

## Frank J. Fedel

3815 Yorba Linda Blvd.

Royal Oak, MI 48073

Phone: (248) 720-8240

[ffedel@emich.edu](mailto:ffedel@emich.edu) or [frankfedel@aol.com](mailto:frankfedel@aol.com)

### Education

Ph.D. – Coursework in progress, Education in Technology, Eastern Michigan University

Grad. Cert. – Orthotics, Eastern Michigan University – 2008

Grad. Coursework in Orthotics & Prosthetics, EMU – 2003-2005

M.S. – Biomechanics, Eastern Michigan University – 2005

B.S. – Exercise Science, Eastern Michigan University – 1986

### Employment History

Eastern Michigan University          Ypsilanti, MI          2004-Present

**Associate Professor (since 2010)– School of Health Promotion & Human Performance – CHHS; previously Full-time Lecturer (2004-2010)**

- Instructor – Human Anatomy & Physiology for Nursing Students, Advanced Lab Techniques, Kinesiology, Wellness, and various graduate courses
- Orthotics & Prosthetics (O&P) Program Research Director
- Assisted in development of O&P curriculum and acquisition of equipment for lab
- Initiated use of 3D printers in O&P R&D lab

Henry Ford Health System          Detroit, MI          1986-2004

**Health Educator/Exercise Physiologist/Researcher – Cardiovascular Medicine**

- Exercise physiologist –Designed cardiac rehabilitation programs, clinical patient management and education, graded exercise tests
- Research assistant – topics: cardiology, exercise physiology and behavioral medicine/lifestyle modification
- Initiated patient data management system
- Maintained physiology lab

Verhoef Information Services          Passaic, NJ/OH/IL          1998–2001

**Technical Educator – Employee Education Program**

- Taught HTML, XML, CSS, XSL(T), DTD, DOM, to commercial entities and government
- Generated evaluations, incorporated new technologies into course presentations
- Co-developed course content; modified courses

Try It, Inc.                                  Dearborn Heights, MI          1995–Present

**Product Development consultant**

- Consulted on product testing considering biomechanics & physiology
- Assisted in grant writing (including Phase I & II and Fast-Track NIH grants)
- Collaborated on development of new, patentable devices for athletic, geriatric, and prosthetics and orthotics industries

## **Awards and Honors**

Fedel, F.J. (2015). 2015 CHHS Everett L. Marshall Award for Faculty Teaching Excellence. April, 2015. Eastern Michigan University.

Leydet, M., Harrington, R., Krapf, C., Link, M., Taszreak, A., Briggs, D., & Fedel, F.J. (2011). Collaboration, "iPecs Tech" Electronics Category Winner, NASA. The iPecs (see patent US 8,298,293) placed 1st in the Electronics Category in the NASA Tech Briefs Create the Future Design Contest in 2011.

Leydet, M., Harrington, R., Hutchenreuther, A., Bharadwaj, V., Krapf, C., Link, M., Toscas, M., Hoover, S., Nowak, C., Taszreak, A., Briggs, D., & Fedel, F.J. (2013). Collaboration, "iPecs Pro Clinical Alignment and Assessment Tool" Electronics Category Winner, NASA. An enhanced version of the iPecs (see patent US 8,298,293) placed 1st in the Electronics Category in the NASA Tech Briefs Create the Future Design Contest in 2013.

Celebration of Student Support – 2010, Eastern Michigan University

Nominated for Lecturers Outstanding Teaching Award – 2008 & 2009, Eastern Michigan University

Full Tuition Scholarship & Graduate Assistant position, Eastern Michigan University. Fall 2003 - Winter 2005.

Recipient of "Award of Excellence" in Education, Eastern Michigan University  
Graduated with Honors (BS)

## **Certifications**

Certified Exercise Specialist (ACSM #1480)

Graduate Certificate, Orthotics (2008)

## **Memberships**

American Academy of Orthotists and Prosthetists (AAOP)

Gait Society, Lower Limb Prosthetic Society, CAD/CAM Society (AAOP)

American College of Sports Medicine (ACSM)

## **Professional Involvement**

Publications Committee – AAOP (<2010)

eFellows Committee – EMU & Mobile Computing Team Chair – EMU

Advisory Committee – O & P Program – EMU (past secretary)

Podcast & WIMPi Projects – EMU (<2010)

IPE Steering Committee Member (2014-2016)

Academic IT Advisory Committee Member

## **Background Summary**

- Background in Education, Research, Exercise Physiology, Biomechanics, Data Analysis, 3D Modeling, Advanced Data Interchange methodology
- Designed, developed, manufactured and/or marketed over 100 products in health, medical and/or fitness fields/3 issues U.S. patents
- Consulted and collaborated with over 20 companies
- 30+ yrs. experience in health care & rehabilitation field

## **Publications**

### **Books**

*Rollers en ligne: 48 exercices et programmes.* 1998. Vigot, Paris, France. ISBN: 2711413489, 9782711413485. Co-author.

Precision Heart Rate Training. 1998. Human Kinetics Publishers, Champaign, Illinois. Edmund R. Burke, lead author. ISBN13: 9780880117708. Contributor.

*Fitness In-line Skating Books.* 1997. Human Kinetics Publishers, Champaign, Illinois. ISBN-13: 9780873229821. Co-author.

