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A BIOMECHANICAL ANALYSIS OF LAYING CONCRETE BLOCK

A study of bricklayers laying concrete blocks was performed to determine the biomechanical stresses and metabolic demands on their low back and upper extremities during the course of a regular working day.

Utilising the facilities of the Ontario masonry Training Centre, an experienced instructor was videotaped using semi-solid block in a controlled environment. These results were analysed for L4/L5 trunk moment, spinal compression and shearing forces and metabolic demands.

Preliminary results indicate that over an average working day a worker will actually lift blocks for approximately 30 minutes – 1 hour (5-7 secs.per lift at 200 blocks per day). The rest of the time is spent on non-lifting activities i.e. scooping up the mortar, tapping the block into place, using the level, setting the line etc. Consequently, the authors divided the analysis into lifting and non-lifting activities. Analysed results indicate that it is the **non-lifting activities** which were found to be the higher risk activity for musculoskeletal injury compared to the lifting activity for these workers. Further on site study is to be evaluated.

Recommendations for injury prevention among these workers include focusing on non-lifting activities such as using height adjustable mortarboards when working at ground level and using elevating scaffolds to keep the materials at ergonomically acceptable heights. Additionally, limiting the size and weight of concrete blocks is recommended.