Redliner: An Activity Monitor for Manual Wheelchair Users

Kenton Hamaluik, MSc, EIT[1], Zohreh Salimi, MSc[1], Martin Ferguson-Pell, PhD, C.Phys.[1,2]
[1]Faculty of Rehabilitation Medicine, [2]Peter Lougheed Leadership College

Background

- Wheelchair users have a strong need to monitor activity
  - Manual wheelchair users are highly susceptible to repetitive stress injuries [2]
  - Propulsion forces over 80% of maximum capacity result in damage [1]
- Typical existing activity monitors don't work with manual wheelchair users
- SmartWheels are the gold standard, but are an expensive clinical tool
  - There is a need for an affordable consumer-grade tool for activity monitoring

Objective

The objective of this work was to create an inexpensive activity monitor for manual wheelchair users capable of measuring the following data:

- Number of propulsion strokes
- Average travel velocity
- Amount of time spent active
- Estimated distance travelled
- Number of "redline events"[1]

[1] *redline events* are instances of when the user's propulsion force exceeds 80% of the maximal propulsion force they can generate

Method

Result

Conclusions

- Redliner is a new activity monitor for manual wheelchair users
- Redliner has been validated against expensive SmartWheel devices
- Redliner is moving forward as a commercial entity to produce and sell the devices

References

[1] I.P. Freely. A small paper. *The journal of small papers*, -1, 1997. to appear.

[2] Hugh Jass. A big paper. *The journal of big papers*, MCMXCVII, 7991.

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