

Curriculum Vitae Patricia Elsa Karg

Biographical

Business Address: University of Pittsburgh
School of Health and Rehabilitation Sciences
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Education

Undergraduate

1985-1989	Lehigh University Bethlehem, Pennsylvania	BA	1989	Applied Science
1985-1990	Lehigh University Bethlehem, Pennsylvania	BS	1990	Mechanical Engineering

Graduate

1990-1993	University of Virginia Charlottesville, Virginia	MS	1993	Biomedical Engineering
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Appointments and Positions

Academic

2008-present	University of Pittsburgh School of Health and Rehabilitation Sciences, Pittsburgh, Pennsylvania	Assistant Professor
2007-2012	University of Pittsburgh Rehabilitation Engineering Research Center on Spinal Cord Injury Pittsburgh, Pennsylvania	Associate Director
2006-2011	Rehabilitation Engineering Research Center on Wheelchair Transportation Safety Pittsburgh, Pennsylvania	Associate Director
2004-2007	University of Pittsburgh Rehabilitation Engineering Research Center on Wheelchair Transportation Safety Pittsburgh, Pennsylvania	Director

1999-2008	University of Pittsburgh School of Health and Rehabilitation Sciences, Pittsburgh, Pennsylvania	Research Instructor
1995-1999	University of Pittsburgh School of Health and Rehabilitation Sciences, Pittsburgh, Pennsylvania	Research Associate
1990-1992	University of Virginia Rehabilitation Engineering Center Charlottesville, Virginia	Graduate Research Assistant

Non-academic

1992-1995	ECRI Plymouth Meeting, Pennsylvania	Project Engineer
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Memberships in Professional and Scientific Societies

Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Seating & Mobility Special Interest Group, Member (1995-present) Assistive Technology Standards Board, Member (1998-present)	1993-present
Biomedical Engineering Society of America	1993-2009
Pittsburgh Assistive Technology Association	1995-1997

Honors

2008	Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Distinguished Service Award
2013	Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Certificate of Appreciation
2015	Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Certificate of Appreciation

Publications

1. Refereed articles (student authors *italicized*)

1. *Akins J, Vallely J, Karg P*, Kopplin K, Gefen A, Poojary-Mazzotta P, Brienza D. Feasibility of freehand ultrasound to measure anatomical features associated with deep tissue injury risk. *Med Eng Phys.* 2016; (In press)
2. *Krishnan S, Brick R, Karg P*, Tzen Y-T, Garber S, Sowa G, Brienza D. Predictive validity of the Spinal Cord Injury Pressure Ulcer Scale (SCIPUS) in acute care and inpatient rehabilitation in individuals with traumatic spinal cord injury. *NeuroRehabilitation.* 2016; (In press)
3. *Krishnan S, Karg P*, Boninger M, Brienza D. Association between presence of pneumonia and pressure ulcer formation following traumatic spinal cord injury. *J Spinal Cord Med.* 2016; doi: 10.1080/10790268.2016.1180099.
4. *Krishnan S, Karg P*, Boninger M, Vodovotz Y, Constantine G, Sowa G, Brienza D. Early detection of pressure ulcer development following traumatic spinal cord injury using inflammatory mediators. *Arch Phys Med Rehabil.* 2016; doi: 10.1016/j.apmr.2016.01.003.
5. Lachenbruch C, *Tzen Y-T*, Brienza D, **Karg P**, Lachenbruch P. Relative contributions of interface pressure, shear stress, and temperature on ischemic-induced, skin-reactive hyperemia in healthy volunteers: A repeated measures laboratory study. *Ostomy Wound Manage.* 2015; 61(2): 16–25.
6. Lachenbruch C, *Tzen Y-T*, Brienza D, **Karg P**, Lachenbruch P. The relative contributions of interface pressure, shear stress and temperature on tissue ischemia: a cross-sectional pilot study. *Ostomy Wound Manage.* 2013; 59(3): 25-34.
7. *Tzen Y-T*, Brienza D, **Karg P**, Loughlin P. Effectiveness of local cooling for enhancing tissue ischemia tolerance in people with spinal cord injury. *J Spinal Cord Med.* 2013; 36(4): 357-64. doi: 10.1179/2045772312Y.0000000085.
8. van Roosmalen L, **Karg P**, Hobson D, Turkovich M, Porach E. Transit operator evaluation of three wheelchair securement systems in a large accessible transit vehicle. *J Public Transportation.* 2012; 15.4: 87-109.
9. Buning ME, Bertocci GE, Schneider LW, Manary M, **Karg P**, Brown D, Johnson S. RESNA's Position on wheelchairs used as seats in motor vehicles. *Assist Technol.* 2012; 24(2): 132-41. doi: 10.1080/10400435.2012.659328.
10. **Karg P**, Cotzin C, Manary M, Fuhrman SI. Guidelines for use of wheelchair postural support devices during travel in motor vehicles. *J Ped Rehab Med.* 4 (2011); 251–7. doi: 10.3233/PRM-2011-0182.
11. Buning ME, **Karg P**. School bus transportation for students seated in wheelchairs. *J Ped Rehab Med.* 4 (2011); 259–268. doi: 10.3233/PRM-2011-0183.
12. Buning ME, **Karg P**. Wheelchair transportation safety on school buses: Stakeholder recommendations for priority issues and actions. *J Ped Rehab Med.* 4 (2011) 269–278. doi: 10.3233/PRM-2011-0180.

