

CURRICULUM VITAE (Required Form) (March 2024)

Theresa Marie (Tartamella) Crytzer
Duquesne University
Assistant Professor

Education:

Doctor of Philosophy
University of Pittsburgh
Sport Medicine and Nutrition
12/2023

Master's level Certificate (during National Institutes of Health T32 Post-Doctoral Fellowship)
University of Pittsburgh
Clinical and Translational Science Institute/Institute for Clinical Research
Clinical Research
5/2011

Doctorate
Slippery Rock University
Physical Therapy
8/2000

Bachelor of Arts
Carlow University
Psychology major/English minor
6/1985

Licensure Information:

Physical Therapist
Commonwealth of Pennsylvania Department of State, Bureau of Professional and Occupational
Affairs
PT013725L

Certifications:

American Physical Therapy Association Credentialed Clinical Instructor
2001

Assistive Technology Provider
Rehabilitation Engineering Society of North America
2011

Employment and Positions Held:

Assistant Professor
Tenure Track
Duquesne University
Pittsburgh, PA
7/2021 to present

Assistant Professor
Non-tenure track
University of Pittsburgh
Pittsburgh, PA
6/2011 to 6/2021

Physical Therapist
Western Pennsylvania School for Blind Children
Pittsburgh, PA
4/2002 to 6/2011

Physical Therapist
The Children's Institute
Pittsburgh, PA
9/2000 to 3/2002

Adjunct Clinical Instructor
Veteran's Affairs Pittsburgh Healthcare System
Pittsburgh, PA
2004 to 2007 (part-time)

Physical Therapist
The Early Learning Institute
Pittsburgh, PA
2004 to 2007 (part-time)

Peer Reviewed Publications:

Manspeaker SA, Deluliis ED, Delehanty AD, McCann M, Zimmerman DE, O'Neil C, Shaffer J, **Crytzer TM**, Loughran MC. Impact of Grand Rounds Interprofessional Workshop: student perceptions of interprofessional socialization and cultural humility. Journal of Interprofessional Care. 2023 Dec 21;1-9. doi: 10.1080/13561820.2023.2287671. [Epub ahead of print] PubMed (PMID: 38126233).

Koontz AM, Wei L, **Crytzer TM**. Influence of direction and surface type on independent wheelchair transfer technique. Special Issue "Emerging technology in rehabilitation science" Journal of Taiwan Occupational Therapy Association, 2022; 40(1): 8-35.

Benjamin, NL, McKernan, G, Izzo, S, **Crytzer, TM**, Clayton, GH, Wilson, PE, ... & Dicianno, BE. Factors Associated with Ambulation and Transfer Ability: A Study from the National Spina Bifida Patient Registry. American Journal of Physical Medicine & Rehabilitation, 2022 101(7), 652-658. (PMID: 34508059)

Greenhalgh, M,* Blaauw, ER, **Crytzer, T**, Deepak, N, Grindle, GG, Koontz, AM, & Cooper, RA. Comparison of trunk mechanics and spatiotemporal outcomes in caregivers using a robotic assisted transfer device and a mobile floor lift. The Journal of Spinal Cord Medicine, 2021 Sep 10;1-8. (PMID: 34505828)

Kulich HR, Wei L, **Crytzer TM**, Cooper RA, Koontz AM. Preliminary evaluation of an automated robotic transfer assist device in the home setting. Disability and Rehabilitation: Assistive Technology. 2021 Jan 22:1-8. (PMID: 33529539)

Koontz AM, Garfunkel CE, **Crytzer TM**, Anthony SJ, Nindl BC. Feasibility, acceptability, and preliminary efficacy of a handcycling high-intensity interval training program for individuals with spinal cord injury. Spinal Cord. 2021 Jan;59(1):34-43. (PMID: 32908194)

Davis, W.A., Zigler, C.K., **Crytzer, TM**, Izzo, S., Houtrow, A.J. and Dicianno, B.E., 2020. Factors Associated With Ambulation in Myelomeningocele: A Longitudinal Study From the National Spina Bifida Patient Registry. American Journal of Physical Medicine & Rehabilitation, 99(7), pp.586-594. (PMID: 32209832)

McKernan, G, Izzo, S, **Crytzer, TM**, Houtrow, AJ and Dicianno, BE, 2020. Relationship Between Motor Level and Wheelchair Transfer Ability in Spina Bifida: A Study from the National Spina Bifida Patient Registry. Archives of Physical Medicine and Rehabilitation, 101(11), pp.1953-1960. (PMID: 32682935)

Kryger MA, **Crytzer TM**, Fairman A, Quinby EJ, Karavolis M, Pramana G, Setiawan IMA, McKernan GP, Parmanto B, Dicianno BE. The Effect of the Interactive Mobile Health and Rehabilitation System on Health and Psychosocial Outcomes in Spinal Cord Injury: Randomized Controlled Trial. Journal of Medical Internet Research. 2019 Aug 28;21(8):e14305. (PMID: 31464189)

Greenhalgh M,* Landis JM, Brown J, Kulich H, Bass S, Alqahtani S, Deepak N, **Crytzer TM**, Grindle GG, Koontz AM, Cooper RA. Assessment of Usability and Task Load Demand Using a Robot-Assisted Transfer Device Compared with a Hoyer Advance for Dependent Wheelchair Transfers. American Journal of Physical Medicine & Rehabilitation. 2019 Aug 1;98(8):729-734. (PMID: 31318755)

Liu HT, Chia RM, Setiawan IM, **Crytzer TM** and Ding, Dan (2018): Development of "My Wheelchair Guide" app: a qualitative study, Disability and Rehabilitation: Assistive Technology, 2019 14 (8): 839-848. (PMID: 30451540)

Cooper RA, Tuakli-Wosornu YA, Henderson GV, Quinby E, Dicianno BE, Tsang K,* Ding D, Cooper R, **Crytzer TM**, Koontz AM, Rice I, Bleakney AW, Engineering and Technology in Sport. Physical Medicine and Rehabilitation Clinics of North America, pp. 347-369, Vol. 29, No. 2, May 2018. (PMID: 29627093)

Crytzer TM, Keramati M,* Anthony S, Cheng Y,* Robertson RJ, Dicianno B. Exercise Prescription Using a Group Normalized Rating of Perceived Exertion in Adolescents and Adults with Spina Bifida. Physical Medicine and Rehabilitation. 2018 Feb 3 (Epub ahead of print). (PMID: 29408563)

