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PHYSIOLOGICAL STRESS ON WOMEN WORKERS IN PEDAL THRESHERS Swain, S K Mohanty and Dr G C Satapathy

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Abstract

Paddy is the main crop of Orissa, grown in both Kharif and Rabi seasons. Beating paddy bundles over a wooden or stone surface is the most common method of threshing, seen in most part of Orissa. Pedal threshers are now beginning to replace the age-old practice of beating method, as animal power is being scarce after the super cyclone.

Fifteen female subjects in the age group of 18 to 45 years in OUAT central farm were selected on basis of the anthropometrics data for above study. Their heart rate, blood pressure, maximum aerobic power and oxygen consumption were measured in the laboratory at rest and work.

Maximum aerobic power of the selected female subjects was observed to be in the range of 1.56 to 1.81 l min⁻¹, which decreases with the increase in age of the subjects. The mean value of oxygen consumption rate at rest was of 0.20 l min⁻¹, which also decreases as the age of the subject increases. Average working oxygen consumption rate was noticed to be 0.91 l min⁻¹ for all workers. The work pulse was found to be in the range of 54.2 beats min⁻¹ for female agricultural workers. The mean value of energy expenditure rate was recorded to be 18.9 kJ min⁻¹. The workers operated the thresher at 53.3 % of their maximum aerobic power. The mean arterial pressure and over all discomfort score was recorded to be 94.9 mmHg and 6.8. The average pedal force applied was recorded to be 233.9 Newton. The body parts feeling discomfort were right legs, waist, hands, shoulder and neck. Maximum continuous working time for female agricultural workers observed to be 34 minutes by the worker. Number of strokes per minute for female worker was noticed in the range of 95 to 104. The output of the thresher was observed to be 40 kg /hr.

Keywords: Physiological Stress, Pedal thresher, Working heart rate, blood pressure, maximum aerobic power and oxygen consumption

**PHYSIOLOGICAL COST OF FARM HOUSEHOLD'S ACTIVITIES OF HILL WOMEN:
STUDY OF MOUNTAIN REGION IN UTARAKHAND**

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Abstract

The farm and home are inseparable in India. An overwhelming majority of women in rural India are associated directly or indirectly with agricultural production, processing and distribution. They substantially contribute towards the labour force required in farm. Poor women in developing countries continue to be responsible for the time and labour intensive tasks of farm.

The study was designed with objectives to identify the extent of drudgery producing activities performed by women in various farm, household, and livestock activities through physiological response and identification of improved drudgery reducing implements and tools. The locale of the study was Nainital district of Uttarakhand state. Multistage purposive-cum-random sampling technique was used. For descriptive data 114 women and for experiments 14 women were selected

The results indicated that the activity, digging of land (4.76), harvesting (4.7), hoeing (4.65), and fetching of fuel (4.57) were the activities produced maximum drudgery. The extremely heavy activities were those where $HR > 175$, $RR > 120$, heavy activities $HR = 125-150$, $RR = 107-114$ and moderately heavy activities with $HR = 100-125$, $RR = 100-107$. Digging of land was perceived as extremely heavy activity. Mopping, fetching of water and fuel, weeding and harvesting were perceived as very heavy activities by majority of the women farmers. Milking activity followed by fetching of and ground leveling were the activities where much grip strength decreased of the women farmers. While studying physiological cost of the selected activities, it was found that blood pressure, heart rate, respiration rate and pulse rate of the women farmers increased in activities. But with use of improved implements the energy consumption decreased.

Keywords: Drudgery, Energy Expenditure rate (EER), Farm Women, Heart Rate, Respiration Rate.

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ERGONOMIC STUDY OF MUSCULOSKELETAL COMPLAINTS IN NURSES

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Abstract

Nurses have high prevalence of low back and neck / shoulder pain and musculoskeletal disorders. This present study aims at ergonomic analysis of musculo-skeletal complain in nurses working in different health care unit in West Bengal.

Elaborative ergonomic questionnaires along with Modified Nordic questionnaire were applied on 98 nurses working in different health care units. The prevalent posture adopted by the nurses during different tasks was photographed with the help of digital camera and analyzed by OWAS method.

After analyses, it was observed that working postures when they are involved in patient handling like lifting and shifting of the patient, bed making, etc are very strenuous, which leads to discomfort feelings in different parts of the body. As weight of the human body very difficult to hold especially in small place it causes more perceived exertion. Frequent adoption of awkward posture leads to a severe musculoskeletal problem. The main complaints of the nurses are low back and shoulder pain.

It was observed that 73 % of nurses complaints that they feel pain after coming back home and 21% during work.

Some ergonomic training for lifting, using of mechanical aids, arrangement of beds, etc., will reduce the problem.