### **Peer-Reviewed Journal Articles**

Fedel FJ, Keteyian SJ, Brawner CA, Marks CRC, Hakim MJ and Kataoka T. Cardiorespiratory Responses During Exercise in Competitive In-Line Skaters. Ed Sci Sports Exerc, 1995;27:682-687.

Keteyian SJ, Mellett PA, Fedel FJ, McGowan CM and Stein PD. Electrocardiographic Monitoring During Cardiac Rehabilitation. Chest, 1995;107:1242-1246.

Keteyian S, Marks CRC, Levine AB, Fedel F, Ehrman J, Kataoka T and Levine TB. Cardiovascular Responses of Heart Transplant Patients to Arm and Leg Exercise. Euro J Appl Physiol, 1994;68:441-444.

Kataoka TK, Keteyian S, Marks CRC, Fedel FJ, Levine AB and Levine TB. Exercise Testing and Training in a Congestive Heart Failure Patient on a Continuous infusion of Dobutamine. Med Sci Sports Exerc, 1994;26:678-681.

Keteyian SJ, Marks CRC, Levine AB, Kataoka T, Fedel FJ and Levine TB. Cardiovascular Responses to Submaximal Arm and Leg Exercise in Cardiac Transplant Patients, Med Sci Sports Exerc, 1994;26:420-424.

Schairer J, Stein P, Keteyian S, Fedel F, Ehrman J, Alam M, Henry J and Shaw T. Left Ventricular Response to Submaximal Exercise in Endurance Trained Athletes and Sedentary Adults. Am J Cardiol, 1992;70:930-933.

Ehrman J, Keteyian S, Fedel F, Rhoads K, Levine TB and Shepard R. Cardiovascular Responses of Heart Transplant Recipients to Exercise Testing. J Appl Physiol, 1992;73:260-264.

Keteyian S., Ehrman J, Fedel F, and Rhoads K (By invitation). Exercise Following Heart Transplantation: Recommendations for Rehabilitation. Sports Med, 1989;8:251-259 (Reviewed in Controversies in Cardiol, 1999;2:14-15).

Ehrman J, Keteyian S, Fedel F, Elder R, and Rhoads K (By invitation). Ventilatory Threshold Following Exercise Training in Orthotopic Heart Transplant Transplantation. J Cardiopulmonary Rehabil, 1992;12:126-130.

Keteyian S, Marks C, Fedel F, Ehrman J, Goslin B, Connolly A, Fachnie JD, Levine TB and O'Neil M. Assessment of Body Composition in Heart Transplant Patients. Med Sci Sports Exerc, 1992;24:247-252.

Schairer J, Briggs D, Kono T, Alam M, Keteyian S, Fedel F, Rosman H, Kutznetsov A and Stein P. Left Ventricular Function Immediately After Exercise in Elite Cyclists. Cardiology, 1991;79:283-289.

Keteyian S., Shepard R, Ehrman J, Fedel F, Glick C, Rhoads K and Levine TB. Cardiovascular Responses of Heart Transplant Patients to Exercise Training. J Appl Physiol, 1991;70:2627-2631.

Keteyian S., Ehrman J, Fedel F, and Rhoads K. Heart Rate – Perceived Exertion Relationship During Exercise in Orthotopic Heart Transplant Patients. J Cardiopulmonary Rehabil, 1990;10:287-295.

### ***Published Abstracts***

Fedel FJ, Brawner CA, Czaplicki TE and Keteyian SJ. Cardiorespiratory Responses During Jogging with and without a Baby Jogging Cart. Med Sci Sports Exerc 1996;28:S171.

Fedel FJ, Brawner CA and Keteyian SJ. Effect of Wheel Type and Skating Surface on Dynamic Friction During In-Line Skating. Med Sci Sports Exerc 1995;27:S92.

Czaplicki TE, Keteyian SJ, Fedel FJ, Williams DM and Kiel A. Non-Compliance after Cardiac Rehabilitation. Med Sci Sports Exerc 1995;27:S32.

Elder RL, Steele RL, Keteyian SJ, Lapina KJ, Mueseler TL and Fedel FJ. Physician Assistance During and After Exercise Physiologist Supervised Graded Exercise Tests. Med Sci Sports Exerc 1995;27:S47.

Fedel FJ, Brawner CA, Marks CRC, Kataoka T, Hakim MH, Baker SJ and Keteyian SJ. Cardiorespiratory Responses to Various Body Positions in Competitive In-Line Skaters Med Sci Sports Exerc 1994;26:S101.

Hakim MJ, Fedel FJ, Brawner CA, Kataoka T, Marks CRC, Baker SJ and Keteyian SJ. The Heart Rate-Oxygen Consumption Relationship in Competitive In-Line Skaters. Med Sci Sports Exerc 1994;26:S66.

Mellet PA, Keteyian SJ, Davenport MJ, Fedel FJ and Stein PD. Existing Criteria for Electrocardiographic Monitoring During Cardiac Rehabilitation Versus Observed Events. Med Sci Sports Exerc 1994;26:S47.

Ehrman JE, Keteyian SJ, Brawner CA and Fedel F. The Heart Rate – Oxygen Consumption Relationship in Patients with Compensated Congestive Heart Failure. Med Sci Sports Exerc 1994;26:S49.

Keteyian SJ, Goldstein S, Brawner CA, Kataoka T, Fedel F and Levine TB. Randomized 24 Week Exercise Program in Patients with Compensated Congestive Heart Failure. Med Sci Sports Exerc 1994;26:S49.

