

MAN-VEHICLE LABORATORY  
PUBLICATIONS

October 2017

Department of Aeronautics and Astronautics  
Kavli Institute for Astrophysics and Space Research  
Room 37-219  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
Cambridge, Massachusetts 02139

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.

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.

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

## 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., Breil, 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. et al, "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

## 2014

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

2013

- 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

## 2012

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

12.09 Duda, K. R., T. Jarchow, L. R. Young (2012) "Squat Exercise Biomechanics During Short-Radius Centrifugation." Aviation, Space, and Environmental Medicine, 83(2):1-9.  
DOI: 10.3357/ASEM.2334.2012



12.10 Van Loon, J.W.A., Baeyens, Berte, J., Blac, S., Bok, K., Bos, J., Royle, R., Braak, L., Bravenboer, N., Chouker A., Clement, G., Cras, P., Cross, E., Custaud, M-A., Angelis, M.De, de Dreu, C., Delavaux, T., Delfos, R., Denise, P., eekhoff, M., Felsenberg, D., Fong, K., Fuller, C., Goswami, N., Grillner, S., Groen, E., Harlaar, J., Heer, M., Heglund, N., Hinghofer-Szalkay, H., Hughes-Fulford, M., Iwase, S., Karemaker, J., Langdahl, B., Linnarsson, D., Luthen, C., Manzey, D., Monici, M., Narici, M., Norsk, P., Paloski, W., Poelma, C., Prisk, K., Rutten, M., Singer, P., Stegeman, D., Stephan, A., Stienen, G., Suedfeld, P., Tesch, P., Ullrich, O., van de Heyning, P., van den Berg, R., Veys, J., Vico, L., Woodward, E. Young, L., Wuyts, F., "A Large Human Centrifuge for Exploration and Exploratory Research", (abstract) 39<sup>th</sup> COSPAR Scientific Assembly 2012

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