

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Patty Freedson	POSITION TITLE Professor and Chair Department of Kinesiology University of Massachusetts		
eRA COMMONS USER NAME (credential, e.g., agency login) pfreedson			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
University of Michigan	BS	05/75	Physical Education
University of Michigan	MS	05/76	Exercise Physiology
University of Michigan	PhD	05/80	Exercise Physiology
Institute of Environmental Stress, University of California, Santa Barbara (post-doc)	NA	1980-81	Exercise Physiology

Please refer to the application instructions in order to complete sections A, B, C, and D of the Biographical Sketch.

A. Positions and Honors

Positions and Employment

- 1981-1982 Visiting Assistant Professor, Department of Exercise Science, University of Massachusetts/Amherst
- 1982-1987 Assistant Professor, Department of Exercise Science, University of Massachusetts, Amherst
- 1987-1994 Associate Professor, Department of Exercise Science, University of Massachusetts, Amherst
- 1994-2006 Professor and Graduate Program Director, Department of Exercise Science
University of Massachusetts, Amherst
- 2006- Present Professor and Chair, Department of Kinesiology, University of Massachusetts, Amherst

Other Experience and Professional Memberships

- 1978-present Member and Fellow, American College of Sports Medicine
- 1978-present Member American Alliance for Health, Physical Education, Recreation and Dance
- 1995-present Fellow, American Academy of Kinesiology and Physical Education
- 1996-1997 Member at Large, Board of Trustees of the American College of Sports Medicine
- 1999-2000 President, New England Chapter of the American College of Sports Medicine
- 1999-2001 Member DSMB NIH TAAG Clinical Trial
- 2006-2008 Vice President, American College of Sports Medicine
- 2006-2009 Member, President's Council on Physical Fitness and Sports Science Board
- 2008-2009 Chair, President's Council on Physical Fitness and Sports Science Board
- 2011-2012 President, National Academy of Kinesiology

Honors

- 1986 American Society of Physical Education, Distinguished Achievement Award
- 1986 University of Rhode Island Fredrika Wild Schweers Lecturer
- 1996 Recipient of the American Alliance for Health, Physical Education, Recreation, and Dance
President's Award
- 1996 Pioneer Valley Girl Scouts, Woman of Merit in Science and Technology
- 2000 McCloy Lecturer for the Research Consortium of AAHPERD

Program Director/Principal Investigator (Last, First, Middle):

- 2001 President's Lecturer for the 2001 ACSM Annual Conference
- 2003 Cureton Lecturer for the 2003 ACSM Annual Conference
- 2004 University of Massachusetts Distinguished Faculty Lecturer
- 2007 University of Massachusetts Outstanding Accomplishments in Research and Creative Activity Award
- 2009 American College of Sports Medicine Citation Award
- 2009 Margaret Safrit Lecturer, University of Wisconsin, Madison
- 2011 Dill Lecturer for the 2011 ACSM Annual Conference

C. Selected Peer-reviewed Publications

Most relevant to the current application

1. Staudenmayer, J, Pober, D., Crouter, S.E., Bassett, D.R., **Freedson, P.** An artificial neural network to estimate physical activity energy expenditure and identify physical activity type from an accelerometer. *Journal of Applied Physiology*, 107:1300-1307, 2009. PMID: 2763835
2. John, D, Liu, S, Sasaki, JE, Howe, CA, Staudenmayer, J, Gao, RX, **Freedson, PS.** Calibrating a novel multi-sensor physical activity measurement system. *Physiological Measurement* 32:1473-1489, 2011. PMID: 3248574
3. Kozey-Keadle, S, Libertine, A, Lyden, K, Staudenmayer, J, **Freedson, PS.** Validation of wearable monitors for assessing sedentary behavior. *Medicine and Science in Sports and Exercise* 43: 1561-1567, 2011. No NIH support
4. **Freedson, PS,** Lyden, K, Kozey-Keadle, S, Staudenmayer, J. Evaluation of artificial neural network algorithms for predicting METs and activity type from accelerometer data: Validation on an independent sample. *Journal of Applied Physiology*, 111:1804-1812, 2011. PMID: 3233887
5. **Freedson, P,** Bowles, HR, Troiano, R, Haskell, W. Assessment of physical activity using wearable monitors: recommendations for monitor calibration and use in the field. *Medicine and Science in Sports and Exercise*, 44:S1-4, 2012. PMID: 3245520

Additional publications of importance to the field (in chronological order)

