

Editor Note: Journal of Ergonomics

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Editor Note

Journal of Ergonomics functions as a platform for the dissemination of latest research developments pertaining to multifarious key aspects of interaction of human beings and other components of a system. The journal specifically emphasizes the publication of manuscripts that correspond to the process of attaining and maintaining overall wellbeing in human beings. The current issue of the journal also published many such articles that function to contribute to the persisting levels of understanding of human behavior, human interactions, etiological and environmental factors involved in the manifestation of a disease.

Cervical disk bulges, especially in the poster lateral direction are mostly attributed to simultaneous lateral bending and compression loading. Many attempts have been made to elucidate the kinematics aspect of the functioning of intact vertebral spine; but the study of vertebral spine in the presence of bulged disks is yet to be achieved. The article published by Saveh et al. [1] presented the results of a study that investigated the possible changes in the kinematics of cervical spine in the presence of disk bulges. The study specifically highlighted the changes in the flexion extension motion of experimental patients with bulged disks at C5/C6 level. The authors studied a three dimensional cervical vertebrae model which was created on the basis of previously collected CT data. Furthermore, the authors used fluoroscopic imaging method to decipher the range of motion of the subjects, which was complemented with the 2D-to-3D registration methods. The result obtained in the comparative analyses indicated that the bulged disk intervertebral extension-flexion difference in such subjects is significantly higher than the normal intervertebral difference. The results obtained in the study helped in identification of the technical reasons behind why patients with bulged disks face higher risk of instability during extension-flexion motion as compared with normal subjects [1].

The article published by Inai et al. presented a detailed simulation analysis that studied the possible correlations between the hip flexion contracture and the hip-joint contact force during different standing postures [2]. The clinical importance of the study lies in the fact that the mechanical stress exerted on the articular cartilage coupled with long-duration standing postures are the major risk factors in the progression of hip osteoarthritis. The authors designed a musculoskeletal model that was essentially composed of seven segments (Head, Arms, and Trunk (HAT) and thighs, shanks, and two feet). 708 different standing postures were also included in the simulation model. The hip flexion contracture conditions were set as: zero contracture and flexions of 0°, 10°, 20°, and 30°. The same model was used to deduce an optimal standing posture based on the hip flexion contracture conditions and the sum of muscle activations. The simulated optimal posture was then used to calculate the hip-joint contact force. Further analysis of sensitivity of the model was tested by

varying the objective function, physiological cross-sectional area, force-length relation, and muscle moment arm length parameters. The results obtained revealed that both the hip-joint contact force and hip extensor muscle forces of the gluteus maximus, semitendinosus, semimembranosus, and biceps femoris long head were elevated during standing and lead to the development of hip flexion contracture. The study finding reinstated the fact that the hip-joint contact force created due to varying the posture of standing, leads to the development of hip flexion contracture.

One of the main aspects of ergonomics encompasses the study of the benefits, discrepancies and future prospects the interaction of human beings with other things, which may be a living organism or a technological revelation. One such aspect was highlighted in the article published by Bouwhuis. The author presented the importance of interactive interfaces in accomplishing routine activities such as operating set top boxes, TV sets, hand-held telephones, washing machines, kitchen ovens, home thermostats, car navigation unit and parking meters. Furthermore, the author also discussed the fact that these interfaces have not witnessed many developments ever since they were first innovated in the year 1995. The article discussed the possible reasons that may have halted the technological development processes required for upgrading the interactive interfaces and specified that software life cycle, cognitive models and beliefs of the stakeholders are among the most important factors behind this technical stagnancy [3]. The information presented in the article may help in the realization of the non-technical discrepancies in the process of development of more advanced interactive technologies.

The advent of medical technologies has increased the average life span of human beings in the recent past. In order to maintain the quality of life of such elderly persons it becomes imperative to devise special methods and tools for the early diagnosis and management of age related disorders. One such aspect is early assessment of the status of hearing impairment of the elderly working population. The article published by Wagner proposed and tested the efficacy of a novel method of assessing hearing impairment. The newly proposed Category Subdivision Scale of Subjective Hearing Impairment (CSS-SHI) was tested in five different studies (236 employees) in which the participants were assessed via self-reported hearing impairment. Subsequent analysis involved study of the patients with the help of audiometry. Significant correlations were established between the data obtained from self-reported hearing impairment CSS-SHI studies and pure-tone audiometry [4]. The information presented in the study may help in the standardization of medical procedures for estimating the hearing abilities of the elderly population.

Another article published in the current issue of the journal that highlighted the prevalence of Visual and Musculoskeletal Disorders (VMSD) in office workers was authored by Saleh and Assaf. The authors used a self-reporting questionnaire to study 501 respondents

who worked in public and private organizations in West Bank, Palestine. Statistical analysis of the collected data was performed using the Minitab 17.0 and it was revealed that around 62.5% of them experienced at least one of the listed VMSD symptoms [5]. Such studies are highly important to be performed, especially because they can help in estimating the potential risk factors of occurrence of VMSD so that they can be avoided for better quality of life.

Music and dance have a long lasting impact on the human brain. Repetition of words or movements in singing and dancing are considered efficient ways of imprinting information in the brain for longer durations. Researchers have since long proposed that these methods may be used for the development of sensorimotor learning devices. The topic was represented in the article published by Ranky and Adamovich. The authors studied the process and efficacy of sensorimotor learning with hand and fingers using both hardware and software systems. They used sequence tapping to measure the predefined parameters in a controlled and safe environment. Furthermore, the article presented the results of memorization and recognition studies during the process of entrainment by studying custom iso-chronic audio tones and sequential finger tapping on a standard computer keyboard [6]. The results presented in the article provide insights into the human brain activities that correspond with sensorimotor learning.

The article published by Alem et al. presented the results of a long term study on assessment of work ability and quality of life of individuals who returned to their work after a long-term sick leave (>6

months). Interestingly, the authors observed that such persons showed significant improvements in their work efficiency. Furthermore, they also showed improvements in physical domain of quality of life that was directly reflected in their sustainable work performance. The publication of such articles can help in assessing and concluding the general patterns of social behavior and work efficiency of individuals.

Overall, the articles published in the current issue of the journal showcase many hitherto unexplored aspects of human behavior, interactions and efficacy.

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