13. van Roosmalen L, Hobson D, **Karg P**, DeLeo E, Porach E. User evaluation of three wheelchair securement systems in large accessible transit vehicles. *J Rehabil Res Dev*. 2011; 48(7): 823-38.
14. *Akins J*, **Karg P**, Brienza D. Interface shear and pressure characteristics of wheelchair seat cushions. *J Rehabil Res Dev*. 2011; 48(3): 225-34.
15. Brienza D, Kelsey S, **Karg P**, Allegretti A, Olson M, Schmeler M, Zanca J, Geyer MJ, Kusturiss MB, Holm M. A randomized clinical trial on preventing pressure ulcers with wheelchair seat cushions. *J Am Geriatr Soc*. 2010 Dec; 58(12): 2308-14. doi: 10.1111/j.1532-5415.2010.03168.x. PMID: 21070197
16. *Tzen Y-T*, Brienza D, **Karg P**, Loughlin P. Effects of local cooling on sacral skin perfusion response to pressure: Implications for pressure ulcer prevention. *J Tissue Viability*. 2010; 19(3): 86-97. doi:10.1016/j.jtv.2009.12.003.
17. *Fuhrman SI*, **Karg P**, Bertocci G. Characterization of pediatric wheelchair kinematics and wheelchair tiedown and occupant restraint system loading during rear impact. *Med Eng Phys*. 2010; 32(3): 280-6. doi:10.1016/j.medengphys.2009.03.006
18. **Karg P**, Buning ME, Bertocci G, Fuhrman S, Hobson D, Manary M, Schneider S, van Roosmalen L. State of the science workshop on wheelchair transportation safety. *Assist Technol*. 2009; 21(3):115-60. doi:10.1080/10400430903175663
19. *Fuhrman SI*, **Karg P**, Bertocci G. Effect of wheelchair headrest use during rear impact on pediatric head and neck injury risk outcomes. *Accid Anal Prev*. 2008; 40(4): 1595-1603.
20. Jan YK, Brienza DM, Geyer MJ, and **Karg P**. Wavelet-based spectrum analysis of sacral skin blood flow response to alternating pressure. *Arch Phys Med Rehabil*. 2008; 89(1):137-45.
21. Fitzgerald SG, Songer T, *Rotko KA*, **Karg P**. Motor vehicle transportation use and related adverse events among persons who use wheelchairs. *Assist Technol*. 2007; 19(4): 180-7.
22. Geyer MJ, Brienza DM, Bertocci GE, Crane B, Hobson D, **Karg P**, Schmeler M, Trefler E. Wheelchair seating: A state of the science report. *Assist Technol*. 2003; 15(2):120-8.
23. van Roosmalen L, Bertocci GE, Hobson DA, **Karg P**. Preliminary evaluation of wheelchair occupant restraint system usage in motor vehicles. *J Rehabil Res Dev*. 2002; 39(1):83-93.
24. *Ha D*, Bertocci G, **Karg P**, Deemer E. Evaluation of wheelchair sling seat and sling back crashworthiness. *Med Eng Phys*. 2002; 24(6):441-8.
25. van Roosmalen L, Bertocci GE, *Ha D*, **Karg P**. Wheelchair integrated occupant restraints: feasibility in frontal impact. *Med Eng Phys*. 2001; 23(10):687-98.
26. *Geyer MJ*, Brienza DM, **Karg P**, Trefler E, Kelsey S. A randomized control trial to evaluate pressure-reducing seat cushions for elderly wheelchair users. *Adv Skin Wound Care*. 2001 May/June; 14(3): 120-9.