Crytzer TM, Cheng YT,* Bryner MJ, Wilson III R, Scirba FC, Dicianno BE. Impact of Neurological Level and Spinal Curvature on Pulmonary Function in Adults with Spina Bifida. Journal of Pediatric Rehabilitation Medicine. 2018;11(4):243-254. (PMID: 300741703)

Crytzer TM, Cooper R, Jerome G, Koontz A. Identifying Research Needs for Wheelchair Transfers in the Built Environment. Disability and Rehabilitation: Assistive Technology, 2017; Feb; 12(2):121-127. (PMID: 25986519)

Tsang K, * Hiremath SV, **Crytzer TM**, Dicianno BE, Ding D. Validity of Activity Monitors in Wheelchair Users: A Systematic Review. Journal of Rehabilitation Research and Development, 2016; 53(6):641-658. (PMID: 27997674)

Crytzer TM, Hong E, Dicianno BE, Pearlman J, Schmeler M, Cooper RA. Identifying Characteristic Back Shapes from Anatomical Scans of Wheelchair Users to Improve Seating Design. Medical Engineering and Physics, 2016 Sep; 38(9):999-1007. Epub 2016 Jul 15. (PMID: 27426985)

Crytzer TM, Dicianno BE, Robertson RJ, Cheng Y.* Validity of a Wheelchair Rating of Perceived Exertion Scale for Individuals with SB (WHEEL scale) during Arm Cycle Ergometry Exercise Testing. Perceptual and Motor Skills. 2015 Feb; 120(1):304-22. Epub 2015 Feb 4. (PMID 25650508)

Dicianno, BE, Karmarkar, A, Houtrow, A, **Crytzer, TM**, Cushmanick, KM, McCoy, A,* Wilson, P, Chinarian, J, Neufeld, J, Smith, K, Collins, DM. Factors Associated with Mobility Outcomes in a

National Spina Bifida. American Journal of Physical Medicine & Rehabilitation, 2015 Dec 94(12), 1015–1025. (PMID: 26488146)

Dicianno BE, Parmanto B, Fairman AD, **Crytzer TM**, Yu DX, Pramana G, Coughenour D, Petrazzi AA. Perspectives on the Evolution of Mobile (mHealth) Technologies and Application to Rehabilitation Physical Therapy. 2015 Mar; 95(3):397-405.

Crytzer TM, Dicianno BE, Kapoor R.* Physical Activity, Exercise and Health Related Measures of Fitness in Adults with Spina Bifida: A Review of the Literature. Physical Medicine and Rehabilitation 2013 Dec 5(12): 1051-1062. (PMID: 24332229).

Crytzer TM, Dicianno BE, Fairman A. Effectiveness of an Upper Extremity Exercise Device and Text Message Reminders to Exercise in Adults with Spina Bifida. Assistive Technology, 2013 winter 25(4): 181-193. (PMID: 24620701)

Schreiber J, Marchetti G, **Crytzer T**. The Implementation of a Fitness Program for Children with Disabilities: A Clinical Case Report, Pediatric Physical Therapy, 2004 fall; 16(3): 173-179. (PMID: 17057545)

Peer Reviewed Scientific and Professional Presentations: From the most recent to the earliest (selected)

Presenter: **Crytzer TM**

Authors: **Crytzer TM**, Nagle E, Beals K, Beck K.

Title: Wheel-Learn: An Internet-Based Healthy Lifestyle Behavior Change Intervention for People with Spinal Cord Injury

Occasion: Poster Session (Poster #41626). American Physical Therapy Association Combined Sections Meeting, Boston MA, 2/25/2024

Presenter: Benjamin NL

Authors: Benjamin NL, McKernan G, Izzo S, **Crytzer T**, Clayton G, Wilson P, Houtrow A, Dicianno B.

Title: Factors Associated with Ambulatory and Transfer Ability: A Study from the National Spina Bifida Patient Registry, " American Journal of Physical Medicine & Rehabilitation 99, no. 3 (2020)

Occasion: World Congress and Annual Meeting of the Association of Academic Physiatrists
Date: 3/4/2020

Presenter: Koontz A

Authors: Koontz AM, Bass SR, **Crytzer TM**.

Title: Feasibility and Effectiveness of a 12-week Upper Limb Vibration Exercise Training Program for Spinal Cord Injury

Occasion: Paralyzed Veterans of America
Date: 8/16/2019

Presenters: Bass S and Koontz S

Authors: Bass S, **Crytzer T**, Koontz, A. (2019).

Title: Acute Effects of Upper Limb Vibration Exercise on Physiological Measures for Wheelchair Users. Medicine & Science in Sports & Exercise, 51(6), 359

Occasion: American Congress of Rehabilitation Medicine 66th Annual Meeting. Board# 115
Date: 5/30/2019

Presenters: Koontz A and Bass S

Authors: Koontz, A., Bass, S., Dighriri, A., & **Crytzer, T.** (2019).

Title: Feasibility of a 6-week Handcycling High Intensity Interval Training Program for Spinal Cord Injury. Medicine & Science in Sports & Exercise, 51(6), 166.

Occasion: 693: American Congress of Rehabilitation Medicine 66th Annual Meeting. Board# 2
Date 5/29/2019

Presenter: Davis WA

Authors: Davis WA, Zigler C, **Crytzer T**, Izzo S, Houtrow A, Dicianno B.

Title: Factors Associated with Ambulation in Myelomeningocele: A Longitudinal Study from the National Spina Bifida Patient Registry

Occasion: Association of Academic Physiatrists Conference, San Juan, Puerto Rico

Date: 2/20/2019

Presenter: **Crytzer TM**

Authors: **Crytzer TM**, Robertson, RJ, Cheng Y, Dicianno BE.

Title: Validity of a Wheelchair Perceived

Exertion Scale (WHEEL Scale) for Arm Ergometry Exercise in People with Spina Bifida

Occasion: Spina Bifida World Congress, San Diego, CA

Date: 3/18/2017

Presenter: **Crytzer TM**

Authors: **Crytzer TM**, Robertson, RJ, Keramati M, Cheng Y Dicianno BE.