Keteyian SJ, Goldstein S, Levine TB, Levine AB, Stein PS, Kataoka T, Schairer JR and Fedel FJ. Exercise Training Improves Functional Capacity in Patients with Compensated Congestive Heart Failure. J Am Coll Cardiol 1994;(2):801-1.

Ehrman J, Keteyian S, Fedel F, Elder L, Kataoka T. Heart Rate and Catecholamine Responses of Heart Transplant Patients to Standard and Extended Duration Exercise Tests. Med Sci Sports Exerc 1992;24:S85.

Schairer J, Keteyian S, Fedel F, Ehrman J, Shaw T, Alam M, Stein P. Endurance Trained Athletes Increased Left Ventricular End-Diastolic Volume and Stroke Volume with Exercise; Whereas Untrained Subjects Showed No Change. Med Sci Sports Exerc 1992;24:S148.

Keteyian S, Marks CRC, Fedel F, Kataoka T, Ehrman J, Ramirez R, Levine TB and Levine AB. Comparison of the Cardiovascular Responses to Both Maximal and Submaximal Arm and Leg Exercise in Patients with Severe Left Ventricular Dysfunction. Med Sci Sports Exerc 1992;24:S113.

Keteyian SJ, Fedel FJ, Kataoka T, Levine TB, Levine AB, Ehrman JK, Stein PS and Marks CRC. Cardiovascular and Sympathetic Response to Arm and Leg Exercise in Patients with Heart Transplant. FASEB J 1992;6:3496.

Elder R, Keteyian S, Ehrman J, Fedel F, Rhoads K and Levine TB. The Relationship Between Heart Rate and Oxygen Consumption in Heart Transplant Patients. Med Sci Sports Exerc 1991;23:S46.

Schairer J, Briggs D, Keteyian S, Kono T, Alam M, Fedel F, Rosman H, Kutznetsov A and Stein P. Left Ventricular Function in Elite Cyclists. Med Sci Sports Exerc 1991;23:S160.

Fedel F, Keteyian S, Ehrman J, Marks C, Connolly A, Fachnie D, Levine B, Fedel F. Effects of a Very Low Calorie Diet on Body Composition in Heart Transplant Patients. Med Sci Sports Exerc 1990;22:S86.

Keteyian S, Ehrman J, Fedel F, Elder R and Rhoads K. Ventilatory Threshold Following Exercise Training in Heart Transplant Patients. Med Sci Sports Exerc 1990;22:S43.

Keteyian S, Ehrman J, Fedel F and Rhoads K. Heart Rate-Perceived Exertion Relationship During Exercise in Heart Transplant Patients. Med Sci Sports Exerc 1990;22:S43.

Keteyian S, Shepard R, Ehrman J, Fedel F, Rhoads K. Exercise Training Improves Aerobic Capacity and Hemodynamics in Orthotopic Heart Transplant Patients. FASEB J 1990;4:4684.

Ehrman J, Keteyian S, Fedel F and Rhoads K. Anaerobic Threshold: A Comparison of Heart Transplant and Heart Surgery Patients. Med Sci Sports Exerc 1988;20:S54.

Keteyian S, Ehrman J, Fedel F and Rhoads K. Rehabilitation Following Heart Transplantation. Med Sci Sports Exerc 1989;21:S55.

Ehrman J, Keteyian S, Fedel F and Relyea B. Responses of Heart Transplant Patients to Exercise. Med Sci Sports Exerc 1988;20:S26.

Keteyian S, Ehrman J, Fedel F and Relyea B. Exercise Training Following Heart Transplantation. Med Sci Sports Exerc 1988;20:S94.

## **Presentations (Presenter/Faculty Sponsor)**

Fedel, F.J., Lindquist, J., & Sweet, J.J. (2016). Using 3d Printing to Increase Student Engagement in Health Care Education. Presented at the 2016 NAKHE Conference, San Diego, CA (Oral Presentation)

Bradley, E., Law, E., & Mansour, M. (2016). Potential Barriers for the Use of Hydrotherapy in the Rehabilitation of Lower-Limb Amputees. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

Smith, G.D. (2016). The Atomizing of Alginate as an Alternative Procedural Method of Application for Casting. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

Ellithy, I. (2016). Size Fluctuation of Plaster Models. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

D'Augustine, J. (2016). Intregrating Universal Design for Learning (UDL) Principles into the O&P Curriculum. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

Calvert, K. (2016). 3D printed Low-Cost Upper Extremity Visual and Tactile Feedback System. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

Thorpe, K. (2016). Mobile Application for Tracking Lower Limb Amputee Fitness. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

Thomas, N. (2016). The Use of Clinical Exercise Testing in Prosthetic Evaluation, Prescription and Rehabilitation. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

Huhta, P., & Nowiki, C. (2016). Phantom Pain: Noninvasive Microcurrent Pain Management Acuscope-Myopulse. Presented at the 42nd Annual Meeting and Scientific Symposium , Orlando, FL. (Poster Presentation)

Bennett, R., DeShaw, M., & Graeff, S. (2016). Plastic Waste in the Orthotic and Prosthetic Fabrication Labs. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

Ezell, S., & Plascencia, J. (2016). Tensile Strength of Materials Used in 3D Printed Prosthetic Sockets. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

Beattie, W., Fedel, F.J., & Marterella, A. (2016). Pilot Interprofessional Education Clinical Experience Between Orthotics and Prosthetics and Occupational Therapy Students. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

Arnold, T., & Sculthorpe, B. (2016). Developments in Direct Skeletal Attachment of Lower Limb Prosthesis: Combating Post-Implant Bone Loss. Presented at the 42nd Annual Meeting and Scientific Symposium, Orlando, FL. (Poster Presentation)

Marterella, A., Beattie, W., & Fedel, F. (2016). Piloting an Interprofessional Education Project with Occupational Therapy and Orthotics-Prosthetics Students. Poster Presentation at the American Occupational Therapy Association Annual Conference. Chicago, IL. (Poster Presentation).

