

Kayla Nuss

350 SOUTH JACKSON STREET, #319 • DENVER, CO 80209 • PHONE 970-581-4824 • E-MAIL KaylaNuss@gmail.com

EDUCATION

Doctor of Philosophy in Bioenergetics

Dissertation: "Wearable Fitness Trackers in Physical Activity Research: Accuracy Assessment and Effects on Motivation and Engagement.

Advisors: Kaigang Li, PhD & Tracy Nelson, PhD

May 2021

Colorado State University, Fort Collins, CO

Master of Science in Health and Exercise Science

Thesis: "Feasibility Assessment and Evaluation of the 12-Week Real Transformation Weight Loss Program: Changes in Social Cognitive Determinants, Behaviors, Body Weight, and Their Associations."

Advisors: Kaigang Li, PhD & Tracy Nelson, PhD

May 2018

Colorado State University, Fort Collins, CO

Master of Arts in Student Development in Post-Secondary Education

May 2006

Advisor: Elizabeth Whitt, PhD

University of Iowa, Iowa City, IA

Bachelor of Arts (*summa cum laude*)

Psychology and Spanish

January 2000

Cornell College, Mount Vernon, IA

RESEARCH INTERESTS

My research is centered on a) motivation for physical activity as described by the Self Determination Theory of Motivation b) how wearable technology supports or thwarts motivation in various populations and c) how to optimize wearable technology, either but combining it with other interventions or altering the UI, to support the development and maintenance of autonomous motivation for, and engagement in, physical activity. I envision commercial wearable devices having the capacity to deliver personalized goals, prompts for specific behaviors in an optimized timeframe, and meaningful data to the individual user. I am inclined to believe that these types of changes to wearables can make them more effective drivers of physical activity.

PUBLISHED WORKS

Refereed Journal Articles

Rhodes, R., Sui, W., **Nuss, K.**, Liu, S. (2022). **Reflecting on Physical Activity across two years of the COVID-19 Pandemic: Predictors of Intention-Behavior Profiles.** Applied Psychology: Health and Wellbeing.

Nuss, K., Coulter, R., DeSilva, B., Sheikhi, R., Naylor, P. J., & Liu, S. (2022). **Evaluating the Effectiveness of a Canadian Family-Based Childhood Obesity Management Virtual Program Delivered During the COVID-19 Pandemic: Prospective Study.** JMIR Pediatrics and Parenting.

Liu S, Smith N, **Nuss K**, Perdeu M, Adiputranto D, Naylor PJ. (2022). **Dose-Response Relationship of a Blended In-Person and Online Family-Based Childhood Obesity Management Program: Secondary Analysis of a Behavior Intervention.** JMIR Pediatr Parent. Jul 5;5(3):e36770. doi: 10.2196/36770.

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Nuss, K, Li, K. (2021). Motivation for Physical Activity and Physical Activity Engagement in Current and Former Wearable Fitness Tracker Users: A Mixed-Methods Examination. Computers in Human Behavior, 121, 106798

Courtney JB, **Nuss K**, Wang S, Do B, Dunton G. (2021). **Using a Daily Diary Approach to Examine the Effects of COVID-19 on Daily Physical Activity Bouts and Contexts Among Residents of Colorado and California.** Trans Behav Med, 11(9), 1171-1181 DOI: 10.1093/tbm/ibab066.

Courtney JB, Nelson T, **Nuss K**, Li K, Haynie D, Iannotti RJ, Simons-Morton B. (2021) **Autonomous Motivation and Action Planning are Longitudinally Associated with Physical Activity Decreases During Adolescence and Early Adulthood.** Psychology of Sport & Exercise, 56, 101974.

Courtney JB, **Nuss K**, Lyden K, Harrall KK, Alaimo K, Glueck DH, Villalobos A, Hamman RF, Hebert JR, Hurley TG, Leiferman J, Li K, Litt JS. (2020). **Comparing the activPAL software's Primary Time in Bed Algorithm Against Self-Report and van der Berg's Algorithm.** Measurement in Physical Education and Exercise Science, 1-15.