Title: Exercise Prescription Using a Group Normalized Rating of Perceived Exertion in Adolescents and Adults with Spina Bifida

Occasion: Spina Bifida World Congress, San Diego, CA

Date: 3/18/2017

Presenter: **Crytzer TM**

Authors: **Crytzer TM**, Dicianno BE, Cheng Y, Bryner MJ, Wilson R, Scieurba, FC.

Title: Impact of Neurological Level and Spinal Curvature on Pulmonary Function in Spina Bifida

Occasion: Spina Bifida World Congress, San Diego, CA

Date: 3/17/2017

Presenter: **Crytzer TM**

Authors: **Crytzer TM**, Dicianno BE, Cheng Y,* Bryner MJ, Wilson R, Scieurba, FC.

Title: Impact of Lesion Level and Spinal Curvature on Pulmonary Function in Spina Bifida

Occasion: American Thoracic Society Conference

Date: 5/17/2016

Presenters: Keramati M and **Crytzer TM**

Authors: Keramati M,* **Crytzer TM**, Dicianno BE, Robertson RJ.

Title: Group Normalized Rating of Perceived Exertion in Adolescents and Adults with Spina Bifida

Occasion: 12th Annual UPMC Rehabilitation Institute Day

Date: 5/18/2016

Presenters: Karavolis M, Mueller E, Fairman AD

Authors: Karavolis M, Mueller E, Fairman AD, **Crytzer TM**, Dicianno BE.

Title: Telewellness Support Systems for Spinal Cord Injury

Occasion: Duquesne University Undergraduate Research Symposium

Date: 4/2015

Presenters: Liu H, **Crytzer TM**, Ding D.

Authors: Liu H, **Crytzer TM**, Kelleher A, Wolff J, Ding D.

Title: Consumer Experience in Wheelchair Service Delivery Process: Preliminary Findings from an Interview Study

Occasion: International Seating Symposium, Nashville, TN

Date: 3/1/2015

Presenters: **Crytzer TM**

Authors: **Crytzer TM**, Dicianno BE, Robertson RJ, Cheng, Y.

Title: Validity of a Wheelchair Perceived Exertion Scale in People with Spina Bifida

Occasion: International Seating Symposium, Nashville, TN

Date: 2/27/2015

Presenter: Hickey C

Authors: Hickey C, Dicianno B, Bobish T, Cooper R, **Crytzer TM**, Kelleher A, Schmeler M.

Title: Procurement of Power Wheelchair Seat Elevators and Association with Mobility and Transfers: A quality improvement project. American Journal of Physical Medicine and Rehabilitation, 2015; 94(3).

Occasion: Annual Meeting of the Association of Academic Physiatrists

Date: 2015

Presenter: Cheng, Yu-Ting

Authors: Cheng Y, **Crytzer TM**, Dicianno BE.

Title: Use of Rating of Perceived Exertion Scale for Arm Cycle Ergometry Among People with Spina Bifida

Occasion: Rehabilitation Engineering and Assistive Technology Society of North America Annual Conference

Date: 6/11-6/15/2014

Presenter: Cushman K

Authors: Cushman K, Houtrow AJ, **Crytzer TM**, Wilson P, Chinarian J, Karmarkar A, Collins D, Dicianno BE.

Title: Factors Contributing to Functional Ambulatory Status in Individuals with Spina Bifida, American Journal of Physical Medicine & Rehabilitation: March 2014-Volume 93-Issue 3-pa1- a97.

Occasion: Annual Meeting of the Association of Academic Physiatrists

Date: 3/2014

Presenter: Jerome GM

Authors: Jerome GM, Koontz AM, **Crytzer TM**, Cooper RA.

Title: Identifying Research Needs for Wheelchair Transfers in the Built Environment

Occasion: Rehabilitation Engineering and Assistive Technology Society of North America Conference, Seattle, WA

Date: 6/20-6/24/2013

Presenter: **Crytzer TM**

Authors: **Crytzer TM**, Dicianno BE, Fairman AD.

Title: Exercise Capacity in Adults with Spina Bifida

Occasion: Second World Congress on Spina Bifida Research and Care, Las Vegas, NV

Date: 3/11-3/14/2012

Presenter: **Crytzer TM**

Authors: **Crytzer TM**.

Title: Cardiopulmonary Fitness Limitations in Spina Bifida

Occasion: Second World Congress on Spina Bifida Research and Care

Date: 3/11-3/14/2012

Presenters: **Crytzer T** and Fairman AF

Authors: **Crytzer TM** Dicianno BE, Fairman AF.

Title: Effects of an Upper Extremity Exercise Device and Text Message Reminders to Exercise on Individuals with Spina Bifida.

Occasion: Leading the way to the future. The 37th Spina Bifida Association National Conference, Cincinnati, OH

Date: 6/27-6/30/2010

Presenters: Michaels M, **Crytzer T**
Authors: Michaels M, Crytzer T.
Title: Reliability of Respiratory Rate and Chest Wall Excursion in Children with Limited Mobility.
Occasion: American Physical Therapy Association National Meeting, Baltimore, MD
Date: 6/12/2009

Presenters: Schreiber J and **Crytzer T**
Authors: Schreiber J, Marchetti G, **Crytzer T**.
Title: The Implementation of a Fitness Program for Children with Disabilities: A Clinical Case Report.
Occasion: American Physical Therapy Association, Combined Sections Meeting, Tampa, FL
Date: 2/13/2003

Funded (current) Grant Activity:

EVALUATION OF THE USABILITY, FEASIBILITY AND PROOF OF CONCEPT OF WHEEL-LEARN: AN INTERNET BASED HEALTHY LIFESTYLE BEHAVIOR INTERVENTION FOR PEOPLE WITH SPINAL CORD INJURY.

PRESIDENTIAL FACULTY SUMMER WRITING AWARD GRANT (CRYTZER) 5/15/2023 to publication

Duquesne University \$5,000

Funding provided by Duquesne University for Dr. Crytzer for release time from teaching duties above one course to write her initial manuscript from her PhD.

WHEEL-LEARN: DEVELOPMENT AND USABILITY TESTING OF A MULTIMEDIA-ENHANCED HEALTHY LIFESTYLE BEHAVIOR INTERVENTION FOR PEOPLE WITH SPINAL CORD INJURY.

