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REDESIGNING OF THE CYBER CAFÉ OF VADODARA CITY

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Abstract

Cyber cafés today have mushroomed throughout the world and today. They even can be found in smaller towns as well. Cyber cafes are beneficial as they offer a low cost alternative to the otherwise expensive model in home ownership of computers with internet connectivity facilitating access the entire world on net, and thus, lower the multiple financial barriers. Since cyber café play a significant role in day to day life of the substantial population in Indian society, it becomes important to design it in a way that would be ergonomically comfortable to all those, who intend to use the internet access service.

With this motive an attempt has been made in the present paper to redesign a selected Cyber Café of Vadodara city.

The cyber cafe was selected based on the convenience and readiness of the owner to get his cyber café redesigned. The cyber cafe was visited several times and the existing plan was prepared which was critically assessed and finally a modified interior plan was suggested taking into consideration the colour schemes, furniture, furnishings, space planning, lighting, ventilation etc.

The present paper throws light on the detailed critical assessment of the existing interiors of the selected cyber café. It also proposes the redesigning of the same by suggesting necessary modifications in it.

Keywords: Cybercafe, assessment, redesigning

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WORK INDUCED DISORDERS OF GOODS LOCO PILOTS OF INDIAN RAILWAYSSubir Danda and Dr B N Lahiri

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Abstract

Railway is the most important land based organized transportation system. The Indian Railways, dedicated to the service of the nation is the nation's single largest central government organisation.

Professional electric loco pilots are a high-risk group for musculoskeletal disorders, result in high morbidity and low retirement age. A sample of 32 male electric loco pilots of Indian Railway, working in standing/sitting postures and doing two main functions were surveyed in this study with RULA (Rapid Upper Limb Assessment) to calculate the exposure to risk factors associated with work-related upper limb disorders. Four types of locomotive were included in this study.

The main driving posture requires the right hand on the notch, left hand on the brake handle, and looking at the front through the look out glass. The pilots mainly adopt standing posture during loco run. Hence, the study is conducted on two specific frequently adopted postures, like –Right hand resting on the notch, Left hand resting on the brake lever.

During this mode of driving element, rarely they flex, bent or rotate the trunk. But they have to keep themselves cognitively always in quite alert and vigilant state. Hence, they have to maintain quite a static posture during this run.

The statistical calculations were done using basic formula available from standard textbooks. All the RULA ranks have been estimated from direct measurement of the postural deviations with goniometer while driving, and estimates of muscle score and force scores during in-situ operations in the running locos. Grand scores of the two different postures were summated to a single final grand score on a weighted basis for the particular job element. Total estimate of a job by extending the concept of RULS, and nor for any particular posture.

Keyword: Railway Drivers, Electric Loco Pilots, RULA, Upper Limb Assessment, Indian Railway

FASHION APPAREL PERCEPTION: DESIGN ERGONOMICS RELEVANCE

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Abstract

Design ergonomics adds value to the creative excellences concerning user's emotions and wellness. Functional and fashion wear constantly create new and changing images of the mood of the society to suit evergrowing modern aesthetic perceptions. In Indian context a study of fashion perception and product utility with aesthetics interpretation by objectifying individual sensibility with accurate observation is necessary.

International fashion trend often deals with the pattern cuts in tune with body dimensions using various materials like knits, woven and accessories with support of stitching styles and sewing methods. Indian traditional motifs and embroidery always facilitates the Indian garments and its influence on the world market with the indigenous technique and styles of stitches that is being practiced in different parts of India.

Application of ergonomics principles and wear design relevant criteria plays a major role in active clothing with skin sensorial comfort. To maximize the customer satisfaction of a product the characteristics of fashion and color, contemporary look, plastic analysis of design, fashion history, functionality and aesthetics, process of fashion merchandising, consumer attitude and purchase behavior towards the fashion product has to be seriously measured in accordance with design ergonomics.

Traditional ergonomic approach dealing with functional clothing needs to relook into. The industry requires an insight of creative perception of a total trust combining both the functional need satisfaction as well as pleasing possession factors.

