



ISWP Standards Working Group October 9, 2019 Meeting Recap

The ISWP Standards Working Group met by conference call on Wednesday, October 9, 2019 from 12:00 p.m. to 1:30 p.m. U.S. Eastern Time. This document provides a recap. Link to call recording: <https://iswp.adobeconnect.com/poacnwv0emag/>

Next call: TBD.

Discussion:

- ISWP Update:** The organization is in the process of moving outside the University of Pittsburgh. A Forming Committee of 5-7 members is being created to provide guidance on organizational structure and other items. David Constantine, Motivation, has agreed to be a Forming Committee member. The Forming Committee's activities will take place from November 2019 to around May 2020. ISWP currently has USAID funding to support activities through August 2020.
- GiveMove Presentation:** Alejandro Bisi from GiveMove in Argentina presented the company's product, Bipmov, a pediatric mobility aid. GiveMove is dedicated to developing technology to aid children with multiple disabilities. Bipmov is the first prototype. The company has been working with groups in Argentina which are providing standing equipment for children, who can stay in standing position for about 50 minutes to 1 ½ hours. GiveMove also is collaborating with a university in Argentina on a power wheelchair with both standing and recline seating options. Jon Pearlman explained there are no design considerations or standards for standing equipment, but stability testing and power wheelchair standards would apply to the device. Christine Write Ott, an OT at the Bridge School, is a good source of design feedback, per Matt McCambridge. **Matt** will introduce Alejandro and Christine.
- LeTourneau/ISWP Rolling Resistance Equipment:** The LeTourneau team is not working much on the rolling resistance equipment due to a lack of repeatable results. A group is working with Mark Richard and Beeline on applying a power wheel to a wheelchair, which would cost about \$200.
- Pitt/ISWP Work:**
 - Rolling Resistance:** Pitt found a way to solve the rolling resistance repeatability problem by using air bearings; repeatability is seen if trials are run back to back. Testing was done recently with 6 wheels and 6 casters. Results are showing that rolling resistance has a linear relationship to load. Higher resistance was observed with higher diameter casters which may be due to caster design and material. Pitt team also is testing rolling resistance on an instrumented treadmill to compare the relationship between flat ground and drum. Rolling resistance tests will be done on



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different thickness of carpet, which will be applied to the drum. Matt McCambridge asked if corrugated surface can be used to simulate rough ground and evaluate energy expenditure with pneumatic tires. Pitt team also is working to determine whether rolling resistance is impacted by durability testing, including corrosion. Results to date show a trend of increasing rolling resistance after wear and tear is put on casters; rolling resistance shows statistically significant increases following ISWP caster durability testing.

- b. **Bushings versus bearings:** Pitt team is evaluating how plastic bushings work compared to bearings. To date, the team found that for 6 inch casters, bearings were affected by corrosion and had a lot of slop after testing. Plastic didn't have any corrosion effect and only slight slop. They also found that bearings on axles of an 8 inch caster model broke on the caster test. The team is continuing to do more testing, including debris infiltration. GG Bearings is interested in working with ISWP/Pitt and providing samples for testing. The company would like to develop a solution if there is significant benefits in plastic versus traditional bearings. Pitt will investigate bushing material from vesconite based on feedback from Chris.
 - c. **Field study on toe and slop on manual wheelchairs:** Joe Ott is conducting a field study for toe and slop on manual wheelchairs and will be using a laser measurement device to capture information for 200 participants. As background, LeTourneau's original work and some rolling resistance work at Pitt showed that 1 or 2 degrees of toe could double or triple rolling resistance. There have not been any studies on prevalence or severity of toe on wheelchairs in community.
 - d. **ISO caster standard:** The caster standard continues to move forward; ISWP is working through the voting process with ISO. A paper on caster validation is close to being published.
 - e. **Standards presentations at conferences:** ISWP standards presentations were given at GReAT Consultation (Geneva) and RESNA/Rehab Week (Toronto) in August.
 - f. **Testing Documentation:** ISWP will soon publish RR and stability testing documentation.
 - g. **Motivation Update:** Chris and team are looking to 3D print wheelchair parts locally and evaluate them in the field.
 - h. **GRIT Update:** GRIT is testing caster models with athletes and will update more in the upcoming meeting.
5. **Standards Wiki:** ISWP is creating a Wiki to provide best practices for performing tests. The goal is to lower the barrier for testing to be done, so photos and videos will be included with drawings. The wiki should be available in about 6 months.

Participants:

Guest: Alejandro Bisi, GiveMove

Standards Working Group Members:

	Bonnie Gonzalez, Free Wheelchair Mission
✓	Ben Judge, GRIT
	Keoke King, Participant Assistive Products
	Daniel Martin, Shonaquip
✓	Matt McCambridge
	Mark Sullivan, Convaid
✓	Norman Reese, LeTourneau University
✓	Chris Rushman, Motivation
	Don Schoendorfer, Free Wheelchair Mission
	Scott Walters, Mobility Worldwide
✓	Eric Wunderlich, Latter-day Saints Charities
✓	Anand Mhatre, University of Pittsburgh
✓	Joe Ott, University of Pittsburgh
✓	Jon Pearlman, University of Pittsburgh
✓	Maria Toro Hernandez, University of Pittsburgh
✓	Nancy Augustine, University of Pittsburgh

Prepared by: Nancy Augustine and Anand Mhatre