

Ergonomic analysis of physiological problems due to inadequate postures adopted by rice mill workers

■ SHOBHA AND PRATIBHA JOSHI

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See end of the paper for authors' affiliations

Correspondence to :

PRATIBHA JOSHI

Social Science Division,
Vivekanand Parvatiya Krishi
Anusandhan Sansthan., ICAR,
ALMORA (UTTARAKHAND)
INDIA

Email:prati12@gmail.com

■ **ABSTRACT** : Food grains are processed in rice mills and stored in several organizations such as the Food Corporation of India, Central Warehouse Corporation, State Warehouse Corporation etc. In the present investigation, work on physiological examination of rice mill workers in the ergonomic background was taken into consideration with intent to determine the magnitude of physiological strain of the workers in actual situation of work. This study has undertaken to evaluate the food grain-handling workers with respect to their workload, energy expenditure rate (EER) and musculo-skeletal disorders (MSDs), discomfort resulting out of work practice. The subjective assessment of respondents showed that mild to moderate pain was experienced by rice-mill workers in upper and lower extremities. The results also revealed that selected respondents adopting standing, forward bending (half bending), full bending posture and frequency of postural change varied from approx. 2-8 times (standing), 6-12 (forward bending) and 7-11 times (full bending) for almost all activities performed by workers in rice mill.

■ **KEY WORDS** : Work-physiological examination, Musculo-skeletal disorders, Energy expenditure rate (EER), Posture and frequency of postural change

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Food grains are processed in rice mills and stored in several organizations such as the Food Corporation of India, Central Warehouse Corporation, State Warehouse Corporation etc. It has been reported earlier that the workers exposed to grain dust in storage air suffer from respiratory, allergic and patho-physiological disorder. Load handling *i.e.*, lifting and carrying heavy load of grain filled sacs is the major job component in these organizations. Often, the workers have to adopt awkward postures leading to physiological strain and musculo-skeletal problem (Aaras and Westgaard, 1988; ROHC, 2004).

Ergonomics involves equipment, adjusting workstations, job rotation, and other changes in the way work performed (Berger, 1995). Application of force is required for handling load (lifting, holding, carrying loads, pushing and pulling weights etc). Awkward body posture also causes the work to become strenuous and the physiological costs are higher in non-erect postures giving rise to musculo-skeletal strains and low back signs and symptoms. Turning, twisting and bending

are also associated with increased incidence of low back disorder like pain, ache and discomfort (Braton, 1992). It was observed during work that the workers had to bend and twist their neck and back for putting the load on the shoulder. Therefore, the present study was based with the following objectives to know the Physiological responses of the workers during various activities of the rice mill workers, to recognize the environmental parameters and related health problems and to envisage the subjective feeling and body pain of the rice mill workers.

■ RESEARCH METHODS

Descriptive research design was chosen to find out the existing working conditions, faulty postures and physical discomfort of the workers and experimental research with 15 respondents, planned to find out physiological cost of work in terms of heart rate, and postural stress while loading the rice bags, related discomfort and health hazards caused. The