

*Marian L. Kohut*  
*Curriculum Vitae*  
2007

**Address**

**Home**

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Ames IA, 50011  
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**Email:** [mkohut@iastate.edu](mailto:mkohut@iastate.edu)

**EDUCATION**

<u>Institution</u>	<u>Field of Study</u>	<u>Degree / Year</u>
University of Chicago, Chicago, IL	Biology	B.A., 1982
Pennsylvania State University, State College, PA	Physiology	M.S., 1986
University of South Carolina, Columbia, SC	Ex. Physiology	Ph.D., 1996

**POSTDOCTORAL TRAINING**

Center for Psychoneuroimmunology, University of Rochester, Rochester, NY	Psychoneuroimmunology	1996-1998
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**FACULTY APPOINTMENTS**

8/05-present Associate Professor, Dept of Health and Human Performance, Iowa State University

1/01- present Faculty, Immunobiology Program, Iowa State University

8/02-present Faculty, Gerontology Program, Iowa State University

8/98 – 8/05 Assistant Professor, Department of Health and Human Performance, Iowa State University

**FELLOWSHIP AWARDS**

**National Research Service Award**, NIMH Training Grant No. 5 T32 MH18822  
University of Rochester, Rochester, NY  
10/95-8/98

**Public Health Traineeship Award**, School of Public Health  
University of South Carolina, Columbia, SC  
8/92-9/95

**Dissertation Fellowship Award**, School of Public Health

## **AWARDS, HONORS**

**Graduate Student Research Award** - Southeast Chapter of the American College of Sports Medicine, 1995. "Induction of macrophage beta-interferon mRNA during exercise."

**Best Research Abstract** - International Society of Exercise Immunology, Brussels 1995. "Role of stress hormones in exercise-induced suppression of alveolar macrophage function."

**Outstanding Early Research Award**, College of Education, Iowa State University, 2001

**New Investigator Award**, Psychoneuroimmunology Research Society, 2005

## **PROFESSIONAL MEMBERSHIPS AND ACTIVITIES**

Member, American College of Sports Medicine (1987-present)  
Certification Examiner, Health/Fitness instruction (1992-2000)

Member, Psychoneuroimmunology Research Society (1996-present)

Member, International Society of Exercise Immunology (1998-present)  
Chair, Membership Committee (2000-2004)

## **MEMBERSHIP IN COMMUNITY SERVICE ORGANIZATIONS**

Bethesda Christian Nursery School – Treasurer, (2002-2004)  
Huxley Community Board of Parks and Recreations (2003-current)

## **CERTIFICATIONS**

Exercise Specialist, American College of Sports Medicine (1987-present)  
Older Adult Exercise Program Leader, American College of Sports Medicine (2000-present)

## **EDUCATIONAL EXPERIENCE**

### **Education - Courses Taught**

**Iowa State University - (1999-present)**

#### **Courses taught with sole responsibility for entire course**

HS 350                      Human Disease

EXSP 358    Physiology of Exercise  
EXSP 462    Medical Aspects of Exercise

**Courses taught as co-instructor or specific topic lectures**

ZOOL 454    General and Comparative Endocrinology (topic – neuroendocrine-immune interaction)  
BBMB 615    Molecular Immunology (topic – physiological alteration of immunologic functions)  
BMS 552    Advanced Vertebrate Physiology (topic – cytokine biology, neuroendocrine-immune)  
Geron 501    Gerontology Seminar

**University of South Carolina – (1992-1995)**

EXSC 223-224    Anatomy / Physiology Laboratory

**Education -Student Supervision**

**Graduate Students**

1. Graduate Students completing 8-12 week laboratory rotation (~ 20 hrs/week requiring supervision)

David Cantowine, Immunobiology – Spring, 2002  
Aisha Martin, Immunobiology – Fall, 2002  
Quingli Wu, Immunobiology – Fall, 2003  
Paola Baggiota, Immunobiology- Fall, 2004  
Courtney Perry, Immunobiology - Fall, 2004  
Mandy Scherer, Immunobiology – Spring 2005  
Richard Gordon, Immunobiology, - Fall, 2005  
Ryan Vanderveen, Immunobiology – Fall, 2006  
Kelley Clausen, Immunobiology – Spring, 2007