27. Brienza DM, **Karg PE**, Geyer MJ, Kelsey S, Trefler E. The relationship between pressure ulcer incidence and buttock-seat cushion interface pressure in at-risk elderly wheelchair users. *Arch Phys Med Rehabil.* 2001 Apr; 82(4):529-33.
28. Bertocci G, Ha D, Deemer E, **Karg P**. Evaluation of wheelchair seating system crashworthiness: "drop hook" type attachment hardware. *Arch Phys Med Rehabil.* 2001 Apr; 82(4):534-40.
29. Bertocci G, Ha D, van Roosmalen L, **Karg P**, Deemer E. Evaluation of wheelchair drop seat crashworthiness. *Med Eng Phys.* 2001 May; 23(4):249-57.
30. *Ha D*, Bertocci G, Deemer E, van Roosmalen L, **Karg P**. Evaluation of wheelchair back support crashworthiness: combination wheelchair back support surfaces and attachment hardware. *J Rehabil Res Dev.* 2000 Sept/Oct; 37(5):555-63.
31. *Wang J*, Brienza DM, Yuan Y, **Karg P**, Xue Q. A compound sensor for biomechanical analysis of buttock soft tissue in vivo. *J Rehabil Res Dev.* 2000; 37(4): 433-43.
32. *van Roosmalen L*, Bertocci G, Ha DR, **Karg P**, Szobota S. Proposed test method for an evaluation of wheelchair seating system (WCSS) crashworthiness. *J Rehabil Res Dev.* 2000 Sept/Oct; 37(5):543-53.
33. Brienza DM, Lin CT, **Karg PE**. A method for custom-contoured cushion design using interface pressure measurements. *IEEE Trans Rehabil Eng.* 1999; 7(1): 99-108.
34. Brienza DM, **Karg PE**. Seat cushion optimization: a comparison of interface pressure and tissue stiffness characteristics for spinal cord injured and elderly patients. *Arch Phys Med Rehabil.* 1998; 79(4):388-94.
35. Bertocci G, **Karg P**, Hobson D. Wheeled mobility device database for transportation safety research and standards. *Assist Technol.* 1997; 9(2):102-15.
36. Brienza DM, **Karg PE**, Brubaker CE. Seat cushion design for elderly wheelchair users based on minimization of soft tissue deformation using stiffness and pressure measurements. *IEEE Trans Rehabil Eng.* 1996; 4(4):320-27.
37. Brienza DM, Chung KC, Brubaker CE, Wang J, **Karg TE**, Lin CT. A system for the analysis of seat support surfaces using surface shape control and simultaneous measurement of applied pressures. *IEEE Trans Rehabil Eng.* 1996; 4(2): 103-13.
38. **Karg P**, Sprigle S. Development of test methodologies for determining the safety of wheelchair headrest systems during vehicle transport. *J Rehabil Res Dev.* 1996; 33(3): 290-304.
39. Sprigle SH, Morris BO, Nowachek G, **Karg PE**. Assessment of the evaluation procedures of drivers with disabilities. *Occup Therapy J of Research.* 1995; 15(3): 147-164.
40. **Karg P**, Yaffe K, Berkowitz D. Positioning and securement of riders and their mobility aids in transit vehicles: an analytical review. *Assist Technol.* 1994; 6(2):94-110.

41. Sprigle S, Morris B, Nowacek G, **Karg P**. Assessment of adaptive transportation technology: a survey of users and equipment vendors. *Assist Technol.* 1994; 6(2):111-9.

2. Proceedings of conferences, book chapters

Proceedings of Conferences

1. *Poojary P*, Brienza B, **Karg P**, Schmeler M, Matambanadzo T, Wilkinson D. Issue related to conducting research in nursing homes. In: *Proceedings of the 31st International Seating Symposium*; Nashville, TN. Pittsburgh, PA: University of Pittsburgh; 2015.
2. *Krishnan S*, Allegretti A, **Karg P**, Sowa G, Brienza D. Pneumonia Precedes Pressure Ulcers in Individuals with Spinal Cord Injury. *Academy of Spinal Cord Injury Professionals*; Las Vegas, Nevada; 2012.
3. van Roosmalen L, Turkovich M, **Karg P**. Selecting and anthropomorphic test device for low acceleration wheelchair transportation testing. In: *Proceedings of the RESNA 35th International Conference on Technology and Disability*; Baltimore, Maryland. Arlington, VA: RESNA Press; 2012.
4. Tzen Y-T, Brienza D, Lachenbruch C, **Karg P**. Relative contribution of pressure, temperature and shear force on ischemia induced skin blood flow response. In: *European Pressure Ulcer Advisory Panel Focus Meeting*; Tel Aviv, Israel; 2012.
5. **Karg P**, Buning ME, Frost K. Students who ride seated in wheelchairs: Survey of state directors of pupil transportation. In: *Proceedings of the RESNA 34th International Conference on Technology and Disability*; Toronto, Canada. Arlington, VA: RESNA Press; 2011.
6. van Roosmalen L, Porach E, Turkovich M, **Karg P**, Krishnan L. A dynamic test method for simulating scooter-seated passenger injury scenarios on transit buses. In: *Proceedings of the RESNA 34th International Conference on Technology and Disability*; Toronto, Canada. Arlington, VA: RESNA Press; 2011.
7. *Tzen Y-T*, Brienza DM, **Karg P**. Effects of sensation and autonomic function on reactive hyperemia following pressure with and without cooling in people with spinal cord injury. *Proceedings of the International Conference Spinal Cord Injury and Rehabilitation*; Washington, D.C. *Topics in Spinal Cord Injury Rehabilitation* 16.1: 42; 2011.
8. *Tzen Y-T*, Brienza DM, **Karg P**, Loughlin PJ, Geyer MJ. Effectiveness of local cooling on enhancing tissue ischemia tolerance in people with spinal cord injury. *Proceedings of the National Pressure Ulcer Advisory Panel Biennial Conference*. Las Vegas: NPUAP Press; 2011.
9. Buning ME, **Karg P**. RESNA Standards Volume 4: Wheelchairs and Transportation. In: *Proceedings for the 27th International Seating Symposium*; 2011 Mar 3-5; Nashville, TN. Pittsburgh, PA: University of Pittsburgh; 2011. p. 81-3.

