

# EVADRIVE

## Eliminating the risks of mobile lifting

The National Institution of Occupational Safety and Health (NIOSH) research<sup>2</sup> and private studies highlight the risks of spinal shear and compression force injury when pushing and pulling a mobile total lift. The amount of force a person can safely push and pull depends on the person's size and body structure. Research studies report that a person can safely push up to 20% of their body weight and pull up to 30% of their body weight<sup>1</sup>. When measuring the push-pull forces required to operate a mobile lift with various quantities of weight loaded; studies reveal the amount of force required, often exceeds maximum safe working load for some users. This exposes a gap in many hospital and healthcare facilities patient handling standards internationally.



These studies highlight the need for a fully powered mobile lift, one capable of lifting the maximum 600lb load with safe push-pull force limited. The EvaDrive is a fully powered mobile total lift. The large rear wheels can fully rotate from forward facing to a lateral position. This allows for normal transfers, tight rotations, and lateral movements.



Handicare performed a study designed to parallel the NIOSH research<sup>2</sup>. In this study a 59kg/130lb female 64in/162.6cm nurse performed pushing and pulling with both the EvaDrive and a standard mobile total lift with these variables measured.

- Peak push force- carpeted surface, hardwood surface, concrete surface.
- Peak pull force- carpeted surface, hardwood surface, concrete surface.

The test was performed on each surface with the following weight loaded on both lifts.

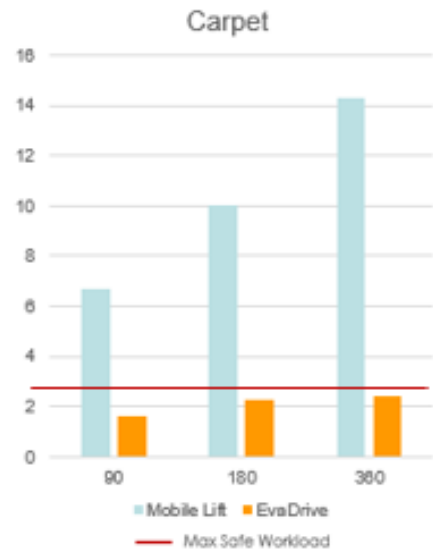
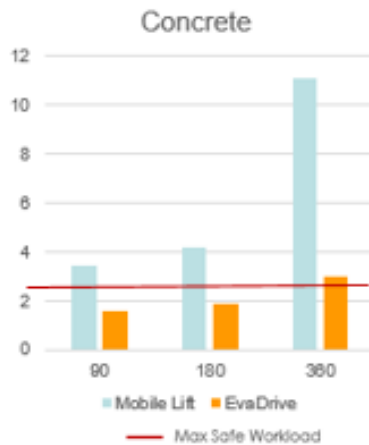
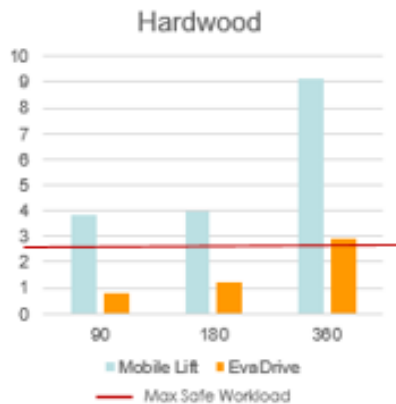
- 90lb/41kg
- 180lb/82kg
- 360lb/164kg

# DATA

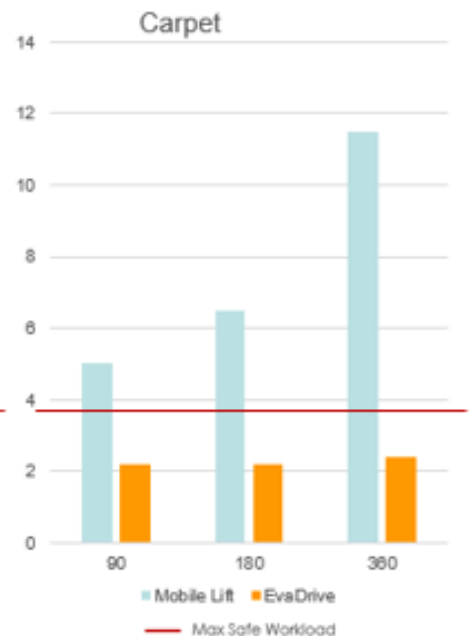
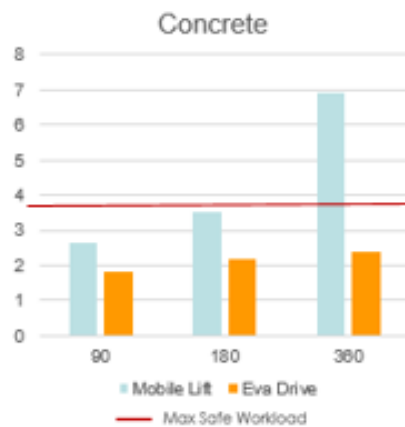
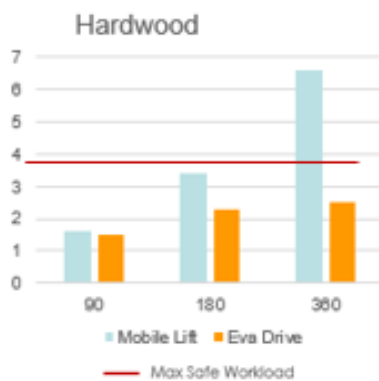
Each variable measurement was repeated three times and averaged to calculate the values reported here.

The following graphs represent the average measurements for peak PULL and PUSH forces. The horizontal line represents the safe maximum working load for the test subject.

## Pull Force



## Push Force



1. Knapik GG, Marras WS. Spine loading at different lumbar levels during pushing and pulling. Ergonomics. 2009 Jan; 52(1): 60-70.
2. Waters Thomas, Collins James, Galinsky Traci, Claire Caruso NIOSH Research Efforts to Prevent Musculoskeletal Disorders in the Healthcare Industry Orthopaedic Nursing. 2006 Nov/Dec; 25 (6)