Smith, G.D. (2015). The Atomizing of Alginate as an Alternative Procedural Method of Application for Mold-Making. Presented at the 2015 EMU Graduate Research Conference, Ypsilanti, MI. (Poster Presentation)

Arnold, T., & Sculthorpe, B. (2015). Developments in Direct Skeletal Attachment of Lower Limb Prosthesis: Combating Post-Implant Bone Loss. Presented at the 2015 EMU Graduate Research Conference, Ypsilanti, MI. (Poster Presentation)

Ellithy, I., Rice, D., Thorpe, K. & Fedel, F. (2015). Anatomical Bone Deformity Models. Presented at the 2015 EMU Graduate Research Conference, Ypsilanti, MI. (Poster Presentation)

D'Augustine, J. (2015). Integrating Universal Design for Learning (UDL) Principles into the O&P Curriculum. Presented at the 2015 EMU Graduate Research Conference, Ypsilanti, MI. (Poster Presentation)

Huhta, P., & Nowiki, C. (2015). Non-invasive treatment option for phantom pain. Presented at the 2015 EMU Graduate Research Conference, Ypsilanti, MI. (Poster Presentation)

Ezell, S., & Plascencia, J. & Fedel, F. (2015). Tensile strength of materials used in 3D printed prosthetic sockets. Presented at the 2015 EMU Graduate Research Conference, Ypsilanti, MI. (Poster Presentation)

Stauffer, S., & Thomas, N. (2015). The Use of Clinical Exercise Testing in Prosthetic Evaluation, Prescription and Rehabilitation. Presented at the 2015 EMU Graduate Research Conference, Ypsilanti, MI. (Poster Presentation)

Diamond, Y. & Fedel, F.J. (2015). Evaluating Obstacles and Applicability of 3-D Printed Prostheses in Developing Countries. Presented at the 41st Annual Meeting & Scientific Symposium (New Orleans, LA). (Poster Presentation)

Trevisan, D. & Fedel, F.J. (2015). 3-D Printer for Orthotic and Prosthetic Devices. Presented at the 41st Annual Meeting & Scientific Symposium (New Orleans, LA). (Poster Presentation)

Howard, J.L., & Fedel, F.J. (2015). Evolution of the Test Socket: Historical Methods and the Emergence of 3-D Printed Sockets. Presented at the 41st Annual Meeting & Scientific Symposium (New Orleans, LA). (Poster Presentation)

Calvert, C., Hutchinson, R., & Fedel, F.J. (2015). Simple, Low-Cost Upper-Limb Terminal Device Force Feedback System. Presented at the 41st Annual Meeting & Scientific Symposium (New Orleans, LA). (Poster Presentation)

Fedel, F.J., (2014). "Living the Dream" Taking your Product to Market and Commercialization Lab (Workshop presented by The Office of Research Development and Administration). Presented at the 2014 EMU Graduate Research Conference (Ypsilanti, MI). (Guest speaker)

Wyman, K., Ellithy, I., Rice, D., & Fedel, F.J. (2014). Anatomical Models of Syme's Ankle Disarticulation for Advancement in Medical Education. Presented at the 2014 EMU Graduate Research Conference (Ypsilanti, MI). (Poster Presentation)

Blaharski, K., Howard, J., Nelson, K., Tiggelaar, M., Brennan, B., and Trevisan, D., Fedel, F.J. (2014). 3D Printing and its application in expanding access to facial prostheses. Presented at the 2014 EMU Graduate Research Conference (Ypsilanti, MI). (Poster Presentation)

Short, R., Sweet, J., & Fedel, F.J. (2014). A Study of the Effects of Learner Technological Self-Efficacy on the Acceptance of Educational Technology within a Higher Education Classroom. Presented at the 2014 EMU Graduate Research Conference (Ypsilanti, MI). (Oral Presentation)

Burner, M., Emling, B., Moussa, S., Vines, M., & Fedel, F.J. (2013). Lifecasting in O & P. Presented at the 39th Academy Annual Meeting & Scientific Symposium (Orlando, FL). (Poster Presentation)

Knauff, M., VanSledright, M, & Fedel, F.J. (2013). Walk a mile in a transtibial amputee's shoes. Presented at the 39th Academy Annual Meeting & Scientific Symposium (Orlando, FL). (Poster Presentation)

Fedel, F.J. & Sweet, J.J. (2013). Re-inventing the classroom with today's technology – maximizing personalized learning and interactivity. Presented at the Clickers Conference 2012 (Chicago, IL). (Oral Presentation)

Fedel, F.J. (2013). Panopto Lecture Capture. Presented at the Jump Start event at Halle Library at EMU (Ypsilanti, MI). (Oral Presentation)