10. *Moore B, Fuhrman S, Karg P*. Transportation of wheelchair-seated students in school buses: A review of state policy. In: Proceedings of the RESNA 33rd International Conference on Technology and Disability; Las Vegas, NV. Arlington, VA: RESNA Press; 2010.
11. *Tzen Y-T, Brienza DM, Karg P, Loughlin P, Geyer MJ*. Effectiveness of local fast and slow cooling on pressure induced reactive hyperemia (RH) in adult human participants. In: Proceedings of the RESNA 33rd International Conference on Technology and Disability; Las Vegas, NV. Arlington, VA: RESNA Press; 2010.
12. *Fuhrman SI, Karg P, Bertocci G*. Effect of positioning of wheelchair mounted headrests during transportation in a motor vehicle on pediatric neck injury criteria outcomes. In: Proceedings of the RESNA 32nd International Conference on Technology and Disability; 2009 June 25-27; New Orleans, LA. Arlington, VA: RESNA Press; 2009.
13. *Akins J, Karg P, Brienza D*. Subcutaneous buttock tissue stresses and strains using finite element analysis. In: Proceedings of the RESNA 32nd International Conference on Technology and Disability; 2009 June 25-27; New Orleans, LA. Arlington, VA: RESNA Press; 2009.
14. *van Roosmalen L, Hobson D, Turkovich M, Karg P, Porach E*. Wheelchair securement in public transportation. In: Proceedings of the 25th International Seating Symposium; 2009 March 12-14; Orlando, FL. Pittsburgh, PA: University of Pittsburgh; 2009. p. 255-6.
15. *Tzen Y, Jan YK, Porach EA, Karg P, Brienza DM*. Effects of local cooling on sacral skin perfusion response to pressure: implications for pressure ulcer prevention. National Pressure Ulcer Advisory Panel (NPUAP) Biannual Conference, Washington, DC, 2009.
16. *Akins J, Karg P, Brienza D*. Measurement and analysis of wheelchair seat cushions' shear characteristics. In: Proceedings of the RESNA 31st International Conference on Technology and Disability; 2008 June 28-30; Washington, DC. Arlington, VA: RESNA Press; 2008.
17. *Fuhrman SI, Karg P*. Incorporating wheelchair transportation safety into wheelchair prescription practices. In: Proceedings of the RESNA 31st International Conference on Technology and Disability; 2008 June 28-30; Washington, DC. Arlington, VA: RESNA Press; 2008.
18. *Fuhrman SI, Karg P, Bertocci G*. Effect of wheelchair headrest use during rear impact on pediatric head and neck injury risk outcomes. In: Proceedings of the RESNA 30th International Conference on Technology and Disability; 2007 June 17-19; Phoenix, AZ. Arlington, VA: RESNA Press; 2007.
19. *Rotko KA, Karg P, Songer T, Fitzgerald S*. Examination of wheelchair tiedown and occupant restraint systems (WTORS): Use and Effect on Motor Vehicle Related Injuries. In: Proceedings of the RESNA 29th International Conference on Technology and Disability; 2006 June 22-26; Atlanta, GA. Arlington, VA: RESNA Press; 2006.

20. *Fuhrman SI, Karg P, Bertocci G.* Characterization of pediatric wheelchair kinematics and WTORS loading during rear impact. In: Proceedings of the RESNA 29th International Conference on Technology and Disability; 2006 June 22-26; Atlanta, GA. Arlington, VA: RESNA Press; 2006.
21. *Rotko KA, Songer T, Fitzgerald S, Karg P.* Injury of wheelchair users as a result of loading and unloading from a motor vehicle. In: Proceedings of the RESNA 28th International Conference on Technology and Disability; 2005 June 23-27; Atlanta, GA. Arlington, VA: RESNA Press; 2005.
22. *Fuhrman SI, Buning ME, Karg P.* Prescription patterns of secondary postural support devices and concerns related to their use during vehicle transportation. In: Proceedings of the RESNA 28th International Conference on Technology and Disability; 2005 June 23-27; Atlanta, GA. Arlington, VA: RESNA Press; 2005.
23. *Ammer M, Karg P, Brienza D.* Comparison of wheelchair cushion characterization tests for loaded contour depth and overload deflection: ISO vs. CMS coding verification requirements. In: Proceedings of the RESNA 28th International Conference on Technology and Disability; 2005 June 23-27; Atlanta, GA. Arlington, VA: RESNA Press; 2005.
24. *Rotko K, Songer T, Fitzgerald S, Karg P.* Characteristics of wheelchair users and associated motor vehicle transportation usage. In: Proceedings of the RESNA 27th International Conference on Technology and Disability; 2004 June; Orlando, FL. Arlington, VA: RESNA Press; 2004.
25. *Rotko K, Songer T, Fitzgerald S, Karg P.* Characteristics of motor vehicle transportation use by wheelchair riders. In: Proceedings of the RESNA 26th International Conference on Technology and Disability; 2003 June 19-23; Atlanta, GA. Arlington, VA: RESNA Press; 2003.
26. *Wang J, Brienza D, Karg P, Bertocci G.* Viscoelastic properties of buttock soft tissues with pressure ulcer susceptibility. In: Proceedings of the RESNA 25th International Conference on Technology and Disability; 2002 June 27-July1; Minneapolis, MN. Arlington, VA: RESNA Press; 2002. p. 330-2.
27. *Ha D, Bertocci GE, van Roosmalen L, Karg P.* Development of a static test method to evaluate crashworthiness of wheelchair seating systems used as motor vehicle seats. In: Proceedings of the RESNA 2001 Annual Conference; 2001 June 22-26; Reno, NV. Arlington, VA: RESNA Press; 2001. p. 319-21.
28. *van Roosmalen L, Bertocci GE, Hobson D, Karg P.* Usability and satisfaction of wheelchair occupant restraint systems used during motor vehicle transport. In: Proceedings of the RESNA 2001 Annual Conference; 2001 June 22-26; Reno, NV. Arlington, VA: RESNA Press; 2001. p. 313-15.
29. *Zeltwanger A, Wang J, Bertocci G, Brienza D, Karg P, Chib V.* Repeatability of determining effective Young's Modulus of buttocks tissue across multiple subjects – Whitaker Scientific Paper Competition Award. In: Proceedings of the RESNA 2001 Annual Conference; 2001 June 22-26; Reno, NV. Arlington, VA: RESNA Press; 2001. p. 418-20.