**2a. Primary thesis advisor for the following M.S. students**

**James Thompson**, HHP – Thesis Topic “Androgenic steroid effects on immune function”  
M.S. 2000.

Publication: **Kohut ML**, Thompson JR, Campbell J, Brown GA, King DS. 2003 Ingestion of a dietary supplement containing androgens has minimal effect on immunity, but alters serum hormones in middle-aged men. *J. Am Coll Nutr.* 22:363-371.

**Megan Cooper**, HHP – Thesis Topic “Psychological factors and impact on influenza vaccine response”  
M.S. 2000

Publication: **Kohut ML**, Cunnick JA, Cooper MM, Nickolaus MS, Russell DW. 2002. Exercise, psychosocial factors and multivitamin supplementation are associated with enhanced immune response to influenza immunization in older adults. *J. Gerontol.:Med Sci.* 57A:M577-M562.

**Michael Nickolaus**, HHP – Thesis Topic, “Physical Activity effect of influenza vaccine efficacy”

M.S. 2000

Publication: **Kohut ML**, Cunnick JA, Cooper MM, Nickolaus MS, Russell DW. 2002.

Exercise, psychosocial factors and multivitamin supplementation are associated with enhanced immune response to influenza immunization in older adults. *J. Gerontol.:Med Sci.* 57A:M577-M562.

**Barbara Arnston**, HHP- Thesis Topic, “Exercise intervention in the elderly and effect on antibody response to influenza vaccine”

M.S. 2002

Publication: **Kohut ML**, Arntson BA, Lee W, Rozeboom KA, Yoon K, Cunnick JE, Wang R,

McElhaney JA. Moderate exercise improves antibody response to influenza vaccine in older adults. *Vaccine* 22:2298-2306, 2004.

**Sarah Borengasser**, HHP – Thesis topic “ Aging and exercise effects on ERK p42MAPK/P44MAPK in purified T cells”

M.S. 2003

**Aisha Martin**, Immunobiology – Thesis Topic, “Aging & exercise impact on resistance to influenza virus, M.S. 2005

**Jack Johnson**, HHP – Thesis Topic, “Interferon gamma responses to recall influenza virus challenge and impact of aerobic vs. strength/flexibility exercise”

M.S. 2006

**Joji George**, HHP – Thesis Topic, “Effect of an exercise intervention on serum proinflammatory cytokines in older adults”

M.S. expected 2007

**Hala Bastawros**, Immunobiology – Thesis Topic, “Role of IL-6 as a mediator of infection-associated alterations of blood glucose and insulin”

M.S. expected 2007

## **2b. Secondary thesis advisor for the following M.S. students**

**Kerry Parsons**, HHP – Thesis topic, “Acute effects of oral anabolic-androgenic supplements on blood androgen and estrogen levels in man” M.S. 1999

**Joshua Dewey**, HHP-Thesis topic, “Acute hormonal responses to oral and androstenedione in college aged women”. M.S. 2001

**Jennifer Herberich**, Statistics, Thesis topic “ Comparison of the power of the McNemar’s Test and the Mainland-Gart test for treatment effect in the presence of an order effect with binary cross-over data”. M.S. 2001

**Amruta Karandikar**, HHP, Thesis topic, “Age and fitness effects on orthostatic tolerance”.  
M.S. 2002

**Lanying Qi**, Statistics, Thesis topic, “Analysis of knowledge, attitude, and behaviors related to HIV/AIDS by fitting logistic regression models”. M.S. 2004.  
M.S. 2004

**Laura Schmitt**, FSHN – Thesis Topic, The Cytotoxicity of *Hypericum perforatum* (St. John’s Wort): Extracts and individual constituents  
M.S. 2005.