FACULTY DEVELOPMENT GRANT (CRYTZER) 5/1/2023 to 4/30/2025

Duquesne University \$10,000

WHEEL-LEARN is a healthy lifestyle behavior intervention, developed and tested by Dr. Theresa Crytzer. Dr. Crytzer proposes to expand upon her PhD work to collaborate with faculty and students from Duquesne's Media Department to complete the following: (1) evaluate for an efficient and accessible content management system (CMS) to house WHEEL-LEARN, (2) multimedia enhanced lesson prototypes of text-based lesson content that reflect learning objectives on PA and nutrition would be created to improve interactivity and knowledge retention, (3) experts and people with SCI will be invited to Duquesne Media Lab to provide feedback on the lessons, (4) key lesson content would be translated to the CMS, (5) usability of the new WHEEL-LEARN prototype will be tested in people with SCI, (6) a design requirement paper that provides specifications for the CMS recommendations and the design of multimedia enhancements to WHEEL-LEARN will be developed. Pilot data from this proposed study and a planned manuscript from Dr. Crytzer's PhD study to be submitted to the International Journal of Health and Physical Activity will be applied to a National Institute of Health R03 application to conduct a full-powered clinical trial of the multimedia-enhanced version of WHEEL-LEARN.

APPLICATION OF MULTIMEDIA TO WHEEL-LEARN: A HEALTHY LIFESTYLE BEHAVIOR INTERVENTION FOR PEOPLE WITH SPINAL CORD INJURY THROUGH

MULTIDISCIPLINARY COLLABORATION OF PHYSICAL THERAPY AND MEDIA FACULTY
PALUSE FACULTY RESEARCH GRANT (CRYTZER) 4/17/2023 to 8/12/2024

Duquesne University Center for Catholic Faith and Culture \$6,000

The primary goal of this study is to enhance WHEEL-LEARN to improve its interactivity, scope, efficiency, and accessibility for people with SCI. To accomplish this goal, Dr. Theresa Crytzer, the

principal investigator (PI) would collaborate with colleagues at Duquesne University in the Media Department, including Dr. William Gibbs, Associate Professor and Mr. James Vota, Chair of the Media Department along with their students. We would work together to develop and test technological advancements made to the WHEEL-LEARN intervention in three phases. The proposed grant would establish a collaborative cross-disciplinary relationship between Physical Therapy and Media Department at Duquesne, engage undergraduate Media students in clinical research with people with disabilities who are disadvantaged and marginalized, and advance the Spiritan Tradition. This proposed grant would be used to supplement a portion of the study that was submitted as a Faculty Development Grant (January 2023) by Dr. Crytzer, Dr. Gibbs and Mr. Vota for a graduate student to serve as design lead.

Selected past grant activity:

Authorship/participation: Principal Investigator. Manuscript in process.

Amount of funding awarded: \$20,000

Nature of project: **WHEEL-LEARN: THE DEVELOPMENT OF AN INTERNET BASED HEALTHY LIFESTYLE BEHAVIOR INTERVENTION IN PEOPLE WITH PHYSICAL, COGNITIVE AND SENSORY DISABILITIES.** Responsible for full conduct of study. A user centered design approach was used to (1) develop WHEEL-LEARN: An Internet Based Healthy Lifestyle Behavior Intervention for People with Disabilities, (2) test the usability, accessibility, and preliminary effectiveness of the product to increase leisure time physical activity to recommended levels (i.e., 150 minutes per week of moderate intensity physical activity), improve exercise self-efficacy, quality of life and social support. A four-week prototype of WHEEL-LEARN was tested in cohort of people with spinal cord injury (N=16). The results showed that 94% of participants increased from baseline to 150 minutes per week of moderate intensity leisure time physical activity. The results also showed that participants significantly increased their exercise self-efficacy and quality of life and that they enjoyed the physical activity they did during the program. Pre-post social support did not improve.

Date and source: 2/15/2020-4/1/2022, University of Pittsburgh Healthy Lifestyle Institute

Authorship/participation: Site Principal Investigator. Study ongoing. Left study when changed jobs from University of Pittsburgh to Duquesne University 6/2022.

Amount of funding awarded: \$2,500,000

Nature of Project: **BODY COMPOSITION AND ENERGY EXPENDITURE IN YOUTH WITH SPINA BIFIDA R01** Responsible for full conduct of the study at the Pittsburgh site (three other sites involved with University of Wisconsin (Michele Polfuss: PI) as the main site). Duties included writing IRB proposal and modifications, recruitment, consenting, communication with families throughout the study, training of clinical coordinators, staff, students, and RN's at Children's Hospital Clinical Translational Research Center, maintenance of records; data collection, recording, analysis and dissemination; conduct of data management meetings and participation in multi-site research meetings. The study aims were: (1). Use multiple measures of body composition and/or height to develop a clinically usable algorithm that accurately models body fat% and categorizes weight status in youth with SB, and (2). Using doubly labeled water, calculate total daily energy expenditure and develop an algorithm to predict energy requirements of the sample.

Date and source: 01/01/19 – 12/31/23, National Institute of Health R01 (HD096085-01-A1)

Authorship/participation: Co-Principal Investigator

Amount of funding awarded: \$272,031

Nature of project: **mWHEELFIT DEVELOPMENT AND FEASIBILITY.** Oversaw the production of all materials (e.g, written, video, app) that demonstrated exercises for people with disabilities, primarily wheelchair users, and testing and provided input to software engineers and app designers for iterative refinement of app. Provided mentoring and oversight to students and staff. Recruited and tested participants. Responsible for data collection, analysis, and dissemination. The goals of this project were to develop, pilot test, and refine a mHealth

application mWheelActive for reducing sedentary behaviors and increasing physical activity (PA) among people with spinal cord injury and to evaluate the feasibility, acceptability, and the impact of mWheelActive in a 10-week pilot trial

Date and source: 09/01/18 – 6/30/20, Craig H. Neilsen Foundation (546511)

Authorship/participation: Co-Investigator

- Developed “My Wheelchair Guide” for United Spinal: <https://unitedspinal.org/my-wheelchair-guide/>
- Hsin-Yi Tanya Liu, Rui-Min Chia, I Made Agus Setiawan, **Crytzer, TM** and Ding, Dan (2018): Development of “My Wheelchair Guide” app: a qualitative study, Disability and Rehabilitation: Assistive Technology, 2019 14 (8): 839-848. (PMID: 30451540)

Amount of funding awarded: \$477,314

Nature of project: **SELF-MANAGEMENT ASSISTANCE THROUGH TECHNOLOGY (SMART) – VIRTUAL COACHES FOR WHEELCHAIR USERS**. Served as content expert during development. Coordinated and oversaw video production of manual and power wheelchair skills educational materials (e.g., videos, app content, written materials) for wheelchair users and therapists. I organize and conduct focus groups, analyze and disseminate data, and provide oversight of students and staff. This project is a 5-year development project that focuses on educating an important but often neglected group – wheelchair users. The project aims to improve health and functional outcomes of wheelchair users by increasing their knowledge of appropriate wheelchair use and their role in the wheelchair service delivery process and providing supportive technologies to assist them in leading a healthy lifestyle.

