

# *MAN VEHICLE LABORATORY PUBLICATIONS*

June 2018

MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
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## NOTES

Publications are listed in reverse chronological order, and include journal articles, abstracts, and technical reports. MVL student theses are indexed in a separate list, "Man-Vehicle Laboratory Theses," which is available upon request. Copies of all publications are available in limited numbers upon request. When requesting publications, give the MVL publication number listed with each citation. Numbers are assigned when author makes publication available for distribution, usually when it is accepted for publication or is in press. Some publication numbers are missing from sequence because the manuscripts originally assigned to them were reassigned to the year of actual publication in the open literature.

2019

**(Leia Stirling)**

Dixon, Philippe, Leia Stirling, Xu Xu, Chien-Chi Chang, Jack Dennerlein, and Jeff Schiffman. "Aging may negatively impact movement smoothness during stair negotiation." *Human Movement Science* (In Press).

Stirling, Leia, Ho Chit Siu, Eric Jones, and Kevin Duda. "Human Factors Considerations for Enabling Functional Use of Exosystems in Operational Environments." *IEEE Systems Journal* (In Press).

Gibson, Alison, Andrea Webb, and Leia Stirling. "Evaluation of a Visual-Tactile Multimodal Display for Surface Obstacle Avoidance During Walking." *IEEE Transactions on Human-Machine Systems* (In Press).

2018

18.01 Kuznets, Lawrence, Rudner, Lanny, Young, Laurence. "To G or not to G: A proposal to answer the question of what happens to astronaut physiology (immune response, bone; cardio, vision etc.) during a 1-1/2 year stay on Mars following the ~8 month outbound leg." Abstract, International Space Development Conference May 24-27, 2018, Sheraton Gateway, Los Angeles, CA

18.02 Charles, J., Young, L.R., et al "*Review of NASA's Evidence Reports on Human Health Risks: 2017 Letter Report*", The National Academies of Sciences, Engineering, and Medicine, 2018, Washington, DC: The National Academies Press. Doi: <https://doi.org/10.17226/24953>

18.03 Young, L.R., "A tribute to the late Prof. Leon Trilling", May 31, 2018, MIT

18.04 E. Anandapadmanaban, J. Tannady, J. Norheim, D. J. Newman, J. A. Hoffman, Holo-SEXTANT: an Augmented Reality Planetary EVA Navigation Interface, ICES Conference, Albuquerque, New Mexico

18.05 J Stroming and D Newman, Data Visualization for Citizen Engagement in Ocean Environmental Challenges, Observing the Anthropocene from Space, COSPAR 2018, Pasadena, CA.

18.06 RPR 19 – Dr. Dava Newman, Former NASA Deputy Administrator, MIT Professor, January 2018, <http://radio2.marssociety.org/2018/01/29/rpr-19-dr-dava-newman-former-deputy-nasa-administrator-mit-professor/>

18.07 Siu, Ho Chit, Ana M. Arenas, Tingxiao Sun, and Leia A. Stirling. "Implementation of a surface electromyography-based upper extremity exoskeleton controller using learning from demonstration." *Sensors* 48 (2018): 467.

18.08 Tammana, Aditya, Cody McKay, Stephen M. Cain, Steven P. Davidson, Rachel V. Vitali, Lauro Ojeda, Leia Stirling, and Noel C. Perkins. "Load-Embedded Inertial Measurement Unit Reveals Lifting Performance." *Applied Ergonomics* 70 (2018): 68-76.

18.09 Gupta, Aditi, Ryan McKindles, and Leia Stirling. "Quantification of human cognitive and motor abilities to understand variability in human-exoskeleton adaptation." In *Society for Neuroscience Annual Conference*. San Diego, CA, 2018.

18.10 Bequette, Blake, Adam Norton, Eric Jones, and Leia Stirling. "The Effect of a Powered Lower-Body Exoskeleton on Physical and Cognitive Warfighter Performance." In Human Factors and Ergonomics Society Annual Meeting. Philadelphia, PA, 2018.

18.11 Joseph, Christine, and Leia Stirling. "A comparison of motion path trajectories between reactive and planned agility" In International Conference on Applied Human Factors and Ergonomics. Orlando, Florida, 2018.

18.12 Fineman, Richard, Timothy McGrath, and Leia Stirling. "Development and Evaluation of Performance Metrics Quantifying Fit in Spacesuit Exo-Systems." In 89th Annual Meeting of the Aerospace Medicine Association (AsMA). Dallas, TX, 2018.

18.13 Siu, Ho-Chit, and Leia Stirling. "Collaborative fluency and task performance with a learning upper-extremity exoskeleton." In NEC HFES Student Conference. Cambridge, MA, 2018.

18.14 Bequette, Blake, Adam Norton, Eric Jones, and Leia Stirling. "The Effect of a Powered Lower-Body Exoskeleton on Physical and Cognitive Warfighter Performance" In National Defense Industrial Association 2018 Human Systems Conference. Springfield, VA, 2018.

18.15 McKeen, Patrick, Shane Jacobs, and Leia Stirling. "Analysis of Human Postural Control in the Demonstrator Spacesuit" In International Conference on Environmental Systems. Albuquerque, New Mexico, 2018.

18.16 Joseph, Christine, Antonia Zaferiou, Lauro Ojeda, Noel Perkins, and Leia Stirling. "An Optimal Control Model for Assessing Human Agility Trajectories" In IEEE Aerospace. Big Sky, Montana, 2018.

Fineman, Richard, and Leia A. Stirling. Quantifying Technique-Based Performance Metrics During Static Balance Tasks In Annual Gait and Clinical Movement Analysis Society Conference., 2018.

18.17 McGrath, Timothy, Richard Fineman, and Leia Stirling. "An Auto-Calibrating Knee Flexion-Extension Axis Estimator using Principal Component Analysis with Inertial Sensors." *Sensors* 18, no. 6 (2018).

18.18 Stirling, Leia, Chika Eke, and Stephen Cain. "Examination of the Perceived Agility and Balance During a Reactive Agility Task." *PLoS ONE* 13, no. 6 (2018).

## 2017

17.01 Brooks, J. D., H. Groshong, A. Liu, P. Houpt and C. Oman (2017). "Survey of Future Railroad Operations and the Role of Automation." *Transportation Research Record: Journal of the Transportation Research Board* 2608: 10-18.

17.02 Young, L.R., Karmali, F., Galvan-Garza, R.C., Rosenberg, M.J.F., Diaz Artilles, A., Oman, C.M., Sherwood, D., Natapoff, A., Kenyon, R., Clark, T.K., "Spatial Orientation and Manual Control in Reduced Gravity", NSBRI HRP Investigators' Workshop, Galveston, TX, Jan. 23-27, 2017

17.03 Young, L.R., Natapoff, A., Greenberg, J., "The Harvard-MIT PhD Program in Bioastronautics", NSBRI HRP Investigators' Workshop, Galveston, TX, Jan. 23-27, 2017

17.04 Young, L.R., "The Harvard-MIT HST-MEMP Bioastronautics PhD Program", Poster for NSBRIP HRP, Investigators' Workshop, Galveston, TX, Jan. 23-27, 2017

17.05 De Sá Teixeira, N. A., Hecht, H., Artilles, A. D., Seyedmadani, K., Sherwood, D. P., & Young, L. R. "Vestibular stimulation interferes with the dynamics of an internal representation of gravity". *The Quarterly Journal of Experimental Psychology*, 70:11, 2290-2305, DOI: 10.1080/17470218.2016.1231828

17.06 De Sá Teixeira, N. A., Hecht, H., Artilles, A. D., Seyedmadani, K., Sherwood, D. P., & Young, L. R. (2017, May). *Vestibular stimulation interferes with the dynamics of an internal representation of gravity*. Poster presented at the 12<sup>th</sup> Meeting of the Portuguese Association of Experimental Psychology, Oporto, Portugal.