**Courtney Perry**, FSHN –Thesis topic, “Inflammatory cytokines and soy isoflavones in post-menopausal women  
M.S. expected 2007

### 3a. Primary thesis advisor for the following Ph.D students

**David Senchina**, Immunobiology, Dissertation topic, “Immunomodulatory properties of different species and extracts of *Echinacea*”  
Ph.D. expected 2006

#### Publications:

1) Kohut ML, **David S. Senchina**, Kelley S. Madden, Aisha E. Martin, David L. Felten, Jan A. Moynihan 2004. Age effects on macrophage function vary by tissue site, nature of stimulant, and exercise behavior. *Exp Gerontol.* 39:1347-60.

2) Kohut ML, **Senchina DS**. 2004. Reversing age-associated immunosenescence via exercise. *Exerc. Immunol. Rev.* 10:6-41.

3) **Senchina DS**, McCann DA, Asp JM, Johnson JA, Cunnick, JE, Kaiser M, Kohut, ML. 2005. Changes in immunomodulatory properties of *Echinacea* spp. Root infusions stored at 4°C for four days. *Clinica Chimica Acta.* 355:67-82.

4) Kohut ML, Martin AE, **Senchina DS**, Lee W. 2005. Glucocorticoids produced during exercise may be necessary for optimal virus-induced IL-2 and cell proliferation whereas both catecholamines and glucocorticoids may be required for adequate immune defense to viral infection. *Brain, Behavior, Immunity* 19(5):423-35.

5) Senchina DW, Wu L, Flinn GN, Konopka DN, McCoy JA, Widrlechner MP, Wurtele ES, **Kohut ML**. 2006. Year-and-a-half old, dried *Echinacea* roots retain cytokine modulating capabilities in an in vitro human older adult model of influenza vaccination. *Planta Med.* 72:1207-1215.

7) **Senchina DS**, Flagel LE, Wendel JF, Kohut ML. 2006. A Phenetic comparison of seven *Echinacea* species based on immunomodulatory characteristics, *Economic Botany*, 60:205-211.

8) **McCann DA, Solco A, Macaluso F, Murphy PA, Kohut ML, Senchina DA**. Cytokine- and interferon-modulating properties of *Echinacea* spp. root tinctures stored at -20 °C for 2 years, *In Press, J. Interferon & Cytokine Res*

9) **Senchina DS & Kohut ML**. *Immunological Outcomes of Exercise in Older Adults, In Press,*

#### *Clinical*

*Interventions in Ageing (invited review)*

10) **Senchina DS, McCann DA, Flinn GN, Zhai Z, Cunnick JE, Kohut ML**. *Phytomedicinal properties of echinacea tennesseensis vary by plant organ, In review, Fitoterapia*

3b. Secondary thesis advisor for the following Ph.D. students

**Juliana Hernandez**, HHP, Dissertation topic, “Age and fitness effects on limb venous compliance responses and tolerance to maximal lower body negative pressure  
Ph.D. 2004  
Current position: Assistant Professor, Southern Illinois University, Exercise Science

**Mark Hausmann**, Ecology and Evolutionary Biology, Dissertation topic, “Evaluation of avian senescence patterns”  
Ph.D. 2005.  
Current faculty position in Biology at Swarthmore College

**Cindy Langren**, DVM, Food Science/Human Nutrition, Dissertation topic, “Low level dietary deoxynivalenol effects on immune response under stress”.  
Ph.D. 2005.  
Currently employed as research associate/DVM for U.S. Army

**Zili Zhai**, Neuroscience, Immunomodulatory, anti-inflammatory and wound healing properties of Echinacea species.  
Ph.D. expected, 2008

**Paola Boggiatto**, Veterinary Pathology - Thesis Topic “Dendritic cell function responses during *Leishmania amazonensis* infection”  
Ph.D. expected 2008.