Date and source: 4/1/15 - 9/29/20

Authorship/participation: Co-Investigator

- Benjamin, NL, McKernan, G, Izzo, S, **Crytzer, TM**, Clayton, GH, Wilson, PE, ... & Dicianno, BE. Factors Associated with Ambulation and Transfer Ability: A Study from the National Spina Bifida Patient Registry. American Journal of Physical Medicine & Rehabilitation, 2022 101(7), 652-658. (PMID: 34508059)
- Davis, W.A., Zigler, C.K., **Crytzer, TM**, Izzo, S., Houtrow, A.J. and Dicianno, B.E., 2020. Factors Associated With Ambulation in Myelomeningocele: A Longitudinal Study From the National Spina Bifida Patient Registry. American Journal of Physical Medicine & Rehabilitation, 99(7), pp.586-594. (PMID: 32209832)
- McKernan, G, Izzo, S, **Crytzer, TM**, Houtrow, AJ and Dicianno, BE, 2020. Relationship Between Motor Level and Wheelchair Transfer Ability in Spina Bifida: A Study from the National Spina Bifida Patient Registry. Archives of Physical Medicine and Rehabilitation, 101(11), pp.1953-1960. (PMID: 32682935)

Amount of funding awarded: \$41,145

Nature of project: **COMP B-NATIONAL SPINA BIFIDA PATIENT REGISTRY AT THE UNIVERSITY OF PITTSBURGH**. Responsible for training all staff and students and providing oversight on data collection, analysis and dissemination. Leadership role at annual registry meeting with the Centers for Disease Control and the Spina Bifida Association with respect to annual improvement in the registry. The objective of this proposal was to continue participation of the University of Pittsburgh in the National Spina Bifida patient Registry. The University of Pittsburgh has been a funded registry site since 2011. The aims are: 1) Describe more fully the neurological and functional classification of individuals with spina bifida, 2) Determine which additional variables contribute significantly to ambulatory and transfer ability.

Date and source: 9/1/19 - 8/31/24, Centers for Disease Control and Prevention (U01 DD001078)

Authorship/participation: Co-Investigator

- Koontz AM, Garfunkel CE, **Crytzer TM**, Anthony SJ, Nindl BC. Feasibility, acceptability, and preliminary efficacy of a handcycling high-intensity interval training program for individuals with spinal cord injury. Spinal Cord. 2021 Jan;59(1):34-43. (PMID: 32908194)

Amount of funding: \$60,344

Nature of project: **FEASIBILITY AND ACCEPTABILITY OF SIX-WEEKS OF HIGH INTENSITY INTERVAL TRAINING IN WHEELCHAIR USERS WITH SPINAL CORD INJURY**. Responsible

for recruitment, consenting, conduct of intervention, data collection and dissemination. The overall objectives of this pilot study (pre-clinical trial) are to explore the feasibility and acceptability of a 6-week high intensity interval training program for wheelchair users with spinal cord injury or disease and low fitness.

Date and Source: 07/01/17 – 06/30/19 University of Alabama at Birmingham/National Institutes of Health (5P2CHD086851-03)

Authorship/participation: Co-Investigator.

Amount of funding awarded: \$149,781

Nature of project: **EFFECT OF VIBRATION EXERCISE ON UPPER LIMB STRENGTH, FUNCTION, AND PAIN.** Responsible for recruitment,

The aims of this study are to evaluate the effectiveness of a novel vibration exercise program over traditional resistance training for upper limb strengthening in people with paraplegia. Twenty-four subjects with paraplegia will be recruited to participate in a pilot randomized control trial to evaluate the feasibility and effectiveness of a supervised home-based high-frequency vibration exercise program on improving upper extremity strength, wheelchair propulsion, transfer ability and shoulder pain.

Date and source: 04/01/16 – 03/31/18, Paralyzed Veterans of America Research Foundation, Clinical Trials Award #3064

Authorship/participation: Principal Investigator

Amount of funding awarded: \$75,000

Nature of Project: **TECHNOLOGY APPLICATIONS IN PEOPLE WITH COMPLEX DISABILITIES.** Awarded this competitive grant that provided funding to assist in student loan repayment for scientists who are involved in medical research for at least 50% of their full-time effort. Goal is to develop technology to support the health and wellness of people with complex neurological disabilities.

Date and source: 10/2016 – 10/2018, National Institutes of Health, National Student Loan Repayment Program

Authorship/participation: Wellness Coordinator

- Kryger MA, **Crytzer TM**, Fairman A, Quinby EJ, Karavolis M, Pramana G, Setiawan IMA, McKernan GP, Parmanto B, Dicianno BE. The Effect of the Interactive Mobile Health and Rehabilitation System on Health and Psychosocial Outcomes in Spinal Cord Injury: Randomized Controlled Trial. Journal of Medical Internet Research. 2019 Aug 28;21(8):e14305. (PMID: 31464189)

Amount of funding awarded; \$4,747,300

Nature of project: **RESEARCH AND ENGINEERING CENTER (RERC) ON INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) FROM CLOUD TO SMARTPHONE: ACCESSIBLE AND EMPOWERING ICT.** Responsible for daily communication to coordinate and support the self-management of participants with spina bifida, cerebral palsy and spinal cord injury to prevent secondary conditions (e.g., pressure wounds, urinary tract infections), via a web-based clinician portal linked to the iMHere 2.0 smartphone app and in collaboration with physiatrist, Dr. Brad Dicianno. Responsible for participation in bi-weekly data management team meetings. Served as content expert on iMHere content and provided input to software engineers for iterative refinement of the iMHere app and clinician portal. The RERC on ICT Access established an engineering center with the missions to mitigate barriers to ICT access for persons with disabilities and to harness the power of on Information and Communication Technologies to improve health and function, social participation, and employment among individuals with disabilities.

