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### **TABLE OF CONTENT**

<b>SECTION</b>	<b>PAGE</b>
<b>PRIMARY RESEARCH INTERESTS</b>	<b>2</b>
<b>EDUCATION</b>	<b>2</b>
<b>EMPLOYMENT</b>	<b>2</b>
<b>PUBLICATIONS</b>	<b>3</b>
<b>ABSTRACTS AT PROFESSIONAL MEETINGS</b>	<b>13</b>
<b>PAPER REVIEWS</b>	<b>17</b>
<b>BOOK CHAPTERS</b>	<b>18</b>
<b>PUBLIC ORAL PRESENTATIONS</b>	<b>18</b>
<b>PATENTS</b>	<b>21</b>
<b>DISSERTATIONS AND THESES COMMITTEES</b>	<b>22</b>
<b>GRANTS /FUNDING</b>	<b>25</b>
<b>GRANT REVIEWS</b>	<b>34</b>
<b>HONORS AND AWARDS</b>	<b>34</b>

## PRIMARY RESEARCH INTERESTS

- Biomechanics, motor control, neurophysiology, antimicrobial materials, and development and testing of 3D printed prostheses, orthotic & assistive devices.

## EDUCATION

- 2007- 2011 Ph.D. in Exercise Physiology, University of Nebraska-Lincoln.
- 2005-2007 Masters in Exercise Science, University of Nebraska at Omaha.
- 1999-2003 Pedagogy in Physical Education, Cardenal R. Silva Henriquez Catholic University, Santiago, Chile.
- 1994-1997 Manuel Barros Borgono High School, Santiago, Chile.

## EMPLOYMENT

- **August 2019 to present:** Associate Professor in the Department of Biomechanics, Biomechanics Research Building at the University of Nebraska at Omaha.
  - Co-Director of the Biomechanics Manufacturing and Rehabilitation Initiative
  - Director of the Additive Manufacturing Laboratory.
  - Graduate teaching: BMCH 8410 and 9411- Motor Control, BMCH 8400/9401- Motor Learning I, and BMCH 9510 - Motor Learning II.
  - Undergraduate teaching: BMCH 4659- Neuromechanics
- **August 2016 to 2019:** Assistant Professor in the Department of Biomechanics, Biomechanics Research Building at the University of Nebraska at Omaha.
  - Research & development of 3D printed prosthetic, orthotic & assistive devices.
  - Undergraduate teaching: BMCH 4630 - 301 Biomechanics (Summer 2017)
  - Graduate teaching: BMCH 8410 and 9411- Motor Control I (Fall 2017), BMCH 9510 - Motor Learning II (Spring 2019).
- **August 2012 to 2016:** Director of 3D Research & Innovation Laboratory Department of Exercise Science and Pre Health Professions at Creighton University.
  - Exercise Physiology (EXS 335), Exercise Physiology Laboratory (EXS 335 AA and BB), Nutrition for Health and Sport Performance (EXS 350), Nutrition for Health and Sport Performance ONLINE (EXS 350), Basic Statistics and Research Design (EXS 407), Directed Independent Research (EXS 497), Directed Independent Study (EXS 495), and Directed Independent Readings (EXS 493).
- **August 2011- May 2012:** Assistant Professor of Kinesiology at the School of Allied Health department of Kinesiology at Western New Mexico University.
  - Undergraduate Teaching: Anatomical and Physiological Kinesiology (with Lab) (KINS 240/242), Exercise Physiology (with Lab) (KINS 341/342), Exercise Prescription for Special Populations (KINS 440), Nutrition/Diet Therapy (KINS/WELL 300), Introduction to Research in Kinesiology (KINS 480).
  - Graduate Teaching: Exercise Programming and Prescription (KINS 550), and Advanced Research Seminar (KIN 551).
- **August 2007- July 2011:** Graduate Assistant in the Exercise Physiology Laboratory at the University of Nebraska-Lincoln.

- Graduate Teaching and Research Assistant / Laboratory Instructor – Department of Nutrition and Health Sciences, Physiology of Exercise (NUTR 484/884).
- Graduate Teaching and Research Assistant / Laboratory Instructor – Department of Nutrition and Health Sciences, Exercise Testing and Exercise Programming in Adult Fitness and Cardiac Rehabilitation (NUTR 486/886).
- **August 2005- May 2007:** Graduate Assistant in the Exercise Physiology Laboratory at the University of Nebraska at Omaha.
- **May 2006-March 2007:** Exercise Physiologist in the Physical Therapy department at the University of Nebraska Medical Center, Omaha, NE.
- **March 2002- November 2003:** Assistant in Exercise Physiology at Cardenal R. Siva Henrriquez Catholic University, Santiago, Chile.

## PUBLICATIONS

**Table 1. Publication Summary**

Status	First or Co-author	Total Number	Number of Students Co-authors
<b>Submitted</b>	First=0; Co= 1	0	00
<b>Published</b>	First=28; Co= 75	103	51
<b>Rejected (not listed)</b>	First=2; Co= 3	5	8
<b>In Preparation</b>	First=2; Co= 0	2	2
<b>Total</b>	First=32; Co= 79	110	61

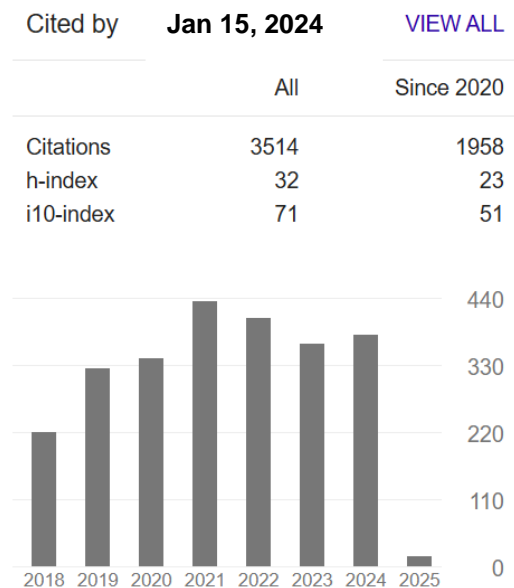


Figure 1. Citation metrics and h-index

## Publication List by Year

### 2024 (Average Impact Factor= 4.4 ±0.07)

1. Andrew J. D'Ovidio, Brian Knarr, Alexander J. Blanchard, Gregory W. Bennett, William Leiva, Bin Duan, **Jorge M. Zuniga**. Characterization of Antimicrobial Poly(Lactic Acid)- and Polyurethane-Based Materials Enduring Closed-Loop Recycling with Applications in Space. *Polymers (Basel)* 2024 Mar; 16(5): 626. doi: 10.3390/polym16050626. Impact Factor: 4.7
2. Jordan A Borrell, Arun Karumattu Manattu, Christopher Copeland, Kaitlin Fraser, Andrew D'Ovidio, Zach Granatowicz, Liliana Delgado, **Jorge M Zuniga**. Prosthetic home intervention induces cortical plasticity in paediatrics with congenital limb reduction. *Brain Commun.* 2024; 6(4): fcae044. doi: 10.1093/braincomms/fcae044. Impact Factor: 4.1
3. Liliana Delgado, **Jorge M. Zuniga**, Mukul Mukerjee, et al. Coactivation, Strength, and Gross Dexterity Improve Following Prostheses Home Intervention in Children. Submitted to *Journal of NeruoEngineering and Rehabilitation* November 15, 2024.

### 2023 (Average Impact Factor= 2.98 ±1.67)

4. Borrell, J.A., Fraser, K., Manattu, A.K. **Zuniga JM**. Laterality Index Calculations in a Control Study of Functional Near Infrared Spectroscopy. *Brain Topogr* (2023). <https://doi.org/10.1007/s10548-023-00942-3> Impact Factor: 4.25
5. Fraser K, Kuhn M, Swanson R, Coulter DW, Copeland C, **Zuniga JM**. Low Motor Dexterity and Significant Behaviors Following Hospitalized Isolation in Children. *Children.* 2023; 10(8):1287. <https://doi.org/10.3390/children10081287> Impact Factor: 2.4
6. Karumattu Manattu A, Borrell JA, Copeland C, Fraser K and **Zuniga JM** (2023) Motor cortical functional connectivity changes due to short-term immobilization of upper limb: an fNIRS case report. *Front. Rehabil. Sci.* 4:1156940. doi: 10.3389/fresc.2023.1156940 Impact Factor:0.8
7. Borrell JA, Manattu AK, Copeland C, Fraser K, D'Ovidio A, Granatowicz Z, Lesiak AC, Figy SC and **Zuniga JM** (2023) Phantom limb therapy improves cortical efficiency of the sensorimotor network in a targeted muscle reinnervation amputee: a case report. *Front. Neurosci.* 17:1130050. doi: 10.3389/fnins.2023.1130050 Impact Factor: 4.3

### 2022 (Average Impact Factor =3.69±1.07)

8. Copeland, C., Reyes, C.C., Peck, J.L. Srivastava R. **Zuniga JM**. Functional performance and patient satisfaction comparison between a 3D printed and a standard trans-radial prosthesis: a case report. *BioMed Eng OnLine* 21, 7 (2022). <https://doi.org/10.1186/s12938-022-00977-w> Impact Factor: 2.905
9. Salazar D, Cramer J, Markin N, Hunt N, Linke G, Siebler J, **Zuniga JM**. Comparison of 3D printed anatomical model qualities in acetabular fracture representation. *Annals of Translational Medicine* (Jan 2022 Accepted). Impact Factor: 3.932
10. SM Parker, SC Andreasen, B Ricks, MS Kaipust, **J Zuniga**, BA Knarr, Comparison of brain activation and functional outcomes between physical and virtual reality box and block test: a case study. *Disability and Rehabilitation: Assistive Technology*, (Impact Factor-1.81)
11. JL Lukaszek, JA Borrell, C Cortes, **JM Zuniga**. Home intervention for children and adolescents with unilateral trans-radial and partial carpal reduction deficiencies. *Scientific reports* 12 (1), 7447 Impact Factor-4.996
12. D Salazar, M Thompson, A Rosen, **J Zuniga** Using 3D printing to improve student education of complex anatomy: a systematic review and meta-analysis *Medical Science Educator* 32 (5), 1209-1218
13. Borrell, JA, Karumattu Manattu, A, Copeland, C, Fraser, K, D'Ovidio, A, Granatowicz, Z, Lesiak, AC, Figy, SC, and **Zuniga, JM**. Phantom Limb Therapy Improves Cortical Efficiency of the

- Sensorimotor Network in a Targeted Muscle Reinnervation Amputee: A Case Report. *Frontiers in Neuroscience*. November 2022, Submitted. Impact Factor-4.51
14. D'Ovidio, A, Evenson, A, and **Zuniga, JM**. Effectiveness and Applications of an Antimicrobial Polyactic Acid-Based Biopolymer. *Expert Review of Medical Devices*. November 2022, Submitted. Impact factor 3.439

**2021** (Average Impact Factor =  $3.55 \pm 1.01$ )

15. **Zuniga, J.M.**, Pierce, J.E., Copeland, C. et al. Brain lateralization in children with upper-limb reduction deficiency. *J Neuro Engineering Rehabil* 18, 24 (2021). <https://doi.org/10.1186/s12984-020-00803-1>. Impact Factor: 5.26
16. Copeland C, Mukherjee M, Wang Y, Fraser K, **Zuniga JM**. Changes in Sensorimotor Cortical Activation in Children Using Prostheses and Prosthetic Simulators. *Brain Sci*. 2021 Jul 27;11(8):991. doi: 10.3390/brainsci11080991. Impact Factor: 3.394
17. Borrell, J.A., Copeland C, Lukaszek J L, Fraser K, **Zuniga JM**. 'Use-Dependent Prosthesis Training Strengthens Contralateral Hemodynamic Brain Responses in a Young Adult with Upper Limb Reduction Deficiency: A Case Report', *Frontiers in Neuroscience*, 15, p. 684. doi:10.3389/fnins.2021.693138. Impact Factor: 4.67
18. Lukaszek J, Borrell J, Cortes C, **Zuniga JM**. Home Intervention for Children with Unilateral Upper Limb Reduction Deficiencies. *Journal of Occupational Rehabilitation*; 2021. DOI: 10.21203/rs.3.rs-765800/v1. In Review. Impact Factor: 2.93
19. Jaime Mesa, James Pierce, **Jorge Zuñiga**, Iván Esparragoza, Heriberto Maury, 'Sustainable manufacture of scalable product families based on modularity', *CIRP Journal of Manufacturing Science and Technology*, Volume 35, 2021, Pages 80-95, ISSN 1755-5817, <https://doi.org/10.1016/j.cirpj.2021.05.011>. Impact Factor: 3.6
20. Drew R. Dudley, Brian A. Knarr, Ka-Chun Siu, Jean Peck, Brian Ricks & **Jorge M. Zuniga** (2021) Testing of a 3D printed hand exoskeleton for an individual with stroke: a case study, *Disability and Rehabilitation: Assistive Technology*, 16:2, 209-213, DOI: 10.1080/17483107.2019.1646823. Impact Factor: 2.1
21. Cortes C, Arce W, Copeland C, Peck J, Srivastava R. **Zuniga JM**. Functional and Patient Satisfaction Comparison between a 3D Printed and Standard Arm Prostheses. *Engineering OnLine*. In Review. Impact Factor: 2.905

**2020** (Average Impact Factor =  $2.718 \pm 0.495$ )

22. Cortes AA, **Zuniga JM**. The use of copper to help prevent transmission of SARS-coronavirus and influenza viruses. A general review. *Diagn Microbiol Infect Dis*. Dec;98(4):115176, 2020. Impact Factor: 2.803
23. **Zuniga JM**, Cortes A. The role of additive manufacturing and antimicrobial polymers in the COVID-19 pandemic. *Expert Review of Medical Devices*, Jun;17(6):477-481, 2020. Impact Factor: 3.166
24. Bergstrom HC, Housh TJ, Dinyer TK, Byrd TM, Jenkins NDM, Cochrane-Snyman KC, Succu PJ, Schmidt RJ, Johnson GO, **Zuniga JM**. Neuromuscular responses of the superficial quadriceps femoris muscles: muscle specific fatigue and inter-individual variability during severe intensity treadmill running. *J Musculoskelet Neuronal Interact*, Mar 3;20(1):77-87. 2020. Impact Factor: 2.186
25. Nahuelhual P, Giaconi C, Dote C, Cubillos R, Fuentes G, J, **Zuniga JM**. Funcionalidad de prótesis de mano impresa en 3D en adolescentes con amputación congénita parcial de mano. *Revista Chilena de Pediatría*. Jun;91(3):410-416., 2020. Impact Factor: Not available.
26. Salazar D, **Zuniga JM**. Use of a three-dimensional printed anatomical model for tumor management in a pediatric patient. *SAGE Open Medical Case Reports Journal*. 8(1):1-4, 2020. Impact Factor: Not Available.