17.07 Diaz-Artilles, Ana, Priesol, Adrian J., Clark, Torin K., Sherwood, David P., Oman, Charles M., Young, Laurence R., Karmali, Faisal, "The Impact of Oral Promethazine on Human Whole-Body Motion Perceptual Thresholds", *Journal of the Association for Research in Otolaryngology*, (), 1-10, DOI: 10.1007/s10162-017-0622-z

17.08 Clark TK, Young LR. *A case study of human roll tilt perception in hypogravity*. *Aerosp Med Hum Perform*. 2017; 88(7):682–687.

17.09 Clark, T.K. and Young, L.R. "Reduced Ocular Torsion and Tilt Perception in Hypo-Gravity" (abstract and presentation) Next-Generation Suborbital Researchers Conference, Broomfield, CO, 18-20, Feb, 2017.

17.10 Fineman, Richard, Stirling, Leia, "Quantification and visualization of coordination during non-cyclic upper extremity motion" *Journal of Biomechanics* 63 (2017) 82–91

17.11 Liu, Andrew, Oman, Charles, Voelbel, Kathleen "Development and Evaluation of a Moving Map Display for Rail Application", Technical Final Report, DOT/FRA/ORD, November 2017

17.12 C. E. Carr, D. J. Newman "Exoskeleton energetics: Implications for planetary extravehicular activity" *IEEE Aerospace Conference* . (2017): 1-14. Print.

17.13 Big Picture Science "It's In Material", October 2017

17.14 Siu, Ho Chit, Ana Arenas, Tingxiao Sun, and Leia Stirling. "Implementation of an adaptive surface electromyography-based exoskeleton controller with k-nearest-neighbors classification." In *International Symposium on Wearable and Rehabilitation Robotics (WeRob)*. Houston, TX, 2017.

17.15 Fineman, Richard, and Leia Stirling. "Quantification and Visualization of Coordination during Non-Cyclic Upper Extremity Motion." *Journal of Biomechanics* 63 (2017): 82-91.

17.16 McGrath, Timothy, and Leia Stirling. "Calibration-free, online estimation of the knee flexion/extension axis using inertial measurement units." In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. Vancouver, Canada, 2017.

17.17 Vitali, Rachel, Stephen Cain, Leia Stirling, and Noel Perkins. "Assessing Performance Correlations Among Tasks in a Challenging Obstacle Course." In *41st Annual Meeting of the American Society of Biomechanics*. Boulder, Colorado, 2017.  
Fineman, Richard, Conor Cullinane, Andrew Abercromby, and Leia Stirling. "Performance Metrics for Quantifying Dynamic Fit in Spacesuit Exo-systems: A Pilot Study." In *International Conference on Environmental Systems*. Charleston, South Carolina, 2017.

17.18 Cullinane, Conor, Richard Rhodes, and Leia Stirling. "Mark III Planetary Suit: Follow-up Hip Brief Assembly Bearing Analysis." In *International Conference on Environmental Systems*. Charleston, South Carolina, 2017.

17.19 Fineman, Richard, Andrew Abercromby, Amy Ross, and Leia Stirling. "Cognitive Task Analysis of Mark III Fit Checks for the Development of Human-Spacesuit Performance Metrics ." In *International Conference on Environmental Systems*. Charleston, South Carolina, 2017.

17.20 Eke, Chika, and Leia Stirling. "Effect of rater expertise on subjective agility assessment." In *Applied Human Factors and Ergonomics*. Los Angeles, CA, 2017.

17.21 Cullinane, Conor, Richard Rhodes, and Leia Stirling. "Implementation of a Mark III Computational Model to Decompose Hip Joint Torques." In *Annual Scientific Meeting of the Aerospace Medical Association*. Denver, CO, 2017.

17.22 Hall, Sherrie, and Leia Stirling. "Effect of Human-Machine Interface Degrees of Freedom on Performance in Space Telerobotics." In *Aerospace Medicine Association 88th Annual Scientific Meeting*. Denver, CO, 2017.

17.23 Gibson, Alison, Andrea Webb, and Leia Stirling. "Analysis of a Wearable, Multi-modal Information Presentation Device for Obstacle Avoidance." In *IEEE Aerospace Conference*. Big Sky, Montana, USA: IEEE, 2017.

17.24 Ojeda, Lauro V., Antonia M. Zaferiou, Stephen M. Cain, Rachel V. Vitali, Steven P. Davidson, Leia A. Stirling, and Noel C. Perkins. "Estimating Stair Running Performance using Inertial Sensors." *Sensors* 17, no. 11 (2017): 2647.

17.25 Cullinane, Conor, Richard Rhodes, and Leia Stirling. "Mobility and Agility During Locomotion in the MARK III Space Suit." *Aerospace Medicine and Human Performance* 88, no. 6 (2017): 589-596.

17.26 Zaferiou, Antonia M., Lauro Ojeda, Stephen M. Cain, Rachel V. Vitali, Steven P. Davidson, Leia Stirling, and Noel C. Perkins. "Quantifying performance on an outdoor agility drill using footmounted inertial measurement units." *PLoS ONE* 12, no. 11 (2017): e0188184.

17.27 Eke, Chika, Stephen Cain, and Leia Stirling. "Strategy Quantification using Body Worn Inertial Sensors in a Reactive Agility Task." *Journal of Biomechanics* 64 (2017): 219-225.

## 2016

16.01 Young, L.R., Natapoff, A., Greenberg, J., "Graduate Training in Bioastronautics at MIT and Harvard", 2016 HRP Symposium, Galveston, TX, Feb. 2016

16.02 Karmali, F., Diaz Artilles, A., Galvan Garza, R., Clark, T.K., Sherwood, D.P., Young, L.R. (2016) "Development of a Countermeasure to Enhance Sensorimotor Adaptation to Altered Gravity Levels" IEEE Aerospace Conference, Big Sky MT. March 9, 2016.

16.03 Gibson, A. E., A. Webb, and L. Stirling, "User abilities in detecting vibrotactile signals on the feet under varying attention loads," HCI International 2016, Toronto, ON, July 17-22, 2016

16.04 Merfeld, D. M., Clark, T. K., Lu, Y. M., & Karmali, F. (2016). Dynamics of Individual Perceptual Decisions. *Journal of Neurophysiology*, 115(1), 39-59. doi:10.1152/jn.00225.2015

16.05 Cullinane, Conor, Richard Rhodes, and Leia Stirling. "Mobility and Agility: Pilot Study Evaluation of Locomotion in the MIII Space Suit Assembly." In *Annual Scientific Meeting of the Aerospace Medical Association*. Atlantic City, NJ, 2016.

16.06 Diaz Artilles, A., Heldt, T., Young, L.R., "Effects of artificial gravity on the cardiovascular system: Computational approach", *Acta Astronautica* 126(2016) 395-410

16.07 Johnson, A.W., Duda, K.R., Sheridan, T.B., Oman, C.M., "A Closed-Loop Model of Operator Visual Attention, Situation Awareness, and Performance Across Automation Mode Transitions", Special Section: Measuring Safety and Performance in Human-Automation Systems: Theories, Metrics, and Practice., September 1, 2016

16.08 Young, L.R., Karmali, F., Galvan-Garza, R., Clark, T.K., "Changing Gravity Levels – Manual Control and Spatial Orientation Adaptation During Hypo-Gravity Centrifugation", (Slides), IAC 2016, Mexico

16.09 B Holschuh, D Newman, Morphing Compression Garments for Space Medicine and Extravehicular Activity Using Active Materials, *Aerospace Medicine and Human Performance* 87 (2), 84-92

16.10 Wood, D. and Newman, D. "The Innovation Landscape within a Large Government Agency: Promising Practices from the US National Aeronautics and Space Administration (NASA)", International Astronautical Congress, Guadalajara, Mexico, Sept. 2016

16.11 Fineman, Richard, and Leia Stirling. "Quantification and Visualization of Upper Limb Joint Coordination During Non-Cyclic Motion." In *Engineering the Upper Arm*. London, UK: Institution of Mechanical Engineers, 2016.