Nuss, K.J., Hulett, N.A., Erickson, A., Burton, E., Carr, K., Mooney, L., Anderson, J., Comstock, A., Schlemmer, E.J., Archambault, L.J., & Li, K. (2020). **Comparison of Energy Expenditure and Step Count Measured by ActiGraph Accelerometers Among Dominant and Nondominant Wrist and Hip Sites.** Journal for the Measurement of Physical Behaviour, 3(4), 315-322.

Nuss, K., Moore, K., Nelson, T., Li, K. (2020). **Associations Among Wearable Fitness Trackers, Self-Determination Theory Based Motivational Interviewing, Motivation for Physical Activity, and Physical Activity Behavior: A Systematic Review.** American Journal of Health Promotion, Advance online publication. <https://doi.org/10.1123/jmpb.2019-0064>.

Nuss, K., Sanford, J., Archambault, L., Schlemmer, E., Blake, S., Courtney, J. Hulett, N., Li, K. (2019). **Accuracy of Heart Rate and Energy Expenditure Estimations of Wrist-Worn and Arm-Worn Apple Watches.** Journal for the Measurement of Physical Behaviour, 2(3) 166-175.

Nuss, K., Thomson, E., Courtney, J. Comstock, A., Reinwald, S., Blake, S. Pimentel, R. E., Tracy, B., Li, K. (2019). **Assessment of Accuracy of Overall Energy Expenditure Measurements for the Fitbit Charge HR 2 and Apple Watch.** American Journal of Health Behavior. 43(3), 498-505.

Thomson, E., **Nuss, K.**, Comstock, A., Reinwald, S., Blake, S., Pimentel, R. E., Tracy, B. & Li, K. (2019). **Heart rate measurements for the Apple Watch and Fitbit Charge HR 2 across different exercise intensities.** Journal of Sports Sciences, 37(12), 1411-1419.

Refereed Journal Articles Under Review

Nuss, K., Moore, K., Marchant, T., Courtney, J.B., Edwards, K., Sharp, J.L., Nelson, T.L., Li, K. (2022). **The combined effect of motivational interviewing and wearable fitness trackers on motivation and physical activity in inactive adults: A randomized controlled trial.** Journal of Sports Sciences.

Nuss, K., Sui, W., Rhodes, R., & Liu, S. (2022). **Motivational profile and associations with physical activity before, during, and after the COVID-19 pandemic.** JMIR Formative Research.

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Nuss, K., Coulter, R., Liu, S. (2022). Content of Social Media Fitspiration and its Effect on Physical Activity Related Behaviour: A Systematic Review. *Psychology of Popular Media.*

Moore, K., **Nuss, K.**, Do, B., Wang, S.D., Li, K, Graham, D.J., Courtney, J.B. (2022). **Motivational Profile as a Predictor of Physical Activity Among U.S. Adults During the Early Months of the COVID-19 Pandemic: A Daily Diary Study.** *Journal of Physical Activity and Health.*

Liu, S., Coulter, R., Sui, W., **Nuss, K.**, Rhodes, R. (2022). **Determinants of Recreational Screen Time Behavior following the COVID-19 Pandemic among Canadian Adults.** *Applied Physiology, Nutrition, and Metabolism.*

Refereed Abstracts

Nuss, K., Sanford, J., Archambault, L., Schlemer, E., Blake, S., Courtney, J. Hulett, N., Li, K. Accuracy of heart rate and energy expenditure estimation of wrist-worn and arm-worn Apple Watches. *International Society for the Measurement of Physical Behavior.*

Thomson, E., **Nuss, K.**, Comstock, A., Renewals, S., Blake, S., Pimentel, R. E., Tracy, B. & Li, K. **Heart rate measurements for the Apple Watch and Fitbit Charge HR 2 across different exercise intensities.** *American College of Sports Medicine.*

PRESENTATIONS

Nuss, K., Sanford, J., Archambault, L., Schlemer, E., Blake, S., Courtney, J. Hulett, N., Li, K. Accuracy of heart rate and energy expenditure estimations of wrist-worn and arm-worn Apple Watches. *Poster session presented at the International Conference on Ambulatory Monitoring of Physical Activity and Movement, Maastricht, Netherlands, 2019.*