30. Wang J, Brienza D, Bertocci G, **Karg P**. Stress relaxation properties of buttock soft tissues: in vivo indentation test. In: Proceedings of the RESNA 2001 Annual Conference; 2001 June 22-26; Reno, NV. Arlington, VA: RESNA Press; 2001. p. 391-3.
31. Wang J, Brienza D, Bertocci G, Chib V, **Karg P**. The influence of axial compression ratio of buttock soft tissues on quasi-linear viscoelastic modeling parameters. In: Chicago 2000 World Congress on Medical Physics and Biomedical; 2000 July 23-28; Chicago, IL.
32. Geyer MJ, Brienza DM, **Karg PE**, Kelsey S, Trefler E. Are commercial seat cushions efficacious in preventing pressure ulcers in the at-risk elderly nursing home population? In: Proceedings of the RESNA 2000 Annual Conference; 2000 June; Orlando, FL. Arlington, VA: RESNA Press; 2000.
33. Wang J, Brienza DM, Bertocci G, Chib V, **Karg P**, Yuan Y-W. Reliability of the in vivo test protocol for measuring biomechanical properties of buttock soft tissues. In: Proceedings of the RESNA 2000 Annual Conference; 2000 June; Orlando, FL. Arlington, VA: RESNA Press; 2000.
34. Ha D, Bertocci G, Deemer E, Roosmalen L, **Karg P**. Evaluation of wheelchair seating system crashworthiness —Wheelchair back surfaces and attachment hardware. In: Proceedings of the RESNA 2000 Annual Conference; 2000 June; Orlando, FL. Arlington, VA: RESNA Press; 2000.
35. Wang J, Bertocci G, Brienza D, **Karg P**, Yuan Y. In vivo characterization of buttock soft tissue using quasi-linear viscoelastic modeling. In: Proceedings of the First BMES/EMBS Conference; 1999 Oct 13-16; Atlanta, GA.
36. Bertocci G, Brienza D, **Karg P**, Wang J. In vivo test protocol to determine soft buttocks tissue relaxation properties. In: Proceedings of ASME Bioengineering Conference, 1999 June.
37. Brienza DM, **Karg PE**, Geyer MJ. A case report from clinical evaluations of the prototype Body Map cushion. In: Proceedings of the RESNA '99 Annual Conference; 1999 June; Long Beach, CA. Arlington, VA: RESNA Press; 1999. p. 263-5.
38. van Roosmalen L, Ha D, Bertocci G, **Karg P**, Szobota S. An evaluation of wheelchair seating system crashworthiness using federal motor vehicle safety standard (FMVSS) 207 testing. In: Proceedings of the RESNA '99 Annual Conference; 1999 June; Long Beach, CA. Arlington, VA: RESNA Press; 1999. p. 257-9.
39. Brienza DM, Geyer MJ, **Karg PE**, Trefler E, Kelsey S. Clinical evaluation of pressure-reducing seat cushions for elderly patients. In: Proceedings of the 15th International Seating Symposium; 1999 Mar; Orlando, FL. Pittsburgh, PA: University of Pittsburgh; 1999. p. 123-5.
40. Wang J, Brienza D, Yuan Y, **Karg P**, Bertocci G. Biomechanical analysis of buttock soft tissue using computer automated seating system. In: Proceedings of IEEE/EMBS Conference; 1998 Nov.