27. **Zuniga, JM**, Knarr BA, Fatone S. Neural Activation Patterns in Children with Upper-limb Reductions. *Trials*. October 12, 2020; Submitted.
28. Cortes-Reyes C, Wang Y, Copeland C, Fraser K, Knarr BA, and **Zuniga JM**. Assessment of Inter-limb Coordination in Pediatric Prosthetic Users. *Assistive Technology Journal*. October 10, 2020. Submitted.
29. Salazar D, Thompson M, Rosen A, **Zuniga JM**. 3D printed anatomical models improve student comprehension of complex anatomy: a systematic review and meta-analysis. *Anatomical Sciences Education*. October 23, 2020. Submitted.

#### **2019** (Average Impact Factor = $2.959 \pm 0.293$ )

30. **Zuniga JM**, Young K, Peck J, Srivastava R, Pierce J, Dudley D, Salazar D, and Bergmann J. Remote Fitting Procedures for Upper Limb 3D Printed Prostheses. *Expert Review of Medical Devices*. 16(3):256-266, 2019. Impact Factor: 3.166
31. **Zuniga JM**, Thompson M. Applications of antimicrobial 3D printing materials in space. *Journal of 3D Printing in Medicine*. 2(3):pages 2-7, 2019. Impact Factor: Not Available
32. Young K, Pierce J, **Zuniga JM**. Assessment of body-powered 3D printed partial finger prostheses: a case study. *3D Printing in Medicine*. 5(1):2-8, 2019.. Impact Factor: not available
33. Giaconi C, Nahuelhual P, Dote C, Cubillos R, Fuentes G, J, **Zuniga JM**. Experiences of the use of 3D printed hand orthoprosthesis (Cyborg Beast) in adolescents with congenital hand amputation and their main caregivers: A study of cases. 90(5):591-596, 2019. Impact Factor: not available.
34. Noble EB, Pilarski JM, Vora HK, **Zuniga JM**, Malek MH. Log-Transformed Electromyography Amplitude-Power Output Relationship: Single-Leg Knee-Extensor Versus Single-Leg Cycle Ergometry. *J Strength Cond Res* May;33(5):1311-1319, 2019 Impact Factor: 2.752

#### **2018** (Average Impact Factor = $4.417 \pm 2.144$ )

35. **Zuniga JM**. 3D Printed Antibacterial Prostheses. *Applied Sciences*. Special issue "Biocompatible Materials". Submitted July 11, 2018. Impact Factor: 2.679
36. **Zuniga JM**, Katsavelis D, Peck J, Srivastava R., Pierce J, Young K, Dudley D, Salazar D, and Knarr B. Coactivation Index of Children with Congenital Upper Limb Reduction Deficiencies Before and After using a Wrist-driven 3D Printed Partial Hand Prosthesis. *Journal of Neuro Engineering and Rehabilitation*. 15(1):48:2018. doi: 10.1186/s12984-018-0392-9. Impact Factor: 5.26
37. **Zuniga JM**, Major MJ, Peck J, Srivastava R, Pierce J., Stergiou N. Considerations for the Development of 3D Printed Upper-Limb Prostheses. *O&P News Magazine of the American Orthotic and Prosthetic Association*. Published April 16, 2018. Impact Factor: not available
38. **Zuniga JM**, Major MJ, Peck J, Srivastava R, Pierce J., Stergiou N. Technical Considerations for the Development of 3D Printed Upper-Limb Prostheses for Pediatric Patients. *Expert Review of Medical Devices*. Submitted February 18, 2018. Impact Factor: 3.166
39. Ludwig P, Huff T., **Zuniga JM**. The potential role of bioengineering and 3D printing in curing global corneal blindness. *Journal of Tissue Engineering*. 13;9: 2041731418769863. doi: 10.1177/2041731418769863. Impact Factor: 7.813
40. Huff T., Ludwig P., **Zuniga JM**. The potential for machine learning algorithms to improve and reduce the cost of 3-dimensional printing for surgical planning. *Expert Review of Medical Devices*. 15(5):349-356, 2018. Impact Factor: 3.166

#### **2017**

41. Keller J. Housh TJ, Camic CL, Bergstrom HC, Smith DB, Smith CM, Hill EC<sup>2</sup>, Schmidt RJ, Johnson GO, **J. M. Zuniga**. The Effect of Epoch Length on Time and Frequency Domain Parameters of Electromyographic and Mechanomyographic Signals. *Journal of Electromyography and Kinesiology*. 22;40:88-94. 2017

*I performed about 10% effort in this manuscript. The work was funded with my grants. (Impact Factor: 1.51)*

- 42.** Dote J, P. Nahuelhual., R. Cubillos, G. Fuentes, and **J. M. Zuniga**. Functionality of the 3D-Printed Hand Prosthesis Cyborg Beast in adolescents with partial hand congenital amputation: a series of cases. *Prosthetics and Orthotics International*. Submitted Nov. 5, 2017

*I performed about 30% effort in this manuscript. The work was funded with my grants. (Impact Factor: 1.185)*

- 43.** Smith, C., Housh, T., **Zuniga, JM.**, Camic, C., Bergstrom, H., Smith, D., Herda, T., Weir, J., Hill, E., Jenkins, N., Schmidt, R., Johnson, G. (2017). Influences of Interelectrode Distance and Innervation Zone on Electromyographic Signals. *International journal of sports medicine*, 38 2, 111-117.

*I performed about 20% effort in this manuscript. The other co-authors did the rest. The work was funded with Housh, T. grants. (Impact Factor:1.67).*

- 44.** Noble EB, Pilarski JM, Vora HK, **Zuniga JM**, Malek MH. Log-Transformed Emg Amplitude-Power Output Relationship: Single-Leg Knee-Extensor Versus Single-Leg Cycle Ergometry. *Journal of strength and conditioning research / National Strength & Conditioning Association*. Apr 15 2017.

*I performed about 10% effort in this manuscript. The other co-authors did the rest. The work was funded with Malek, H. grants. (Impact Factor:2.065).*

- 45.** **Zuniga JM**, Peck J, Srivastava R, Pierce J., Dudley D., Than N., and Stergiou N. Functional Changes through the usage of 3D Printed Transitional Prostheses in Children. *Disability and Rehabilitation: Assistive Technology*. 2017; 8:1-7.

*I performed about 90% effort in this manuscript. The work was funded with my grants. (Impact Factor: 1.985)*

## **2016**

- 46.** **Zuniga JM**, Peck J, Srivastava R, Katsavelis D, Carson A. An Open Source 3D-Printed Transitional Hand Prosthesis for Children. *JPO: Journal of Prosthetics and Orthotics*. 2016;28(3):103-8. doi: 10.1097/jpo.0000000000000097. PubMed PMID: 00008526-201607000-00004.

*I performed about 90% effort in this manuscript. J.P. D.K. R.S. and A.C. did the rest. The work was funded with my grants. (No impact factor available)*

- 47.** **Zuniga JM**, Carson AM, Peck JM, Kalina T, Srivastava RM, Peck K. The development of a low-cost three-dimensional printed shoulder, arm, and hand prostheses for children. *Prosthetics and orthotics international*. 2016. Epub 2016/04/28. doi: 10.1177/0309364616640947. PubMed PMID: 27117013

*I performed about 90% effort in this manuscript. The co-authors did the rest. The work was funded with my grants. Submission date 9/01/2015. (Impact Factor:1.041)*

- 48.** Mikkelsen BM, **Zuniga JM**, Herron WK, Frauso FE, Pulliam AN. The Effect of Cardiorespiratory Fitness on the Assessment of the Physical Working Capacity at the Fatigue Threshold. *International Journal of Research in Exercise Physiology*. 11(2):16-24, 2016.

*I performed about 15% effort in this manuscript. The other co-authors did the rest. The work was funded with my grants. (Impact Factor: Not available).*

- 49.** Ivy M, **Zuniga JM**, Sikora A, Ino E, Aguero G, Cho E. The Effect of Different Regression-Based Algorithms on Frequency Based EMG Fatigue. *International Journal of Research in Exercise Physiology*. 11(2):25-33, 2016.

*I performed about 15% effort in this manuscript. The other co-authors did the rest. The work was funded with my grants. (Impact Factor: Not available).*

- 50.** Baniqued A., **Zuniga JM**, Strunc TC., Keenan K., Boken A., Anderson JJ. The Effect of Skinfold on the Assessment of the Mean Power Frequency at the Fatigue Threshold. *International Journal of Exercise Science*. 9(4), 2016.

*I performed about 15% effort in this manuscript. The other co-authors did the rest. The work was funded with my grants. (Impact Factor: Not available).*

51. Brooks JR, Oketch-Rabah H, Low Dog T, **Zuniga JM**, et al. Safety and performance benefits of arginine supplements for military personnel: a systematic review. *Nutrition reviews*. Nov 2016;74(11):708-721.

*I performed about 5% effort in this manuscript. The other co-authors did the rest. The work was funded by an external source. (Impact Factor: 5.5).*

52. Smith CM, Housh TJ, Herda TJ, Zuniga JM, Camic CL, Bergstrom HC, et al. Time Course of Changes in Neuromuscular Parameters during Sustained Isometric Muscle Actions. *The Journal of Strength & Conditioning Research*. 9000;Publish Ahead of Print. doi: 10.1519/jsc.0000000000001547. PubMed PMID: 00124278-900000000-96394. 2016.

*I performed about 10% effort in this manuscript. The other co-authors did the rest. The work was funded with T. Housh. grants. (Impact Factor:2.065).*

53. Smith, CM, T.J. Housh, T.J. Herda, **J.M. Zuniga**, E.D. Ryan, C.L. Camic, H.C. Bergstrom, D.B. Smith, J.P. Weir, J.T. Cramer, E.C. Hill, K.C. Cochrane, N.D. Jenkins ND2, R.J. Schmidt, G.O. Johnson . Electromyographic responses from the Vastus Medialis during Isometric Muscle Actions. *International Journal of Sports Medicine*. 37(8):647-52, 2016

*I performed about 10% effort in this manuscript. The other co-authors did the rest. The work was funded with T.J.H. grants. (Impact Factor:2.065).*

## **2015**

54. **Zuniga, J.M.**, D. Katsavelis, J. Peck, J. Stollberg, M. Petrykowski, C. Fernandez, and A. Carson. Cyborg Beast: A Low-Cost 3D-Printed Prosthetic Hand for Children with Upper-Limb Differences. *BMC Research Notes*, 8:10, 2015. **Highly Accessed**.

*I performed about 90% effort in this manuscript. D.K., J.P., M.P., C.F. and A.C. did the rest. The work was funded with my grants. (Impact Factor:1.041).*

55. Cory M. S., T. J. Housh, T. J. Herda, **J. M. Zuniga**, E. D. Ryan, C. L. Camic, H. C. Bergstrom, D. B. Smith, J. P. Weir, J. T. Cramer, K. C. Cochrane, E. C. Hill, N. D.M. Jenkins, R. J. Schmidt, and G. O. Johnson. Effects of the Innervation Zone on the Time and Frequency Domain Parameters of the Surface Electromyographic Signal. *Journal of Electromyography and Kinesiology*, 5(4):565-70, 2015.

*I performed about 20% effort in this manuscript. The other co-authors did the rest. The work was funded with T.J.H (mentor) grants. (Impact Factor: 1.647)*

56. Barry M.B., **Zuniga JM**, Brown MM, Garnett WM, Hadden ZV, Nguyen PK, Supplee GA, Svoboda CJ. The Effects of Muscle Cross-sectional Area on the Physical Working Capacity at the Fatigue Threshold. *Journal of Undergraduate Kinesiology Research*. 10(2):20-30, 2015.

*I performed about 30% effort in this manuscript. My undergraduate students did the rest. The work was funded with my grants. (No impact factor available).*

57. Bergstrom, H.C, T.J. Housh, **J.M. Zuniga**, K.C. Cochrane, J.D. Jenkins, S.L. Buckner, J.A. Goldsmith, R.J. Schmidt, G.O. Johnson, J.T. Cramer. Factors underlying the perception of effort during constant heart rate running above and below the critical heart rate. *Eur J Appl Physiol*. [Epub ahead of print] 2015.