**Kim Petry**, Genetics – Thesis topic, “Anti-inflammatory properties of Hypericin”, Ph.D. expected 2008

**Xianai Wu**, Toxicology – Thesis Topic, “Doses of deoxynivalenol and immune modulation”, Ph.D. expected 2007

**Carlie LaLone**, Genetics – Thesis Topic, Anti-inflammatory actions of Echinacea”  
Ph.D. expected 200

4. Supervision of postdoctoral fellows

**Wanglok Lee, Ph.D.** Research topic, “Exercise Immunology”  
11/01- 9/04  
Current position: Assistant Professor, Chungnam National University, Republic of Korea

**Young-Je Sim, Ph.D.** Research topic “Exercise and aging effects on immunity to viral infection”  
2/06 - current

### Publications:

Kohut ML, Thompson JR, **Lee W**, Cunnick JE. 2004. Exercise training-induced adaptations of immune response are mediated by beta-adrenergic receptors in aged, but not young mice. *J. Appl. Physiol.* 96:1312-1322.

Kohut ML, Arntson BA, **Lee W**, Rozeboom KA, Yoon K, Cunnick JE, Wang R, McElhaney JA. 2004. Moderate exercise improves antibody response to influenza vaccine in older adults. *Vaccine* 22:2298-2306.

**Kohut ML**, Martin AE, Senchina DS, Lee W. 2005. Glucocorticoids produced during exercise may be necessary for optimal virus-induced IL-2 and cell proliferation whereas both catecholamines and glucocorticoids may be required for adequate immune defense to viral infection. *Brain Behav. Immun.* 19(5):423-35.

**Kohut ML**, Lee W, Martin A, Arnston B, Russell DW, Ekkekakis P, Yoon KJ, Bishop A, Cunnick JE. 2005. The exercise-induced enhancement of influenza immunity is mediated in part by improvements in psychosocial factors in older adults. *Brain, Behavior, Immunity.* 19:357-366.

5. Research supervision of undergraduate students (students in honors program and/or completing research project in my laboratory)

Shawn Spooner (current medical student at University of Iowa)

Allison Magel (current medical student at University of Iowa)

Crystal Loving (current Ph.D. student, Immunobiology, Iowa State University)

Jeff Campbell (current medical student at University of Iowa)

Kayla Rozeboom (current Ph.D. student, Physical Therapy, University of Washington, St. Louis)

Allison Haug (current student of Chiropractic, Davenport, IA)

Kathleen Kleemeier (current physical therapy student)

Andy Carrell (current Ph.D. student, Motor Learning, Iowa State University)

Jessie Ranheim (current internship in exercise science)

Dustin McCann (current research assistant on NIH botanical grant)

Jess Asp (Freshmen Honors Mentor Program, 2003)

Catalina Castillo (Freshmen Honors Mentor Program, 2004)

Elizabeth Vanderah (Freshmen Honors Mentor Program, recipient of “ Freshmen Honors Research Grant”, 2004)

Amber Reighard (Freshmen Honors Mentor Program, 2004)

Gina Nicole Flinn (Freshmen Honors Mentor Program, 2005)

Heather Willson (Freshmen Honors Mentor Program 2005)

Isaac Miller (Freshmen Honors Mentor Program, 2005)