16.12 Zaferiou, Antonia, Lauro Ojeda, Stephen Cain, Rachel Vitali, Steven Davidson, Leia Stirling, and Noel Perkins. "Using Inertial Measurement Units Mounted on the Feet to Define Performance Metrics for an Outdoor Agility Drill." In 40th Annual Meeting of the American Society of Biomechanics. Raleigh, NC, 2016.

16.13 Eke, Chika, and Leia Stirling. "Agility Quantification Using Torso-Worn Inertial Sensors." In 40th Annual Meeting of the American Society of Biomechanics. Raleigh, NC, 2016.

16.14 Gibson, Alison, Andrea Webb, and Leia Stirling. "User Abilities in Detecting Vibrotactile Signals on the Feet Under Varying Attention Loads." In Human Computer Interaction International (HCI). Toronto, CA, 2016.

16.15 Cullinane, Conor, Richard Rhodes, and Leia Stirling. "Mobility and Agility: Pilot Study Evaluation of Locomotion in the MIII Space Suit Assembly." In Annual Scientific Meeting of the Aerospace Medical Association. Atlantic City, NJ, 2016.

16.16 Schneider, Jonathan, Alvar Saenz-Otero, and Leia Stirling. "A Pilot Study of Fatigue and Situation Awareness During Simulated Small Satellite Operations." In Annual Scientific Meeting of the Aerospace Medical Association. Atlantic City, NJ, 2016.

16.17 Siu, Ho Chit, Julie Shah, and Leia Stirling. "Classification of Anticipatory Signals for Grasp and Release from Surface Electromyography." *Sensors* 16, no. 11 (2016): 1782.

16.17 Stirling, Leia, and Julie MacLean. "Roadmap for the Development of at-Home Telemonitoring Systems to Augment Occupational Therapy." *IEEE Transactions on Human-Machine Systems* 46, no. 4 (2016): 569-580.

16.18 Kelly-Stephen, Damian, Leia Stirling, and Lewis Lipsitz. "Multifractal temporal correlations in circle-tracing behaviors are associated with executive function of rule switching." *Psychological Assessment* 28, no. 2 (2016): 171-180.

## 2015

15.01 Mulavara A.P., Kofman, I.S., De Dios, Y.E., Galvan, R., Goel, R., Miller, C., Peters, B., Cohen, H.S., Jeevarajan, J., Reschke, M., Wood, S., Bergquist, F., Seidler, R.D., Bloomberg, J.J., "Improving Sensorimotor Adaptation Following Long-Duration Spaceflight by Enhancing Vestibular Information Transfer", Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015

15.02 Holshuh, B., Newman, D., "Mechanical Counter-Pressure Space Suit Design Using Active Materials", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015

15.03 Hilbert, A., Bertrand, P., Reyes, S. Anderson, A., Newman, D.J., "Human-Spacesuit Interaction: Experimental Results and Future Testing", poster, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015

15.04 Duda, K.R., Vasques, R.A., Middleton, A.J., Hansberry, M.L., Newman, D.J., Jacobs, S.E., West, J.J., "Variable Vector Countermeasure Suit (V2Suit) for Space Exploration", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015

15.05 Diaz, A., Beckers, N.W., Clark, T.K, Sherwood, D., Oman, C., Young, L.R., Karmali, M., "Development of a Countermeasure to Enhance Sensorimotor Adaptation to Altered Gravity Levels", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015

15.06 Diaz, A., Young, L.R., "Artificial Gravity and Exercise on the MIT Compact-Radius Centrifuge", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015

15.07 Kendrick, D., Newman, D., "The Gravity Loading Countermeasure Skinsuit", Poster, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015

- 15.08 Holschuh, Gatto, G., Levrino, L., Bretl, K, Newman, D., "Active Material Technology Development for Mechanical Counter-Pressure Space Suits using 3D-Printed Components", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015
- 15.09 Vadhavkar, N.A., Newman, D.J., "Modular Portable Life Support System (PLSS) for Advanced Suit Concepts, Poster, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015
- 15.10 Vanegas, M., Stirling, L., "Characterization of Sensor Placement Variability on the Human Body upon Repeated Donnings", poster, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015
- 15.11 Newman, D.J., Anderson, A., Bertrand, P., Diaz, A., Hilbert, A., Hoffman, J., Kracik, M., Reyes, S., Trotti, G., "Conclusions and Paths Forward in Space Suit Injury Countermeasures", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015
- 15.12 Mulavara, A.P., Seidler, R.D., Feiveson, A., Oddsson, L., Zanello, S., Oman, C.M., Ploutz-Snyder, L., Peters, B., Cohen, H.S., Reschke, M., Wood, S., Bloomberg, J.J., "Physiological Observations and Omics to Develop Personalized Sensorimotor Adaptability Countermeasures using Bed Rest and Spaceflight Data", Abstract Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015
- 15.13 Galva-Garza, R., Clark, T.K., Merfeld, D.M., Bloomberg, J.J., Mulavara, A.P., Oman, C.M., "Improving Sensorimotor Function using Stochastic Vestibular Stimulation", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015
- 15.14 Clark, T.K., Galvan, R.C., Bermudez Rey, M.C., Yi, Y., Merfeld, D.M., "Perceptual Noise and Sensorimotor Adaptation", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015
- 15.15 Clark, T.K., Newman, M.C., Oman, C.M., Merfeld, D.M., Young, L.R., "Modeling Human Orientation Perception in Altered Gravity", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015
- 15.16 Robinson, S.K., Liu, A.M., Oman, C.M., Mindock, J., Byrne, V., Warren, L.E., Burbank, D.C., Reagan, M., "Customized Refresher and Just-in-Time Training for Long-Duration Spaceflight Crews", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015
- 15.17 Liu, A.M., Galvan, R.C., Rueger, M., Flynn-Evans, E.E., Natapoff, A., Lockley, S.W., Oman, C.M., "Validation of Assessment Tests and Countermeasures for Detecting and Mitigating Changes in Cognitive Function Due to Fatigue during Telerobotic Operations", Abstract, Human Research Program Investigators' Workshop, Galveston, TX, Jan. 13-15, 2015
- 15.18 Clark, T.K., Newman, M.C., Merfeld, D.M., Oman, C.M., and Young, L.R. (2015). Human Manual Control Performance in Hyper-Gravity. *Experimental Brain Research* 233, 1409-1420. doi: 10.1007/s00221-015-4215-y.
- 15.19 Diaz, Ana, Trigg, Chris, Young, Laurence R., "Combining ergometer exercise and artificial gravity in a compact-radius centrifuge", *Acta Astronautica* 113 (2015) 80-88.
- 15.20 Diaz, A., Young, L.R., "Effects of Artificial gravity on the Cardiovascular System: Computational Approach", (abstract), 66<sup>th</sup> International Astronautical Congress, October 12-16, 2015, Jerusalem, Israel
- 15.21 Clark TK, Newman MC, Oman CM, Merfeld DM, Young LR (2015) Human Perceptual Overestimation of Whole-Body Roll Tilt in Hyper-Gravity. *Journal of Neurophysiology* 113: 2062-2077.
- 15.22 Clark TK, Newman MC, Oman CM, Merfeld DM, Young LR (2015) Modeling Human Perception of Orientation in Altered Gravity. *Frontiers in Systems Neuroscience* 9.
- 15.23 Oman, C. M., "Towards Integrated Countermeasures for Deep Space Exploration: Vestibular Function for Balance and Beyond", Vestibular-Autonomic Responses Session, NSBRI Workshop, Houston, TX, May 7, 2015