Nuss, K., Sanford, J., Archambault, L., Schlemer, E., Blake, S., Courtney, J. Hulett, N., Li, K. Validation of heart rate measurement and energy expenditure calculation of wrist-worn and arm-worn Apple Watches. *Poster session presented at Rocky Mountain ACSM Annual Meeting, Denver, CO, USA, 2019.*

Nuss, K., Sanford, J., Archambault, L., Schlemer, E., Blake, S., Courtney, J. Hulett, N., Li, K. Validation of heart rate measurement and energy expenditure calculation of wrist-worn and arm-worn Apple Watches. *Poster session presented at Colorado State University Graduate Research Showcase, Fort Collins, CO, USA, 2018.*

Thomson, E. A., **Nuss, K.**, Comstock, A., Reinwald, S., Blake, S., Pimentel, R. E., Tracy, B., & Li, K. **Validity of heart rate measurements for the Apple Watch and Fitbit Charge HR 2 across different exercise intensities.** *Poster session presented at The American College of Sports Medicine's 64th Annual Meeting, Minneapolis, MN, USA, 2018.*

Li, K., **Nuss, K.**, Thomson, E. A., Comstock, A., Reinwald, S., Blake, S., Pimentel, R. E., & Tracy, B. **Validation of overall energy expenditure measurements for the Fitbit Charge HR 2 and Apple Watch.** *Poster session presented at The American College of Sports Medicine's 64th Annual Meeting. Minneapolis, MN, USA, 2018.*

Nuss, K. Assessing the heart rate and energy expenditure accuracy of Apple Watch Series 1 and the Fitbit Charge HR. *Presentation for Colorado State University Vice President for Research Three Minute Challenge, Fort Collins, CO, USA 2018.*

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Nuss, K., Thompson, E., Comstock, A., Reinwald, S., Blake, S, Pimentel, R.E., Tracy, B. Li, K. **Heart rate and energy expenditure validity for the Fitbit Charge HR 2 and Apple Watch.** *Poster session presented at Colorado State University Graduate Research Showcase, Fort Collins, CO, USA, 2017.*

Nuss, K., Haynie, D., Simons-Morton, B., Li, K. **External motivation for weight loss is linked to overweight status in young adults.** *Poster session presented at Colorado State University Graduate Research Showcase, Fort Collins, CO, USA, 2016.*

RESEARCH EXPERIENCE

Postdoctoral Scholar, Digital Health Lab

Primary Investigator: Dr. Sam Liu

September 2021-Present

University of Victoria, Victoria, B.C., Canada

Responsibilities: Design and coordinate a physical activity daily diary study using a lab designed proprietary mobile application, mentor MS level graduate students, author and co-author manuscripts, author grant proposals for external funding.

Lab Manager, Lab for the Assessment and Prevention of Physical Activity and Health

Primary Investigator: Dr. Kaigang Li

August 2017-May 2021

Colorado State University, Fort Collins, CO

Responsibilities: Conceptualized and designed physical activity human subjects studies, submitted study materials for Institutional Review Board approval, recruited participants, managed participant compensation, supervised a team of six to ten undergraduate research assistants, oversaw data collection, managed and analyzed data, authored and co-authored manuscripts, mentored one MS level student.

TEACHING EXPERIENCE

Graduate Teaching Assistant, Department of Health and Exercise Science

August 2016-May 2019

Colorado State University, Fort Collins, CO

Courses Taught: First Aid and Emergency Care, Exercise Prescription, Techniques of Teaching Group Exercise, Exercise Electrocardiography, Sports Medicine Capstone

FUNDING

Mitac Accelerate Postdoctoral Scholar Grant

\$60,000 CAD

“Type 2 Diabetes Management using mobile health technology among South Asian Communities: A Feasibility Study”

September 2021-August 2022

Colorado State University, College of Health and Human Sciences Mini-Grant (Co-PI and grant author)

“Understanding Wearable Fitness Trackers and Self-Determination Theory Based Motivational Interviewing”

