




ISWP Standards Working Group

December 9th, 2020 Meeting Recap

The ISWP Standards Working Group met by conference call on Wednesday, December 9th, 2020 from 12:00 p.m. to 1:30 p.m. U.S. Eastern Time. This document provides a recap.

Here is the recording from this meeting:  [ISWP Stds WG-Dec.09. 2020. p1.mp4](#)

Next call: Wednesday, March 10th, 2020, 12:00 p.m. U.S. Eastern Time/16:00 UTC

Discussion:

1. ISWP updates – Jon Pearlman, PhD

ISWP is currently in the process of rolling into a separate entity over the next 6 months. The forming committee chaired by David Constantine developed the framework for governance and the founding board is now in place consisting of 11 members plus 2 ex-officio members and are now electing officers. Early next year, ISWP will start the recruitment process for the executive leadership role.

Wheelchair standards launch meeting, which is co-funded through WHO, happened last week. There is an anticipated 18 months of work ahead.

Another activity funded by ISWP is the development of the educator's package, which is the wheelchair training package tailored towards being run in academic institutions such as PT, and OT programs. Besides, the ISWP WST Basic test has been taken by over 4000 people from more than 100 countries.

2. ISWP Wiki Wheelchair Testing Methods - Stephanie Vasquez

Stephanie provided an overview of the Wiki, which is hosted on wheelchairnetwork.org. The ISWP covers wheelchair testing methods and is not intended to replace ISO material. In fact, it encourages users to attach to ISO documentation while providing free resources that detail best practices on how to do the tests. WIKI uses publications, expert contribution and research available to help testing centers around the world.

Content available about testing methods was mentioned such as Static Stability, Rolling Resistance, Caster Testing, Dimensions, mass and maneuvering space, and seating and wheel dimensions. Individuals were encouraged to participate as a revisor or translator, for the available content and also to contribute to new content. To become part of this, it is required to sign in or to create an account on wheelchairnetwork.org.

Each revisor is able to add content, edit content, add media, add resources as downloadable files (Word, Excel, PDFs) for drawings and any other supporting documentation of up to 40MB. To do this, a revisor can go to the article they would be interested in editing and click "revise this article" and edit directly. A translator follows the same process. The only



difference for a translator is that they will need to select the language to translate before clicking on “Revise this article”. Similarly, to add content, click on “Add a new article” or “add new term” to add terminology to the Glossary. The fields to edit, and add content are the same.

Stephanie encouraged participants to reach out to her about testing centers to start to create a network of testing centers.

3. RR update - Holly

Component testing results from our lab are being compared with wheelchair system testing on a treadmill. The correlation analysis is underway but not yet completed. The lab recently obtained a small pressure map for caster and tire contact patch measurements. Use of this tool will begin soon.

A paper on caster rolling resistance performance before and after environmental exposure is underway and close to completion.

4. Caster update -Anand and Jack

ISO CD ballot is in process and results might be ready in February to revise.

Additional casters have been received for testing, and these casters correlate to known community failures. Testing will compare outcomes and failure time and failure mode versus community outcomes as a validation test.

Work on manuscripts for the caster crossover paper and a secondary analysis are underway.

A new caster database is being developed and will contain a variety of caster characteristics, measurements, and testing results. An overview was provided of the database and feedback is welcome.

Jack introduced the SQL caster database and shared the screenshots of this database. The database has categories such as community data (manufacturer, model, SN, etc), caster characteristics (wheel material, diameter, width, etc), samples and failures to be able to compare. The database has an access form for data entry to create new samples or search. The search tool is under development. This data base allows to enter the new caster sample information and to complete this after the testing is complete to enter failure information. Anand added that they are looking for community data and failure, but most importantly to identify a particular characteristic of a caster when presenting a failure.

5. Guest updates

5.1. Free Wheelchair Mission – Don

Currently in discovery mode in which they are improving a design and the verification mode where 7 or 8 changes will be applied. The test track is being used as a substitute for

extensive field testing. The test track has been running 24/7 and hopefully late spring next year will be able to have some results.

In regards of a pediatric dummy, it looks like there are no available designs to use. At the moment, they are deciding between buying one or designing one. Don mentioned he is looking for a 30-50kg dummy with anatomical proportions for a child. Discussion about the challenges of defining a representative child dummy included the differences of children's proportions versus adult models, especially for center of mass.