- 15.24 Young, L.R., et al, "Review of NASA's Evidence Report on Human Health Risks", 2014 Letter Report, Institute of Medicine of The National Academies
- 15.25 Diaz, A. Sherwood, D., Beckers, N. W. M., Galvan-Garza, R. C., Natapoff, A., Oman, C. M., Clark, T. K., Karmali, F., Young, L. R. Development of a Countermeasure to Enhance Sensorimotor Adaptation to Altered Gravity Levels. National Space Biomedical Research Institute Symposium, May 7, 2015, Houston, TX.
- 15.26 Hall, S., Mitchell, C., Assad, C., Wolf, M., Hoffman, J., Stirling, L., "Intuitive Gesture Control for the ISS Space Station Remote Manipulator Arm", IAC 15-A5.3-B3.6.5, 66<sup>th</sup> International Astronautical Congress, Jerusalem, Israel, October 12, 2015
- 15.27 Meyen, F., Hoffman, J., Hecht, M., "Thermodynamic Model of Mars Oxygen ISRU Experiment (MOXIE)", 66<sup>th</sup> International Astronautical Congress, Jerusalem, Israel, IAC-15.B3.7.10, October 12-16, 2015
- 15.28 Meyen, F., Hoffman, J., Hecht, M., "Thermodynamic Model of Mars Oxygen ISRU Experiment (MOXIE)", abstract for 66<sup>th</sup> International Astronautical Congress, Jerusalem, Israel, October 12-16, 2015
- 15.29 Diaz Artilles, A., Heldt, T., Young, L.R., "Artificial gravity and Ergometer Exercise on the Cardiovascular System", manuscript submitted to JAP, November 2015
- 15.30 van Loon, J. etal, "Moon as a Stepping Stone for Mars: Centrifuge on the Moon!", (slides) Moon 2020-2030: A New Era of Coordinated Human and Robotic Exploration/Exploration Technology Showcase ESTEC, Noordwijk, The Netherlands, 14 December 2015
- 15.31 Beckers, Niek, Richard Fineman, and Leia Stirling. "Anticipatory Signals in Kinematics and Muscle Activity During Functional Grasp and Release." In *IEEE Body Sensor Networks*. Boston, MA, 2015.
- 15.32 Cullinane, Conor, Richard Rhodes, and Leia Stirling. "Mark III Technology Demonstrator Suit: Hip Brief Assembly Bearing Analysis." In International Conference on Environmental Systems. Bellevue, WA, 2015.
- 15.33 Vanegas, Morris, and Leia Stirling. "Characterization of inertial measurement unit placement on the human body upon repeated donnings." In *IEEE Body Sensor Networks*. Boston, MA, 2015
- 15.34 Melo, P., Silva, M., Martins, J., and Newman, D.J., "Technical Developments of Functional Electrical Stimulation to Correct Drop Foot: Sensing, Actuation and Control Strategies", *Journal of Clinical Biomechanics*, available online 20 Nov 2014, Vol. 30, Issue 2, pp. Pages 101-113, doi:10.1016/j.clinbiomech.2014.11.007
- 15.35 Pierre J. Bertrand, Savannah L. Niles, and Dava J. Newman, "Human Spaceflight in Social Media: Promoting Space Exploration Through Twitter", *New Space*, Volume 3, 150514110504002, 2015. DOI: 10.1089/space.2015.0004
- 15.36 Holschuh, B., and Newman, D. "Two-Spring Model for Active Compression Textiles with Integrated NiTi Coil Actuators," *Smart Mater. Struct.* 24 (2015).
- 15.37 Kevin R. Duda, Rebecca A. Vasquez, Akil J. Middleton, Mitchell L. Hansberry, Dava J. Newman, Shane E. Jacobs and John J. West, "The Variable Vector Countermeasure Suit (V2Suit) for Space Habitation and Exploration", *Frontiers in Systems Neuroscience*, Volume 9, Article 55, April 2015.
- 15.38 P. L. Melo, M. T. Silva, J. M. Martins, D. J. Newman, A Microcontroller Platform For The Rapid Prototyping of FES-based Gait Neuroprostheses, *Artif Organs*, Vol. 39, Issue 5, E56-66, May 2015. DOI: 10.1111/aor.12400
- 15.39 A. Anderson, D. Newman, Pressure Sensing for In-Suit Measurement of Space Suited Biomechanics, *Acta Astronautica*, 115 (2015) 8.
- 15.40 A. Anderson, Y. Menguc, R. Wood, D. Newman, Development of the Polipo Pressure Sensing System for Dynamic Space-Suited Motion, *IEEE Sensors Journal*, Vol. 15(11):6229-6237, 2015. 10.1109/JSEN.2015.2449304



- 15.41 K. R. Duda, R. A. Vasquez, A. J. Middleton, M. L. Hansberry, D. J. Newman, S. E. Jacobs, and J. J. West, Variable Vector Countermeasure Suit (V2Suit) for Space Exploration, IEEE Aerospace Conference Proceedings, March, 2015.
- 15.42 E. W. Obropta, D. J. Newman "A comparison of human skin strain fields of the elbow joint for mechanical counter pressure space suit development" IEEE Aerospace Conference . (2015): 1-9. Print.
- 15.43 A. Diaz Artilles, C. Trigg, H. Jethani, S. Tritchler, D. Newman "Physiological and comfort assessment of the gravity loading countermeasure skinsuit during exercise" IEEE Aerospace Conference . (2016): 1-10. Print.
- 15.44 A. Anderson, D. Newman "Pressure characterization between the upper body and space suit during mission-realistic movements" IEEE Aerospace Conference . (2015): 1-9. Print.
- 15.45 R. A. Vasquez, M. L. Hansberry, K. R. Duda, A. J. Middleton, D. J. Newman "Wearable CMG design for the Variable Vector Countermeasure Suit" IEEE Aerospace Conference . (2015): 1-13. Print.
- 15.46 P. Bertrand, S. Reyes, D. Newman "Pressure and kinematic in-suit sensors: Assessing human-suit interaction for injury risk mitigation" IEEE Aerospace Conference . (2016): 1-10. Print.
- 15.47 Vadhavkar, N.A., Newman ,D.J., "Lighter, adaptive thermal subsystem for life support during Mars extravehicular activity (EVA) planetary exploration," Int'l. Astronautical Congress, Israel, Oct. 2015.
- 15.48 Holschuh, B., and Newman, D. "Improving Compression Garments for Space and Terrestrial Applications via Integrated Active Materials Technology," submitted to Aviat Space Env. Med, 2015
- 15.49 F. Romero, P. L. Melo, M. T. Silva, F. Javier Alonso, Estimation of FES actuation parameters based on inverse dynamic analysis, Clin Biomech, 2014.
- 15.50 P. L. Melo, M. T. Silva, J. M. Martins, D. J. Newman, A Model-based Approach To Correct Drop Foot Using Electrical Stimulation, Control Eng Pract, submitted 2014.
- 15.51 P. L. Melo, M. T. Silva, J. M. Martins, A. M. Pinto, D. J. Newman, Modular Stimulation Units: A Novel Stimulation Platform for Motor Rehabilitation, Artif Organs, submitted 2014.
- 15.52 Sebastian Pfothenauer, Danielle R Wood, Daniel Roos, Dava J Newman, "International university partnerships as instruments for capacity-building in science, technology, and innovation: A systems architecture analysis of four MIT collaborations", submitted to Research Policy, January 2015
- 15.53 Kendrick, D., Newman, D., The Gravity Loading Countermeasure Skinsuit [#0061] NASA Human Research Program Annual Conference, Galveston, TX Jan. 13-15, 2015.
- 15.54 Vadhavkar, N. A., Newman ,D. J., "Modular Portable Life Support System (PLSS) for Advanced Suit Concepts [#0399]"NASA Human Research Program Annual Conference, Galveston, TX Jan. 13-15, 2015.
- 15.55 Holschuh, B., Gatto, G., Levrino, L., Bretl, K., Newman, D., "Active Material Technology Development for Mechanical Counter-Pressure Space Suits Using 3D-Printed [#0072]"NASA Human Research Program Annual Conference, Galveston, TX Jan. 13-15, 2015.
- 15.56 Holschuh, B., Newman, D., "Mechanical Counter-Pressure Space Suit Design Using Active Materials [#0322]"NASA Human Research Program Annual Conference, Galveston, TX Jan. 13-15, 2015. Selected as Best Postdoc Poster Award.