July 2019-June 2020

OTHER RELEVANT HIGHER EDUCATION WORK HISTORY

Academic Advisor, College of Business

January 2015-December 2015

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Colorado State University, Fort Collins, CO

Academic Support Coordinator

October 2010-January 2015

Colorado State University, Fort Collins, CO

Residence Hall Director, Office of Residence Life

June 2006-October 2010

University of San Francisco, San Francisco, CA

Summer Operations Manager, Summer Guest Housing- Office of Residence Life

Summer 2007-Summer 2010

University of San Francisco, San Francisco, CA

Graduate Assistant, Health Iowa/Student Health Services

August 2005- May 2006

University of Iowa, Iowa City, IA

Practicum Student, Pomerantz Career Center

January 2006-May 2006

University of Iowa, Iowa City, IA

Graduate Assistant, Transfer Honors Learning Community

August 2004-May 2005

University of Iowa, Iowa City, IA

Practicum Student, Office of Student Life

January 2005-May 2005

Coe College, Cedar Rapids, IA

Assistant Director, Office of Admissions

January 2000-August 2004

Cornell College, Mount Vernon, IA

OTHER RELEVANT HEALTH AND FITNESS INDUSTRY WORK HISTORY

Remote Health and Nutrition Coach

November 2021-Present

Calibrate, Inc.

New York, NY

Remote Health and Nutrition Coach

January 2021-Present

Self-Employed, Denver, CO

Health and Nutrition Coach

July 2018-April 2021

Raintree Athletic Club, Fort Collins, CO

Personal Trainer and Exercise Physiologist

July 2019-April 2021

Raintree Athletic Club, Fort Collins, CO

Group Exercise Instructor

July 2018-April 2021

Raintree Athletic Club, Fort Collins, CO

Group Exercise Instructor

May 2013-July 2018

Miramont Lifestyle Fitness, Fort Collins, CO

Small Group Trainer, REVE Fitness by Miramont

May 2013-December 2017

Mirmonat Lifestyle Fitness, Fort Collins, CO

Remote Certified Personal Trainer,

January 2014-Present

Self-Employed, Fort Collins, CO

Group Exercise Assistant Manager

January 2015-August 2016

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Miramont Lifestyle Fitness, Fort Collins, CO
Certified Personal Trainer, Vida Sana
December 2012-November 2013
Northside Aztlan Recreation Center, Fort Collins, CO
Certified Personal Trainer
December 2012-November 2013
Core Fitness and Nutrition, Fort Collins, CO

HONORS AND AWARDS

Colorado State University Graduate School Travel Award
June 2019
Colorado State University, Fort Collins, CO

Dissertation Enhancement Award
January 2019
Colorado State University, Fort Collins, CO

Great Minds in Research
November 2018
Colorado State University, Fort Collins, CO

Vice President for Research Fellowship
May 2018
Colorado State University, Fort Collins, CO

Phi Beta Kappa
May 1999
Cornell College, Mt. Vernon, IA

Psi Chi- International Psychology Honor Society
May 1999
Cornell College, Mt. Vernon, IA

Sigma Delta Pi- National Spanish Honor Society
May 1999
Cornell College, Mt. Vernon, IA

PROFESSIONAL ASSOCIATION INVOLVEMENT

- *Member*, International Society for the Measurement of Physical Behavior
 - *Member*, *Communications Committee*
- *Member*, Rocky Mountain ACSM
- *Member*, ACSM

LICENSES AND CERTIFICATIONS

Certified Exercise Physiologist, American College of Sports Medicine
October 2019-Present

Certified Personal Trainer, American Council on Exercise
November 2012-Present

Certified Nutrition Coach, Precision Nutrition
August 2016-Present

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References

Dr. Barry Braun, PhD
Department Head
Department of Health and Exercise Science
Colorado State University
Barry.Braun@colostate.edu
(970) 491-7875

Dr. Sam Liu, PhD
Director, Digital Health Lab
University of Victoria
samliu@uvic.ca
(250) 721-8392

Kristen Moore, MS
PhD Student
Real Time Eating, Activity, and Children's Health Lab
University of Southern California
knmoore@usc.edu
(719) 258-0926