

S. Sundarrao, D. Dekker, R. Dubey, M.L. Morris. *Mobility rover, the all-terrain wheelchair platform, and a rolling dance chair for life enrichment. Gerontechnology 2009;8(2)122; doi: 10.4017/gt.2009.08.02.022.00* In 2000, DePauw and Doll-Tepper¹ challenged professionals in the recreation and physical activity arenas to view inclusive leisure services for individuals with disabilities as a normal way of life. During the past 10 years, researchers have found social, emotional, physical and cognitive benefits experienced by all who participate in recreation, regardless of disability². Wheelchairs and mobility devices are designed for specific easy public environments and have limited ability to negotiate uneven terrain (nature areas), soft terrain (beaches), and lack the movement flexibility needed on dancing floors. As a result, users are either excluded from leisure activities or they have to rely on personal assistance. **Technical description** Since we designed an all-terrain platform with a drive system that relies on the electric wheelchair's power, the platform itself can remain purely mechanical. With no motors or electric parts on the attachment, we keep it simple and user friendly. Roll onto the mechanism via an attached ramp, secure the wheelchair into the locking mechanism, and you're ready to hit the beach with confidence. The primary advantages are that the users do not need to transfer from their existing wheelchair and no auxiliary power is needed. We brought together engineers and dance professionals to design the Rolling Dance Chair that explores motion and mobility in innovative ways. Research was conducted analyzing the velocity and mass relationships of the chair in connection with the degree of tilt in all directions, so the chair could dance by moving the body only, while the hands were free for dancing motions. **User studies** Survey data has been collected from the beginning of the projects which helped to provide a reference point for reactions/responses including: (i) perceptions of disability, (ii) perceptions of leisure and disability, and (iii) attitudes towards assistive technologies used for disability/aging needs. A market assessment for the prototype devices was completed. Research collaboration relating to all of design aspects is on-going in terms of best and most economical materials to use and best method of construction. Users of these technologies are actively involved from the conceptual phase through to the prototyping and commercialization. Usability studies include assessment of performance, accuracy, emotional response and recall. A total of 9 usability factors were derived from the exploratory factor analysis^{3,4}.

References

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Figure 1. All terrain (upper) and dancing (lower) wheelchair