*I performed about 15% effort in this manuscript. The other co-authors did the rest. The work was funded with B.H.C grants. (Impact Factor: 2.187)*

58. Bergstrom, H.C, T.J. Housh, **J.M. Zuniga**, C. L. Camic, D. A. Traylor, R.J. Schmidt, and G.O. Johnson. Application of the critical heart rate model to treadmill running. *Journal of Strength and Conditioning Research*. 29(8):2237-48, 2015.

*I performed about 25% effort in this manuscript. The other co-authors did the rest. The work was funded with B.H.C grants. (Impact Factor:2.075)*

59. Blaesser, R.J, L.M. Clous, C.F. Lee, **J.M. Zuniga**, M.H. Malek. Comparing EMG amplitude patterns of responses during dynamic exercise: polynomial versus log-transformed regression. *Scandinavian Journal of Medicine and Science in Sports*. 25(2):159-65, 2015.

*I performed about 10% effort in this manuscript. The other co-authors did the rest. The work was funded with M.H.M grants. (Impact Factor:3.27).*

60. Smith, CM, T.J. Housh, T.J. Herda, **J.M. Zuniga**, E.D. Ryan, C.L. Camic, H.C. Bergstrom, D.B. Smith, J.P. Weir, J.T. Cramer, E.C. Hill, K.C. Cochrane, N.D. Jenkins ND2, R.J. Schmidt, G.O. Johnson . Effects of the Innervation Zone on the Time and Frequency Domain Parameters of the



Surface Electromyographic Signal. *Journal of Electromyography and Kinesiology*. 25(4):565-70, 2015

*I performed about 10% effort in this manuscript. The other co-authors did the rest. The work was funded with T.J.H. grants. (Impact Factor:1.647).*

## **2014**

- 61. Zuniga, J.M.,** T.J. Housh, C.L. Camic, , H.C. Bergstrom, D. A. Traylor, G.O. Johnson, and R.J. Schmidt. The effect of different exercise protocols and regression-based algorithms on the assessment of the anaerobic threshold. *Journal of Strength and Conditioning Research*, 28(9):2507-12, 2014.

*I performed about 90% effort in this manuscript. T.J.H., C.L.C, H.C.B.D.A.T, G.O.J, and R.J.S did the rest. The work was funded with my grants. (Impact Factor:2.075)*

- 62. Bergstrom, H.C, T.J. Housh, J.M. Zuniga,** C. L. Camic, D. A. Traylor, R.J. R.W. Lewis, Schmidt, and G.O. Johnson. Differences among estimates of critical power and anaerobic work capacity derived from five mathematical model and the 3-min all-out test. *Journal of Strength and Conditioning Research*. 28(3):592-600, 2014.

*I performed about 15% effort in this manuscript. The other co-authors did the rest. The work was funded with B.H.C grants. (Impact Factor: 2.075)*

- 63. Bergstrom, H.C, T.J. Housh, J.M. Zuniga,** E. D. Ryan, C. L. Camic, D. A. Traylor, R.J. Schmidt, and G.O. Johnson. Responses during exhaustive exercise at critical power determined from the 3-min all-out test. *Journal of Sports Sciences*. 31(5):537-45, 2014.

*I performed about 15% effort in this manuscript. The other co-authors did the rest. The work was funded with B.H.C grants. (Impact Factor: 2.246)*

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## ABSTRACTS AT PROFESSIONAL MEETINGS

**Table 2. Abstracts Summary Table**

Status	First or Co-author	Total Number	Number of Students Co-authors
<b>Submitted</b>	First: 0; Co: 0	0	0
<b>Presented</b>	First: 21; Co: 51	72	54
<b>Rejected (not listed)</b>	First: 0; Co: 0	0	0
<b>In Preparation</b>	First: 0; Co: 0	0	0
<b>Total</b>	First: 21; Co: 45	66	56

## Abstract List

1. Suh, Irene H, **Zuniga JM**, Ka-Chun Siu Optical neuroimaging technique can detect laparoscopic surgical skills learning after intensive virtual reality training. SAGES Annual Meeting March 12-15, 2025.
2. Kaitlin Fraser and **Jorge M. Zuniga**. Neuroimaging for potential astronauts. Nebraska Academy of Sciences Aeronautics and Space Science Section. April 19, 2024
3. Miracle S, **Zuniga, J.M** "Development and Evaluation Of A Hybrid Electronically-Driven Training Prosthesis". Nebraska Academy of Sciences Annual Meeting 2023 April 21
4. Evenson A, **Zuniga, J.M**, " Development And Testing Of A Recyclable Antimicrobial Material For In-Space Manufacturing Of Medical Devices", Nebraska Academy of Sciences Annual Meeting 2023 April 21
5. Delgado L, **Zuniga, J.M** Changes In Coactivation Levels Of Children With Upper Limb Reduction Pre And Post 8-Week Home Interventions, Nebraska Academy of Sciences Annual Meeting 2023 April 21

6. D'Ovidio, A, **Zuniga, J.M**, "Development and Testing of Recyclable and Antimicrobial Materials for Additive Manufacturing" NASA Human Research Program Investigators", Nebraska Academy of Sciences Annual Meeting 2023 April 21
7. Fraser, K., Borrell, J.A., **Zuniga, J.M**. "Ipsilateral motor control of prosthesis during first use", Nebraska Academy of Sciences Annual Meeting 2023 April 21
8. Copeland C, Fraser, K., Borrell, J.A., **Zuniga, J.M** "Effective Connectivity Of Neural Networks During Motor Imagery And Execution Of A Gross Manual Dexterity Task Using Dynamic Causal Modeling: An fNIRS Study", Nebraska Academy of Sciences Annual Meeting 2023 April 21
9. D'Ovidio, A, **Zuniga, J.M**, "Development and Testing of Recyclable and Antimicrobial Materials for Additive Manufacturing" NASA Human Research Program Investigators' Workshop Feb 7-10, 2023 Submitted
10. Evenson A, **Zuniga, J.M**, " Development And Testing Of A Recyclable Antimicrobial Material For In-Space Manufacturing Of Medical Devices" " NASA Human Research Program Investigators' Workshop Feb 7-10, 2023 Submitted
11. Borrell, J.A., Karumattu Manattu, A., Copeland, C., Fraser, K., D'Ovidio, A., Salazar, D., Granatowicz, Z., Lesiak, A.C., Flgy, S.C., and **Zuniga, J.M**. "Phantom Limb Therapy Provides Clinical Benefits after Amputation and Targeted Muscle Reinnervation Surgery." October 2022. (Poster Session)
12. Karumattu Manattu, A., Borrell, J.A., Copeland, C., Fraser, K., D'Ovidio, A., Granatowicz, Z., and **Zuniga, J.M**. "Alterations in motor cortical connectivity due to short-term immobilization of an upper limb: an FNIRS case study." October 2022. (Poster Session).
13. Fraser, K., Borrell, J.A., **Zuniga, J.M**. "Ipsilateral motor control of prosthesis during first use" Society for Functional Near-Infrared Spectroscopy (fNIRS) Conference. Oct 2022. Poster Presentation
14. Fraser, K., **Zuniga, J.M** "Ipsilateral Motor Cortex Dominance and Decrease Motor Dexterity Following Isolation In Children" Human Movement Variability Conference 2022
15. Salzar D, **Zuniga, J.M** "The Use Of 3d Printed Models to Improve the Understanding of Complex Orthopedic Trauma" Human Movement Variability Conference 2022
16. D'Ovidio, A, **Zuniga, J.M**, "Development and Testing of Novel Antimicrobial Materials for Additive Manufacturing with Applications in Space" NASA Human Research Program Investigators' Workshop Feb 7-10 2022
17. D'Ovidio, A, **Zuniga, J.M**, Development and Testing of Recyclable Antimicrobial Materials for In-Space Manufacturing of Medical Devices, 2022 Nebraska Academy of Sciences Annual Spring Meeting
18. Borrell J. Copeland C Lukaszek J Fraser K **Zuniga J M** Use-Dependent Prosthesis Training Strengthens Contralateral Hemodynamic Brain Responses in a Young Adult with Upper Limb Reduction Deficiency: A Case Report. fNIRS 2021 Virtual Conference 18-22 Oct 2021
19. Karumattu Manattu A. Copeland C Fraser K Borrell J. **Zuniga J M** Resting State Cortical Connectivity Changes Due to Short-Term Immobilization of Upper Limb: An FNIRS Case Study. fNIRS 2021 Virtual Conference 18-22 Oct 2021.
20. **Zuniga JM**. Development and testing of novel antimicrobial materials for additive manufacturing with application in space. 2020 HRP IWS Jan 27, 2020, Galveston, TX.
21. Parker S. **Zuniga JM.**, Knarr B. Use of virtual reality for assessing hand gross dexterity in young healthy individuals. Summer Biomechanics, Bioengineering and Bio transport Conference June 17-20,2020 Vail, CO, USA.
22. **Zuniga JM**. 3D Printed Antibacterial Prostheses. AAOP Annual Meeting, March 6-9, 2019. Orlando, Florida.
23. Walker A. **Zuniga JM**. Development and Testing of 3D Printed Prostheses, Orthoses, and Assistive Devices for Children and Adults. Undergraduate Poster Presentation NE Scifest. April 28, 2018. Omaha, NE.
24. Walker A. **Zuniga JM**. Development and Testing of 3D Printed Prostheses, Orthoses, and Assistive Devices for Children and Adults. Nebraska Academy of Sciences. April 21, 2018. Lincoln, NE.
25. Young K, Pierce J, **Zuniga JM**. 3D Prosthesis Effects on Standing Posture in Unilateral Upper Limb Deficient Children. (Human Movement Variability Conference. June 2018. Omaha, NE)
26. Young K, Pierce J, **Zuniga JM**. The Influence of Prosthetic Use on Standing Posture in Adults and Children with Upper Limb Reductions. (University of Nebraska Omaha, Graduate Research. March 2018).
27. Than N, Dudley D, Pierce J, Arce W, Young K, **Zuniga JM**. Refinement of tracking Methodology for Baseball Using Open-Sourced Software. (University of Nebraska Omaha, Graduate Research. Omaha, Nebraska. March 2017).

28. Drew Dudley, Jean Peck, Rakesh Srivastava, James Pierce, Nick Than, Chris Copeland, **Zuniga JM**. Increases in ROM and circumference of the forearm after 6 months of using a 3D printed transitional hand prosthesis (University of Nebraska-Omaha Creative Research Fair. March 2017. Omaha, NE)
29. Drew Dudley, Jean Peck, Rakesh Srivastava, James Pierce, Nick Than, Chris Copeland, **Zuniga JM**. Increases in ROM and circumference of the forearm after 6 months of using a 3D printed transitional hand prosthesis (Human Movement Variability Conference. June 2017. Omaha, NE)
30. Drew Dudley, Jean Peck, James Pierce, David Salazar, Keaton Young, Brian Knarr, **Zuniga JM**. The Effects of an Upper Limb Exoskeleton on Brain Activation of a Stroke Patient. (University of Nebraska-Omaha Creative Research Fair. March 2018. Omaha, NE)
31. **Zuniga JM**, Major MJ, Peck J, Srivastava R, Pierce J., Stergiou N. Technical, Clinical, and Functional Considerations for the Development of 3D Printed Upper-Limb Prostheses for Pediatric Patients. (AAOP Annual Meeting, February 14-17, 2018. New Orleans, Louisiana).
32. **Zuniga JM**, Major MJ, Peck J, Srivastava R, Pierce J., Stergiou N. Technical and Clinical Considerations for the Development of 3D Printed Upper-Limb Prostheses for Pediatric Patients. (AOPA World Congress, September 6-12, 2017. Las Vegas, NV)
33. Drew Dudley, Jean Peck, Rakesh Srivastava, James Pierce, Nick Than, Chris Copeland, **Zuniga JM**. Increases in ROM and circumference of the forearm after 6 months of using a 3D printed transitional hand prosthesis. (American Society of Biomechanics Conference August 2017. Boulder, CO).
34. Pierce, J., Than, N., Dudley, D., & **Zuniga, JM**. "Development of low cost 3D printed transitional prostheses". (2017 Human Movement and Variability Conference, June 1, 2017. Omaha, NE)
35. Pierce, J., Than, N., Dudley, D., & **Zuniga, JM**. "Development of low cost 3D printed transitional prostheses". (American Society of Biomechanics Annual Meeting, August 8-12, 2017. Boulder, CO)
36. Dote J, P. Nahuelhual., R. Cubillos, G. Fuentes, and **Zuniga, JM**. Functionality of the 3D-Printed Hand Prosthesis Cyborg Beast in adolescents with partial hand congenital amputation: a series of cases. (Annual Congress of the International Society of Physical and Rehabilitation Medicine, April 30, 2017. Buenos Aires Argentina).
37. Pierce, J., Than, N., Dudley, D., & **Zuniga, JM**. "Development of low cost 3D printed transitional prostheses". (Annual Biomechanics Symposium, October 13, 2016. Omaha, NE).
38. Maliha, A., Kosanke, E., **JM Zuniga**. "Description and Comparison of Scaling Procedures in Computer Design Programs (Blender and Fusion 360) for 3D Printed Prostheses". (2016 Nebraska Research and Innovation Conference (NRIC):, October 13, 2016. Omaha, NE).
39. **Zuniga, J.M.**, J. Peck, R. Srivastava, and John Stollberg. "Development of low cost 3D printed transitional prostheses". (American Academy of Orthotist & Prosthetist Annual Meeting, March 9-12, 2016. Orlando, FL)
40. **Zuniga, J.M.**, J. Peck, R. Srivastava, and John Stollberg. "Increases in ROM and circumference of the forearm after 6 months of using a 3d printed transitional hand prosthesis". (American Academy of Orthotist & Prosthetist Annual Meeting, March 9-12, 2016. Orlando, FL).
41. **Zuniga, J.M.**, J. Peck, R. Srivastava, and John Stollberg. "Development of low cost 3D printed transitional prostheses". (Association of Children's Prosthetic-Orthotic Clinics Annual Meeting April 13-16, 2016. Broomfield, Colorado)
42. **Zuniga, J.M.**, Peck, J. (May 13, 2015). "Cyborg Beast: A Low-Cost 3D-Printed Prosthetic Hand For Children With Upper-Limb Differences". (Association of Children's Prosthetic-Orthotic Clinics Annual Meeting May 14, 2015. Clearwater Beach, FL)
43. **Zuniga, J.M.**, Katsavelis, D., Petrykowski, M., Carson, A. (January, 2015). "Cyborg Beast: A Low-Cost 3D-Printed Prosthetic Hand for Children with Upper-Limb Differences". (Presented at the 2015 NASA Human Research Program, NASA Johnson Space Center. Huston, TX).
44. **Zuniga, J.M.**, Peck, J, Petrykowski, M. (September, 2014). "Mainstreaming Open Source 3D-Printed Prosthetics for Underserved Populations". (Presented at the Johns Hopkins Hospital, Advance Prosthetic Center, Baltimore MD).
45. **Zuniga, J.M.**, Shull, J. (March, 2014). "eNABLE, a distributed pay it forward network. (Presented at the National Collegiate Inventors and Innovators Alliance (NCIIA) in San Jose, California).
46. **Zuniga, J.M.**, Malek, M. (May, 2013). "Electromyographic Responses of the Superficial Quadriceps Femoris Muscles during Incremental Treadmill Running. (Presented at the Annual American College of Sports Medicine Conference in Indianapolis, Indiana).
47. **Zuniga, J.M.**, C. Harris, T.J. Housh, C.L. Camic, H.C. Bergstrom, Daniel A. Traylor, M. T. Goodman, G.O. Johnson, and R.J. Schmidt. (May, 2012). Neuromuscular parameters for ramp and step incremental

