

THE EFFECT OF CARDBOARD SLIPSHEETS BETWEEN LAYERS OF BEVERAGE PRODUCTS ON SIDE-LOAD DELIVERY TRUCKS: A TRUNK MOTION STUDY

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A previous ergonomic evaluation of route drivers in the beverage industry indicated that one of the factors associated with increased risk of low back injury was the high frictional force encountered when dragging selected products during the off-loading process. Of particular concern were the rigid plastic trays used to package and ship the 2-liter bottles and the open-topped cardboard cases used for the 592 ml containers. The present study tested the effects of using cardboard slipsheets placed between layers of palletized products on-board delivery trucks on the forces required and the trunk motions exhibited during the unloading process. Seven employees participated in the trunk motion study by wearing the Lumbar Motion Monitor while unloading both types of products from a side-load truck. The cardboard slipsheets reduced the required pull force by 35 percent for the 592 ml containers and by 58 percent for the 2-liter bottles. The use of cardboard had a small, but adverse, effect on the trunk motions. When the slipsheets were used twisting motions were increased during the handling of the 2-liter bottles and the lateral bending was increased during the handling of the cases containing 592 ml products. It is likely that the reduced sliding resistance translated to increased trunk motion. Evaluation of these results using the trunk motion model proposed by Marras et al. (1993) suggest that overall the use of cardboard slipsheets should be advocated.