41. **Karg PE**, Bertocci GE, Hobson D. Status of universal design standard for mobility device docking on vehicles. In: Proceedings of the RESNA '98 Annual Conference; 1998 June 26-30; Minneapolis, MN. Arlington, VA: RESNA Press; 1998. p. 37-9.
42. *van Roosmalen L*, Bertocci GE, **Karg PE**, Young T. Belt fit evaluation of fixed vehicle mounted shoulder restraint anchor across mixed occupant populations. In: Proceedings of the RESNA '98 Annual Conference; 1998 June 26-30; Minneapolis, MN. Arlington, VA: RESNA Press; 1998. p. 40-2.
43. Brienza DM, **Karg PE**. A method for contoured cushion design using pressure measurements. In: Proceedings of the RESNA '98 Annual Conference; 1998 June 26-30; Minneapolis, MN. Arlington, VA: RESNA Press; 1998. p. 125-7.
44. *Geyer MJ*, Brienza DM, Kelsey SF, **Karg PE**, Treffler E. Efficacy of seat cushions in preventing pressure ulcers for at-risk elderly nursing home residents: Research issues. In: Proceedings of the RESNA '98 Annual Conference; 1998 June 26-30; Minneapolis, MN. Arlington, VA: RESNA Press; 1998. p. 122-4.
45. Brienza DM, **Karg PE**, Lin CT and Wang J. CAD/CAM Custom Contoured Cushions. In: Dundee '97 - International Conference on Wheelchairs and Seating; 1997 Sept 8-12; Dundee, Scotland.
46. **Karg PE**, Bertocci GE, Hobson DA. Universal interface hardware design standard for mobility device transport docking systems. In: Proceedings of the RESNA '97 Annual Conference; 1997 June 20-24; Pittsburgh, PA. Arlington, VA: RESNA Press; 1997. p. 29-31.
47. Bertocci GE, **Karg PE**. Survey of wheeled mobility device transport access characteristics. In: Proceedings of the RESNA '97 Annual Conference; 1997 June 20-24; Pittsburgh, PA. Arlington, VA: RESNA Press; 1997. p. 38-40.
48. *Wang J*, Brienza DM, Yuan Y-W, **Karg PE**, Brubaker CE. A compound sensor for biomechanical analysis of load-bearing soft tissue. In: Proceedings of the RESNA '97 Annual Conference; 1997 June 20-24; Pittsburgh, PA. Arlington, VA: RESNA Press; 1997. p. 242-4.
49. **Karg PE**, Brienza DM, Brubaker CE, *Wang J*, Lin CT. A system for the design and analysis of seat support surfaces. In: Proceedings of the RESNA '96 Annual Conference; 1996 June 7-12; Salt Lake City, UT. Arlington, VA: RESNA Press; 1996. p. 226-28.
50. **Karg PE**, Brienza DM, Chung KC, Brubaker CE. Evaluation of a surface shape optimization technique for custom contoured cushion design. In: Proceedings of the RESNA '96 Annual Conference; 1996 June 7-12; Salt Lake City, UT. Arlington, VA: RESNA Press; 1996. p. 229-31.
51. **Karg P**, Yaffe K. Positioning and Securement of riders and their mobility aids in transit vehicles. In: Proceedings of the RESNA '94 Annual Conference; 1994 June 17-22; Nashville, TN. Arlington, VA: RESNA Press; 1994. p. 82-84.

52. **Karg PE**, Sprigle SH. Determining the transportation safety of chest and pelvic restraints. In: Proceedings of the RESNA '93 Annual Conference; 1993 June; Las Vegas, NV. Arlington, VA: RESNA Press; 1993. p. 83-85.
53. Sprigle SH, **Karg PE**. Static testing of commercial headrests to evaluate transportation safety. In: Proceedings of the RESNA '93 Annual Conference; 1993 June; Las Vegas, NV. Arlington, VA: RESNA Press; 1993. p. 86-88.

Book Chapters

1. Chapter 38: Seating, Assistive Technology & Equipment – Wheelchair Transportation Safety. Stroke Recovery and Rehabilitation, Second Edition, ed. Stein J, Harvey R, Macko R, Winstein C, Zorowitz R, Wittenberg G. Demos Medical Publishing; 2015. p. 623-43.
2. Chapter 33: Seating, Assistive Technology & Equipment – Wheelchair Transportation Safety. Stroke Recovery and Rehabilitation, ed. Stein J, Harvey R, Macko R, Winstein C, Zorowitz R. Demos Medical Publishing; 2009. p. 543-65.
3. Wheelchair Transportation Safety, Chapter 10. Karg P, Bertocci GE, van Roosmalen L, Hobson D, Furui Toru. An Introduction to Rehabilitation Engineering, ed. Cooper R. Taylor and Francis Group; 2007. p. 187-209.