- cycle ergometer tests. (Presented at the Annual American College of Sports Medicine Conference in San Francisco, California).
48. **Zuniga, J.M.**, T.J. Housh, C.L. Camic, C.R. Hendrix, H.C. Bergstrom, Daniel A. Traylor, G.O. Johnson, and R.J. Schmidt. (June, 2011). A new mechanomyographic amplitude-based fatigue threshold test for cycling. (Presented at the Annual American College of Sports Medicine Conference in Denver, Colorado).
  49. **Zuniga, J.M.**, T.J. Housh, C.L. Camic, C.R. Hendrix, H.C. Bergstrom, G.O. Johnson, and R.J. Schmidt. (July, 2010). The relationship between skinfold thicknesses and mechanomyography at different locations on the vastus lateralis during incremental cycle ergometry. (Presented at the National Strength and Conditioning Association Annual Conference in Orlando, Florida).
  50. **Zuniga, J.M.**, T.J. Housh, C.L. Camic, C.R. Hendrix, G.O. Johnson, and R.J. Schmidt. (June, 2010). A comparison of fatigue thresholds derived from the amplitude and frequency domains of the electromyographic signal. (Presented at the Annual American College of Sports Medicine Conference in Baltimore, Maryland).
  51. **Zuniga, J.M.**, C.R. Hendrix, C.L. Camic, M. Mielke, G.O. Johnson, R.J. Schmidt, and T.J. Housh. (October, 2009). The effects of micronized creatine supplementation on mean and peak power from the Wingate test. (Presented at the Annual Southwest American College of Sports Medicine Conference in San Diego, California).
  52. **Zuniga, J.M.**, T. J. Housh, FNSCA, C.L. Camic, M. Mielke, C.R. Hendrix, G.O. Johnson, R.J. Schmidt, and D. J. Housh. (July, 2009). Gender comparisons of anthropometric characteristics of young sprint swimmers. (Presented at the National Strength and Conditioning Association Annual Conference in Las Vegas, Nevada).
  53. **Zuniga, J.M.**, C.L. Camic, M. Mielke, C.R. Hendrix, T.J. Housh, G.O. Johnson, R.J. Schmidt. (May, 2009). The effects of parallel versus perpendicular electrode orientations on EMG amplitude and mean power frequency from the biceps brachii. (Presented at the Annual American College of Sports Medicine Conference in Seattle, Washington).
  54. **Zuniga, J. M.**, T.J. Housh, C.L. Camic, M. Mielke, C.R. Hendrix, G.O. Johnson, R.J. Schmidt, D.J. Housh. (July, 2008). Validity of fat-free weight equations for estimating mean and peak power in high school wrestlers. (Presented at the National Strength and Conditioning Association Annual Conference in Las Vegas, Nevada).
  55. **Zuniga, J. M.**, K. E. Berg, FACSM, J. Noble, J. Harder, M. Chaffin, Vidya S. Hanumanthu (May, 2008). Physiological responses and role of  $\dot{V}O_2$  slow component to interval training with different intensities and durations of work. (Presented at the Annual American College of Sports Medicine Conference in Indianapolis, Indiana).
  56. Goodman M. T., **Zuniga J.M.**, and C. Harris. (May, 2012). Gas Exchange Fatigue Thresholds From Ramp Versus Step Incremental Cycle Ergometer Tests (Presented at the Annual American College of Sports Medicine Conference in San Francisco, California).
  57. Camic, C.L., T.J. Housh, **J.M. Zuniga**, C.R. Hendrix, H. C. Bergstrom, G.O. Johnson, R.J. Schmidt, and D.J. Housh. (July, 2010). The influence of electrode placement on the physical working capacity at the fatigue threshold. (Presented at the National Strength and Conditioning Association Annual Conference in Orlando, Florida).
  58. Bergstrom, H.C., **J.M. Zuniga**, T.J. Housh, C.L. Camic, C.R. Hendrix, G.O. Johnson, and R.J. Schmidt. (July, 2010). The relationship between skinfold thickness and the time and frequency domains of the surface electromyographic signal during cycle ergometry. (Presented at the National Strength and Conditioning Association Annual Conference in Orlando, Florida).
  59. Camic, C.L., T.J. Housh, C.R. Hendrix, **J.M. Zuniga**, G.O. Johnson, D.J. Housh, and R.J. Schmidt. (June, 2010). A comparison of fatigue thresholds derived from the frequency domain of the electromyographic signal and gas exchange parameters. (Presented at the Annual American College of Sports Medicine Conference in Baltimore, Maryland).
  60. Hendrix, C.R., T.J. Housh, **J.M. Zuniga**, M. Mielke, C.L. Camic, G.O. Johnson, and R.J. Schmidt. (June, 2010). Comparison of a new mechanomyographic frequency-based fatigue threshold test and critical torque. (Presented at the Annual American College of Sports Medicine Conference in Baltimore, Maryland).
  61. Camic, C.L., T.J. Housh, **J.M. Zuniga**, M. Mielke, C.R. Hendrix, G.O. Johnson, R.J. Schmidt, and D.J. Housh. (October, 2009). Effects of four weeks of an arginine-based supplement on the ventilatory threshold



- and peak oxygen uptake. (Presented at the Annual Southwest American College of Sports Medicine Conference in San Diego, California).
62. Hendrix, C.R., T.J. Housh, **J.M. Zuniga**, M. Mielke, C.L. Camic, G.O. Johnson, D.J. Housh, and R.J. Schmidt. (October, 2009). Effects of polyethylene glycosylated creatine supplementation on muscular strength. (Presented at the Annual Southwest American College of Sports Medicine Conference in San Diego, California).
  63. Camic, C.L., T.J. Housh, **J.M. Zuniga**, C.R. Hendrix, M. Mielke, G.O. Johnson, R.J. Schmidt, and D.J. Housh. (July, 2009). Effects of four weeks of arginine supplementation on the physical working capacity at the fatigue threshold. (Presented at the National Strength and Conditioning Association Annual Conference in Las Vegas, Nevada).
  64. Hendrix, C.R., T.J. Housh, M. Mielke, C.L. Camic, **J.M. Zuniga**, G.O. Johnson, and R.J. Schmidt. (July, 2009). A comparison of critical torque and electromyographic mean power frequency fatigue threshold during isometric leg extension. (Presented at the National Strength and Conditioning Association Annual Conference in Las Vegas, Nevada).
  65. Camic, C.L., M. Mielke, C.R. Hendrix, **J.M. Zuniga**, T.J. Housh, G.O. Johnson, R.J. Schmidt. (May, 2009). The effect of electrode orientation on electromyographic amplitude and mean power frequency versus isometric torque relationships. (Presented at the Annual American College of Sports Medicine Conference in Seattle, Washington).
  66. Hendrix, C.R., T.J. Housh, G.O. Johnson, M. Mielke, C.L. Camic, **J.M. Zuniga**, and R.J. Schmidt. (May, 2009). Anaerobic work capacity from linear and nonlinear mathematical models. (Presented at the Annual American College of Sports Medicine Conference in Seattle, Washington).
  67. Camic, C.L., T.J. Housh, M. Mielke, C.R. Hendrix, **J.M. Zuniga**, G.O. Johnson, D.J. Housh, and R.J. Schmidt. (July, 2008). Anthropometric growth patterns of young wrestlers. (Presented at the National Strength and Conditioning Association Annual Conference in Las Vegas, Nevada).
  68. Hendrix, C.R., T.J. Housh, M. Mielke, C.L. Camic, **J.M. Zuniga**, G.O. Johnson, and R.J. Schmidt. (July, 2008). A Comparison of critical force and electromyographic fatigue during isometric muscle actions of the leg extensors. (Presented at the National Strength and Conditioning Association Annual Conference in Las Vegas, Nevada).
  69. Mielke, M., T.J. Housh, M.H. Malek, T.W. Beck, C.R. Hendrix, **J.M. Zuniga**, C.L. Camic, R.J. Schmidt, G.O. Johnson, and D.J. Housh. (July, 2008). The effects of a calorie dense high protein supplement on exercise performance and body composition during resistance training. (Presented at the National Strength and Conditioning Association Annual Conference in Las Vegas, Nevada).
  70. Schmidt, R.J., M. Mielke, M.H. Malek, T.J. Housh, C.L. Camic, **J.M. Zuniga**, C.R. Hendrix, and G.O. Johnson. (July, 2008). Comparison of army, navy, and marine corps ROTC physical fitness test scores and evaluation of Special Forces Assessment and Selection Success. (Presented at the National Strength and Conditioning Association Annual Conference in Las Vegas, Nevada).
  71. Mielke, M., T.J. Housh, C. R. Hendrix, C.L. Camic, **J.M. Zuniga**, R.J. Schmidt, and G.O. Johnson. (May, 2008). Oxygen uptake, heart rate, and ratings of perceived exertion at the PWC $\dot{V}O_2$ . (Presented at the Annual American College of Sports Medicine Conference in Indianapolis, Indiana).
  72. Camic, C.L., M. Mielke, C. R. Hendrix, **J. Zuniga**, G.O. Johnson, and T.J. Housh. (May, 2008). Cross-cultural validation of isokinetic peak torque prediction equations on young American wrestlers. (Presented at the Annual American College of Sports Medicine Conference in Indianapolis, Indiana).

## PAPER REVIEWS

- Article reviewed on June 13, 2024 for Disability and Rehabilitation: Assistive Technology
- Article reviewed on September 1, 2022 for Rehabilitation Medicine
- Article reviewed on July 19, 2017 for Transactions on Mechatronics
- Article reviewed on January 31, 2017 for Prosthetics & Orthotics International
- Article reviewed on September 2<sup>nd</sup>, 2015 for PLOS ONE.
- Article reviewed on September 2<sup>nd</sup>, 2015 for American Academy of Orthotist & Prosthetist.
- Article reviewed on September 2<sup>nd</sup>, 2013 for Medical & Biological Engineering & Computing.
- Article reviewed on July 24<sup>th</sup>, 2013 for the Journal of Athletic Medicine.
- Article reviewed on June 17<sup>th</sup>, 2013 for the Journal of Athletic Medicine.

- Article reviewed on April 24<sup>th</sup>, 2013 for the Journal of Athletic Medicine.
- Article reviewed on February 1<sup>st</sup>, 2013 for the Journal of Strength and Conditioning Research.
- Article reviewed on November 28<sup>th</sup>, 2011 for The Chinese Journal of Physiology.
- Article review on March 4<sup>th</sup>, 2011 for the Journal Sensors.
- Article reviewed on December 30<sup>th</sup>, 2011 for Muscle & Nerve.

## BOOK CHAPTERS

- **Zuniga, J.M** and Stergiou N, Chapter 11 - Future directions in biomechanics: 3D printing, Biomechanics and Gait Analysis, Academic Press, 2020, Pages 345-373, ISBN 9780128133729, <https://doi.org/10.1016/B978-0-12-813372-9.00011-7>.
- Eckerson, J.M. and **Zuniga, J.M.**, Searching the Scientific Literature. In: *ACSM Research Methods (1<sup>st</sup> Ed.)*. Lawrence E. Armstrong and William J. Kraemer, Eds. Human Kinetics (In Progress).