Date and source: 4/1/15 - 9/29/21, Administration for Community Living (ACL) 90RE5018-04

Authorship/participation: Co-Investigator

- Koontz AM, Wei L, **Crytzer TM**. Influence of direction and surface type on independent wheelchair transfer technique. Special Issue “Emerging technology in rehabilitation science” Journal of Taiwan Occupational Therapy Association, 2022; 40(1): 8-35.

Amount of funding awarded: \$69,775

Nature of project: **DEVELOPMENT OF THE CAREGIVER ASSISTED TRANSFER TECHNIQUE (CATT) INSTRUMENT**. Responsible for providing content expertise, recruitment and analysis, dissemination of findings. A new instrument, called the Caregiver Assisted Transfer Technique Instrument (CATT) was developed to provide an objective way to evaluate proper assisted transfer techniques. The goal of this study was to determine face and content validity of the CATT to evaluate assisted transfer technique that is directed towards informal (i.e., non-paid) caregivers providing care to individuals with spinal cord injury/dysfunction.

Date and source: 1/1/20 - 12/31/21, Paralyzed Veterans of America Research Foundation (3173)

Authorship/participation: Volunteer

Amount of funding awarded: \$23,000

Nature of project: **HOPE THROUGH HOOPS!** Developed this grant in combination with John Sikora, Executive Director, HOPE Network to obtain wheelchair basketball chairs for a new Juniors program for children with paralysis to learn to play wheelchair basketball. Assisted with conduct of the grant including data collection including 1). Attendance (weekly), Body fat analysis with skin fold calipers (monthly), Strength assessed by bench press or arm curl (monthly), Quickness assessed by side-to-side sprint at free throw lane (monthly) and Speed assessed by 10-20-10 sprint (monthly). I assisted with teaching/coaching wheelchair basketball skills at weekly practices and scrimmages, assist with participant and volunteer recruitment and training. Responsible for collecting, recording, and analyzing data as well as preparing reports to funding agency.

Date and source: 2019-2020, State of Pennsylvania Resource Grant

Authorship/participation: Co-Investigator

- Kulich HR, Wei L, **Crytzer TM**, Cooper RA, Koontz AM. Preliminary evaluation of an automated robotic transfer assist device in the home setting. Disability and Rehabilitation: Assistive Technology. 2021 Jan 22:1-8. (PMID: 33529539)

Amount of funding awarded: \$303,888

Nature of project: **DEVELOPMENT AND EVALUATION OF AN AUTOMATED TRANSFER TECHNOLOGY**. The goal is to develop, prototype and test a new wheelchair as part of the AgileLife patient transfer system that would accommodate bariatric individuals over 250 lbs. and a tilt feature on the standard weight capacity under 250 lbs. and bariatric wheelchair. The new designs will be iteratively developed in collaboration with the University of Pittsburgh. Eight commercial ready prototypes will be built that meet the user, technical and manufacturing requirements established by expert panel review, wheelchair standards testing, and in-lab evaluations.

Date and source: 09/18/15 – 08/31/19, NextHealth Inc. (Prime: National Institutes of Health, (R44HD085702)

Authorship/participation: Co-Investigator

Amount of funding awarded: \$28,507

Nature of project: **TELEWELLNESS SUPPORT SYSTEMS FOR SPINAL CORD INJURY**, Responsible for recruitment, consenting, and data collection and recording. Served as wellness coordinator to provide support through a web-based portal for people with spinal cord injury connected to the iMHere app for participants to self-manage their health (taking medications and catheterizing on time, bowel management, pressure wound prevention). In a randomized clinical trial, the group who uses iMHere smartphone app will have improved psychosocial and medical outcomes compared to the standard of care only group. Participated in conducting usability study to determine what modifications need to be made to the system for those with higher levels of impairment who have difficulty accessing a smartphone even with accessibility functions.

Date and source: 04/01/15 – 04/30/16, Craig H. Neilsen Foundation (288995)

Authorship/participation: Co-Investigator

- Dicianno, BE, Karmarkar, A, Houtrow, A, **Crytzer, TM**, Cushmanick, KM, McCoy, A,* Wilson, P, Chinarian, J, Neufeld, J, Smith, K, Collins, DM. Factors Associated with Mobility Outcomes in a National Spina Bifida. American Journal of Physical Medicine & Rehabilitation, 2015 Dec 94(12), 1015–1025. (PMID: 26488146)

Amount of funding awarded: \$41,145

Nature of project: **COMP B-NATIONAL SPINA BIFIDA PATIENT REGISTRY AT THE UNIVERSITY OF PITTSBURGH**. Responsible for training all staff and students and providing oversight on data collection, analysis and dissemination. Leadership role at annual registry meeting with the Centers for Disease Control and the Spina Bifida Association with respect to annual improvement in the registry. The objective of this proposal was to continue participation of the University of Pittsburgh in the National Spina Bifida patient Registry. The University of Pittsburgh has been a funded registry site since 2011. The aims are: 1) Describe more fully the neurological and functional classification of individuals with spina bifida, 2) Determine which additional variables contribute significantly to ambulatory and transfer ability, and 3) Develop and validate a “Spina Bifida Impairment Scale” that clinicians can use to accurately quantify motor and sensory deficits in individuals with spina bifida.

Date and source: 9/1/14-8/31/2020, Centers for Disease Control and Prevention (U01 DD001078)

Authorship/participation: Volunteer

Amount of funding awarded: \$10,000

Nature of project: **“HOPE, YOU CAN RALLY!”** Wrote grant with John Sikora, Executive Director of HOPE Network to obtain adaptive handcycles for this non-profit community organization to grow their community handcycling program in southwestern Pennsylvania and the surrounding area. The goal was to improve health and fitness of children and adults with spinal cord injury and engage clients, families and caregivers together in healthy lifestyles. Responsible for participation in program and completion of data collection and reporting.