Key words: Ergonomics, Nurses, Musculoskeletal complaint, postural analysis.

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**ERGONOMIC EVALUATION OF WORK LOAD OF FEMALE LABOURERS WORKING
IN THE UNORGANISED SECTORS OF THE BRICK FIELDS**

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Abstract

The study aimed at evaluating work load environment of the female labourers engaged in the manual brick manufacturing units of the unorganised sectors of West Bengal, India.

A detailed questionnaire study along with direct observations of work postures were studied on 122 female labourers. Physical parameters such as body weight, height; physiological parameters like heart rate response, blood pressure and psycho physiological parameters such as perceived exertion rating were studied during rest and while performing different tasks in the field.

The workers are recruited on seasonal basis (mainly from October to May). The BMI of the workers show that 32 % of them are suffering from chronic energy deficiency. About 94 % of the workers complain about pain in different body parts. Other main health complaints include gynaecological problems (74 %), skin diseases (68 %) and respiratory problems (85 %). From the physiological responses, it was observed that most of the jobs performed by the female workers are classified as moderate to heavy.

Moreover, they lift and carry load which is more than the recommended level. Postural analysis in OWAS method shows that some of the posture adapted during work required immediate corrective measures. Apart from this, the female labourers are continuously exposed under the sun, radiant heat from the brick kiln, dusty and noisy environment making their work place more hazardous. Thus, immediate ergonomic interventions are required to improve the quality of life of these female labourers, working in the unorganised sectors of the brick fields.

Key words: Ergonomics, female, brick kiln, postural analysis, physiological response.

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MUSCLE FATIGUE IN YOUNG PROFESSIONAL FEMALE ATHLETES DURING ERGOMETER ROWING

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Abstract

Rowing is a whole body exercise like cycling and running. For competitive rowers fatigue induced changes in movement can be detrimental for their performance and can lead to injury.

The objective of this study was to analyze muscle fatigue in professional athletes while rowing in a rowing ergometer (virtual environments) using surface Electromyography (sEMG) signal.

Seven female professional athletes trained for at least 5 years in the sport, voluntarily participated in this study. Each volunteer performed 15 min rowing activity in rowing ergometer. sEMG signals were acquired bilaterally from quadriceps, erector spinae and trapezius muscle groups at sampling frequency of 1000Hz. sEMG was recorded before and after 15 min of rowing when the subjects performed psychophysical tests to elicit maximal voluntary contraction (MVC) of the relevant muscles. Muscle fatigue was quantified using frequency domain parameters such as mean power frequency (MPF). In all athletes there was a significantly high muscle fatigue ($p < 0.05$) in the muscles controlling trapezius and erector spinae. The fatigue rate of these muscles creates shoulder and back injury.

Output of this simulator study use to providing focused training to these weak muscles (back and shoulder) by a rehabilitation program can help super athletes to perform better and reduce shoulder injury and back pain in real world.

Keywords: Electromyography (EMG), Power spectral density (PSD), Muscle fatigue, Rowing activity, Maximal voluntary contraction (MVC)

PREVALENCE OF MUSCULOSKELETAL DISORDERS AND PERCEIVED QUALITY OF LIFE AMONGST CONSTRUCTION SITE MANAGERS IN MUMBAI

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Abstract

The diverse managerial functions in any construction organization are myriad and considerable evidence exists to indicate that the specific function a manager supervises, to large extent determines his health and well being. Recent studies indicate potential links among work organization, quality of life, and work-related musculoskeletal disorders (WRMDs).

This study attempted to investigate prevalence of musculoskeletal disorders and physical activity and ascertain the perceived quality of life, amongst construction site managers in Mumbai. The study was conducted on 21 male construction managers (mean age 34.4 yrs.), involved various managerial activities. The average work duration was 9.36 h per day and 58.5 h per week. Volunteers responded to WHO-QOL BRIEF (Quality of Life Questionnaire, WHO), Nordic Musculoskeletal Questionnaire and WHO's General Physical Activity Questionnaire (GPAQ).

Results demonstrated that the total physical activity of all managers was between <600 and >3000 MET-minutes/week at work, implying that all the managers were found to have "moderate" level of physical activity. Out of the mean scores in the four domains of QOL, social domain was maximum, followed by psychological domain, environmental domain and physical domain, in that order. Among musculoskeletal problems, low back pain, followed by upper back pain, were found to be mostly reported by managers. The highest score in social domain of Quality of Life entail the highest perceived satisfaction in personal relationships, social support, and sexual activity facets. Results also conclude that back problem is most common musculoskeletal disorders, among others, in construction site managers.

Keywords: Musculoskeletal disorders, Quality of Life, Physical activity, Construction site.