15.57 Hilbert, A., Bertrand, P., Reyes, S., Anderson, A., Newman, D. J., "Human-Spacesuit Interaction: Experimental Results and Future Testing [#0320]" NASA Human Research Program Annual Conference, Galveston, TX Jan. 13-15, 2015. Received 2nd Place Student Poster Award

15.58 Duda, K., Vasquez, R., A., Middleton, A. J., Hansberry, M. L., Newman, D. J., Jacobs, S. E., West, J. J., "Variable Vector Countermeasure Suit (V2Suit) for Space Exploration [#0071]" NASA Human Research Program Annual Conference, Galveston, TX Jan. 13-15, 2015.

15.59 Duda, Kevin R.; Vasquez, Rebecca A.; Middleton, Akil J.; Hansberry, Mitchell L.; Newman, Dava J.; Jacobs, Shane E.; West, John J. "The Variable Vector Countermeasure Suit (V2Suit) for space habitation and exploration", April 2015

15.60 Kelty-Stephen, Damian, Mona Qureshi-Ahmad, and Leia Stirling. "Use of a Tracing Task to Assess Visuomotor Performance for Evidence of Concussion and Recuperation." *Psychological Assessment* 27, no. 4 (2015): 1379-1387.

15.61 Hall, Sherrie, Jeffrey Hoffman, Christopher Assad, Michael Wolf, and Leia Stirling. "Intuitive Gesture Control for the ISS Space Station Remote Manipulator Arm." In *International Astronautical Congress*. Jerusalem, Israel, 2015.

15.62 Vanegas, Morris, and Leia Stirling. "Characterization of inertial measurement unit placement on the human body upon repeated donnings." In *IEEE Body Sensor Networks*. Boston, MA, 2015.

15.63 Beckers, Niek, Richard Fineman, and Leia Stirling. "Anticipatory Signals in Kinematics and Muscle Activity During Functional Grasp and Release." In *IEEE Body Sensor Networks*. Boston, MA, 2015.

15.64 Cullinane, Conor, Richard Rhodes, and Leia Stirling. "Mark III Technology Demonstrator Suit: Hip Brief Assembly Bearing Analysis." In *International Conference on Environmental Systems*. Bellevue, WA, 2015.

15.65 Leveson, Nancy, Dan Montes, and Leia Stirling. "Incorporating New Methods of Classifying Domain Information for Use in Safety Hazard Analysis." In *International Symposium on Aviation Psychology*. Dayton, OH, 2015.

15.66 Unhelkar, Vaibhav, Caludia Perez-D'Arpino, Leia Stirling, and Julie Shah. "Human-Robot Co-Navigation using Anticipatory Indicators of Human Walking Motion." In *IEEE International Conference on Robotics and Automation (ICRA)*. Seattle, WA, 2015.

15.67 Stirling, Leia, Mona Qureshi-Ahmad, Damian Kelty-Stephen, and Annette Correia. "Examination of the Torque Required to Passively Palmar Abduct the Thumb CMC Joint in a Pediatric Population with Hemiplegia and Stroke." *Journal of Biomechanics* 48 (2015): 4246-4252.

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14.01 Clark, T.K., Merfeld, D.M., Newman, M.C., Young, L. R. "Pilot control and Stabilization of a Rate-Controlled Vehicle in Hyper-Gravity", IEEE, 2014 Aerospace Conference, at the Yellowstone Conference Center in Big Sky, Montana, Mar 1 - 8, 2014

14.02 Diaz, A., Young, L.R., "Human Modeling and Experimentation under Artificial gravity using the MIT Compact Radius Centrifuge", poster for NASA's Human Research Program Investigators' Workshop, Galveston, TX, Feb. 11-13, 2014

14.03 Young, Laurence R., Retirement Remarks – Dec. 13, 2013

14.04 Young, L.R., "Sensory-Motor Adaptation What Have We Learned in 40 Years?", ppt presentation, WCBR 2014, Steamboat Springs, CO

14.05 Torin K. Clark, Alexander J. Stimpson, Laurence R. Young, Charles M. Oman, Alan Natapoff, and Kevin R. Duda, "Human Spatial Orientation Perception During Simulated Lunar Landing Motions," *Journal of Spacecraft and Rockets*, (2014), accessed February 11, 2014, doi: <http://arc.aiaa.org/doi/abs/10.2514/1.A32493>

