EVALUATING THE IMPACT OF THE LIFT-MOVE-PLACE ACTIVITY WITH 5-GALLON WATER BOTTLES TO SPINAL LOADING PARAMETERS: A DYNAMIC MOTION ANALYSIS APPROACH

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Abstract

The focused on evaluating 5-gallon water bottle designs particularly and its impact to lower back injuries. Most 5-gallon bottles require users to apply a series of Lift-Move-Place Activity in order to pre-position the container for use. These series of tasks applied to a relatively heavy load is known to put undue pressure to users handling the water bottle. Most existing lifting assessment tools are static in nature and are not able to account for the changes in the spinal loading parameters from the initial position, transfer, up to the final position of the container. Motion analysis was done using a Motion Analysis Capture (MAC) system which captures the series of handling activities across time. The paper studied the responses in terms of angles per millisecond of the trunk, arms, and hips which translates to the body orientation of the lifter. These angle variables represents the posture of lifters together with spinal loading parameters (i.e. EMG) captures the entire scenario in order to completely assess the risk of low back pain during manual handling. Findings from MAC are broken down to present recommendations of better designs for lifters of 5-gallon water bottle not to incur low back injuries as well as the proper way to lift the object.