ASSESSMENT OF TRANSTIBIAL PROSTHETIC SOCKET ALIGNMENT IN SAGGITAL PLANE BY CENTER OF PRESSURE (COP) ANALYSIS

[æ]Lenka P, [ë] Maity T and [ì]Kumar R
[æ]Dept. of R&D, NIOH, Kolkata, India, [ë] Dept of E & Control , HIT, Haldia, [ì] Director, NIOH, Kolkata, India,
[æ]Email: Lenka_pk@yahoo.co.uk

Abstract

The objective of this study was to find out suitable prosthetic socket alignment in saggital plane by force platform based center of pressure (COP) analysis. Socket alignment is one of the important parameter to achieve postural stability in persons with transtibial prosthesis.

Fifteen transtibial amputee of young active group (32.55± 8.32 years) were participated. Three range of anterior posterior alignment in saggital plane of the socket (0^0, 7^0 and 14^0 flexion) were tested in a load cell based force plate on each amputee after gait training & one day practice. The COP factors like AP range, ML range, RMS distance, mean distance, sway velocity, sway area and mean power frequency were evaluated for each alignment. The AP variation & ML variation in 0^0 flexion were found to 70% higher than both 7^0 and 14^0 flexion and a statistical significant difference ($p<0.001$) was found in sway velocity & sway area.

A significant difference ($p<0.005$) was recorded for ML range and mean velocity in 7^0 flexion & 14 flexion. The results concluded COP parameters vary form patient to patient in all three range of alignment, however 60% of total amputees were better in 7^0 flexion.

Keywords: COP parameter, Force plate, Socket alignment, Transtibial Amputee

DEVELOPMENT OF AN INTEGRATED METHOD FOR ANALYSING ERGONOMIC COMPLIANCE OF A WORKSTATION

Pradeep.K.Joshi and Avinash R.Apte

DGM (Industrial Engineering) Sr.Engr (Industrial Engineering)

Bosch Ltd.(Nashik) Bosch Ltd.(Nashik)

Email: JOSHI.PK@in.bosch.com

Abstract

With emergence of India as manufacturing and outsourcing hub due to its skilled and cheap manpower, more and more global players are entering India for setting up their own facilities or to outsource their components. So production managers in India are forced to push for higher productivity. Ergonomics, as an applied science, has a significant role to play in improving working conditions and productivity in Industrially Developing Countries (IDCs).

Manual Materials Handling (MMH) tasks continue to predominate in IDCs and universally these have long been recognized as a major contributor to the occurrence of health complaints. This in turn results in an increase in suffering of the operator, and cost to the company concerned. There exists an urgent need to investigate the incompatibility between the human operator and the physically demanding tasks so many workers in developing areas are required to do. The focus of the present paper is specifically on manual activities of workers in the engineering industry and development integrative method to asses various aspects of ergonomics.

Secondly the paper deals with change in the paradigm of the workers towards ergonomics through systematic institutionalization of ergonomic policies.

Keywords: Ergonomics, NIOSH, EN 1005-2, ISO 11228-1, ISO 11228-2, OCRA Index, metabolic Rate

STUDY OF REAR (PASSENGER) SEAT IN FOUR WHEELER

Abhinav Kshirsagar[1] and N.R. Rajhans[2]

[1]Production Engg. Department, College of Engineering, Pune

[2]Production Engg. Department , College of Engineering, Pune

Email:abhinav_kshirsagar02@yahoo.com

nrr.prod@coep.ac.in

Abstract

Most of the research, in the field of vehicle interior, is being carried out with respect to driver and his comfort. With increase in travelling and tourism many people prefer to use taxi service instead of traveling by train or bus. The distances travelled by tourists are quite long. The road conditions are improved to great extent in last 15 years. Variety of vehicles has also increased. Obviously the passenger has a choice of selecting a vehicle as well as mode of transport. Passengers, for travelling for long distances prefer comfort and thus the passenger comfort is playing a key role in designing a vehicle. As against driver, the passenger in rear seat has a flexibility of shifting his position if he is alone or there are two passengers in the rear seat.

The objective of the study thus, is to conduct a survey on comfort of passenger at rear seat. The comfort mainly depends on the pressure points generated at different locations on seat and the pressures created at the back rest.

Anthropometry data will be collected and stationary pressure mapping will be done using pressure pads. Subjects will be asked to give subjective rating based on questioner and the subjective rating will be compared with objective results obtained from pressure mapping. Vehicles will be rated based on this study and rear seat design will be studied considering the angle, seat dimensions, styling contour, stiffness and foam thickness.

Keywords: passenger comfort, seat design, anthropometry, pressure mapping

ROLE OF ERGONOMICS IN REHABILITATION OF SUBJECTS WITH PARKINSON'S DISEASE

Anant Singh Gaur, P R Suresh and Anubha Singhai

Ayushman College and Associated Hospital, Bhopal

Email: anant_physio@yahoo.com , anant_physio@in.com

Abstract

Objectives: Development of an environment that enhances the independence of Parkinson's disease subjects and help in the rehabilitation.