Klenow, T., & Fedel, F.J. (2013). An initial assessment of kinetic output measures of the Intelligent Prosthetic Endoskeletal Component System. Presented at the O & P World Congress (Orlando, FL). (Poster Presentation) - advisor

Klenow, T., & Fedel, F.J. (2013). The immediate effects of the Kickstart Walking System on temporal-spatial parameters of gait and functional assessment in patients with lower limb neuromuscular deficit. Presented at the 40th Annual Meeting & Scientific Symposium (Chicago, IL). (Poster Presentation)

Trevisan, D., & Fedel, F.J. (2013). Hockey prosthetic skate. Presented at the 40th Annual Meeting & Scientific Symposium (Chicago, IL). (Poster Presentation) - advisor

Blaharski, K., Howard, J., Nelson, K., Tiggelaar, M., & Fedel, F.J. (2013). 3D Printing and its application in expanding access to facial prostheses. Presented at the 40th Annual Meeting & Scientific Symposium (Chicago, IL). (Poster Presentation)

Barris, K., & Fedel, F.J. (2013). What difficulties do traumatic lower limb amputees perceive as negatively affecting their exercise motivation? Presented at the 40th Annual Meeting & Scientific Symposium (Chicago, IL). (Poster Presentation) - advisor

Koster, B., Huebner, C., & Fedel, F.J. (2013). A Case Study: Real-world kinetic and kinematic assessment of multi-surface prosthetic gait in a unilateral transtibial amputee. Presented at the 40th Annual Meeting & Scientific Symposium (Chicago, IL). (Poster Presentation)

Klenow, T., & Fedel, F.J. (2013). An initial comparison of the High-Fidelity interface design to traditional socket designs: The effects on gait of transfemoral amputees. Presented at the 40th Annual Meeting & Scientific Symposium (Chicago, IL). (Poster Presentation) - advisor

Klenow, T., & Fedel, F.J. (2013). A comparison of the kinetic and kinematic profile at midstance of prosthetic gait: An analysis of the "Dead Spot" phenomenon. Presented at the 40th Annual Meeting & Scientific Symposium (Chicago, IL). (Poster Presentation) - advisor

Dombroski, S., Schubring, J., Stukel, J., Yonkers, K., & Fedel, F.J. (2013). Silicone Model Project: Transtibial part-task trainers. Presented at the 40th Annual Meeting & Scientific Symposium (Chicago, IL). (Poster Presentation)

Fedel, F.J. (2013). Empowering students and encouraging engagement – teaching and learning with "Lecture Capture." Presented at International ISSOTL 2013 (Raleigh, NC). (Poster Presentation)

Fedel, F.J. (2013) "Integration of Today's Interactive Technology within a Physical Education Program" – 2013 NAKHE National Conference – Ft. Lauderdale, FL (Poster Presentation)

Sweet, J.J., Sweet, L. & Fedel, F.J. (2012). Thinking out of the box: Using today's technologies together to transcend the learning in and out of the classroom. Presented at the 2012 National Association for Kinesiology & Physical Education in higher Education (NAKPEHE) Conference (San Diego, CA). (Poster Presentation)

Olson II, J., & Fedel, F.J. (2012). Evaluation of rocker soled shoe designs on coronal plane movement. Presented at the 38th Academy Annual Meeting & Scientific Symposium (Atlanta, GA). (Poster Presentation)

Fedel, F.J. (2012). Flipping the classroom with Panopto at EMU. Presented at the 12th Annual United States Coast Guard's Human Performance Technology Workshop (Hampton, VA). (Oral Presentation)

Fiedler, G., Slavens, B., Briggs, D., Fedel, F., & Smith, R. (2012). Leg laterality in bilateral trans-tibial amputees, a Case Study using prosthesis-integrated sensors. Presented at the Annual Conference of the Rehabilitation Engineering and Assistive Technology of North America (RESNA), Baltimore, MA. (Oral Presentation)

Fedel, F.J. (2012). "Reinventing the classroom with today's technology" – Clickers 2012 Conference – Chicago, IL – Oct. 26, 2012 (Oral Presentation)

Casper, A. & Fedel, F.J. (2011). Click It! i>clicker. Presented at the Bruce K. Nelson Faculty Development Center in Halle Library at EMU (Ypsilanti, MI). (Oral Presentation)

Fedel, F.J. & Sweet, J.J. (2011). Anything but WIMPi: Using a variety of technologies to improve student learning. Presented at the First Annual Conference Transforming Teaching and Learning (Houston, TX). (Oral Presentation)

Fedel, F.J. (2011). Lecture Capture: Enabling Students to Learn at their Own Pace, in their Own Space. Presented at the 2011 Teaching/Learning Workshops at the Bruce K. Nelson Faculty Development Center in Halle Library at EMU (Ypsilanti, MI). (Oral Presentation)

Fedel, F.J. (2011). Panopto Lecture Capture system. Presented at the 2011 Teaching/Learning Workshops at the Bruce K. Nelson Faculty Development Center in Halle Library at EMU (Ypsilanti, MI). (Oral Presentation)

Fedel, F.J. (2011). WIMPi is anything but wimpy: Using a variety of technologies to improve student learning. Presented at the Rehabilitation Research Design & Disability (R2D2) Center at the University of Wisconsin-Milwaukee (Milwaukee, WI). (Oral Presentation)