- 14.06 Johnson, A.W., Oman, C.M., Sheridan, T.B., Duda, K.R., "Dynamic Task Allocation in Operational Systems: Issues, Gaps, and Recommendations", 2014, IEEE
- 14.07 Anderson, A., Hilbert, A., Bertrand, P., Newman, D.J., "Space Suit Trauma Countermeasure System – Pressure Sensing Capability for in-Suit Characterization", NASA Human Research Program Investigators' Workshop, Feb. 11-13, 2014, Galveston, TX
- 14.08 Young, L.R., Natapoff, A., Greenberg, J., "The Harvard-MIT PhD Program in Bioastronautics, NASA Human Research Program Investigators' Workshop, Feb. 11-13, 2014, Galveston, TX (poster)
- 14.09 Meyen, F., Duda, J.E., Opperman, R., N. Jawdat, J. Chambers, D.J. Newman, Hoffman, J., Perusek, G., "Pneumatic Exoskeleton for Space Suit Simulation, abstract, NASA Human Research Program Investigators' Workshop, Feb. 11-13, 2014, Galveston, TX
- 14.10 Johnson, A.W., Kaderka, J.D., "Pilot Visual Scan Patterns during Lunar Landing Mode Transitions", abstract, NASA Human Research Program Investigators' Workshop, Feb. 11-13, 2014, Galveston, TX
- 14.11 Diaz, A., Young, L.R., Human Modeling and Experimentations under Artificial Gravity using the MIT Compact Radius Centrifuge", NASA Human Research Program Investigators' Workshop, Feb. 11-13, 2014, Galveston, TX
- 14.12 Young, L.R., Beckers, N.W.M., Karmali, F., Clark, T.K. "Countermeasures to Reduce Sensorimotor Impairment and Space Motion Sickness Results from Altered Gravity Levels" NASA Human Research Program Investigator's Workshop, Feb. 11-13, 2014, Galveston, TX (abstract and presentation).
- 14.13 Clark, T.K., Newman, M.C. "Human Manual Control of Vehicle Roll Tilt in Hyper-Gravity" NASA Human Research Program Investigator's Workshop, Feb. 11-13, 2014, Galveston, TX (abstract and poster).
- 14.14 Beckers, N.W.M., Young, L.R., Karmali, F., Clark, T.K. "Studying the Innate Capacity for Sensorimotor Adaptation to Altered Gravity Levels" NASA Human Research Program Investigator's Workshop, Feb. 11-13, 2014, Galveston, TX (abstract and poster).
- 14.15 Galvan, R.C., Bloomberg, J.J., Mulavara, A.P., Clark T.K., Merfeld, D.M., Oman, C.M. "Improving Sensorimotor Function and Adaptation using Stochastic Vestibular Stimulation" NASA Human Research Program Investigator's Workshop, Feb. 11-13, 2014, Galveston, TX (abstract and poster).
- 14.16 Clark, T.K. "Predicting Sensorimotor Adaptation to Altered Gravity by Measuring Vestibular Perceptual Thresholds" NSBRI Symposium: Designing for the Future: Remote Rehabilitation and Integration of New Technologies in Spaceflight, May 6-7, 2014, Houston, TX (presentation)
- 14.17 Clark, T.K., Newman, M.C., Oman, C.M., Merfeld, D.M., Young, L.R. "Human Perception of Roll Tilt in Hyper-Gravity: Experiments and Modeling" XXVIIIth Barany Society Meeting, May 25-28th, 2014, Buenos Aires, Argentina (abstract and poster).
- 14.18 Clark, T.K., Yi, Y., Galvan-Garza, R. Bermudez Rey, M.C., Merfeld D.M. "How Many Decision Boundaries Contribute to Human Vestibular Decisions?" Society for Neuroscience meeting, Nov. 15-19, 2014, Washington, D.C. (abstract)
- 14.19 Newman, Dava, "A BioSuit Takes Shape", Textile Insight, May/June 2014
- 14.20 Diaz, A., Trigg, C., Young, L.R., "Combining Ergometer Exercise and Artificial Gravity", 65<sup>th</sup> International Astronautical Congress, Toronto, Canada, 2014.
- 14.21 Young, L., "New York City Ski Memories", Skiing History, Journal of the International Skiing History Association, Vol. 26, No. 4, July-August 2014.
- 14.22 Young, L. "Retirement Remarks: MIT President's Dinner", MIT Museum, May 21, 2014
- 14.23 Clark, T.K., Newman, M.C., Oman, C.M., Merfeld, D.M., Young, L.R., "Human Perceptual Overestimation of

Whole-Body Roll Tilt in Hyper-Gravity", in Press, Journal of Neurophysiology (December 24, 2014). Doi:10.1152/jn.00095.2014

14.24 Mulavara A.P., Kofman, I.S., De Dios, Y.E., Galvan, R., Goel, R., Miller, C., Peters, B., Cohen, H.S., Jeevarajan, J., Reschke, M., Wood, S., Bergquist, F., Seidler, R.D., Bloomberg, J.J., "Improving Sensorimotor Adaptation Following Long-Duration Spaceflight by Enhancing Vestibular Information Transfer", Abstract, Human Research Program Investigators' Workshop, Galveston, TX Jan. 13-15, 2015

14.25 Anderson, A., Hilbert, A., Bertrand, P., McFarland, S., Newman, D.J., "In-Suit Sensor Systems for Characterizing Human-Space Suit Interaction", 44<sup>th</sup> International Conference on Environmental Systems, 13-17 July 2014, Tucson, Arizona

14.26 Young, L.R., "History of Artificial Gravity", International Workshop on Research and Operational Considerations for Artificial Gravity Countermeasures, NASA Ames Research Center, Moffett, CA, Feb. 19-20, 2014

14.27 Holschuh, B., Obropta, E., Newman, D.J., "Low Spring Index NiTi Coil Actuators for Use in Active Compression Garments, IEEE/ASME Transactions on Mechatronics, 10.1109-TMECH.2014.2328519, 25 June 2014. 1264-1277

14.28 Meyen, F., Duda, J.E., Opperman, N., Jawdar, N., Chambers, J., Newman, D.J., Hoffman, J., Perusek, G., "PNEUMATIC EXOSKELETON FOR SPACE SUIT SIMULATION" HRP abstract for the EVA S3. February 2014

14.29 A. Diaz, D. Newman "Musculoskeletal human-spacesuit interaction model" IEEE Aerospace Conference . (2014): 1-13. Print., March 2014

14.30 R. A. Vasquez, K. R. Duda, A. J. Middleton, D. J. Newman "The V2Suit "down" tracking algorithm" IEEE Aerospace Conference . (2014): 1-10. Print, March 14

14.31 B. Holschuh, D. Newman "Low spring index, large displacement Shape Memory Alloy (SMA) coil actuators for use in macro- and micro-systems" SPIE MOEMS-MEMS [Conference] 8975. (2014): 897505. Print, March 2014

14.32 Duda, K., Carpenter, M., Cohanim, B., Newman, D.J., Joffman, J.A., Loffi, R., and West, J., "Wearable Control Moment Gyroscopes: A technology Enabler for Space Exploration Missions, 3rd Annual Research and Development Conference, Chicago, IL, June, 2014.

14.33 Anderson A., A. Hilbert, P. Bertrand, S. McFarland, D. J. Newman, "In-Suit Sensor Systems for Characterizing Human-Space Suit Interaction" International Conference on Environmental Systems, Tucson, AZ, 2014.

14.34 Hilbert, A., Anderson, A., Bertrand, P., and Newman, D.J., "Human-Spacesuit Interaction: Suit-Induced Pressures in the Shoulder Region", ICES Poster presentation, Tucson, AZ, 2014.

14.35 Kendrick, D. and Newman, D.J., "Modeling the Gravity Loading Countermeasure Skinsuit," 44th International Conference on Environmental Systems (ICES), Tucson, AZ, 13-17 July 2014.

14.36 P. Bertrand, Anderson A., A. Hilbert, D. J. Newman, "Feasibility of Kinematics and Human-Suit Interactions" International Conference on Environmental Systems, Tucson, AZ, 2014.

14.37 Obropta, E., Newman, D.J., "Measuring the strain field of human skin at the elbow joint for mechanical counter pressure space suit development," ICES Poster presentation, Tucson, AZ, July, 2014.

14.38 Bertrand, P., Niles, S., Newman, D., "Human Spaceflight in Social Media: Promoting Space Exploration through Twitter", 65th International Astronautical Congress, Paper IAC-14-E3-3-2-x22415, Toronto, Canada, 2014.

14.39 Holschuh, Brad; Newman, Dava "Low spring index, large displacement Shape Memory Alloy (SMA) coil actuators for use in macro- and micro-systems". March 2014

14.40 Boston Common Magazine "MIT's Dava Newman Creates a New Astronaut Suit".

Wired UK "A Closer Look at MIT's Next-Gen Spacesuits", May 2014

14.41 Holschuh, Bradley; Obropta, Edward; Newman, Dava "Low Spring Index NiTi Coil Actuators for Use in Active Compression Garments". , June 2014

14.42 ExecutiveGov.com "MIT Professor Dava Newman To Be Nominated NASA Deputy Administrator", October 2014

14.13 Maeder-York, Paxton, Tyler Clites, Emily Boggs, Ryan Neff, Panagiotis Polygerinos, Donal Holland, Leia Stirling, Kevin Galloway, Catherine Wee, and Conor Walsh. "Biologically Inspired Soft Robot for Thumb Rehabilitation." *Journal of Medical Devices* 8, no. 2 (2014): 020933.

