (2012). Organizational stress: Causes and management. *International Journal of Innovations in Business*. 1(1):1-11.
- Amaechi,-C.J. and Elsie A., (2019): The effect of ergonomics risk factors on Housekeepers in Hotel Operation: *International Journal of Scientific Research in Humanities, Legal Studies and International Relations*. 4(1)
- Common Health of Virginia. (2015). Housekeeping personnel safety workers' compensation services. Mc Innovation, LLC Partners in Excellence. Virginia. Retrieved from <http://www.covwc.com/template/systemdetail>.
- DaRos, J. (2011) Preventing Workplace Injuries Commonly Sustained by Hotel Guestroom Attendants: University of Nevada, Las Vegas. (UNLV Theses, Dissertations, Professional Papers and Capstones).
- Hedge, A., Morimoto, K., & McCrobie, D. (2016). Office ergonomics: practical applications. CRC Press.
- Hsieh, S., Apostolopoulos, F. and Sonmez, M. (2013). Working conditions and the health and safety of room attendants in luxury hotels. University of Sydney: Workplace.
- Hsieh, Y., Apostolopoulos, Y., and Sonmez, S. (2013). World at work: Hotel cleaners. *Occupational and Environmental Medicine*. 70(5):360-364.
- Johansson, M. T. and Ljunggren, K. I (2019). Process evaluation of a participatory ergonomics programme to prevent low back pain and neck pain among workers, implementation *Science*, 5, 65-75. 11p, ISSN: 1748-5908
- Kozak, R. (2011); Ergonomic Evaluation and Design of Tools in Cleaning Occupation, Doctoral Thesis, Lulea University of Technology Department of Human Work Sciences Division of Industrial Design, Sweden.
- Krause, K., Lee, J. W., Ju, L., Hyeon, M. J., Kyung-J. L& Joo, K. J. (2015). The Relationship between Musculoskeletal Symptoms and Work-related Risk Factors in Hotel Workers. *Annals of Occupational and Environmental Medicine* 25:20 , 1-10.
- Kumar, S. & Singh, D. (2015). Identifying Reasons for Employee Turnover in Housekeeping Department. A Study of selected Hotels in Delhi. Publishers: *International Journal Management and Social Sciences Research (IJMSSR)*, Vol 4, No.1
- Landers, S. & Maguire, T (2014), Ergonomic Changes to Workstations Reduce Workers' Musculoskeletal Problems by 40 percent, Academic- State Study Reveals, <http://www.ergocanada.com/ergo/cornell>
- Oxenbridge, M. and Moensted, S. O. (2011). Effects of Work System and Workplace Hazards on Employees Behaviour. Peer Reviewed International Journal. *Journal of Management and Business Research: Administration Management*, Vol.14 Issue 3 version 10.

- Powel, G. and Watson, M. C. (2016). To Stretch or not to Stretch: The Role of Stretching in Injury Prevention and Performance Scandinavian. *Journal of Medicine & Science in Sports*. 20 (2) , 169-181 doi:10.1111/j.1600-08382009.01058.x.
- Safak, C. (2017). *Healthy, Safe and Productive lives, Part 4-Accommodation and Housekeeping*. Health and safety Authority.
- Sonmez, H., Marie, E. G., & Anne S.A. & Luc, N. (2013, July). Effect of Rehabilitation Length of Stay on Outcomes of Individuals with Traumatic brain injury or Spinal cord injury: A systematic review protocol. *Systematic Reviews* published online 2013, Jul.20 doi10.1186\2046-4053, 2-59.
- Terzioglu, S. (2018), *Ergonomic Changes to Workstations Reduce Workers' Musculoskeletal Problems by 40 percent, Academic- State Study Reveals*, <http://www.ergocanada.com/ergo/cornell.html>
- WHO. (2013). *Global health risk: mortality and burden of disease attributes*. Geneva: World Health Organization.