Fedel, F. and Sweet, J. (2011). Anything but WIMPi: Using a Variety of Technologies to Improve Student Learning at 1st Annual Clickers Conference, Houston, TX. (<http://bit.ly/irWINq>) June 3, 2011. (Oral Presentation)

Fedel, F. (2011). Clickers: Improving Attendance, Interaction, Engagement and Feedback at i>clicker Workshop in Halle library's Faculty Development Center, EMU. March 28, 2011. (Oral Presentation)

Fedel, F. (2011). WIMPi: Whiteboard, Information Management, Panopto Lecture Capture, and i>clicker - Creating an Educational Culture for Today's Students at EDUCAUSE ELI 2011 Annual Meeting. (<http://bit.ly/j35yBn>) Feb. 15, 2011. (Two Poster Presentations)

Fedel, F. (2011). Change the culture of your classroom. Connect with your students using i>clicker and Panopto. (<http://bit.ly/jAo2Sv>) Feb. 9, 2011. (Webinar)

Fedel, F. (2011). Best Practices in Lecture Capture: Ensuring Positive Student Experiences at Multicultural Perspectives, Multifaceted Teaching: New Approaches for Development Courses Symposium, Austin, TX. (<http://bit.ly/kJ9pSi>) Feb. 5, 2011. (Oral Presentation)

Fedel, F.J. (2011). Change the culture of your classroom, connect with your students and Panopto and iClicker. Presented at the Multicultural Perspectives - Multifaceted Teaching Conference at Austin Community College in Austin, TX on Feb. 4, 2011. (Oral Presentation)

Fedel, F. (2011). Best Practices in Lecture Capture: Ensuring Positive Student Experiences. (<http://bit.ly/ISkw80>) Feb. 1, 2011. (Webinar)

Fedel, F.J. (2011). Best practices of Lecture Capture. Online webinar presented Jan. 31, 2011 via Webex. (Oral Presentation)

Fedel, F.J., Sweet, J.J. (2010). Better student outcomes with Lecture Capture. Presented at Ball State University, Muncie, IN (Oral Presentation)

Fedel, F.J. (2010). Best practices of Lecture Capture: Ensuring positive student experiences. Online webinar presented Nov. 16, 2010 through "The Active Class." (Oral Presentation)

Fedel, F.J. (2010). Lecture Capture: Simple, reliable, flexible. Presented at EMU Technovations: A Day of Workshops program at the Halle Library, EMU, Ypsilanti, MI. (Oral Presentation)

Fedel, F. and Sweet, J. (2010). Better Student Outcomes with Lecture Capture. At Teachers' College, Ball State, Muncie, IN. Invited speakers. Nov. 8, 2010. (Oral Presentation)

Fedel, F. (2010). Mobile Computing (filled in for Debi Silverman) at Halle Library Technology Workshops, Halle Library, EMU, Ypsilanti, MI. Aug. 31, 2010. (Oral Presentation)

Fedel, F. (2010). WIMPi Project: Integrating an Interactive Whiteboard, Information Management system, Panopto (lecture capture) and iClicker (student response system) for Improved Outcomes. (2010). At Technovations Forum, EMU, March 17, 2010. (Oral Presentation)

Brauckmuller, A.R. (2010). WIMPi: Whiteboard+Information Management+Panopto+iClicker = Student Retention, Engagement and Learning. Project dates: Jan. 2009 – April, 2010. Presented at: 30th Annual Undergraduate Symposium. - advisor

Jones, S. and Gilmore, M. (2010). Unlimited Opportunities in a World of Information: Successful Students = Successful Universities. Project dates: Sept. 2010 – April, 2010. Presented at: 30th Annual Undergraduate Symposium. - advisor

Robinson, K. and Brown, D. (2010). Lecture Capture Systems (LCS): A Real Solution

for Today's Student. Project dates: Sept. 2010 – April, 2010. Presented at: 30th Annual Undergraduate Symposium. – advisor

Fedel, F. (2009). Lecture Capture Systems: Preserve those Precious Memories. (2009). At The Center for E-Learning - Online Instructor Showcase, EMU, Nov. 17, 2009. (Oral Presentation)

Fedel, F. (2008). Automated Measurement and Documentation of Prosthetic Function, Satisfying Insurers. At The American Academy of Orthotists and Prosthetists 34<sup>th</sup> Annual Meeting and Scientific Symposium, Orland, Florida, Feb. 27 – March 1, 2008. (Oral Presentation)

Fedel, F, Briggs, D. (2008). Real-World Functional Assessment Tool for Prosthetics Research. At The American Academy of Orthotists and Prosthetists 34<sup>th</sup> Annual Meeting and Scientific Symposium, Orland, Florida, Feb. 27 – March 1, 2008. (Oral Presentation)

Fedel, F., Briggs, D. (2007). Bridging the Gap between Clinicians and Researchers: a functionally-transparent 24-7 prosthesis monitor. Presented at the Michigan Orthotics and Prosthetics Association 2007 O & P Educational Seminar, Mount Pleasant, June 7-8, 2007. (Oral Presentation)

Fedel, F. (2003). The Biomechanics of Hockey Skating versus Inline Skating. Presented at the International Hockey Summit, Livonia, Michigan July 4-6, 2003. (Oral Presentation)

Briggs, D., Fedel, F. (2000). False Start Detection Algorithm for Track and Field from a Real-Time Feedback Streaming Device Interrogation System of Analog Counts, International Society of Biomechanics, Swiss Federal Institute, Zurich, August 2000. (Oral Presentation - absent)