14.14 Aubin, Patrick, Kelsey Petersen, Hani Sallum, Conor Walsh, Annette Correia, and Leia Stirling. "A pediatric robotic thumb exoskeleton for at-home rehabilitation: The Isolated Orthosis for Thumb Actuation." *International Journal of Intelligent Computing and Cybernetics* 7, no. 3 (2014): 233-252.

14.15 Menguc, Yigit, Yong-Lae Park, Hao Pei, Daniel Vogt, Patrick Aubin, Ethan Winchell, Lowell Fluke, Leia Stirling, Robert J. Wood, and Conor Walsh. "Wearable Soft Sensing Suit for Human Gait Measurement." *International Journal of Robotics Research* 33, no. 14 (2014): 1748-1764.

14.16 Park, Yong-Lae, Bor-Rong Chen, Nestor Perez-Arancibia, Diana Young, Leia Stirling, Robert J. Wood, Eugene Goldfield, and Radhika Nagpal. "Design and control of a bio-inspired soft wearable robotic device for ankle-foot rehabilitation." *Bioinspiration and Biomimetics* 9 (2014): 016007

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13.01 Mateus, J., Hargens, A.R., (2013). "Bone Hemodynamic Responses to Changes in External Pressure", *BONE* 52(2) p.604-610.

13.02 L. R. Young<sup>1</sup>, C. M. Oman<sup>1</sup>, T. K. Clark<sup>1,2</sup>, S. E. Tritchler<sup>1</sup>, K. R. Duda<sup>2</sup>, S. J. Wood<sup>3</sup>, and A. Estrada<sup>4</sup> SENSORIMOTOR DISPLAYS AND CONTROLS TO ENHANCE SAFETY OF HUMAN/MACHINE COOPERATION DURING LUNAR LANDING: PROJECT REVIEW, Abstract, Human Research Program Investigators' Workshop, Galveston, TX , Feb. 12-14, 2013

13.03 MacLeish, M.Y., McNeel, R.L., Young, L.R., Turner, N.D., Hackler, A.E., Thomson, W.A., "Success in Mentoring is no Accident: Improving Mentoring in STEM Education", NASA Human Research Program Investigators' Workshop, Galveston, TX, Feb. 12-14, 2013

13.04 Holschuh, B., Obropta, E., and Newman, D. "Shape Memory Alloy (SMA) Coil Actuators for Use in Controllable Mechanical Counter-Pressure (MCP) Space Suits". NASA 2013 Human Research Program Investigators' Workshop, Galveston TX, February 12-14, 2013.

13.05 Diaz, A., Anderson, A., Kracik, R, Trotti, G., Hoffman, J. and Newman, D. J. (2013): "Development of a musculoskeletal human spacesuit interaction model". 2013 NASA Human Research Program Investigators' Workshop, Galveston, Texas, USA, February 12-14, 2013.

13.06 Clark, T.K., and Newman, M.C., "Human Perception of Roll Tilt in Hyper-Gravity", (abstract and poster) NASA 2013 Human Research Program Investigators' Workshop, Galveston, TX, February 12-14, 2013.

13.07 Clark, T.K., Newman, M.C., Young, L.R., "Effect of hyper-gravity on human perception of vehicle roll tilt", (abstract) NASA 2013 Human Research Program Investigators' Workshop, Galveston, TX , February 12-14, 2013.

13.08 Kaderka, J.D., Duda, K.R., "Pilot Detection of System Failures during a Lunar Landing Task in a Motion Simulator", poster, NASA Human Research Program Investigators' Workshop, Galveston, TX, February 12-14, 2013.

- 13.09 Trigg, Chris, Young, Laurence R., "Design of a Short Radius Centrifuge Artificial Gravity Test Platform", Poster presented at the 2013 NASA Human Research Program Investigators' Workshop, Galveston Texas, February 12-14, 2013.
- 13.10 Young, L., "MJ and Adaptation From the 1960's How Our Shared Interest in Aviation, Control Theory and Vestibular Function got started", (ppt)Symposium on Sensing Motion for Action a tribute to the career of Geoffrey Melvill Jones, July 13-14, 2013, Montreal, Canada
- 13.11 Hainley CJ, Duda KR, Oman CM, Natapoff A (2013) Pilot performance, workload and situation awareness during lunar landing mode transitions. *AIAA Journal of Spacecraft and Rockets* 50:793-801 doi: 10.2514/1.A32267
- 13.12 Clark, T.K., Newman, M.C., Young L.R., "Effect of Hyper-Gravity on Human Perception of Vehicle Roll Tilt", 19th IAA Humans in Space Symposium, Cologne, Germany, July 8-12, 2013.
- 13.13 Young, L. R. , "Countermeasure for a Mars Exploration Mission", presented at the International Forum for Space Life Science and Space Biotechnology, Beijing, September 24, 2013 (abstract)
- 13.14 Vadhavkar, N.A., Somers, J.T., "Correlation of Hybrid III numerical models with physical ATD responses in various loading directions, Poster presentation at 2013 NASA Human Research Program Investigators' Workshop, Galveston, Texas, February 12-14, 2013
- 13.15 Young, L.R., Trigg, C., "Design of a compact Short Radius Centrifuge Artificial Gravity Test Platform", abstract, presented at the 64<sup>th</sup> International Astronautical Congress, (IAC), Beijing, China, 23-27 September, 2013
- 13.16 Trigg, Chris, Young, Laurence, "Design of a Short Radius Centrifuge Artificial Gravity Test Platform", Poster, presented at the 64<sup>th</sup> International Astronautical Congress, (IAC), Beijing, China, 23-27 September, 2013
- 13.17 Young, L.R., "Padding- From Helmets to Towers" ppt. slides presented at the 2013 20<sup>th</sup> ISSS Congress, Bariloche, Argentina, Aug 4, 2013
- 13.18 Oman, C. M. (2013). Locomotive Alert Technology Assessment. Transportation Research Board Railroad Operational Safety (AR070) Themed Meeting The Future Locomotive: How to Manage What You Have Today With a View to the Future. A. Mills, L. Fleischer, M. Jones, J. Keenan and H. Rosenhand. Union Pacific Center, Omaha, Nebraska, TRB Railroad Operational Safety Meeting, Omaha NB, July 30-31, 2013
- 13.19 Oman CM, Cullen KE (2013) Reafference Cancellation in Brainstem Vestibular Neurons: Implications for Motion Sickness Etiology. In: Horn CC, Yates BJ (eds) *Biology and Control of Nausea and Vomiting 2013*. University of Pittsburgh, Pittsburgh PA
- 13.20 Young, L.R., "Models for Adaptation of the VOR", Motion Sensing, Montreal, July 14, 2013
- 13.21 Young, L., "The Man Vehicle Lab at 50", Annual 2012-13, MIT, AeroAstro No. 10, July 2013
- 13.22 Schimizza, Benjamin, Son, Steven F., Goel, Rahul, Vechart, Andrew P., and Young, Laurence, "An experimental and numerical study of blast induced shock wave mitigation in sandwich structures", *Applied Acoustics* 74 (2013) 1-9
- 13.23 Duda, K., Vasquez, R., Newman, D.J., "Variable Vector Countermeasure Suit (V2Suit) for Space Exploration", *IEEE Explore*, paper number 978-1-4673-1813-6, 2013.
- 13.24 Domingues, R., Marreiros, S.M., Martins, J., Silva, M., Newman, D.J., "Analysis of the Skin Deformation about the Ankle-Foot Joint Using Two Different Methods of Digital Technology" submitted *IEEE Transactions on Biomedical Engineering*, 2013.
- 13.25 K. R. Duda, D. J. Newman "Variable Vector Countermeasure Suit (V2Suit) for Space Exploration" *IEEE Aerospace Conference* . (2013): 1-8. Print.