Date and source: 2014 – 2016, Christopher and Dana Reeves Foundation

Authorship/participation: Principal Investigator

- **Crytzer TM**, Keramati M,* Anthony S, Cheng Y,* Robertson RJ, Dicianno B. Exercise Prescription Using a Group Normalized Rating of Perceived Exertion in Adolescents and Adults with Spina Bifida. Physical Medicine and Rehabilitation. 2018 Feb 3 (Epub ahead of print). (PMID: 29408563)
- **Crytzer TM**, Cheng YT,* Bryner MJ, Wilson III R, Scirba FC, Dicianno BE. Impact of Neurological Level and Spinal Curvature on Pulmonary Function in Adults with Spina Bifida. Journal of Pediatric Rehabilitation Medicine. 2018;11(4):243-254. (PMID: 300741703)
- **Crytzer TM**, Dicianno BE, Robertson RJ, Cheng Y.* Validity of a Wheelchair Rating of Perceived Exertion Scale for Individuals with SB (WHEEL scale) during Arm Cycle Ergometry Exercise Testing. Perceptual and Motor Skills. 2015 Feb; 120(1):304-22. Epub 2015 Feb 4. (PMID 25650508)

Amount of funding awarded: \$37,500

Nature of project: **PULMONARY FUNCTION IN ADOLESCENTS AND ADULTS WITH SPINA BIFIDA**. Coordinated all aspects of the study: recruitment, coordination of conduct of exercise testing and pulmonary function tests with Endocrinology and Metabolism laboratories and COPD Emphysema labs respectively at University of Pittsburgh, collected data, trained student and staff, analyzed data, provided oversight to students and staff, prepared manuscript, disseminated results in form of published manuscripts and presentations.

Date and source: 7/1/2012 – 6/30/2013, National Spina Bifid Association/Ashley Rose Foundation, 2011 Spina Bifida Association Young Investigator Award

Authorship/participation: Co-Investigator

Amount of Funding awarded: \$27,778

Nature of project: **MOBILITY AND FUNCTIONAL OUTCOMES FROM A NATIONAL SPINA BIFIDA PATIENT REGISTRY**. Responsible for assistance with the development of a National Spina Bifida patient Registry at the Pittsburgh site. Responsible for IRB development, participation at monthly national data safety and management meeting, and training staff in data collection. Conducted data collection, recording, coding, and analysis of mobility outcomes as well as preparing dissemination of findings at Centers for Disease Control Meeting and manuscripts. The aims were: 1) Describe more fully the neurological and functional classification of individuals with spina bifida, 2) Determine which additional variables contribute significantly to ambulatory and transfer ability, and 3) Develop and validate a "Spina Bifida Impairment Scale" that clinicians can use to accurately quantify motor and sensory deficits in those with spina bifida. Date and source: 10/1/2012 – 9/30/2013. Centers for Disease Control, Center for Rehab. Research Using Large Database

Authorship/participation: Post-Doctoral Fellow

- **Crytzer TM**, Dicianno BE, Kapoor R.* Physical Activity, Exercise and Health Related Measures of Fitness in Adults with Spina Bifida: A Review of the Literature. Physical Medicine and Rehabilitation 2013 Dec 5(12): 1051-1062. (PMID: 24332229).
- **Crytzer TM**, Dicianno BE, Fairman A. Effectiveness of an Upper Extremity Exercise Device and Text Message Reminders to Exercise in Adults with Spina Bifida. Assistive Technology, 2013 winter 25(4): 181-193. (PMID: 24620701)

Amount of funding awarded: \$57,052

Nature of project: **EFFECTIVENESS OF AN UPPER EXTREMITY EXERCISE DEVICE AND TEXT MESSAGING IN ADULTS WITH SPINA BIFIDA**. NIH T32 National Institute of Child Health and Human Development Training Rehabilitation Clinicians for Research Careers. Participants (n=19) completed a quasi-experimental trial using cross-over design involving 19 adults with spina bifida who participated in exercise on either a Game Cycle or Saratoga Arm ergometer and received text message reminders to exercise.

Date and source: 7/1/2009 – 6/30/2011, National Institutes of Health T32HD049307 (Mentor: B. Dicianno MD)

Membership in Scientific/Professional Organizations:

Vice Chair
Rehabilitation Engineering Society of North America
2020 to present

Member
Rehabilitation Engineering Society of North American
2015 to 2019

Member
American Physical Therapy Association
1997 to present

Community Service:

Member
Ethical Review Board
Western Pennsylvania School for Blind Children

Member
Housing Board
Spina Bifida Association of Western Pennsylvania
2010 to present

Volunteer/Assistant Wheelchair Basketball Coach
HOPE Network
2000 to present

Services to the University/College/School on Committees/Councils/Commissions:

University-wide
2024
Reviewer
Faculty Development Grants

University-wide
2024 – present
Member
Disability Working Group

University-wide
2021 to present
Member
Interprofessional Education Committee

School
2023 – present
Member
Safety Committee

School
2021 to present
Member
Curriculum Committee

Department
2021 – 2022
Member
Search Committee

Honors and Awards:

Award: First Place Poster Presentation
Title: Patterson C, **Crytzer TM**. *Development of Wheel Learn Healthy Lifestyle Behavior Program Utilizing Social Cognitive Behavioral Theory*
Occasion: University of Pittsburgh, REU/ASPIRE Summer Internship Program, Pittsburgh, PA
Date: 2020

Award: First Place Poster Presentation
Title: **Crytzer TM**, Dicianno BE, Cheng Y. *Pulmonary Function of Adolescents and Adults with Spina Bifida*
Occasion: University of Pittsburgh, School of Medicine, Rehabilitation Institute Research Day, Pittsburgh, PA
Date: 2013

Award: Honorable Mention Paper
Title: **Crytzer, TM**, Dicianno BE. Spina Bifida Association Research Award for significant contribution to the literature at the 2nd World Congress on Spina Bifida Research and Care, Las Vegas, NV
Date: 2012

Award: Honorable Mention Poster Presentation
Title: **Crytzer TM**, Dicianno BE, Niyonkuru, C. *Exercise Capacity of Adults with Spina Bifida*
University of Pittsburgh School of Medicine Rehabilitation Institute Research Day, Pittsburgh,

PA
Date: 2011

Continuing Education Attended (selected and related to responsibilities in entry-level program):