Briggs, D., Fedel, F. (1998). On-Board Real-Time Miniature Feedback Computer For Physiological and Mechanical Assessment of Bicycling Performance, U.S. Olympic Committee, Colorado Springs January 1998. (Device now used in Tour de France – Oral Presentation)

Keteyian S, Ehrman J, Fedel F, Theisen P, Rhoads K. (1990). Rehabilitative Outcomes Following Heart Transplantation. Presented at the Midwest Chapter of the American College of Sports Medicine Winter Meeting, Boyne Mountain, February 8-9, 1990. (Oral Presentation)

Dewar S, Smereka C, Theisen V, Fedel F, Keteyian S and Rhoads K. (1989). Implementation of a Comprehensive Health Screening and Education Program to a Decentralized Corporate Work Force. Presented at Strategies for Health Promotion Dissemination, East Lansing, October 15-17, 1989. (Oral Presentation)

## Grants/Funding

October, 2014 - 3,986.89 - Fedel, F.J. & Lindquist, J. "The 3D Printing Project" Dissemination to be at 2014 AAOP Annual Meeting, EMU's 2014 Graduate Research Conference, and an EMU FDC workshop - **FUNDED**

2012 - \$2,400 - Tout, S. & Fedel, F.J. (2012). Collaboration, "GaitCAP – iOS-based gait capture system" Faculty Research Fellowship Award. Dissemination at EMU's 2014 Graduate at the Podium event. - **FUNDED**

October, 2010 - \$4,420.00 - "eAccess: enhancing Access to organized media-rich educational materials between and within programs at EMU" - EMU Internal grant application - Women in Philanthropy - Collaborative, inclusive education environment using technology and Universal Design in Learning principles – not funded

April, 2010 - \$300 – "WIMPi Project" – EMU Internal support - Student Affairs and Enrollment Management – Support for promotional items at 30th Annual Undergraduate Symposium presentations – **FUNDED**

April, 2010 - \$250 – "WIMPi Project" – i>clicker – Support for promotional items at 30th Annual Undergraduate Symposium presentations – **FUNDED** + loan of equipment

December, 2009 - \$500 – "Expansion of availability of portable learning objects for students" – Tegrity external grant application – Funding to support use of Tegrity LCS for student access in Winter, 2009 nursing education classes – **FUNDED**

October, 2009 - \$4,993.08 (primary applicant/2-person team with James Sweet)– "WIMPi - Integration of Interactive Whiteboard, Information Management, Panopto lecture capture and iClickers" – EMU Internal grant application – eFellows – Education system to support student retention and expand reach of educators at EMU – **FUNDED**

December, 2008 - \$1.2+M – "Functional prosthetic monitoring system for evidence-based research & assessment" - Phase II application – NIH SBIR – Prosthetic-device development and human subjects research related

April, 2007 - \$1,159,721 – "Functional prosthetic monitoring system for evidence-based research & assessment" - Fast-track Phase I & II application – NIH SBIR – Prosthetic-device related

December, 2007- \$165,810– "Universal prosthetic monitoring system for outcome based research and clinical application" - Phase I application – NIH SBIR – Prosthetic-device related – **FUNDED - 1R43HD059285-01**

## Patents/Intellectual Property

Patent Applied for (2015). Fedel, F., with Harrington, R., Rontal, M., Krapf, C., Briggs, D.: Multicapacitor Sensor Array with user Electrical Feedback. This patent disclosure relates to providing electrical feedback to humans who have either lost a limb or have diabetes and have neuropathy. 2015.

US 8,821,417 - McGregor, S.J., Bollt, E., & Fedel, F.J. (2014). Method of Monitoring Human Body Movement. US 8,821,417 B2 Issued Sept. 2, 2014. This device is a portable, self-contained, kinematic measurement tool that is capable of measuring accelerations of sensors mounted at discrete points of attachment to an individual. Data from these sensors can be used to develop a movement economy profile which could be used to enhance performance at any level along an activity spectrum, from disabled individuals to professional athletes.

US 8,298,293 - Leydet, M.G., Harrington, R.H., Fedel, F.J., Link, M. & Street, J.J. (2012). Prosthetic Sensing Systems and Methods. US 8,298,293 B2 Issued Oct. 30, 2012. Licensed to College Park Industries to expand the capabilities of researchers in the field of prosthetics and ultimately to provide real-time feedback to prosthetists.

D338176 – Fedel, F.J., (1993). Issued Patent: Elastic-property utilizing water bottle holder for maintaining hydration status during cycling competition. Component of hydration system used internationally by athletes.

Patent Pending with Swiss Timing: Full-Foot Electronic Starting Blocks and Real-Time Analog Shear and Axial Force Signal Interrogation Algorithm, developed for Olympic and World Championships Competition.

Provisional patent application: on-bicycle real-time power monitor/computer for enhancement of bicycling performance for professional cyclists.