The scope for apparel relevant ergonomics application in tune to creating identity of Indian context. To develop look of the apparel and create luster of fashion a series of studies may be initiated aiming at analysing the flow of pattern through colour and knit and dimensions.

Keywords: Design ergonomics, clothing, Indian context

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EFFICIENCY TESTING OF WEEDING TOOLS - AN ERGONOMIC STUDYSudesh Gandhi*, Mamta Dilbaghi** and D.N. Sharma***Department of Family Resource Management, College of Home Science, CCS HAU,
Hisar 125004, Haryana, IndiaEmail:sgandhi3@yahoo.com, sgandhi021@gmail.com**Abstract**

Traditionally, weeding and interculturing in Haryana is performed manually using kasola, a long handled tool, spending 2-3 hrs daily by the worker in the season. This has very low output and leads to muscular fatigue causing drudgery to the user. Hence, a mechanical weeder designed by CCSHAU was introduced to solve the problem.

A study was carried out to compare the efficiency of improved wheel hand hoe and kasola. Field experiments were conducted on a sample of 10 male respondents doing weeding for 30 minutes in guar/sarson fields studying their physiological and biomechanical stress alongwith output capacity. The output capacity was 4.2 times higher using wheel hand hoe (0.05 ha/hr) as compared to only 0.12 ha/hr with kasola. Although, average heart rate was higher using wheel hand hoe (134 bpm) than with kasola (126 bpm) yet the recovery of HR was vice-versa i.e. faster in wheel hand hoe than with kasola. Respondents felt less fatigued with wheel hand hoe as it involved push/pull operations (15 strokes/min) whereas kasola involved 37 strokes/min, hence, perceived exertion was 2.9 in wheel hand hoe as compared to 3.8 for kasola on RPE scale. Musculoskeletal discomfort using kasola was highest as they reported discomfort of wrist & hands (ms.= 4.3), shoulders (4.1) whereas they scored lesser on MSD for using wheel hand hoe i.e. 3.6 and 3.5 respectively.

Conclusively, the output capacity of wheel hand hoe was 4.2 times higher as compared to kasola and it saved 75 percent time and cost of operation.

Keywords: physiological stress, biomechanical stress, output capacity, musculoskeletal discomfort

STATUS AND CONSTRAINTS IN RETROFITTING OF ROPS ON INDIAN AGRICULTURAL WHEELED TRACTORS

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Abstract

Agricultural wheeled Tractors have become indispensable and are utilized in different fields also as a main power source during transportation, construction, mining, material handling excavating etc. Safety is one of the most important design factors in tractor operation and use.

In India, with the increasing interest to own tractors, the market is more than 3.0 million. But, tractors are not available with any ROPS fitted on it and there is no definite trend in tractor industries in comparison to motor industries to promote safety and comfort features resulting in fatalities to multiply. Dynamic forces caused by the field bumpiness produce dynamic stresses and these forces lead to failure of axle housing and some axle housing fails catastrophically due to incorrect fitting of ROPS. The reference mass of tractor has direct relation to weight of ROPS system. If ROPS are mounted on other than designed model, then it may break the axle housing. It was also found that retrofitting of ROPS on different models of tractors is a challenge in view of axle top, fender design and strength criterion.

Therefore, it is vital that the axle housing must resist against the fatigue failure to save the life of operator. With the trend towards increasing mechanization overseas and the virtual saturation of the new tractor market in the industrially developing countries like India, the value of the tractor operator is at its highest level. In order to obtain maximum work from the operators, it is now necessary to improve the safety and comfort of the working environment and to encourage skilled labour to stay in Farming.

This paper presents the overall scenario of the status of availability of rollover protective structures and problems to retrofitting particularly in Indian agricultural tractor.