## PUBLIC ORAL PRESENTATIONS

**Table 3. Public Oral Presentations Summary**

Status	International	National	Local
<b>Presented</b>	11	15	28
<b>Total</b>	54		

## International Presentations

- 1) Research in Biomechanics and 3D printed prosthetics. Sunshine Rehabilitation Hospital, First Rehabilitation Hospital, and University of Tongji Shanghai, China. (May 8-12, 2017). Three presentations about research in biomechanics and 3D printed prosthetics.
- 2) Tour EDUTIC Chile (July 1-August 11, 2016). Several presentations about the use of 3D printing as a tool Social Innovation. Two presentations in the Universidad San Sebastian, Santiago Chile, one presentation in Universidad de Vina del Mar, Vina del mar Chile, 3 presentations at the Universidad Austral “Congreso Nacional de Kinesiología” and PAR EXPLORA de CONICYT Los Ríos, Valdivia Chile, 3 presentations at the Universidad Santo Tomas, Antofagasta Chile, and one presentation at the Universidad Autonoma of Chile. [https://issuu.com/uautonomadechile/docs/autonoma\\_al\\_dia\\_numero\\_45](https://issuu.com/uautonomadechile/docs/autonoma_al_dia_numero_45) and <http://www.congresodelfuturo.cl/impresion-3d-nueva-oportunidad-de-vivir/congresodelfuturo/2016-06-22/152231.html>
- 3) Impacto social de las nuevas tecnologías. Congreso Del Futuro, Santiago Chile, January 2016. Presenter: Dr. Zuniga. <http://www.congresodelfuturo.cl/jorge-zuniga/congresodelfuturo/2015-11-09/181252.html>.
- 4) Impacto social de las nuevas tecnologías. Congreso Del Futuro, Valparaiso Chile, January 2016. Presenter: Dr. Zuniga.
- 5) Impacto social de las nuevas tecnologías. Congreso Del Futuro, La Serena Chile, January 2016. Presenter: Dr. Zuniga.
- 6) The 3D-Printed Prosthetic Revolution. Hewlett-Packard Innovation Day, Santiago Chile, November 23, 2015. Presenter Dr. Zuniga
- 7) A 3D-Printed Prosthetic Hand for Children. Manuel Barros Borgono High school, Santiago, Chile, October 20, 2015. Presenter: Dr. Zuniga.
- 8) A 3D-Printed Prosthetic Hand for Children. Department of Electrical Engineering, Biomedical Engineering major, Concepcion, Chile, October 16, 2015. University of Concepcion. Presenter: Dr. Zuniga.
- 9) A 3D-Printed Prosthetic Hand for Children. Centro de Desarrollo de Tecnologías de Inclusión de la Universidad Católica (CEDETI) located Santiago, Chile, December 3, 2014. Catholic University of Chile. Presenter: Dr. Zuniga.
- 10) A 3D-Printed Prosthetic Hand for Children. Instituto Teleton and Rehabilitation Center located Santiago, Chile, December 4, 2014. Presenter: Dr. Zuniga.

- 11) A 3D-Printed Prosthetic Hand for Children. Hospital del Trabajador located Santiago, Chile, December 4, 2014. Presenter: Dr. Zuniga.

## National

- 1) **Zuniga JM** "The Sweet Spot for Motor Learning in Children with Congenital Limb Loss", Association of Children's Prosthetic-Orthotic Clinics (ACPOC) 2023 held at Minneapolis, on May 17-20, 2023
- 2) **Zuniga JM** "Brain Lateralization in Children with Upper-limb Reduction Deficiency", Association of Children's Prosthetic-Orthotic Clinics (ACPOC) 2022 held at Clearwater, Florida on April 8th, 2022.
- 3) **Zuniga JM** Annual meeting of 48th Academy annual meeting and scientific symposium of the American Academy of Orthotists and prosthetists held at Georgia, Atlanta. March 2-5 2022
- 4) **Zuniga JM**. 3D Printed Antibacterial Prostheses. AAOP Annual Meeting, March 6-9, 2019. Orlando, Florida.
- 5) **Zuniga JM**. Technical, Clinical, and Functional Considerations for the Development of 3D Printed Upper-Limb Prostheses for Pediatric Patients. (AAOP Annual Meeting, February 14-17, 2018. New Orleans, Louisiana).
- 6) Development of 3D printed prostheses for children and clinical findings. Grand rounds University of Kansas Medical Center (May 18, 2017). [https://www.youtube.com/watch?v=fMDyitlg5\\_s&feature=youtu.be](https://www.youtube.com/watch?v=fMDyitlg5_s&feature=youtu.be)
- 7) 3D printed prostheses for pediatrics. Falmouth, Maine (April 16 to 29, 2017). <http://brunosnotes.blogspot.com/>
- 8) 3-D Printing and the Future of O&P. **American Academy of Orthotist & Prosthetist Annual Meeting**, March 9-12, 2016. Orlando, FL. Dr. Zuniga. [http://www.academyannualmeeting.org/2016/education/organized\\_sessions/](http://www.academyannualmeeting.org/2016/education/organized_sessions/)
- 9) Anthropometric, Range of Motion and Strength Changes After 6 Months of Using the Cyborg Beast, an Open Source Wrist Driven 3D-Printed Prosthetic Hand for Children. Midwest Chapter **American Academy of Orthotists & Prosthetists**, 2015 Annual Meeting and Scientific Session, Wednesday, May 27, 2015 - Friday, May 29, 2015. Hyatt Rosemont. Presenter: Dr. Zuniga.
- 10) 3D Printed Prostheses for Children. Make/Happen. September, 2015. <http://strictlybusinessomaha.com/news/non-profit/greater-omaha-chamber-announces-dynamic-speaker-lineup-for-inaugural-makehappen/>
- 11) Cyborg Beast: An Open-Source Low-Cost 3D-Printed Prosthetic Hand For Children With Upper-Limb Differences. **Association of Children's Prosthetic-Orthotic Clinics** Annual Meeting May 16, 2015. Hilton Clearwater Beach Resort, Clearwater Beach, Florida. Presenter: Dr. Zuniga.
- 12) Development of low-cost 3D printed prosthetic devices. **2015 Innovation Kansas Summit**, Friday May 1<sup>st</sup>, ICC West, 2615 W. Main, Independence, Kansas. Presenter: Dr. Zuniga.
- 13) Mainstreaming Open Source 3D-Printed Prosthetics for Underserved Populations Sunday Sept 28, 2014, **Johns Hopkins Hospital**, Advance Prosthetic Center, Baltimore MD. Presenters: Dr. Zuniga (EXS Faculty), Jean peck (OT from Creighton Medical Center), and Marc Petrykowski (EXS major) presented preliminary data and future research directions in low-cost prosthetics.
- 14) Low-Cost 3D Printed Assistive Devices: A technological innovation that has an impact on the NASA strategic goals. Friday January 16<sup>th</sup>. **NASA Johnson Space Center**, B261, SK3 Houston, TX 77058. Presenters: Dr. Zuniga (EXS Faculty), Adam Carson (EXS major), and Marc Petrykowski (EXS major). Sponsor: NASA Nebraska EPSCor
- 15) Nutritional supplementation to decrease muscle breakdown. **National Strength and Condition Association**. 37<sup>th</sup> National conference. July 10<sup>th</sup>, 2014. Las Vegas, NV 89109.

## Local

- 1) Presentation to District 145. 3D printing in Nebraska. Waverly high school, May 06, 2024.
- 2) Presentation to District 145. 3D printing in Nebraska. Waverly high school, May 08, 2023.
- 3) Presentation to Rotary Club of Omaha. 3D printing in Nebraska. Omaha Rotary Club, May 21, 2018.

- 4) Presentation to University of Nebraska Board of Regents. 3D printing in Nebraska: Clinical Applications. University of Nebraska Board of Regents. September 21, 2017.
- 5) Keynote Speaker. Innovation: A 3D-printed hand named the cyborg beast. OLC collaborate Nebraska 2017, UNMC, Omaha, Nebraska. <https://onlinelearningconsortium.org/attend-2017/collaborate-nebraska/>
- 6) Medical 3D Printing Seminar sponsored by UNMC Student Senate, University of Nebraska Medical Center March 14, 2017.
- 7) 3D Printed Prostheses for Children. College of Allied Health Professions Research Seminar Series. University of Nebraska Medical Center. December 1, 2016.
- 8) 3D Printing in Healthcare Expert Panel: October 4, 2016. University of Nebraska Medical Center Innovation Week.
- 9) Demo Day “3D Printing Prosthetic Innovations”: October 5, 2016. University of Nebraska Medical Center Innovation Week.
- 10) Low-Cost 3D Prosthetics Hand for Children. November 12<sup>nd</sup>, 2015. Presenters: Dr. Zuniga (EXS Faculty), Adam Carson (EXS Major), and Elizabeth Kosanke (EXS Major) and Joseph Bowens (Med School) perform a workshop on 3D printing. Millard North Middle School, Omaha, NE.
- 11) “AIM Infotec 2016” April 21, 2015. Adam Carson, Marc Petrykowski, Nicholas Than, Christopher Wong, Maggie Fleita, Maggie Griffin (EXS Majors). Cyborg beast: an open source low-cost 3d-printed prosthetic line for children with upper-limb differences.
- 12) “Nebraska Academy of Sciences” NASA Nebraska EPSCoR. April 17, 2015. Adam Carson (EXS Major), Alexandra Maliha (Environmental Science Major), and Dr. Zuniga (EXS Faculty). Cyborg beast: an open source low-cost 3d-printed prosthetic line for children with upper-limb differences.
- 13) “Nebraska Academy of Sciences” NASA Nebraska EPSCoR. April 17, 2015. Mark Petrykowski (EXS Major), Maggie Fleita (Exercise Science Major), and Dr. Zuniga (EXS Faculty). Low-Cost 3D-Printed Prosthetic Devices for Children.
- 14) “Nebraska Academy of Sciences” NASA Nebraska EPSCoR. April 17, 2015. Joseph Lesnak (Exercise Science Major) and Dr. Zuniga (EXS Faculty). Gender Differences for the Assessment of Neuromuscular Fatigue.
- 15) “St. Albert’s/Research Day” Creighton University. April 14, 2015. Adam Carson (EXS Major), Alexandra Maliha (Environmental Science Major), and Dr. Zuniga (EXS Faculty). Cyborg beast: an open source low-cost 3d-printed prosthetic line for children with upper-limb differences.
- 16) “St. Albert’s/Research Day” Creighton University. April 14, 2015. Mark Petrykowski (EXS Major), Maggie Fleita (Exercise Science Major), and Dr. Zuniga (EXS Faculty). Low-Cost 3D-Printed Prosthetic Devices for Children.
- 17) “St. Albert’s/Research Day” Creighton University. April 14, 2015. Joseph Lesnak (Exercise Science Major), and Dr. Zuniga (EXS Faculty). Gender Differences for the Assessment of Neuromuscular Fatigue.
- 18) “St. Albert’s/Research Day” Creighton University. April 14, 2015. Joseph Lesnak (Exercise Science Major), and Dr. Zuniga (EXS Faculty). Gender Differences for the Assessment of Neuromuscular Fatigue.
- 19) “St. Albert’s/Research Day” Creighton University. April 14, 2015. Christian Andreen, Andrew Jochum (Exercise Science Major), and Dr. Zuniga (EXS Faculty). Gender Differences for the Assessment of Neuromuscular Fatigue.
- 20) “St. Albert’s/Research Day” Creighton University. April 14, 2015. Morgan Busboom (Exercise Science Major), Marc Petrykowski (Exercise Science Major), Benjamin Kohler (Exercise Science Major), Gwendolyn Devonshire (Exercise Science Major), Nicholas Hiraoka (Exercise Science Major), Cortney Kelley (Exercise Science Major), Anne Sullivan (Exercise Science Major), and Dr. Zuniga (EXS Faculty). The effect of body mass index on the assessment of the physical working capacity at the fatigue threshold.
- 21) “St. Albert’s/Research Day” Creighton University. April 14, 2015. Mariah Sommer (Exercise Science Major), Olivia Chambers (Exercise Science Major), Courtney Coslor (Exercise Science Major), Emily Esch (Exercise Science Major), Larissa Hamada (Exercise Science Major), Alexander Heimes (Exercise Science Major), Julia Hummel (Exercise Science Major), and Dr. Zuniga (EXS Faculty). The effects of cardiorespiratory fitness on the assessment of the physical working capacity at the fatigue threshold.

