

# Zoom<sup>®</sup> Motorized Drive Reduces Perceived Exertion when Transporting Up an Incline

**Medical**

3800 E. Centre Ave.  
Portage, MI 49002 USA  
t: 269 329 2100 f: 269 329 2311  
toll free: 800 787 9537

www.stryker.com

## Situation

The Healthcare Professional (HCP) continues to be a profession that puts their physical health at risk in their daily activities. HCPs often perform an array of physically demanding tasks, many of which contribute to work-related musculoskeletal disorders and termination of career.<sup>1</sup> In 2004, McFarlane identified concerns relating to peak forces experienced by a HCP while transporting a patient up an incline.<sup>2</sup> Due to high Rates of Perceived Exertion (RPE), or physical intensity level; a HCP is 4.5 times more likely to sustain a back injury due to overexertion when compared to other professions.<sup>3</sup>

## Rationale

Stryker recognized the opportunity to provide a mobility solution on their stretchers that would reduce the Rate of Perceived Exertion a HCP experiences while transporting a patient up an incline. Applying advanced engineering practices alongside biomechanical science, Stryker developed the Zoom<sup>®</sup> Motorized Drive System. Zoom is designed to virtually eliminate strenuous pushing and pulling required to transport heavy patients up an incline.

## Methodology

To determine how stretcher mobility design affects the Rate of Perceived Exertion on a caregiver, independent ergonomic experts compared Stryker's Zoom Motorized Drive System to the standard fifth wheel system. Participants were observed pushing each stretcher with a 225 lb. load along a corridor and then up an eight-degree incline. Upon completion, participants were asked to provide a rating of perceived exertion.<sup>4</sup>

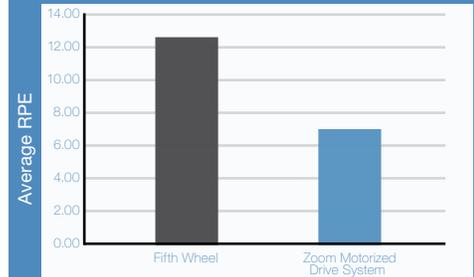
## Results

Scientific assessment of the participants determined each candidate experienced significantly lower RPE while pushing Stryker's Zoom Stretcher up the incline. Compared to the fifth wheel, Zoom reduced RPE by 42%.

## Conclusion

The Rate of Perceived Exertion a caregiver experiences while transporting a patient is heavily influenced by the design of the stretcher used during transport. Stryker's Zoom Motorized Drive System reduces the physical intensity level a HCP will experience while transporting a patient up an incline and could help reduce the risk of work-related musculoskeletal disorders.

**Rate of Perceived Exertion (RPE)  
While Transporting Up an Incline**



**Stryker Zoom Motorized Drive Stretcher**

## References

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4. Butt, Steven E., Fredericks, Tycho K., Cure, Laila N., Burns, James D., Harms, Kimberly S. "Effects of transport stretcher mobility related design features on healthcare workers." 2012