- 13.26 Pfothenauer, S., Wood, D., Newman, D.J.. "Complex International Science, Technology and Innovation Partnerships: Towards a theoretical framework for analysis, assessment and design", Review of Policy Research, invited, 2013.
- 13.27 S. d'Orey, J.M. Martins, M.T Silva D.J. Newman "Detected of Gait Cycle Events Through Fourier Series Expansion of Kinematic Data". February 2013
- 13.28 Marreiros, S., Domingues, A., Martins, J., Silva, M., Newman, D., " Automatic Calculation of the Skin Lines of Non-Extension at the Ankle Joint", 5th Portuguese Biomechanics Congress, Espinho, Portugal, February 8-9, 2013.
- 13.29 Keddrick, D., Waldie, J., Newman, D., " THE GRAVITY COUNTERMEASURE SKINSUIT" HRP 2013.  
A. Anderson, A. Diaz, M. Kracik, G. Trotti, J. Hoffman, D.J. Newman," UNDERSTANDING HUMAN-SPACE SUIT INTERACTION TO PREVENT INJURY DURING EXTRAVEHICULAR ACTIVITY"HRP 2013.
- 13.30 K. R. Duda, R. Vasquez, A. J. Middleton, D. J. Newman, and S.E. Jacobs, 'Variable Vector Countermeasure Suit (V2Suit) for Space Habitation and Exploration', 2013 NASA Innovative Advanced Concepts Spring Symposium March 12–14, 2013 Chicago, IL.
- 13.31 Duda, .E., Opperman, R.A., Meyen, F.E., Jawdat, N., Newman, D.J., Hoffman, J.A., Perusek, G., " Lower Body Development of a Space Suit Simulator For EVA Experimentation and Training" HRP 2013.
- 13.32 Meyen, F., Duda, J.E., Opperman, R.A., Jawdat,N., Newman, D.J., Hoffman, J., Perusek, G., " Engineering an Anthropomorphic Exoskeleton for Actively Controlled Space Suit Simulation" HRP 2013.
- 13.33 Duda, K.R., Vasquez, R., Middleton, A. J., Newman, D.J., Jacobs, S.E., " Variable Vector Countermesure Suit (V2Suit) For Space Exploration" NASA Human Research Program Conference, Galveston, TX, 2013.
- 13.34 Holschuh, B., Obropta, E., Newman, D., " Shape Memory Alloy (SMA) Coil Actuators for use in Controllable Mechanical Counter-Pressure (MCP) Spacesuits" NASA Human Research Conference, Galveston, TX 2013.
- 13.35 Oman, Charles; Young, Laurence; Newman, Dava; Hoffman, Jeffrey; Zotos, Elizabeth "MVL@50: Historical photos of MIT Man Vehicle Lab 1962-2012". May 2013
- 13.36 Building the Future Spacesuit , [www.nasa.gov](http://www.nasa.gov), Issue 45, November 2013
- 13.37 Business Insider "This New Form-Fitting Spacesuit Could Revolutionize How Astronauts Move In Space"., December 2013
- 13.38 GIGAOM.COM "These Are The Futuristic (and hot) Space Suits Astronauts Could Wear On Mars"., December 2013
- 13.39 Fast Co.Exist "This Sliik Spiderman Spacesuit Could Take Astronauts To Mars", December 2013
- 13.40 Menguc, Yigit, Yong-Lae Park, Ernesto Martinez-Villalpando, Patrick Aubin, Miriam Zizook, Leia Stirling, Robert J. Wood, and Conor Walsh. "Soft Wearable Motion Sensing Suit for Lower Limb Biomechanics Measurements." In IEEE International Conference on Robotics and Automation (ICRA). Karlsruhe, Germany, 2013.
- 13.41 Stirling, Leia, Mona Qureshi, Damian Stephen, Ary Goldberger, and Madalena Costa. "A Simple Tracing Task to Assess Visuomotor Performance." In Gait and Clinical Movement Analysis Society. Cincinnati, OH, 2013.
- 13.42 Aubin, Patrick, Hani Sallum, Conor Walsh, Annette Correia, and Leia Stirling. "A pediatric robotic thumb exoskeleton for at-home rehabilitation: The Isolated Orthosis for Thumb Actuation (IOTA)." In IEEE International Conference on Rehabilitation Robotics (ICORR). Seattle, WA, 2013.
- 13.43 Wehner, Michael, Brendan Quinlivan, Patrick Aubin, Ernesto Martinez-Villalpando, Michael Baumann, Leia Stirling, Ken

Holt, Robert J. Wood, and Conor Walsh. "A lightweight soft exosuit for gait assistance." In IEEE International Conference on Robotics and Automation (ICRA). Karlsruhe, Germany, 2013.

13.44 Stirling, Leia, and Jacob Weatherly. "Examining anticipatory turn signaling in typically developing 4-and 5-year-old children for applications in active orthotic devices." *Gait & Posture* 37, no. 3 (2013): 349-353.

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12.01 Duda, K., Jarchow, T., Young, L., "Squat Exercise Biomechanics During Short-Radius Centrifugation", *Aviation, Space, and Environmental Medicine*, Vol. 83, No. 2, February 2012

12.02 Young, L.R., Natapoff, A., Greenberg, J., "The Harvard-MIT PhD Program in Bioastronautics", abstract, NASA Human Research Program Investigators' Workshop, Houston, TX, February 13-16, 2012

12.03 Liu, A.M., Wang, V., Forman, R.E., Galvan, R.C., Natapoff, A., Oman, C.M., "Advanced Displays for Efficient Training and Operation of Robotic Systems", abstract, NASA Human Research Program Investigators' Workshop, Houston, TX, Feb. 13-16, 2012

12.04 Young, L.R., Oman, C.M., Clark, T.K., Tritchler, S.E., Duda, K.R., Wood, S.J., Estrada, A., "Sensorimotor Interaction with Vehicle Displays and Controls to Enhance Human-Machine Cooperation during Precision Lunar Landing", abstract, NASA Human Research Program Investigators' Workshop, Houston, TX, February 13-16, 2012

12.05 Clark, T.K. and Newman, M.C., "Human Orientation Perception of Roll Tilt in Hyper-Gravity", poster, NASA Human Research Program Investigators' Workshop, Houston, TX, February 13-16, 2012

12.06 Kaderka, J.D., Duda, K.R., Oman, C.M., "Development and Simulation of a Pilot Failure Detection Model within a Closed-Loop Human-System Model", poster, NASA Human Research Program Investigators' Workshop, Houston, TX, February 13-16, 2012

12.07 Wen, H.Y., Johnson, A.W., Duda, K.R., Oman, C.M., and Natapoff, A., "Investigating Human-Automation task Allocation in Lunar Landing Through Simulation and Human Subject Experiments", poster, NASA Human Research Program Investigators' Workshop, Houston, TX, February 13-16, 2012

12.08 Liu, A.M., Lowenthal, C.S., Galvan, R.C., Forman, R.E., Rueger, M., Flynn-Evans, E.E., Natapoff, A., Lockley, S.W., Oman, C.M., "Validation of Assessment Tests and Countermeasures for Detecting and Mitigating Changes in Cognitive Function during Robotic Operations", abstract, , NASA Human Research Program Investigators' Workshop, Houston, TX, February 13-16, 2012

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