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On Trunk Muscle Fatiguability during a Repetitive Lifting Task In
Manual Material Handlers – a non-randomized single-group trial.**

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The Effect of An On Body Personal Lift Assist Device (Jaipur Belt) On Trunk Muscle Fatiguability during a Repetitive Lifting Task In Manual Material Handlers – a non-randomized single-group trial.

Background: An on body personal lift assist device (OBPLAD) is a non-motorized, passive device in which the elastic elements act as an external muscle power generator to assist lifting thereby offloading the trunk muscles. Though there is enough evidence for the use of OBPLAD generated through laboratory studies, we found a scarcity of evidence on the use of OBPLAD in real-life work settings, especially in the Indian population. This study investigates the effect of the Jaipur belt, an OBPLAD, on trunk muscle fatiguability while performing repetitive lifting task in manual material handlers. **Methods:** 70 subjects engaged in manual material handling were recruited from industries in and around Mangalore, Karnataka in this non-randomized single group trial. Subjects were made to perform a repetitive lifting task over a period of 15 minutes with and without an OBPLAD. Electromyographic data were recorded from rectus abdominis, transverse abdominis, quadratus lumborum, and erector spinae from either side of the body, and the onset of fatigue was deduced from the changes in electromyographic parameters. **Results:** We found a delay in the onset of fatigue in all the muscle groups studied while the lift was performed wearing the Jaipur belt. However, the findings were statistically significant only for right erector spinae, right rectus abdominis, left transverse abdominis, and left quadratus lumborum. It was also found that number of repetitions as well as time for which a task would be sustained were both found to be significantly better wearing an OBPLAD. **Conclusion:** The findings of the study imply that the Jaipur belt could potentially delay the onset of fatigue in the trunk muscles while performing repetitive lifting task and hence, could be useful in the prevention of fatigue-related musculoskeletal disorders of the lower back.