- 22) "St. Albert's/Research Day" Creighton University. April 14, 2015. Meghan Barry (Exercise Science Major), Makenna Brown (Exercise Science Major), William Garnett (Exercise Science Major), Zachary Hadden (Exercise Science Major), Paul Nguyen (Exercise Science Major), Geoffrey Supplee (Exercise Science Major), and Dr. Zuniga (EXS Faculty). The effects of muscle cross-sectional area on the physical working capacity at the fatigue threshold.
- 23) "Nebraska Robotic Expo" February 21, 2015. Dr. Zuniga (EXS Faculty), Adam Carson (EXS Major), Marc Petrykowski (EXS Major), Christian Andreen (EXS Major), Zoe Reed (EXS Major), Nick Than, Christopher Wong, Maggie Fleita, Maggie Griffin perform 3d printing workshop for children interested in science and biomedical engendering. Strategic Air and Space Museum in Ashland, Nebraska.
- 24) "Celebration of Mind-Nebraska" is a community collaboration to celebrate STEM. Saturday October 18<sup>th</sup>, 2014. Dr. Zuniga (EXS Faculty), Adam Carson (EXS Major), Marc Petrykowski (EXS Major), Christian Andreen (EXS Major), and Zoe Reed (EXS Major) perform 3d printing workshop for children interested in science and biomedical engendering. KANEKO, 1111 Jones St, Omaha, Nebraska.
- 25) Development of Low-Cost 3D Prosthetics Hand for Children. September 26<sup>th</sup>, 2014. Presenters: Dr. Zuniga (EXS Faculty), presented preliminary data and future research directions in low-cost prosthetics. **Exercise Science Departmental Seminar, School of HPER, UNO, NE, 68182.**
- 26) Development of Low-Cost 3D Prosthetics Hand for Children. October 7<sup>th</sup>, 2014. Presenters: Dr. Zuniga (EXS Faculty), presented preliminary data and future research directions in low-cost prosthetics. **Exercise for Special Populations, School of HPER, UNO, NE, 68182.**
- 27) Development of Low-Cost 3D Prosthetics Hand for Children. Friday July 9<sup>th</sup>, 2014. Presenters: Dr. Zuniga (EXS Faculty), presented preliminary data and future research directions in low-cost prosthetics. **Gaining STEAM Event, Boys & Girls Clubs of the Midlands' STEM Summer & School Break Academy, Omaha, NE.**
- 28) Development of Low-Cost 3D Prosthetics Hand for Children. August 2<sup>nd</sup>, 2014. Presenters: Dr. Zuniga (EXS Faculty) and Marc Petrykowski (EXS major) presented preliminary data and future research directions in low-cost prosthetics. **The MakerTech group workshop, Boys & Girls Clubs of the Midlands' STEM Summer & School Break Academy, Omaha, NE.**
- 29) Development of Low-Cost 3D Prosthetics Hand for Children. April 29<sup>nd</sup>, 2014. Presenters: Dr. Zuniga (EXS Faculty), Adam Carson (EXS Major), and Marc Petrykowski (EXS Major) presented preliminary data and future research directions in low-cost prosthetics. **Millard North Middle School: STEM, Omaha, NE.**
- 30) The Truth about Sports Nutrition. Dr. Zuniga (EXS Faculty) presented a sports nutrition seminar. Artist Lecture Series Student Symposium at **Hastings College**, in Hastings NE, 68901

## PATENTS

### Published

1. Upper Limb Prosthesis (Modular and Hybrid Systems). Full Patent Submission. International Application (PCT) for filing in the US receiving office. PCT/US19/56902. Primary contact: Jorge M. Zuniga. **12/16/2021. Pub . No .: US 2021/0386562 A1**

### Patents Pending (12 New Invention Notifications/Patent Applications)

1. Antimicrobial Prosthetic Liner with A Compressible Sweat Evacuation System. New Invention Notification filed on **September 24, 2022**. Primary contact: Jorge M. Zuniga. NIN No. 23022
2. Accelerometry-based fatigue detection system to prevent slip-induced falls in structural steel workers. New Invention Notification filed on **March 25, 2019**. Primary contact: Jorge M. Zuniga. NIN No. 18097
3. 3D Printable Partial Hand Prosthesis (Cyborg Beast 2). New Invention Notification filed on **April 13, 2018**. Primary contact: Jorge M. Zuniga. NIN No. 18097.

4. Parametric Design Process for 3D Printed Prosthesis Fitted Remotely. New Invention Notification filed on **April 13, 2018**. Primary contact: Jorge M. Zuniga. NIN No. 18096.
5. 3D Printable Below-elbow Arm Prosthesis. New Invention Notification filed on **April 13, 2018**. Primary contact: Jorge M. Zuniga. NIN No. 18095.
6. Hybrid-Drive Upper-Limb Prosthesis. New Invention Notification filed on **December 22, 2017**. Primary contact: Jorge M. Zuniga. NIN No. 18087.
7. Upper Limb 3D Scanning System. New Invention Notification filed on **November 10, 2017**. Primary contact: Jorge M. Zuniga. NIN No. 18022.
8. Footwear with interchangeable outsoles for optimizing different biomechanical parameters using online optimization. New Invention Notification filed on **October 26, 2017**. Primary contact: Philippe Malcolm. NIN No. 18094.
9. Hydraulic Assembly for a Prosthetic Device. New Invention Notification filed on **October 14, 2017**. Primary contact: Jorge M. Zuniga. NIN No. 18044.
10. 3D printed rotation mechanisms for prostheses: Application number: 62/28,6475. Application filed **January 25, 2016**. Primary contact: Jorge M. Zuniga
11. 3D Printed Swimming Hand. Application number: 61/95,4020. **March 17, 2014**. Primary contact: Jorge M. Zuniga
12. 3D Printed Weight Lifting Hand. Application number: 61/952,994. **March 14, 2014**. Primary contact: Jorge M. Zuniga

## DISSERTATIONS AND THESES COMMITTEES

1. Changes in Motor Learning as Evidenced by Cortical Effective Connectivity  
Doctoral's Thesis: Chris Copeland  
Started: December 5th 2020  
Proposed: July 25th, 2024
2. Development and Evaluation of a Hybrid Electronically Driven Training Prosthesis  
Master's Thesis: Sydney Miracle  
Started: Jan 2022  
Proposed: August 2023
3. Development and testing of a recyclable antimicrobial material for in-space manufacturing of medical devices  
Master's Thesis: Alex Evanson  
Started: Jan 2022  
Proposed: June 7<sup>th</sup> 2023
4. Dynamic Causal Modeling of Cortical Activity During Prosthesis Use  
PhD Thesis: Copeland, Chris  
Department of Biomechanics at the University of Nebraska at Omaha  
Started: August 2020  
Proposed: June 14<sup>th</sup> 2023

5. Evaluation of embodiment through hemodynamic changes and gesture analysis  
 PhD Thesis: Fraser, Kaitlin  
 Department of Biomechanics at the University of Nebraska at Omaha  
 Started: Jan 2023  
 Proposing: Winter 2023
6. Changes in Coactivation Before and After 8-week Guided Training while Using 3D Printed Upper Limb Prostheses  
 Master's Thesis: Liliana Delgado  
 Proposal Date: October 2022  
 Defended: April 28<sup>th</sup> 2023
7. Changes in Bimanual Coordination Before and After an 8-week Home Intervention while Using a 3D Printed Upper Limb Prosthetic Device  
 Master's Thesis: Zach Granatowicz  
 Proposal Date: 12 January 2023  
 Defended: April 18<sup>th</sup> 2023
8. Testing and Validation of Antimicrobial Polymers for Additive Manufacturing  
 Master's Thesis: Andrew D'Ovidio  
 Proposal Date: June 2022  
 Defended: March 3<sup>rd</sup> 2023
9. Motor dexterity and behavior in chronically ill children after isolation  
 Master's Thesis: Fraser, Kaitlin  
 Department of Biomechanics at the University of Nebraska at Omaha  
 Defended: November 23, 2021
10. Development and Validation of a Low-Cost 3D Printed Upper Limb Prosthetic Simulator  
 Master's Thesis: Copeland, Chris  
 Department of Biomechanics at the University of Nebraska at Omaha  
 Defended: August 8, 2020
11. Development of Myoelectric Hand prosthesis  
 Doctoral Thesis (Ph.D. in Biomedical Engineering)  
 Dissertation Committee: Enrique Ignacio Germany Morrison, Department of Biomedical Engineering, Universidad de Concepcion, Concepcion, Chile.  
 Defended June 1, 2018.
12. Development of a Methodology for Sustainable Product Design from Modular Architecture Principles  
 Doctor in Mechanical Engineering. External committee member for Jaime Alberto Mesa Cogollo  
 Engineering Division Mechanical Engineering Department Barranquilla Universidad del Norte, Colombia  
 Started: March 1, 2016  
 Proposing: July 2018

13. Development and Validation of Low-cost 3D Printed Anatomical Models for Pre-Surgical Planning (In-Process)  
 Master's Thesis Committee Chair: Salazar, David  
 Department of Biomechanics at the University of Nebraska at Omaha  
 Started: May 1, 2018  
 Proposing: August 15, 2018
14. 3D Prosthetics Effects on Standing Posture in Unilateral Upper Limb Deficient Children and Adults (In-Process)  
 Master's Thesis Committee Chair: Young, Keaton  
 Department of Biomechanics at the University of Nebraska at Omaha  
 Started: May 1, 2018  
 Proposing: August 15, 2018
15. Developing and Testing of a Low-Cost Upper Limb Exoskeleton for Stroke Patients (In-Process)  
 Master's Thesis Committee Chair: Dudley, Drew  
 Department of Biomechanics at the University of Nebraska at Omaha  
 Started: February 1, 2017  
 Proposing: February 12, 2018
16. 3D Printed Prostheses for Children: A Tool to Monitor Upper Limb Movement (In-Process)  
 Master's Thesis Committee Chair: Pierce, James  
 Department of Biomechanics at the University of Nebraska at Omaha  
 Started: January 10, 2017  
 Proposed: September 26, 2017
17. Physiological Responses at the Critical Heart Rate during Treadmill Running  
 Doctoral Dissertation (Ph.D. in Exercise Physiology & Nutrition)  
 Dissertation Committee: Haley Bergstrom, Exercise Physiology and Nutrition at the University of Nebraska Lincoln, USA.  
 Defended May 9, 2013.
18. Tactile Feedback Control of Myoelectric Hand prosthesis  
 Master Thesis (M.S. in Biomedical Engineering)  
 Thesis Committee: Enrique Ignacio Germany Morrison, Department of Biomedical Engineering, Universidad de Concepcion, Concepcion, Chile.  
 Defended July 17, 2015.



**GRANTS /FUNDING (TOTAL AWARDED = \$5,985,234)**

<b>Table 4. Faculty Grants Summary</b>			
<b>Status</b>	<b>PI or Co-PI</b>	<b>Number (#)</b>	<b>Amount (\$)</b>
<b>Pending Grants</b>	PI=3; Co-PI=0	3	7,153,199
<b>Ongoing Grants</b>	PI=7; Co-PI=0	7	519,993
<b>Completed</b>	PI=17; Co-PI=6	23	5,509,545
<b>Not Funded</b>	PI=9; Co-PI=0	9	-
<b>In Preparation</b>	PI=1; Co-PI=0	1	-
<b>Total</b>	<b>PI=27; Co-PI=06</b>	<b>37</b>	<b>13,182,737</b>

**Faculty Grants List**

2024	PI \$440,000, “3D Printing for Healthcare Education and Workforce Development.” The current proposal aims to recruit a diverse group of prospective UNO students to participate in an educational and workforce development program hosted by the Department of Biomechanics and the Creative Production Lab at Criss Library at UNO. This group will include students with Autism Spectrum Disorder (ASD), individuals requiring orthopedic rehabilitation services, and prospective graduate and undergraduate students who will serve as mentors. <b>Awarded</b>
2024	PI \$79,993, “Development and Testing of a Novel Antimicrobial Material for Prosthetic Liners and Other Medical Devices.” There is a need for a versatile medical grade flexible polymer material with antimicrobial properties for the manufacturing of medical devices susceptible to microbial growth. The primary objective of the current proposal is to develop and test an antimicrobial flexible polymer to then develop proof-of-concept antimicrobial prosthetic liner for lower limb amputees. <b>Awarded</b>
2023	PI \$19601.00, “Neural Correlates of Movement Variability during Simulated Driving”. The proposed work takes a first step towards filling the gap to link cortical activity with steering behavior while driving. In the proposed work, participants will perform several driving tasks while we monitor both neural activity along with synchronous human movements and steering performance . <b>Awarded</b>
2023	PI \$17292.00, “Innovative Student Support Project” The overall goal of the Student Support Project is to provide funding to support a UNO student worker (Student Scientist) in the 3D printing laboratory at UNOs Biomechanics Research Building under the supervision of Dr. Jorge M. Zuniga. The specific objectives of the Student Support Project are: Expose UNO undergraduate or graduate students to the research and clinical applications of 3D printing while working in laboratory and clinical settings. <b>Awarded</b>
2023	PI \$7411 “Student Support-Signs & Shapes” <b>Awarded</b>