## **RESEARCH ACTIVITY**

### **Overall research objectives**

My primary research emphasis over the past 5 years has been focused on modulation of the immune response to viral infection. We have studied the impact of aging, exercise, neuroendocrine factors, and dietary supplements on immune responsiveness with an overall goal of developing therapies to improve resistance to infection. In human studies, a model of influenza immunization among older adults has been used to examine the mechanisms by which exercise may reverse the process of immunosenescence. Outcome variables have included: antibody subclasses, intracellular antigen-specific Th1/Th2 cytokines in CD4+ and CD8+ T cells, CTL function, and ERK / phosphoERK response. We have also used a mouse model of upper respiratory viral infection to challenge with either influenza virus or HSV-1 virus to study immunomodulation due to age, dietary supplements, exercise, and interaction between these immunomodulators. Outcome measures include lung pathology, lung viral titers, alveolar macrophage antiviral function and production of interferon  $\alpha/\beta$ , expression of co-stimulatory molecules on antigen-presenting cells, Th1/Th2 cytokines, phosphoERK in CD4+, CD8+ cells, the expression of Type I interferon-induced proteins. Some of the newer directions in our laboratory include the assessment of proinflammatory cytokines. Elevated proinflammatory cytokines have been associated with aging and numerous chronic diseases. We are interested in determining to what extent different therapies, (i.e., exercise and botanicals) may reduce the level of these cytokines.

## **RESEARCH GRANTS - PAST**

**American College of Sports Medicine Foundation Grant** (Davis JM, Principal Investigator)  
The role of corticosteroids / catecholamines on macrophage antiviral activity and resistance to infection in exercised mice  
1/01/94-12/31/95  
Total support \$16,000 (awarded for dissertation research, assisted in writing of research grant)

**Sigma Xi Scientific Research Society**, (Kohut, ML, Principal Investigator)  
Stress hormones and macrophage antiviral immunity”  
1/01/93-1/1/94  
Total support \$1,000

**Special Research Initiation Grant**, Iowa State University (Kohut, ML, Principal Investigator)  
“Exercise and the Efficacy of Influenza Vaccination in the Elderly”  
1/01/99-12/31/00  
Total support \$16,331 (Pilot data collected used in subsequent NIH funded grant)

**University Research Grant** - Iowa State University (Kohut, ML, Principal Investigator)  
“Exercise-induced enhancement of antigen-specific immunity in aged mice: role of catecholamines”  
7/01/99 – 6/31/02  
Total support \$ 18,116

**Nyvatex Research Grant**, Nyvatex Corp (Kohut ML, Principal Investigator)  
"Effect of non linear electric fields on immune cell number and function in post-menopausal women"  
7/01-06/04  
Total support \$66,136

**SPRIG - Iowa State University** (Martin P., Principal Investigator)  
"Risk and Resilience in Rural Elderly Iowans  
1/1/02 - 12/31/02  
Total support \$ 11,033

**RISE - Iowa State University College of Education** (Kohut ML, Principal Investigator)  
"Effect of exercise and age on mitogen-activated protein kinase (MAPK) signal transduction molecules"  
2/1/02-6/30/02  
Total support \$1297

**Center for Designing Foods to Improve Nutrition – USDA/CSRS** (Reddy M, Principal Investigator)  
“Effect of Soy Protein Components in Reducing Cardiovascular Disease Risk in Postmenopausal Women”  
1/1/03-1/1/04  
Total Costs \$ 27,286 (Role co-investigator)

**P01ES12020-01 Pilot Project, NIH (NIEHS/ODS)** (Buss JA & Kohut ML – Co-investigators)  
“Cellular mechanisms of antiviral activity of Echinacea”  
7/01/04-6/31/05  
Total costs, \$58,397  
Role:Co-investigator (15% effort)

**R01 AI49956-01, NIH (National Institute of Allergy / Infectious Disease)** (Kohut ML, Principal Investigator)

"Exercise & influenza immunity:A Psychoneuroendocrine model"

6/1/02-5/31/06

Total costs \$897,340 (35% effort)

**Role – PI**

### **RESEARCH GRANTS CURRENT**

**P01ES12020-01, NIH (NIEHS/ODS)** (Birt DF, Program Director)

"Center for Research on Botanical Dietary Supplements"

7/1/02-6/30/07

Total Costs \$7,946,490 (11% effort)