## Teaching Experience

ORPR-580 Introduction to Orthotics and Prosthetics

ORPR-581 Musculoskeletal Pathologies for Orthotics and Prosthetics α

ORPR-582 Biomechanics of Orthotic and Prosthetic Management α

ORPR-583 Kinetics in Orthotics & Prosthetics\* α

ORPR-605 Clinical Gait Analysis α

ORPR-630 Research Methods in Orthotics and Prosthetics α

ORPR-660 Advanced Techniques in Orthotics and Prosthetics α

ORPR-685 Literature Review for Capstone Project α

ORPR-686 Capstone Project in Orthotics and Prosthetics α

SPMD-201 Human Anatomy for Sports Medicine Students (Nursing Section) α, £, β

SPMD-201 Human Anatomy for Sports Medicine Students α

SPMD-201 Human Physiology for Sports Medicine Students (Nursing Section) α, £, β

SPMD-201 Human Physiology for Sports Medicine Students α

SPMD-280 Pharmacology for Sports Medicine\*\*, α α (in process)

SPMD-410 Laboratory Techniques in Human Performance Analysis

SPMD-636 Advanced Testing and Evaluation α

SPMD-637 Techniques of Exercise Leadership and Prescription, β

PEGN-101 Weight Control & Fitness

PEGN-177 Family Fitness\*, α  
PEGN-177 Fitness Inline Skating\*, α  
PEGN-177 Cross-training\*, \*\*\*  
PEGN-177 Exercise Equipment Selection and Usage\*, α  
PEGN-177 Pickleball \*  
PEGN-210 Fitness Activities  
PEGN-210 Lifetime Wellness and Fitness – ONLINE Version\*\*, α α  
PEGN-210 Lifetime Wellness and Fitness – On Ground Version α  
PEGN-224 Jogging  
PHED-204 Kinesiology – Biomechanics of Physical Activity

\* Developed course

\*\* Developed online course

α Enhanced course with eCompanion (web enhancement)

α α Updated online course

£ Included LIVE video streaming

β Lectures recorded for later access – iPod/RSS/Web

*Web technologies: HTML, XML, XSL-T, DTD, CSS, Website Design for Usability, RSS, Threaded Discussions, Video streaming*

## **Development Activities Attended**

- Not updated since 2009
- Dec. 2009 – Going Edupunk: Teaching and Learning Wikis & History – Faculty Development Center, Halle Library, EMU, Ypsilanti, MI
- Sept. 2009 – SMART Board Training Workshop – Faculty Development Center, Halle Library, EMU, Ypsilanti, MI
- Aug./Sept. 2009 – T2R – Teaching, Technology, Research 2009 Workshops – Faculty Development Center, Halle Library, EMU, Ypsilanti, MI
- March, 2009 – Reliability, Validity and Dimensionality of Multiple Choice Surveys or Tests – Faculty Development Center, Halle Library, EMU, Ypsilanti, MI
- Feb. 2009 – SPSS II Training Workshop - Faculty Development Center, Halle Library, EMU, Ypsilanti, MI
- Feb. 2009 – SPSS I Training Workshop - Faculty Development Center, Halle Library, EMU, Ypsilanti, MI
- March 2008 - EduCause Mid-West Regional Conference, EduCause, Chicago, IL
- Aug. 2007 – On Course Workshop – Faculty Development Center, Halle Library, EMU, Ypsilanti, MI
- March 2007 – Human Subjects IRB Review Process – Faculty Development Center, Halle Library, EMU, Ypsilanti, MI
- March 2007 – EMU Faculty Showcase 2007 – Faculty Development Center, Halle Library, EMU, Ypsilanti, MI
- Jan. 2007 – Community-based Participatory Research Training Program – Faculty Development Center, Halle Library, EMU, Ypsilanti, MI
- Oct. 2007 – Evidence Based Practice: Justifying Clinical Care – American Academy of Orthotists and Prosthetists – Chicago, IL
- April 2005 – Two-day ABC/BOC course – Techniques for Foot Selection/Success with Alpha Liner™ - OH
- Oct. 2005 – SNAP 8 Workshop Series – Faculty Development Center, Halle Library, Ypsilanti, MI
- Sept. 2005 – Assessing Higher Order Learning Workshop Series – Faculty Development Center, Halle Library, Ypsilanti, MI

## **History of Technology and Education Integration**

- Not updated since 2010
- Sept. 2010 – Linked LCS-recorded lectures from different programs via LCS and used cloud for storage of resources for students
- Mar. 2010 – Streamed remote presenter's content, allowing engagement and eliminating geographic constraint while expanding access to topic experts
- Mar. 2010 – Expanded whiteboard use to include Web 2.0 access
- Feb. 2010 – Included interactive whiteboard (Hitachi SmartBoard) in lessons
- Jan. 2010 – Streaming lectures live with one LCS while simultaneously capturing with second system; tested over a dozen webcams for compatibility and quality
- Dec. 2009 – Began using Tegrity Lecture Capture System as optional provider for full use in winter semester
- Nov. 2009 – Tested new HD webcam and 3D webcam for expanding visual options for learning objects
- Sept. 2009 – Integrated LCS into on-ground class as supplement (Panopto) in conjunction with second video source for ancillary visual information



- June 2009 – Began beta-testing Lecture Capture System (Panopto) in preparation for pilot use in Fall
- Jan. 2008 – Used new CRS in classroom (i>Clicker) to decrease student registration costs of system
- Sept. 2007 – Optical test scanning system used in classroom (GradeCam) providing immediate feedback for students on all discrete-answer tests using “bubble sheets”
- Jan. 2007 – First use of Classroom Response System (eInstruction) to engage students and get feedback on their comprehension on a weekly basis
- Sept. 2006 – First fully-online class taught (eCollege); modified previous version
- Sept. 2005 – Web Enhancements added to traditional class (eCollege)