Methods: 11 subjects with Parkinson's disease were taken rated III at Hoehn Yahr classification irrespective of their age. The comprehensive evaluation of their physical, mental and working status with the help of, [UPDRS (Unified Parkinson's Disease rating scale) , Berg Balance scale, Barthel index, Katz index of activities of daily living], were recorded. Then visit to there home and working environment were done to assess the condition of performing activities of daily living. After assessment with the help of various ergonomic principles the home and work environment were improved along with the improvement of various tools of daily use. All the subjects were taking regular medical and therapeutic interventions before and after implementing ergonomic principles.

Result: The Activities of Daily living had become easier than earlier after implementation of ergonomic principles and improvement in the home and work environment. The subjects have shown higher motivation level and independence there by suppressing the anxiety and stress of the condition.

Keywords: Ergonomics, Parkinson's disease, ADL

BARRIER-FREE FEATURES IN HIGHER EDUCATIONAL BUILDINGS

Mahalakshmi V. Reddy
Professor, Dept. of Resource Management and Consumer Sciences
College of Home Science, ANGRAU, Hyderabad

Email: mahavr@rediffmail.com

Abstract

A study to explore the suitability of higher educational building design features to orthopedically challenged students was taken up in Hyderabad city of Andhra Pradesh. The ex-post facto research design was used to approach research. Four reputed universities were selected to conduct the research. Fifty orthopedically challenged students were identified using simple random sampling technique from these four universities and were personally interviewed using interview schedules. In addition, a checklist cum observation schedule was used to seek information on accessibility features in college buildings.

Eighty-six per cent of the sample was males. Eighty-six per cent of the total sample were affected by polio and had problem with either one or both the legs, and the rest were disabled by birth defects or accident. All the respondents were semi-ambulatory and among them 46 per cent used moving aids like crutches and canes. Only 36 and 14 per cent had preferred technical and science education respectively, while the others opted for arts and commerce The data obtained from the respondents indicated that all respondents had problem in accessing class rooms, 46 per cent felt difficulty in accessing seminar hall / auditorium, 24 per cent in laboratory, 28 per cent had problem in library, 88 per cent faced problems in accessing toilet, 52 per cent had difficulty in accessing canteen while 10 per cent were having problems in accessing parking area.

They also had problem in accessing different building element like staircase, steps, corridors and steep ramps. Few students also expressed problems in accessing furniture inside the classroom and auditorium. Physical observation of the educational buildings in different universities revealed that, the campus which had recently constructed buildings have introduced accessibility features like wide doors without threshold, curb ramp, ramps, staircase with low riser and railing support and western commode in rest rooms. However the universities which had very old buildings did not provide any accessible features and these were located far from to one other.

Outcome of the study revealed that higher education buildings are not equipped with barrier-free features to meet the needs of non ambulatory members who enroll in University for higher education under the physically-challenged quota.

Keywords: orthopedically challenged students, non ambulatory members.

HINTS AND TIPS FOR SUCCESSFUL CLASS ROOM FURNITURE DESIGNING

Manjari S Acharya and Sulaiman Ahmed Ali
P .G. Department of Home Science
Sardar Patel University,
Vallabh Vidyanagar.
Email: manjariacharya@gmail.com
saaalbahar@yahoo.com

Abstract

This paper describes the results of Re-designing furniture for the classrooms at the primary level, especially tables and chairs with furniture to suit the age group of the students. The study is based on the study of movement within the classroom in addition to activities carried out by the students inside the classroom, such as

1. to sit for hearing theory lessons .
2. Follow-up to explain and listen to the teacher a lesson
3. Practical lessons.

After analyzing the activities carried out by the students inside the classroom, the researcher examined the problems faced in both the movement of students within the classroom and problems related to the design of furniture. the furniture didn't fit with the age group of students and did not have the human engineering an effort was made to re design chair and table to suit the students need.

Research will address the errors of furniture design in the classroom and in accordance with the mechanism of the human body so as to achieve full amenities for students during their studies within the classroom and check traffic and movement within the classroom runs smoothly without the full constraints of the movement and flexibility of movement between the furniture.

Key words: Class room furniture, furniture design, redesigning, ergonomic consideration, class room movement.

SAFE TYPING TECHNIQUES

H. M. Arun Kumar

Email: typing_guru@yahoo.com

Abstract

Computers were invented to get our work much more easier and faster. It is just because of the non-scientific way the computer users are not getting their work easier and faster and moreover getting injured too.

Every computer user don't get injured from computers. It is only the wrong computer users who are suffering from eye strain (Computer vision syndrome), neck pain, back pain, carpal tunnel syndrome and so on

Computer users need not suffer from any injury such as Repetitive Strain Injury, Carpal Tunnel Syndrome, Computer Vision Syndrome, and so on. Scientific methods if adopted will really make them work safer.

We like to put an end to this BIG health hazards which is causing huge loss in compensation and productivity too.

Keywords: safe typing techniques computers, CTD, RSI