3. Other publications

1. Pressure ulcers in people with spinal cord injury. Brienza D and **Karg P**. Pressure Ulcers in America: Prevalence, Incidence, and Implications for the Future: 2nd Edition, ed. Pieper B. National Pressure Ulcer Advisory Panel; Washington, DC: NPUAP; 2012. p. 107-12.
2. Bertocci GE, **Karg PE**. Wheelchair Seating and Postural Supports in Transportation. Paraplegia News. Paralyzed Veterans of America. December 2008; 70-71.
3. Fuhrman SI, Buning ME, **Karg PE**. Wheelchair Transportation: Ensuring Safe Community Mobility. OT Practice. October 6, 2008; 10-14.
4. **Karg PE**, Buning ME, editors. State of the Science in Wheelchair Transportation Safety – Final Report. Pittsburgh: RERC on Wheelchair Transportation Safety; 2005. Available from:
www.ercwts.pitt.edu/RERC_WTS_SOS/RERC_WTS_SOS.html
5. Bertocci GE, **Karg PE**, Hobson DA. Wheelchair classification system and database report. University of Pittsburgh Rehabilitation Engineering Research Center on Wheeled Mobility, Technical Report No. 6, April 1996.
6. **Karg PE**. Development of methodology to evaluate the transportation safety of adaptive seating devices. Master's Thesis, University of Virginia, January 1993.

7. **Karg PE**, Sprigle SH. Shear characteristics of foam mattress overlays. Technical Report No. UVA-REC 102-91, University of Virginia REC, Charlottesville, VA, 1991.
8. **Karg PE**, Sprigle SH. Static fatigue of compression packaging. Technical Report No. UVA-REC 101-91, University of Virginia REC, Charlottesville, VA, 1991.

Professional Activities

Teaching

Courses

University of Pittsburgh, HRS 2704: Rehabilitation Engineering and Assistive Technology, Wheelchair Transportation Safety Section and Laboratory, 1995-present

University of Pittsburgh, HRS 2901: Introduction to Research Methodology, Randomized Clinical Trial Section, 2011-present

University of Pittsburgh, REHSCI 1290: Practical Issues in Disability, Pressure Ulcers Section, 2012-present

University of Pittsburgh, HRS 2725: Accessible Transportation, Instructor, 1998

University of Pittsburgh, HRS 2704: Fundamentals of Rehabilitation Engineering and Technology I, Seating Standards Section, 2000-2002

University of Pittsburgh, HRS 3704: Wheelchair Transportation Safety, Primary Instructor, 2006-2010

University of Pittsburgh, HRS 2725: Principles of Wheelchair Transportation, Primary Instructor, 2002-2004

Graduate Student Committees

Jon Akins, Masters in Bioengineering, University of Pittsburgh

Rohit Bafana, Masters in Bioengineering, University of Pittsburgh

Rebecca Faett, PhD in Health and Rehabilitation Sciences, University of Pittsburgh

Susan Fuhrman, PhD in Health and Rehabilitation Sciences, University of Pittsburgh

Andrew Malkiewicz, Masters in Bioengineering, University of Pittsburgh

Zdravko Salipur, PhD in Mechanical Engineering, University of Louisville

Yi-Ting Tzen, Masters in Rehabilitation Science and Technology, and PhD in Health and Rehabilitation Sciences, University of Pittsburgh

Shilpa Krishnan, PhD in Health and Rehabilitation Sciences, University of Pittsburgh

David Smeresky, PhD in Health and Rehabilitation Sciences, University of Pittsburgh

Perna Poojary, PhD in Health and Rehabilitation Sciences, University of Pittsburgh

Sample of Invited Presentations and Instructional Courses

Education modules for clinicians: Wheelchair transportation planning and mobility equipment decisions; RESNA, 2014

Update on Wheelchair Transportation Safety and Related Standards; ISS, Nashville; March 2011

Transporting Students in Wheelchairs; Transporting Student with Disabilities Expo, Kansas City; March 2011

Wheelchair Transportation Safety: A Clinical Update for Practitioners; RESNA Conference, New Orleans; June 2009

Update on Wheelchair Transportation Safety for Prescribers: The wheelchair, the seating and the secondary postural supports; RESNA Conference, Phoenix Arizona; June 2008

Clinical Update on Wheelchair Transportation Safety: The wheelchair, the seating and the secondary postural supports; RESNA Conference, Phoenix Arizona; June 2007

WC19: What Pupil Transportation Professionals Need to Know about the New Wheelchair Standard. Audio conference; Federal News Services; May 2007

Buckle Down for Safety! A System for Securing Wheelchairs on Buses and other Motor Vehicles. Demonstration; Council on Foundations Annual Conference: Disability Awareness Showcase, Pittsburgh, PA; May 2006

Wheelchair Transportation Safety. Comprehensive Workshop: Seating and Wheeled Mobility; University of Pittsburgh; March 2005

Seating Standards. Comprehensive Workshop: Seating and Wheeled Mobility; University of Pittsburgh; Jan 2002

Update on Seating Standards Development; Hiram G Andrews Center; Aug 2002

Wheelchair Transportation Safety. Pre-Conference Workshop for Thirteenth International Seating Symposium; Pittsburgh, PA; Jan 1997

Wheelchair and Seating Biomechanics. Session chair: RESNA '96 Annual Conference; June 1996

Wheelchair Transportation Safety. Pre-Conference Workshop for Transporting Students with Disabilities 5th National Conference and Exhibition, March 1996

Assistive Technology: Issues in Seating and Wheeled Mobility. Virginia Rehabilitation Training Project, October 1996