Dr. Pearlman mentioned there would be a possibility to consider another material for the dummy and the removal of the legs to test it. Dr. Pearlman suggested Don could look at 3D drawings of adult dummies and as a starting point to evaluate how to modify.

Marita mentioned children's proportions are different from adults and that changes the Center of Mass (COM). This is one of the biggest challenges.

6. Other updates

6.1. Yetsa Tuakli

The bending bamboo idea was adopted to create more aesthetic and easier to assemble wheelchair. The team of students from the Biomedical Engineering program at the Univ. of Delaware selected this project as their thesis project. They created a manual on how to grow and manipulate pieces of bamboo that grows in Ghana and Nigeria into curved shapes by creating wedge cuts and then using a heat treatment or by growing the bamboo in a external mold to shaped as desired. Yetsa will have an update from the team tomorrow and thanked the group for the idea.

6.2. Dr. Pearlman additional updates

International initiatives related to product standards in Indonesia – Chai and AT scale initiatives for higher quality products. An Indonesian company which currently produces hospital beds is planning to begin producing wheelchairs with their mass production facilities, motivated by government funding. They will be making a pediatric product and adding testing capabilities and the WIKI and designs will be also included as part of this project.

UNICEF is interested in buying wheelchairs and are in an early stage of initial discussions with a variety of manufacturers. A large challenge is how to outline requires for product testing and handle differences between ISO international standards and local country standards, as well as GMP manufacturing practice requirements. For this project, it would be very helpful have a list of test labs around the world.

6.3. Keoke

Pediatric wheelchair developing has been an issue because of Covid, but recently moved forward. The factory in China is making bicycles now due to increased demand from Covid. They hope to have their pediatric wheelchair available in February and they are also working on other products. Other products currently undergoing are wheelchair walkers, gait trainers, carbon fiber forearm crutches.

6.4. Eric Wunderlich

They are currently working on updates to their first 3 products based on feedback provided.

6.5. Christopher Rushman

Chris mentioned they have been working with Alimco from India to try and improve the production on the rough terrain and active folding models. It has been a long process to meet quality of production and quality of products and now they are testing the final prototype.

Discussions with Unicef brought up the issue of what are the appropriate standards for wheelchairs to be procured, and should they be based on country standards or international ISO standards. Dr. Pearlman and Chris mentioned that some country standards are not as stringent as ISO standards and manufacturers argue that they meet their local standards. Therefore, Unicef will need to consider this to promote global standards without necessarily cutting off the competition and innovation so that the sector can be driven forward. The ISWP Wiki can become a strategic project to provide access to testing centers for manufacturers and for people to create their own testing centers.

Maria asked if some countries that have already adopted local standards based on ISO standards would have a conflicting message based on that their local standards might not be enough. Dr. Pearlman mentioned that in some instances, countries base the access to products on certain standards, so in this case, ISO are usually recognized at the international level for pre-market approval. As Unicef is not looking for a particular country regulation, they can still look for ISO standardization to look for good manufacturing process to make sure the products meet good manufacturing processes and quality.

6.6 Ben - GRIT

Ben also commented about bicycle production overtaking wheelchair production at the international level due to Covid.

Grit is a direct consumer to the market with some seasonality. Currently they are working on development to improve wheelchair features, including lever drive and brake improvements and modifications.



These links were shared during the meeting:

These are the product profiles shared with the UNICEF request for expression of interest:

<https://www.unicef.org/innovation/disability-friendly-supplies>

https://pitt.co1.qualtrics.com/jfe/form/SV_cuvJMGZSAJinznf

Participants

	Bonnie Gonzalez, Free Wheelchair Mission		Andy Maynard, Mobility Worldwide
✓	Ben Judge, GRIT	✓	Chris Rushman, Motivation
✓	Keoke King, Participant Assistive Products	✓	Yetsa Tuakli, BambooAbility
	Daniel Martin, Shonaquip		Marjelle Scheffers, BambooAbility
	Matt McCambridge	✓	Anand Mhatre
	Mark Sullivan, Convoid	✓	Jon Pearlman
	Norman Reese, LeTourneau University	✓	Maria Luisa Toro
✓	Chris Rushman, Motivation		Nancy Augustine
✓	Don Schoendorfer, Free Wheelchair Mission	✓	Holly Wilson-Jene
	Scott Walters, Mobility Worldwide	✓	Stephanie Vasquez
✓	Eric Wunderlich, Latter-day Saint Charities	✓	Marita Brundin
✓	Jack Fried	✓	Joseph Ruffing

Prepared by: ISWP Pitt Team

