AUMNAJ SETSUWAN : RELATIONSHIP BETWEEN WORK FACTORS AND BACK LOAD
MEASURED BY ELECTROMYOGRAPHY : A CASE STUDY OF 1-TON PICK-UP
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This research studied work factors that could cause back pain
symptoms to workers in a 1-ton truck assemblyline. The research objectives
were 1) to survey the problems in 1-ton truck assemblyline, 2) to investigate
back load by electromyography (EMG), 3) to analyse the relationship between
work factors and backload, 4) to suggest solutions to the problems or reduce
back pain symptoms on the job.

The researcher interviewed workers to assest the severity of
problems and selected 34 persons from 5 sections to be experimental subjects.
The experiments were conducted by EMG measurement and data on working
postures were analysed by a technique called RULA (rapid upper limb
assessment) in 46 types of work based on these subjects.

The results showed a linear relationship between values of percentage
maximum voluntary electromyography, %MVE and RULA scores from working
posture analysis with statistical significance.

The interested work factors:bending back posture, weight of the work
piece, work station height and work period were linear related to %MVE with
statistical significance. Applying fuzzy set theory to investigate work
factors serious priority, it was found that bending back posture was the
most important factor, followed by weight of the workpiece, work station
height and work period, respectively.

The results were analysed based on the three criteria, namely (1)
posture score with RULA greater than 5, (2) %MVE values greater than 30 %,
and   (3) abnormal index (AI) from the questionnaires greater than 3.
Sixteen out of the 46 types of work were found to be dangerous and required
improvement immediately.