Keywords: tractor, ROPS, dynamic forces, Indian agriculture

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**CULTURE SPECIFIC JOB CONTENT QUESTIONNAIRE: ASSESSING
THE OCCUPATIONAL DYNAMICS IN INDIAN PERSPECTIVE**

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Abstract

Systematic investigations of psychosocial workplace factors and their relations with cardiovascular disease have been advanced by the Job Strain model introduced by Robert Karasek. Job Content Questionnaire (JCQ) has been accepted globally as an instrument for assessments of psychosocial job characteristics. The statistical validity of JCQ scales were verified mostly with the U.S. and Swedish data.

The perception of an Indian worker with regard to bearable job load is obviously different from that of a worker in the U.S. or Sweden. The amount of government fund spent for social security is negligible in India. A common Indian doesn't expect the state to support him, in case of disability or mishaps. An average Indian expects that his family would take his entire responsibly in case of any misfortune. The present paper suggests some additional questions with the core questions of JCQ to normalize the said cultural difference between two working environments.

The modified questionnaires were issued to the employees working in a modernized private manufacturing plant and the process plants of a nuclear research center. The effect of technology upgradation has also been compared with some other relevant factors by analysis of variance (ANOVA) technique applied in a 4X4 Graeco-Latin square design.

Keywords: Work stress, Job Content Questionnaires, Culture Specific Occupational Dynamics.

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COMPUTER WORKSTATION ERGONOMICS

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Abstract

Ergonomics principles are not widely used by many users of computers since the awareness about the consequences of wrong postures are not well understood.

An ergonomic check list for conducting ergonomic assessment of computer workstation has been used to assess three different employees while they work in their computers in our university. Two of them are involved in administrative work in our university and the third one is a faculty. The evaluation checklist checks working postures, seating, keyboard/input device, monitor, working area and accessories. It was found that nearly 60% of the questions contained in the checklist brought 'no' answers which gives a lot of scope for improvement. This paper presents the problems existing in the workstation available in our university and possible improvements which will be incorporated.

The computer operators were informed of the deficiencies in their work stations and suitable changes are implemented in stages.

Keywords: postures, ergonomic checklist, computer workstation

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ACTIVITY PROFILE OF BEAD MAKERS -AN ERGONOMIC STUDYSudesh Gandhi Mamta Dilbaghi and Manju Mehta

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Abstract

Bead making, a small scale enterprise, is commonly practiced in North western part of Haryana in India. Ergonomic assessment of making beads of wood was carried out on a sample of 30 respondents to study their activity profile, physiological & muscular stress and health hazards.

Mean age of the respondents was 31 years having height and weight as 157.3 cm and 53 kg, respectively. Activity profile revealed that bead making was carried out for 8 hrs, working at a stretch for 2- 3 hrs, with micro breaks along with lunch break. Generally 6000-12000 beads ranging from 2mm-8mm size were made per person in a day. Working environment of making beads was quite uncomfortable depicting that the activity was carried out in an ill-ventilated room having poor lighting (127 lux), high noise level (79 dB), 33°C temperature and 69 % humidity. Average working heart rate increased to 84 bpm over the resting heart rate (73 bpm). Making of beads required high concentration involving stress on eyes and bending of neck leading to various musculo-skeletal discomforts. Very severe pain was observed in neck, eyes, head (m.s.= 4.9 each), shoulders, fingers (4.8 each), hands and low back (4.6 each).

High noise level exposure, cuts in fingers and suspended saw dust in air causing eyes and breathing problems were the other health hazards. Hence, there is a need to improve the work station as well as the working environment.

Keywords: Bead making, working environment, musculo-skeletal disorders

**TECHNOLOGY FOR NEXT GENERATION AND RELATED CHALLENGES WITHIN
THE FRAMEWORK OF HUMAN FACTORS ENGINEERING WITH SPECIAL
REFERENCE TO DEVELOPING COUNTRIES LIKE INDIA**

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Abstract

There has been tremendous increase in the past decade in the field of nanotechnology. It is envisaged that next century will still maintain or see rather increased pace of nano-based technology implementation in all most all walk of life. This technology will change the face of development of human civilization as done by industrial revolution in past.