Course Title: Navigating the Medical Record in the ICU: Determining Right Patient Time Co-Treat Frequency and More

Date Earned: 2/17/24

Credit/Type: 0.2 CEU

Conference: American Physical Therapy Association, Combined Sections Conference, 2024

Course Title: And Breathe

Date Earned: 2/15/2024

Credit/Type: 0.2 CEU

Conference: American Physical Therapy Association, Combined Sections Conference, 2024

Course Title: We Like to Move It Move It: An Interprofessional Approach to Heart Failure

Date Earned: 2/17/2024

Credit/Type: 0.2 CEU

Conference: American Physical Therapy Association, Combined Sections Conference, 2024

Course Title: When Reflux Comes up Everything Is Affected

Date Earned: 2/16/2024

Credit/Type: 0.2 CEU

Conference: American Physical Therapy Association, Combined Sections Conference, 2024

Course Title: Science Meets Practice: Injury Prevention and Fitness Assessments in Adaptive Sports

Date Earned: 2/15/2024

Credit/Type: 0.2 CEU

Conference: American Physical Therapy Association, Combined Sections Conference, 2024

Course Title: Growing Your Toolbox: Lifestyle Medicine for Preventing and Managing Chronic Heart Disease

Date Earned: 2/16/2024

Credit/Type: 0.2 CEU

Conference: American Physical Therapy Association, Combined Sections Conference, 2024

Course Title: Urine Luck! Multicenter Strategies to Address Pediatric Pelvic Floor Dysfunction

Date Earned: 2/16/2024

Credit/Type: 0.2 CEU

Conference: American Physical Therapy Association, Combined Sections Conference, 2024

Course Title: Giving Hypermobile Children a Leg up on Lower Extremity Function: Physical Therapist Assessment and Treatment

Date Earned: 2/15/2024

Credit/Type: 0.2 CEU

Conference: American Physical Therapy Association, Combined Sections Conference, 2024

Course Title: CP-18355

Date Earned: 2/16/2024

Credit/Type: 0.2 CEU

Conference: American Physical Therapy Association, Combined Sections Conference, 2024

Course Title: Tough to Treat: Increase Your Clinical Expertise by Learning to Assess the

Complex Patient
Date Earned: 1/13/2023
Credit/Type: 0.20 CEU
Course: LMN-ComplexPt

Course Title: Tips on Drips: Integrating ICU Pharmacology into PT Practice
Date Earned 1/13/2023
Credit/Type: 0.10 CEU
Course ID: LMS-AC-ICUPharm

Course Title: Movement System Neuromuscular Diagnoses
Date Earned: 1/10/2023
Credit/Type: 0.20 CEU
Course ID: LMS-NMR-Diagnoses

Course Title: Physical Therapy Considerations of Neurologic Presentations in COVID-19
Date Earned: 1/10/2023
Credit/Type: 0.20 CEU
Course ID: LMS-COVID19-Neuro

Course Title: Physical Therapy Considerations of COVID-19 in the Post-Acute Setting
Date Earned: 1/10/2023
Credit/Type: 0.20 CEU
Course ID: LMS-COVID19-PAS

Course Title: PACER Series: Pediatric Considerations
Date Earned: 1/17/2023
Credit/Type: 0.10 CEU
Course ID: LMS PACER-13

Course Title: DEI: You Don't Know Jack... Until You Understand His Culture: A Journey into Diversity Education
Date Earned: 1/11/2023
Credit/Type: 0.20 CEU
Course ID: DEI-Diversity-Education

Course Title: PACER Series: Covid-19 Specific Considerations
Date Earned: 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS PACER-1

Course Title: PACER Series: Cardiovascular and Pulmonary Anatomy and Physiology
Date Earned 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS-PACER-2

Course Title: PACER Series: Cardiovascular and Pulmonary Examination
Date Earned 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS-PACER-3

Course Title: PACER Series: Vital Signs, Exercise Prescription, Oxygen Devices
Date Earned 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS-PACER-5

Course Title: PACER Series: Rehabilitation for People with Post-Intensive Care Syndrome (PICS)
Date Earned 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS-PACER-6

Course Title: PACER Series: Posture, Breathing, Ventilation
Date Earned 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS-PACER-8

Course Title: PACER Series: Inspiratory Muscle Training
Date Earned 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS-PACER-9

Course Title: PACER Series: Pulmonary Rehabilitation
Date Earned: 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS PACER-11

Course Title: PACER Series: Geriatric Considerations
Date Earned: 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS PACER-14

Course Title: PACER Series: Outpatient PT for COVID-19 Part 1
Date Earned: 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS PACER-16-1

Course Title: PACER Series: Outpatient PT for COVID-19 Part 2
Date Earned: 1/10/2023
Credit/Type: 0.10 CEU
Course ID: LMS PACER-16-2

Course Title: Arterial Blood Gasses
Date Earned 1/04/2023
Credit/Type: 0.10 CEU
Course ID: LMS-AC-ABG

Course Title: Acute Care Physical Therapy and COVID-19: How Can We Add the Greatest Value? Part 2
Date Earned 1/04/2023
Credit/Type: 0.10 CEU
Course ID: LMS-AC-COVID-GV2

Course Title: Basic EKG Interpretation
Date Earned: 01/04/2023
Credit/Type: 0.30 CEU
Course ID: LMS-EKG-Interpretation

Current Teaching Responsibilities in the Entry-Level Program for Academic Year of Site Visit:

Assistant Professor
PHYT 572 Pediatrics

Spring 2024

Assistant Professor
PHYT-447-547 Foundational Skills
Fall 2023

Assistant Professor
PHYT 605 Cardiovascular and Pulmonary Science/Lab
Fall 2023

Assistant Professor
PHYTH 506 Exercise Physiology Science/Lab
Summer 2023

Assistant Professor
PHYTH 543 Clinical Neurologic Science I
Spring 2022

Instructor
PHYTH 506 Exercise Physiology Science/Lab
Summer 2022

Instructor
PHYT 605 Cardiovascular and Pulmonary Science/Lab
Fall 2022

Co-Instructor
PHYTH 543 Clinical Neurologic Science I
Spring 2022

Instructor
PHYT 605 Cardiovascular and Pulmonary Science/Lab
Fall 2021