

CARDIOVASCULAR LOAD AND STRAIN ON DAIRY WORKERS INVOLVED IN MILKING

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ABSTRACT

In the present study, an attempt was made to find out cardiac load or strain on dairy workers during milking by estimating energy expenditure. On the basis of physical fitness of respondents, 30 male and 22 female respondents of 30-40 yrs. And 10 male and 8 female respondents of 40-50 yrs. were selected for experiments. Findings showed that energy expenditure was higher among female respondents as compared to male respondents of higher age group as compared to female and male respondents of lower age group.

Key words : Cardiac load, Energy expenditure, Heart rate, Milking, Respondents.

Milking is physically arduous occupation and exposes the dairy workers to various risk factors that have been associated with musculo-skeletal disorders (MSDs). In a Swedish study, it was observed that female milkers had a greater risk of developing hand and wrist MSDs as compared to agriculture workers (non-milkers) Stal, *et al.* (1996). In the same study, symptoms of numbness and white finger related to vibration exposure were also reported. During any physical activity, there is an increase in blood circulation which increases the rate of transportation of oxygen, CO₂ and the metabolites formed during muscular contraction. The increase in blood flow is met through the combination of two factors viz., an increase in pulse rate and increase in blood volume output from the heart per beat (stroke volume). If the volume ejected per beat remains constant and the heart rate increases, cardiac output also increases. In the light of above facts an attempt was made to assess the cardiac load and strain on dairy workers performing milking operation.

METHODOLOGY

Present study was conducted in 3 villages of Kalyanpur block of Kanpur Nagar (U.P.) namely- Hirdayapur, Ishwarigunj and Dharmapur which were randomly selected from the list of villages of Kalyanpur. On the basis of physical fitness index suggested by

Garrow (1981), forty male and thirty female respondents of two age-group 30-40 yrs. and 40-50 yrs. were selected purposively. Thirty male and twenty-two female respondents of 30-40 yrs. and ten male and eight female respondents of 40-50 yrs. were found physically fit from the selected samples of phase-I. Physical fitness was assessed through body mass index, body temperature, blood pressure and heart rate.

The subjects who met the following conditions were selected for the experiments:

Physical fitness : BMI index
Body temperature : Not above 99°F
Blood Pressure : 120/80±10
Heart rate : 70-90 beats/min

Cardiac load and strain was made by calculating energy expenditure in split-up stages and complete cycle of selected dairy farming activities through formula proposed by Varghese *et al.* (1994).

Energy expenditure (kg/min) = 0.159 x average heart rate (beats/min) – 8.72

Heart rate of dairy workers was measured with the help of polar heart rate monitor before, during and after each split-up stages and complete cycle.

Split-up stages of milking was as below :

Stage- I : Onward journey from home to cattle-shed with carrying bucket containing small quantity of water.

Stage – II : Milking operation

Stage – III : Backward journey from cattle-shed to home.

ANOVA, adjusted analysis of variance (Snedecar