During all these technological endeavors, their innovators have always been looking at the cost-benefit ratio, whereas the end-users of the concerned technologies, and, therefore, we too get worried about the risk-benefit ratio, and it is this theme that happens to be the topic of the present paper also. Researches in the area of health and environment with reference to new technology is still in infancy.

Existing research shows that the issue of exposure of workers, arising from the production, handling, and processing of nano-particles has been inadequately addressed. Many nano-materials and devices are formed from nanometer scale particles that are initially produced as aerosols or colloidal suspension. Exposure to these materials during manufacturing and use may occur through inhalation, dermal contact and ingestion. Minimal information is currently available on dominant exposure routes, potential exposure levels and material toxicity.

Conclusive implication of the new technology on human health and ecology will surface once technology passes the test of economic viability and social acceptability. Present paper presents some of the critical related issues.

Keywords: Nano-particles, dermal contact, exposure routes, material toxicity, economic viability.

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**OPERATIONAL ERGONOMICS AND PRODUCTIVITY DRIVE THROUGH FLOW
PROCESS CHARTING OF NON-PARALLEL DRILLING OPERATIONS ON CUBI-
CAL BLOCK WITH RECONFIGURABLE DRILLING MACHINE**Chiranjit Sarkar and Balendra Nath Lahiri

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This paper searches the possibility of carrying out drilling operations on different faces of a job, that otherwise require resetting the job every time, or preferably use multi-spindle drilling machine, if the hole axes are parallel. Reconfigurable machine tools (RMT) are a breed of machines that can take care of carrying machining operations on different non-parallel planes. This enables reduce the down-time or unproductive time.

Reconfigurable machine tools are a new generations of machines that bring high flexibility in machining operations, and is a compromise between hard automation and flexible machining systems.

This paper considers a cubical block requiring blind drilling on different faces. This therefore necessitates identifying a right type of RMT capable of drilling holes. A single spindle parallel type RMT is considered in this case.

The process chart is drawn for this consideration of given job and the selected RMT. Different dimensional measures are collected on the reconfigurable drilling machine to assess the operator movements, postures and work space for ergonomic assessments. The flow process chart enables to estimate the total operation time to complete a job.

When this job is compared, say with a pillar drilling machine, or multi-spindle drilling machine, the selected RMT offers better ergonomics and productivity.

Keywords: Reconfigurable machine tools, Flow process chart, Productivity, Ergonomic assessments

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**PRODUCT HUMAN FACTORS EVALUATION IN TV COMMERCIALS USING
PSYCHOPHYSICAL TEST**K Adalarasu¹, Aswin Suryanarayanan¹, V. Balasubramanian^{1§}

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Advertising is a form of communication the purpose of which is to inform potential customers to purchase or to consume more of a particular brand of product or service. The popularity of an advertisement depends on various factors like, choosing a proper theme for a brand of product, music, animations and speech.

The objective of this study was to evaluate human factors while watching commercials advertising using psychophysical questionnaires (i.e. subjective rating) of the information provided by the subjects who have participated in the experiment. Seven males and one female subject were voluntarily participated in this study. Different TV commercials advertising such as Naukri.com, Tiger biscuits, Vodafone, Union bank, Godrej soaps, Tata tea, HTC mobiles, Sony xperia and LG mobiles were grouped into 5 groups and embedded in the movie at a regular interval of 18 minutes in two hours of English movie. The movie was screened for each subject with the help of a LCD projector and speakers to mimic a cinema theatre effect.

A questionnaire form depicting the advertising rating was provided to the subjects after the experiment for the assessment.

One way ANOVA test was performed on the rating value of all commercial advertising. Rating value corresponding to Kiwi advertisement are significantly ($p < 0.05$) low when compared to other advertisement Vodafone, Union bank, Naukri.com and LG mobile.

This result indicates that advertisement contain only speech has less attraction with viewers as compared to advertisement have animation/ music/ dialog and theme/ humor.

Keywords: Human Factor, Psychophysical Test, Advertisement, Subject Rating