1. Freedson, P, Melanson, E, Sirard, J. Calibration of the Computer Science and Applications, Inc. accelerometer. *Medicine and Science in Sports and Exercise*, 30:777-781, 1998. No NIH support
2. Matthews, CE, **Freedson, PS,** Hebert, JR, Stanek, EJ III, Merriam, PA, Ockene, IS. Comparing physical activity assessment methods in the Seasonal Variation of Blood Cholesterol Study. *Medicine and Science in Sports and Exercise*, 32, 976-984, 2000. No PMID available
3. Matthews, **CE, Freedson, PS,** Hebert, JR, Stanek EJ III, Merriam, PA, Rosal, MC, Ebbeling, CB, Ockene, IS. Seasonal variation in household, occupational, and leisure time physical activity: Longitudinal analyses from the seasonal variation of blood cholesterol study. *American Journal of Epidemiology*, 153: 172-183, 2001. No PMID available
4. Ockene, IS, Chiriboga, DE, Stanek, EJ, III, Harmatz, M, Nicolosi, R, Saperia, G, Well, AD, **Freedson, PS,** Merriam, PA, Reed, G, Ma, Y, Matthews, CE, Hebert, JR. Seasonal Variation in Serum Cholesterol Levels: Treatment Implications and Possible Mechanisms. *Archives of Internal Medicine*. 164: 863-870, 2004. No PMID available
5. Pober, DM, Staudenmayer, J, Raphael, C, **Freedson, PS.** Development of novel techniques to classify physical activity mode using accelerometers. *Medicine and Science in Sports and Exercise* 38:1626-1634, 2006. No NIH support
6. Matthews, CE, Chen, KY, **Freedson, PS,** Buchowski, MS, Beech, BM, Pate, RR, Troiano, RP. Amount of time spent in sedentary behaviors in the United States 2003-2004. *American Journal of Epidemiology* 167: 875-881, 2008. No PMID available
7. Howe, CA, Staudenmayer, JW, **Freedson, PS.** Accelerometer prediction of energy expenditure: Vector magnitude versus vertical axis. *Medicine and Science in Sports and Exercise* 41: 2199-2206, 2009. No PMID available

Program Director/Principal Investigator (Last, First, Middle):

8. Kozey, SL, Staudenmayer, JW, Troiano, RP, **Freedson, PS**. A comparison of the Actigraph 7164 and the Actigraph GT1M during self-paced locomotion. *Medicine and Science in Sports and Exercise*, 42:971-976, 2010. PMID: 2893387
9. Lyden, K, Kozey, SL, Staudenmayer, JW, **Freedson, PS**. A comprehensive evaluation of commonly used accelerometer energy expenditure and MET prediction equations. *European Journal of Applied Physiology*, 111:187-201, 2011. NIHMSID: 230755
10. Sasaki, JE, John, D, **Freedson, PS**. Validation and comparison of Actigraph activity monitors. *Journal of Science and Medicine in Sport*, 14:404-410, 2011. No NIH support

D. Research Support

Current

RO1 CA121005 (Freedson, PI)

9/1/06-5/30/12

Novel analytic techniques to assess physical activity

The major goals of this project are to develop and validate new data processing methods for interpretation of accelerometer based physical activity measurement.

UO1 CA130783 (Freedson, PI)

8/1/07-7/30/12

Development of an integrated measurement system to assess physical activity

The major goals of this project are to develop, calibrate and validate a new multi-sensor activity monitor that assesses motion, respiration and environmental context.

Vanderbilt University (Freedson, PI)

4/1/09 – 3/31/14

Sub-contract for 1R01NR011477

A new instrument to comprehensively assess sedentary behavior

The major goal of this project is to develop and validate either a single or age group specific self-report instrument(s) that assess(es) sedentary behavior in adolescents and adults

1RC1HL099557 (Freedson, PI)

9/30/09 – 8/31/12

Advancing physical activity measurement using pattern recognition techniques

The major goal of this project is to apply pattern recognition techniques to accelerometer output to examine its sensitivity to assessing change in physical activity and to determine if accelerometer measured physical activity level, assessed with pattern recognition techniques outside of purposeful training explains differences in responsiveness to training.

UMass Life Sciences Moment Fund (Freedson, PI)

11/1/10 – 10/31/12

Technology to assess physical activity and sedentary behavior in aging adults with osteoarthritis

The major goal of this project is to assess physical activity and sedentary behavior in adults with osteoarthritis (OA) over a nine month period to examine how activity and sedentary behavior change with conservative (non-surgical) treatment for OA knee and/or hip pain. We are also determining the relationship between activity and sedentary behavior assessed with wearable monitors with self-reported measures of physical function. This is a collaborative study with the Department of Orthopedics at the UMass Medical School.

Jawbone, Inc. (J. Staudenmayer PI, Freedson, Co-I)

Validation of a wrist worn accelerometer

11/1/11 – 10/30/13

The major goal of this project is to develop machine learning algorithms for a wrist worn accelerometer. We are training and validating machine learning algorithms to estimate activity energy expenditure and to detect activity types using indirect calorimetry (energy expenditure) and direct observation (activity type) as criterion measures.

Program Director/Principal Investigator (Last, First, Middle):

Completed

3RO1CA121005-03S1 (Freedson, PI)

6/13/08 -6/12/10

Novel analytic techniques to assess physical activity

This was a Research Supplement to Promote Diversity in Health Related Research award for Sofiya Alhassan who is developing neural network system to identify physical activities and estimate activity energy expenditure in children. This award is a supplement to the RO1, P. Freedson (PI) (CA121005).

HHSN261200700343P (Freedson, PI)

8/27/07-12/31/08

Comparison of the 7164 Actigraph and the GT1M Actigraph during Self-paced Walking in Adults

The major goal of this project was to compare the output of the two models of the Actigraph accelerometer

Boston Children's Hospital (Freedson, PI)

5/1/08-12/31/09

AKIDS: Activity kcal intervention daily study

The major goal of this study is to examine the effect of a 100 kcal/day recess based activity intervention for 2nd and 3rd grade children on rate of weight gain.

Pending

RO1 CA121005 (Freedson and Staudenmayer co-PI's)

1/1/13 – 12/31/17

Novel analytic techniques to assess physical activity

This competitive renewal proposes to extend our previous work on validation of a wearable monitor by training machine learning algorithms in free-living settings and validating the new algorithms on an independent sample. We propose to also investigate optimal monitor placement and sampling frequencies. Web-based data processing and analysis tools will be developed.