2022	PI \$3,585,098.00 “Functional Networks of Use-Dependent Brain Plasticity in Children with Upper Limb Reduction Deficiency” Lack of knowledge of the functional neural networks and the unknown dose-response relationship, can detrimentally affect any efforts to enhance current evidence-based rehabilitation approaches aiming to improve prosthesis acceptance. Our objective is to identify and quantify the functional neural networks responsible for the use-dependent neural plasticity after prosthesis use in children with Unilateral Upper-Limb Reduction Deficiency. NIH RO1. Resubmission <b>Pending</b>
2022	PI \$3,329,509.00 “Neuromuscular Feedback Prosthesis for Children” The proposed study seeks to develop a greater understanding of the neuromuscular control parameters in children with unilateral congenital upper-limb reductions while they use prosthetic devices This project will develop a new real-time neuromuscular feedback system that will potentially reduce the training time needed for these children to learn how to use a prosthetic device. NIH RO1. Resubmission <b>Pending</b>
2021	PI \$1,125,000.00 “Development and Testing of Recyclable Antimicrobial Materials for In-Space Manufacturing of Medical Devices. “Information: The purpose of the study is to develop and test a medical device for astronauts. We aim to develop, in collaboration with Copper3D, antimicrobial polymers materials. In conjunction with the Made In Space and NASA, we will send the materials to space for in-space manufacturing of medical devices. NASA EPSCoR. <b>Funded.</b>
2021	PI \$222,234.00 “Development and Testing of Recyclable and Antimicrobial Materials for Additive Manufacturing” The purpose of the study is to develop and test a recyclable and antimicrobial polymer for additive manufacturing for use on long duration missions. We aim to develop, in collaboration with Copper3D, antimicrobial polylactic acid (PLA) and polyurethane (TPU) based materials to test through several closed-loop recycling cycles. In conjunction with the Marshall Space Flight Center, properties of these materials will be assessed through antimicrobial and mechanical testing, as well as chemical characterization. NASA George C. Marshall Space Flight Center. <b>Funded</b>
2021	PI. \$238,592.76 “Development of a Modular Activity-Specific Upper limb Prosthesis” The proposal aims to develop a modular 3D printed prosthesis for activity-specific activities that can be fitted remotely. Participation in music and sports during childhood has a profound effect in brain development, plastic changes associated to improvements in motor skills and overall well-being of the child. Children with limb loss have a lack of participation in bimanual recreational activities. There is a critical need to develop practical and affordable activity-specific upper-limb prostheses for children. NIH STTR <b>Pending</b>
2021	PI. \$3,335,355.00 “Neural Functional Networks of Use-Dependent Brain Plasticity in Children with Upper Limb Reduction Deficiency” Our objective is to identify and quantify the functional neural networks responsible for the use-dependent neural plasticity after prosthesis use in children with upper limb reduction deficiency. We also aim to identify the effects of short- and long-term home interventions on the function and structure of these networks to determine a dose-response relationship. NIH RO1 <b>Pending</b>
2020	PI. \$1,500,000 Biomechanics Rehabilitation and Manufacturing Initiative. Our objective is to improve the quality of life of medically underserved populations through the offering of comprehensive rehabilitation services and the creation of

	low-cost medical devices for our local, national, and international communities. University of Nebraska at Omaha Big Idea Initiative. <b>Funded</b>
2019 (Spring)	PI. \$1,584,008. The influence of 3D printed prostheses on neural activation patterns of the primary motor cortex in children with unilateral congenital upper-limb reductions. NIH R01. National Institute of Health. <b>Funded.</b>
2019 (Spring)	Project Lead. \$169,590. The Influence of Prosthesis Use on Cortical Activation and Movement Variability. 2P20GM109090-06 (PI: Stergiou). National Institute of Health. <b>Funded</b>
2019 (Spring)	PI. \$32,000. Development and Testing of Antimicrobial 3D Printed Medical Devices for Astronauts. NASA Nebraska Mini Grant (NNX15AI09H). <b>Funded.</b>
2019 (Spring)	PI. \$5,000. Innovative Student Support Project. Innovative Prosthetics & Orthotics. <b>Funded.</b>
2019 (Spring)	PI. \$425,801. The influence of using a 3D printed partial hand prosthesis in neuromuscular coordination of children with unilateral congenital upper limb reductions. NIH R15. <b>Impact Score=2.0. Not eligible due to NIH R01 award.</b>
2019 (Spring)	PI. \$150,000. Neural activation patterns in children after prolonged hospitalization. Nebraska Research Institute (NRI) Collaboration Initiative. <b>Pending.</b>
2018 (Spring)	PI. \$223,477. Development of Low Cost Medical Grade 3D-Printed Transitional Prostheses. NIH STTR. <b>Resubmission Pending. (First submission Impact Score: 40).</b>
2018 (Spring)	PI. \$5,500. Innovative Student Fellowship Award. Innovative Prosthetics & Orthotics. <b>Ongoing.</b>
2018 (Spring)	PI. \$750,000. Development of 3D Printed Upper-Limb Transitional Prostheses for Veterans and Military Personnel. CDMRP OR170058. <b>Not funded. (Average score 4.75)</b>
2018 (Spring)	PI. \$2,182,529. The influence of 3D printed prostheses on neural activation patterns of the primary motor cortex in children with unilateral congenital upper-limb reductions. NIH R01. National Institute of Health. <b>Not funded.</b>
2018 (Spring)	PI. \$8,000. The Influence of Upper-limb Prostheses in Brain Activity of Children. Teacher-Researcher Partnership Program. <b>Ongoing.</b>
2017 (Fall)	PI. \$12,207.81. 3D Printed Prostheses for Children. National Institute of Health (NIH), Loan Repayment Program. <b>Ongoing.</b>
2017 (Fall)	PI. \$25,000. Improvements of an Electronically-Powered 3D Printed Arm Prosthesis. NASA Nebraska Office Mini-Grant. <b>Completed.</b>
2017 (Fall)	PI. \$150,000. Developing and Testing of Low-cost 3D Printed Prostheses to Restore and Improve Function of Children with Congenital or Traumatic Below Elbow Amputations. System Science Collaboration Initiative. <b>Ongoing.</b>
2017 (Fall)	PI. \$96,000. An Analysis of Localized Muscle Fatigue, I-Beam Surface Coating, and Harness and Tool Belt on Gait Stability for Steel Erection. System Science Collaboration Initiative. <b>Ongoing.</b>

2017 (Spring)	PI. \$5,000. Low-Cost, Open-Source Methodology to 3D Print Anatomical Models for Pre-Surgery Planning. University Committee on Research and Creative Activity (UCRCA). <b>Completed.</b>
2017 (Spring)	PI. \$8,000. Development and Testing of 3D Printed Prostheses, Orthoses, and Assistive Devices for Children and Adults. Teacher-Researcher Partnership Program. <b>Completed.</b>
2016 (Fall)	PI. \$7,500. Low-cost Tracking Methodology for Baseball Using Open-Sourced Software. The Ridge House Group, LLC (College Splits). <b>Completed</b>
2016 (Fall)	PI. -\$190,095. Acquisition of a professional grade 3D printer “OBJET260 Connex3” for Research, Training and Outreach Activities. Nebraska EPSCoR, National Science Foundation. <b>Completed.</b>
2016 (Spring-Summer)	PI. -\$15,000.00. <i>3D Printed Prostheses for Children. A tool to monitor Human Movement.</i> Autodesk Foundation. <b>Completed.</b>
2015 (Fall)	PI - \$15,000. <i>Development of Low Cost Mechanical Devices for Children with Upper Limb Differences.</i> The Dr. George F. Haddix President’s Faculty Research Fund. <b>Completed.</b>
2015 (Summer)	PI - \$50,000.00. <i>Development of Low-Cost 3D-Printed Prosthetic and Assistive Devices.</i> Nebraska Department of Economic Development. <b>Completed.</b>
2015 (Summer)	PI - \$5,000.00. <i>Development of Open sourced 3D-Printed Modular Hand Prostheses.</i> E-nable the Future Foundation. <b>Completed.</b>
2014 (Fall)	PI - \$400,000.00. <i>Low-Cost 3D-Printed Prosthetic Hand for Children with Upper-Limb Differences: An Educational Outreach.</i> Faculty Early Career Development (CAREER) Program NSF. <b>Not funded.</b>
2014 (Fall)	PI - \$2,500,000.00. <i>Low-Cost 3D Printed Prosthetics and Orthotics Devices for Children: An Open Source Project.</i> National Institutes of Health (NIH) Pioneer Award Program, DP1. <b>Not funded.</b>
2014 (Fall)	PI - \$20,000. <i>Low-Cost 3D-Printed Prosthetic Hand and Fitting Methodology for Children with Upper-Limb Differences.</i> Nebraska EPSCoR FIRST AWARD. <b>Not funded.</b>
2014 (Fall)	PI - \$19,896. <i>Low-Cost 3D Printed Prosthetic Devices for Children and Adults with Upper Limb Differences.</i> NASA Nebraska EPSCoR Research Mini-Grant. <b>Completed.</b>
2013 (Fall)	PI - \$15,000. <i>Development of Low Cost Mechanical Devices for Children with Upper Limb Differences.</i> The Dr. George F. Haddix President’s Faculty Research Fund. <b>Not funded.</b>
2013 (Fall)	PI - \$4,300. <i>A Low Cost mechanical Hand for Children with Upper-Limb Differences</i> ”. Faculty research fellowship program summer of 2014. <b>Completed.</b>

- 2012 (Fall) PI - \$10,000. *Assessment of neuromuscular fatigue and muscular function using electromyography and mechanomyography*. Christopher Columbus Foundation-U.S. Chamber of Commerce Life Sciences Awards **Not funded**.
- 2012 (Fall) PI - \$15,000. *Differences in Neuromuscular Fatigue, Strength, and Muscle Morphology of the Quadriceps between Individuals with and without a History of Arthroscopic Partial Meniscectomy*. The Dr. George F. Haddix President's Faculty Research Fund **Not funded**.
- 2012 (Fall) PI - \$38,372. *Neuromuscular and Metabolic Responses to Interval Training with Different Durations of Exercise*. Nebraska EPSCoR First Award. **Not funded**.
- 2012 (Fall) PI - \$4,300. *Neuromuscular and Metabolic Responses to Interval Training with Different Durations of Exercise*. Faculty research fellowship program summer of 2013 (not funded). **Completed**.
- 2010 (Fall) Co-Investigator and Study Coordinator (effort 20%) - \$100,000, *The effects creatine supplementation on exercise performance and lean body mass*. General Nutrition Company (GNC), Pittsburgh, Pennsylvania, (awarded, GNC-2010-002; P.I.: Terry J. Housh, PhD). **Completed**.
- 2009 (Summer) Co-Investigator and Study Coordinator (effort 20%) - \$60,000, *The effects of 28 days of creatine supplementation on anaerobic capabilities and muscle strength*. General Nutrition Company (GNC), Pittsburgh, Pennsylvania, (awarded, GNC-2009-001B; P.I.: Terry J. Housh, PhD). **Completed**.
- 2009 (Summer) Co-Investigator - \$60,000. *The effects of 1 week of creatine supplementation on anaerobic capabilities and muscle strength*. General Nutrition Company (GNC), Pittsburgh, Pennsylvania, (awarded, GNC-2009-001A; P.I.: Terry J. Housh, PhD). **Completed**.
- 2008 (Fall) Co-Investigator - \$90,000. *The Effects of Two Different Arginine Based Formulations on the Physical Working Capacity at Neuromuscular Fatigue Threshold*. General Nutrition Company (GNC), Pittsburgh, Pennsylvania, (awarded, GNC-2008-007; P.I.: Terry J. Housh, PhD). **Completed**.
- 2008 (Spring) Co-Investigator - \$45,000. *The Acute Effects of TPB™ on Endurance Performance and Muscular Strength*, General Nutrition Company (GNC), Pittsburgh, Pennsylvania, (awarded, GNC-2008-001B; P.I.: Terry J. Housh, PhD). **Completed**.
- 2007 (Fall) Co-Investigator - \$30,000. Extension Arm to Spring 2007 study: *The effects of a calorie dense high protein supplement on body composition and exercise performance during resistance training*. General Nutrition Company (GNC), Pittsburgh, Pennsylvania, (awarded, GNC-2006-008; P.I.: Terry J. Housh, PhD). **Completed**.

## Student Mentoring Grant List

**Table 5. Student Mentoring Grant Summary**

<b>Status</b>	<b>Number (#)</b>	<b>Amount (\$)</b>
<b>Pending Grants</b>	-	-
<b>Ongoing Grants</b>	9	37,000
<b>Completed</b>	50	454,680
<b>Not Funded</b>	-	-
<b>In Preparation</b>	0	0
<b>Total</b>	59	491,680

- 2024 Mentor -\$5000-GRACA "Mechanical Characterization of Antimicrobial 3D Printed Material for in Space Additive Manufacturing"- Liliana Delgado- **Funded**
- 2024 Mentor -\$5000-GRACA "The Influence of Prosthesis Use on Cortical Activation and Movement Variability"- Kaitlin Fraser - **Funded**
- 2024 Mentor -\$2500-FUSE project "The Development of an Antimicrobial and Selective Laser Sintered Prosthetic Socket"- Dominic Koperski **Funded**
- 2024 Mentor -\$2500-FUSE Project: "Electronic Control System for Prosthetic Arms" - Ryan Gallo. - **Funded**
- 2024 Mentor -\$2000-FUSE "Copper infused fabrication to develop an ethylene vinyl acetate antimicrobial inner liner socket for lower leg amputee patients" - Gabrielle Diaz. - **Funded**
- 2024 Mentor -\$2000-FUSE project "A Bio Inspired Flexible Inner Socket with Channels to Manage Sweat Evacuation for Above the Knee Amputees."- Isabella Arrayales. - **Funded**
- 2024 Mentor -\$6000-NASA NE Space Grant 2024- Eleanor Britson - **Funded**
- 2024 Mentor -\$6000-NASA NE Space Grant 2024- Liliana Delgado- **Funded**
- 2024 Mentor -\$6000-NASA NE Space Grant 2024- Kaitlin Fraser - **Funded**
- 2023 Mentor -\$6000-NASA NE Space Grant 2023- Kaitlin Fraser - **Funded**
- 2023 Mentor -\$6000- NASA NE Space Grant 2023- Chris Copeland -**Funded**
- 2022 Mentor-\$6,000 -NASA NE Space Grant 2022 - Chris Copeland - **Funded**  
Title: Development and Testing of cyclable Antimicrobial Materials for In-Space Manufacturing of Medical Devices; Student Application: Alex Evenson - **Funded**
- 2022 Mentor-\$6,000 NASA NE Space Grant Fellowship 2022 Student Fellowship Student Application: Andrew D'Ovidio – **Funded**
- 2022 Mentor-\$6,000 NASA NE Space Grant Fellowship 2022 Student Fellowship; Student Application: Sydney Miracle - **Funded**
- 2022 Mentor-\$3,000 NASA NE Space Grant Fellowship 2022 Student Fellowship  
Title: Changes in Coactivation Levels of Children with Upper Limb Reduction Pre and Post 8-week Home Intervention-Student Application: Liliana Delgado - **Funded**
- 2022 Mentor-\$5000. "The effect of visualization on learning and performance of a complex surgical procedure". Graduate grant (GRACA). Graduate student David Salazar **Funded**
- 2022 Mentor-\$5000. "Comparing coactivation levels of children with congenital upper limb reduction before and after 8-week prosthesis usage". Graduate grant (GRACA). Graduate student Liliana Delgado **Funded**
- 2022 Mentor-\$5000. "The influence of prosthesis use on cortical activation and movement variability". Graduate grant (GRACA). Graduate student Chris Copeland **Funded**
- 2022 Mentor-\$5000. The influence of 3D printed prostheses on neural activation patterns of the primary motor cortex in children with unilateral congenital upper-limb reductions. Graduate grant (GRACA). Graduate student Kaitlin Fraser **Funded**
- 2022 Mentor-\$5000. Graduate grant (GRACA). "Development of Polymer Recycling Protocols and Mechanical Testing of Recycled Antimicrobial Polymers for Additive Manufacturing with Applications in Space". Graduate student Andrew D'Ovidio **Funded**
- 2022 Mentor-\$2000. FUSE. "'Functional Outcomes of Noninvasive Sensory Feedback in Upper Limb Prostheses: A Meta-Analysis". Undergraduate Student Libby Caldwell **Funded**