Update on Wheelchair Transportation Standards. Breakout Session, 5th National Conference and Exhibition on Transporting Students with Disabilities, March 1996

Wheelchair Transportation Safety Standards Update. Pittsburgh Assistive Technology Association (PATA) Members, February 1996

Research

Current Grant Support

<u>Grant Number</u>	<u>Grant Title</u>	<u>Role</u> <u>% Effort</u>	<u>Years</u>	<u>Source</u> <u>\$ Amount</u>
2 R01HD041490	An RCT on Wheeled Mobility for Preventing Pressure Ulcers	Co-I 20%	2010-2015	NIH \$2.65M
Coulter TPII	Temperature Controlled Cushioning Surface	Co-I 30%	2014-2016	Pitt-Coulter TPII \$100K
Dabir Surfaces	DabirAir Overlay Evaluation	Co-I 10%		Dabir \$32K

Prior Grant and Contract Support

<u>Grant Number</u>	<u>Grant Title</u>	<u>Role</u>	<u>Years</u>	<u>Source</u> <u>\$ Amount</u>
H133E30005	Rehabilitation Engineering Research Center on Technology to Improve Wheeled Mobility	Co-I	1995-1998	NIDRR \$3.5M
#1503	An Ultrasound Device for Distortion Measurement and Biomechanical Analysis of in vivo Load Bearing Soft Tissue	Research engineer	1995-1998	PVA-SCRF \$150k
Sentron Medical Inc	Clinical Evaluation of BodyMap Seat Cushion	Co-I	1996-1998	\$14k
Otto Bock, Inc	Clinical Evaluation of Otto Bock Cloud, Advantage and Z-flo Seat Cushions	Co-I	1996-1998	\$20k
R43HD34603	A Reusable Mold for Custom Contoured Seat Cushions	Co-I	1996	NIH SBIR \$88k
R41HD34641	Development of a docking system for wheelchair securement	Co-I	1997-1998	NIH STTR \$99k
R41HD34976	Evaluation of a wheelchair-	Co-I	1997-1999	NIH STTR \$99k

	integrated restraint system			
H133G70076	A pilot study for the clinical evaluation of pressure relieving seat cushions for elderly, stroke patients	Co-I	1997-1999	NIDRR \$250k
H133E990001	Rehabilitation Engineering Research Center on Wheeled Mobility	Co-I, Project Leader	1999-2005	NIDRR \$4.65M
#1927	The influence of wheelchair seating system characteristics and positioning on wheelchair occupant injury risk in frontal motor vehicle crashes	Co-I	1999-2001	PVA-SCRF \$217k
R43HD38593	Development of the Auto-contour wheelchair seat cushion	Co-I	2000-2001	NIH SBIR \$103k
VA Center for Excellence for Wheelchairs and Related Technology	Dermal blood flow response to static and repetitive loading in subjects with spinal cord injury	Co-I	2000-2003	\$150k (est.)
H133E010302	Rehabilitation Engineering Research Center on Wheelchair Transportation Safety	PI (2004-07), Project Leader	2001-2007	NIDRR \$4.5M
1R01HD041490	RCT on Prevention of Pressure ulcers with Seat Cushions	Co-I	2003-2009	NIH \$2.1M
H133E060064	Rehabilitation Engineering Research Center for Wheelchair Transportation Safety	PI (Pitt) 40%	2006-2012	NIDRR \$4.5M
H133E070024	Rehabilitation Engineering Research Center on Spinal Cord Injury	Co-I 40%	2007-2013	NIDRR \$4.75M
688	Wheelchair Transportation Safety Fundamentals	Co-I	2012-2013	PVA \$50k

Course

Service

Professional Society Activities

RESNA Committee on Wheelchairs and Transportation Standards, Member 1996-present

RESNA Committee on Wheelchair and Related Seating Standards, Chair 2002-2006;
Member 1998-present

RESNA Assistive Technology Standards Board, Vice-Chair, Member 1998-present

RESNA Committee on Wheelchair Standards, Member 1993-1999

RESNA WG-PM Working Group, Pressure Management Device Standard, Chair 1998-
present

ISO Wheelchair Seating Standards Working Group (SC1/WG11), Member 1998-present

ISO Wheelchair Transportation Standards Working Group (SC1/WG6), Member 2000-
present

ISO Support Surface Standards Working Group (SC1), Member 2005-present

Reviewer/Editor

Reviewer, International Journal of Crashworthiness, 2013-present

Reviewer, Journal of the American Geriatrics Society, 2010-present

Reviewer, Journal of Accident Analysis & Prevention, 2008-present

Reviewer, Journal of Assistive Technology, 2000-present

Reviewer, Journal of Medical Devices, 2006-present

Reviewer, Medical Engineering & Physics, 2006-present

Reviewer, Journal of Rehabilitation Research and Development, 2006-present

Associate Editor, IEEE Transactions on Neural Systems and Rehabilitation
Engineering, 2004-05

Committees

University of Pittsburgh, Dept. of Rehabilitation Science and Technology, Research
Committee, Member

University of Pittsburgh, Dept. of Rehabilitation Science and Technology, Curriculum
Committee, Member