22. 2021 Mentor- \$114,340. Development and Validation of a Low-Cost 3D Printed Upper Limb Prosthetic Simulator The objective of the study is to determine differences in lateralization of brain function during a gross manual dexterity assessment using prosthetic simulators and 3D printed prostheses. NIH Diversity Grant. Graduate Student Christopher Copeland **Funded**
23. 2021 Mentor- \$114,340. 3D Printed Prostheses for Children: A Tool to Monitor Upper Limb Movement the purpose of this project is to assess temporal synchrony of hand movement and gross manual dexterity after completing an 8-week home intervention. NIH Diversity Grant. Graduate Student Claudia Cortes **Funded**
24. 2020 (Fall 2020) Mentor - \$ 3,000. Development of a 3D Printed Hybrid Actuation Prosthetic Arm. NASA NE Space Grant Fellowship. Graduate student Will Randby.
25. 2020 (Fall 2020) Mentor - \$ 3,000. Development of low-cost anatomical modeling production methods to improve the education of complex orthopedic fractures for medical students. NASA NE Space Grant Fellowship. Graduate student David Salazar.
26. 2020 (Fall 2020) Mentor - \$ 4,500. The use of prosthetic simulators. This project will focus in the use of prosthetic simulators as a surrogate for an actual prosthesis. NASA NE Space Grant Fellowship. Graduate student Chris Copeland.
27. 2020 (Fall 2020) Mentor - \$6,000. The influence of prolonged hospitalization on cortical activation, gross manual dexterity, communication skills, and socialization of children. This project will focus on examining the neural activation patterns in the motor cortex of children after a period of isolation. NASA NE Space Grant Fellowship. Graduate student Kaitlin Fraser.
28. 2020 (Fall 2020). Mentor - \$4,496. Developing and Testing of Low-cost 3D Printed Prostheses to Restore and Improve Function of Children with Congenital or Traumatic Below Elbow Amputations. Graduate grant (GRACA). Graduate student Rahul Raj.
29. 2019 (Fall) Mentor - \$4,000. 3D Printed bolus for radiotherapy. This project will focus on making a bolus for radiotherapy that is much more accessible for health care providers. NASA NE Space Grant Fellowship. Graduate student David Salazar.
30. 2019 (Fall) Mentor - \$4,000. Spaceflight Applications of Flexible Thermoplastic Polyurethane (TPU) 3D printing material and Polyethylene Terephthalate (PETG) 3D printing material". Michael plans to develop medical and non-medical devices for astronauts using a newly formulated flexible 3D printing filament that is bacteria resistant, and the development of spaceflight equipment with the durable PETG material. NASA NE Space Grant Fellowship. Undergraduate student Michael Thompson.
31. 2019 (Fall) Mentor - \$4,000. Coordination and motor skills assessment for astronauts. The purpose of this study is to create a protocol to use before and after space missions to assess the effects of microgravity and radiation on coordination. NASA NE Space Grant Fellowship. Graduate student Claudia Cortez Reyes.
32. 2019 (Fall) Mentor - \$4,000. Modular surgical for astronauts. The goal of the project is to have a modular surgical kit that can be 3D printed using anti-microbial material. Models and new tools will be made in the computer program Fusion 360 which is a CAD program that will allow for easy modifications through parametrization. NASA NE Space Grant Fellowship. Undergraduate student Roberto Saavedra.

33. 2019 (Fall) Mentor - \$5,000. Anatomical differences of brain gray and white matter resulting from unilateral congenital upper limb loss. Graduate grant (GRACA). Graduate student Claudia Cortez Reyes.
34. 2019 (Fall) Mentor - \$5,000. Developing and testing of low-cost 3D printed prostheses to restore and improve function of children with congenital or traumatic below elbow amputations for children and adults. Graduate grant (GRACA). Graduate student Rahul Raj.
35. 2018 (Spring) Mentor - \$5,000. Development of 3D printed assistive device for recreational activities. The objective is to produce Computer-aided design (CAD) models of an activity specific prosthetic device to allow individuals with congenital or traumatic limb loss to play golf. NASA NE Space Grant Fellowships. Undergraduate student Will Picken.
36. 2018 (Spring) Mentor - \$5,000. Development of 3D print upper limb prosthetic simulators. The tasks included in the development of prosthetic simulator are creating a computer model of all necessary parts of the simulators, 3D printing these necessary components, and assembling the prosthetic simulator. Prosthetic simulators are crucial to gain knowledge of how children and adults learn and adapt to their prosthesis. NASA NE Space Grant Fellowships. Undergraduate student Michael Thompson.
37. 2018 (Spring) Mentor - \$5,000. Development of low-cost 3D printed anatomical models for pre-surgical planning. The purpose of is to validate the use of 3D printed anatomical models for the planning of complex surgical procedures. The goal is to have real surgeons use these tools to plan their surgeries, and then evaluate the usefulness of the model. We will be using different types of printers and software to produce the models, and then compare them to see if there is a significant difference in the utility of high-end models compared to the low-cost alternatives. NASA NE Space Grant Fellowships. Graduate student David Salazar.
38. 2018 (Spring) Mentor - \$5,000. 3D Printed Prostheses Effects on Standing Posture in Unilateral Upper Limb Deficient Children. The purpose of this study is to identify the effects of wearing a 3D printed prosthesis on body and trunk posture in children. This study will provide vital information about the postural changes of using a 3D printed upper limb prostheses and the potential impact the device may have on postural control. NASA NE Space Grant Fellowships. Graduate student Keaton Young.
39. 2018 (Spring) Mentor - \$5,000. Development of a modular 3D printed prosthetic finger for veteran and active duty military personnel. The objective is to develop and optimize the functionality and efficiency for 3D printed finger prostheses with military applications. NASA NE Space Grant Fellowships. Undergraduate student Claudia Cortez Reyes.
40. 2018 (Spring) Mentor - \$5,000. Development and Implementation of 3D printed upper limb orthoses. The objective is to develop an effective and user-friendly methodology for the manufacturing of wrist orthoses and other assistive devices. NASA NE Space Grant Fellowships. Undergraduate student Chris Copeland.
41. 2018 (Spring) Mentor - \$5,000. Development and Testing of 3D Printed Prostheses, Orthoses, and Assistive Devices for Children and Adults Part V. The objective is to develop a wireless control system to allow pediatric patients to activate a shoulder prosthesis using facial muscles (i.e. eye blinking). FUSE. Graduate student Walker Arce.
42. 2018 (Spring) Mentor - \$5,000. Development and Testing of 3D Printed Prostheses, Orthoses, and Assistive Devices for Children and Adults Part IV. The objective is to develop a voice controlled prosthetic system that would allow amputee patients to activate their arm using voice commands. FUSE. Graduate student Will Picken.



43. 2018 (Spring) Mentor - \$5,000. Development and Testing of 3D Printed Prostheses, Orthoses, and Assistive Devices for Children and Adults Part III. The objective is to develop a Radio Frequency Identification (RFID) control system for our upper limb prostheses. FUSE. Graduate student Andre Butler.
44. 2018 (Spring) Mentor - \$5,000. 3D Printed Prostheses Effects on Standing Posture in Unilateral Upper Limb Deficient Children. GRACA. Graduate student Keaton Young.
45. 2018 (Spring) Mentor - \$5,000. Developing and Testing of a Low-Cost Upper Limb Exoskeleton for Stroke Patients. GRACA. Graduate student Drew Dudley.
46. 2017 (Fall) Mentor - \$5,000. 3D Printed Prostheses for Children: A Tool to Monitor Upper Limb Movement Project Description. Capacitive touch control for 3D printed shoulder prosthesis. GRACA. Graduate student James Pierce. Completed.
47. 2017 (Fall) Mentor - \$5,000. 3D Printed Prostheses: Collaborative work with Chile. Adaptive devices. GRACA. Graduate student Nick Than. Not funded.
48. 2017 (Spring) Mentor - \$4,000. Development and Testing of 3D Printed Prostheses, Orthoses, and Assistive Devices for Children and Adults Part I. Wireless control for hand exoskeleton. FUSE. Undergraduate student Walker Arce. Completed.
49. 2017 (Spring) Mentor - \$4,000. Develop custom printed circuit board for a 3D scanner arm. NASA NE Space Grant Fellowships. Undergraduate student Walker Arce. Completed.
50. 2017 (Spring) Mentor - \$2,000. Anatomical Modeling for Pre-Surgical Planning. NASA NE Space Grant Fellowships. Graduate student Drew Dudley. Completed.
51. 2016 (Fall) Mentor - \$2,000. 3D Printed Prostheses for Children: A Tool to Monitor Upper Limb Movement. NASA NE Space Grant Fellowships. Graduate student James Pierce. Completed.
52. 2016 (Spring) Mentor - \$4,000. Practical file manipulation methodology to convert ultrasound images into a 3D printed object. NASA NE Space Grant Fellowships. Undergraduate student Zoe Reed. Completed.
53. 2016 (Spring) Mentor - \$4,000. Additive Manufacturing for the Health Professional. NASA NE Space Grant Fellowships. Medical student Joey Bowens. Completed.
54. 2015 (Fall) Mentor - \$15,000. *NASA NE Space Grant Fellowships 2015-2016*. NASA NE Space Grant Fellowships. Ryan Smith, Alexandra Maliha, Margaret Fleita, & Margaret Griffin. Completed.
55. 2014 (Fall) Mentor - \$1,500. *Low-Cost 3D Printed Assistive Devices for Astronauts*. NASA Nebraska Space Grant & EPSCoR offices. Undergraduate student Mark Petrykowsky. Completed.
56. 2014 (Fall) Mentor - \$2,500. *Gender Differences in Muscle Function and Neuromuscular Fatigue Thresholds*. NASA Nebraska Space Grant & EPSCoR offices. Undergraduate student Joe Lesnak. Completed.
57. 2013 (Fall) Mentor - \$4,000. *New Submaximal Fatigue Threshold Tests for Muscular Function*. NASA Nebraska Space Grant & EPSCoR offices. Undergraduate student Chelsie James. Completed.

58. 2013 (Fall) Mentor - \$4,000. *The Effect of Muscle Temperature in Neuromuscular Fatigue Thresholds*. NASA Nebraska Space Grant & EPSCoR offices. Undergraduate student Mathew Buback. Completed.
59. 2013 (Fall) Mentor - \$4,000. *Neuromuscular, Metabolic, and Muscle Morphology Contributions to Fatigue of the Quadriceps between Individuals with and without a History of Knee Injuries*. NASA Nebraska Space Grant & EPSCoR offices. Undergraduate Student Elizabeth Bracciano. Completed.

## GRANT REVIEWS

- During the 2020 calendar year I was accepted as a core member for the NIH Special Emphasis Review Panel on Musculoskeletal, Orthopedic, Oral, Rheumatology, Rehab, Skin (SEP) ZRG1MOSSD10. As a member of this panel, I will serve 3 times a year for 4-6 years with a workload of 12 applications per session. This Special Emphasis Review Panel focus on NIH STTR and SBIR applications.
- I have also served in grant review panels for the DoD (CDMRP PRORP REHAB-1/REHAB-2 and Health Services Research and Development) and the National Institute on Disability, Independent Living, and Rehabilitation Research (Switzer Fellowship).

## HONORS AND AWARDS

- 2018 “Runner Up” for the APEC (Asia-Pacific Economic Cooperation) Science Prize for Innovation, Research and Education (“ASPIRE”) given by the U.S. Department of State.
- Tech Innovator of the Year for AIM’s 2015 Tech Celebration Awards. The Tech Innovator of the Year Award is presented annually to one creative, outside-the-box individual that has demonstrated significant innovation in our community.
- Distinguished Promising Professional Award from the University of Nebraska at Omaha (2015).
- Best Inventions of 2014: Top 5 “Cyborg Beast” Low cost Prosthetic Hand (By MSN, The Microsoft Network).  
<http://www.msn.com/en-us/news/bing/best-inventions-of-2014/ss-BBgPUrR#image=5>
- Creator and designer of low-cost prosthetic devices for children “Cyborg Beast” (2013 to present)
- Minority Scholarship from the National Strength and Conditioning Association Foundation (2009-2010).
- Member of the National Strength and Conditioning Association
- Member of The Association of Children's Prosthetic-Orthotic Clinics
- Member of the review panel of the 2016 Peer Reviewed Orthopaedic Research Program (PRORP) for the Department of Defense Congressionally Directed Medical Research Programs (CDMRP).