**Role -Co-investigator on Project 3**

**U.S. Wheat & Barley SCAB Initiative** (Hendrich, S. Principal Investigator)

"Biomarkers of low dose immunotoxicity of deoxynivalenol in mice"

5/1/06-4/30/07

Total Costs \$67,929

**Role – Co-investigator**

**NIOSH R21 OH008270-01** (PI:Franke)

Stress, cytokines and heart disease in police

1/1/07-12/31/08

Total Costs \$360,798

**Role- Co-investigator**

**NIAID (NIH) (Kohut, ML, Principal Investigator)**

1 R01 AI059455-01

"Exercise-induced immunomodulation in the aged"

12/1/2006-11/30/2011

Total Costs \$2,582,768 (30% effort)

### **RESEARCH GRANTS PENDING**

**NIH/NCCAM 9P50 AT004155-06** (Birt, D, PI)

Center for Research on Botanical Dietary Supplements

3/2007 to 2/2010

Total costs \$4,383,451 (Total) \$946,878 (project 2)

**NIH R21 AG030389-01** (Franke, W, PI)

PREPARE:Progressive resistance exercise to promote activity in rural elderly

9/1/07 to 8/31/09

Total costs \$402,875

## **PUBLICATIONS**

*Senchina DS, McCann DA, Flinn GN, Zhai Z, Cunnick JE, Kohut ML. Phytomedicinal properties of echinacea tennesseensis vary by plant organ, In review, Fitoterapia*

*McCann DA, Solco A, Macaluso F, Murphy PA, Kohut ML, Senchina DA. Cytokine- and interferon-modulating properties of Echinacea spp. root tinctures stored at -20 °C for 2 years, In Press, J. Interferon & Cytokine Res.(2007)*

*Senchina DS, Kohut ML. Immunological Outcomes of Exercise in Older Adults., In Press, Clinical Interventions in Aging (2007)*

*Zhai Z, Liu Y, Senchina DS, Wurtele ES, Murphy PA, Kohut ML, Cunnick JE. Enhancement of innate and adaptive immune functions by multiple Echinacea species. In Press, J. Medicinal Food. (2007)*

Landgren CA, Kohut ML, Hendrich S. 2006. Low-level dietary deoxynivalenol and acute exercise stress result in immunotoxicity in BALB/c mice. *J Immunotoxicol.* 3:173-178.

Senchina DS, Fligel LE, Wendel JF, **Kohut ML**. 2006. A Phenetic comparison of seven Echinacea species based on immunomodulatory characteristics, *Economic Botany*, 60:205-211.

Hanson LN, Engelman HM, Alekel DL, Schalinske KL, **Kohut ML**, Reddy MB. 2006. Effects of soy isoflavones and phytate on homocysteine, C-reactive protein, and iron status in postmenopausal women. *Am.J. Clin. Nutr.*84:774-80.

Senchina DW, Wu L, Flinn GN, Konopka DN, McCoy JA, Widrlechner MP, Wurtele ES, **Kohut ML**. 2006. Year-and-a-half old, dried Echinacea roots retain cytokine modulating capabilities in an in vitro human older adult model of influenza vaccination. *Planta Med.* 72:1207-1215.

**Kohut ML**, McCann DA, Russell DW, Konopka, DN, Cunnick JE, Franke WD, Castillo MC, Reighard AE, Vanderah E. 2006. Aerobic exercise, but not flexibility/resistance exercise, reduces serum IL-18, CRP, and IL-6 independent of beta-blockers, BMI, and psychosocial factors in older adults. *Brain, Behavior, Immunity*,20:201-209.

**Kohut ML**, Martin AE, Senchina DS, Lee W. 2005. Glucocorticoids produced during exercise may be necessary for optimal virus-induced IL-2 and cell proliferation whereas both catecholamines and glucocorticoids may be required for adequate immune defense to viral infection. *Brain, Behavior, Immunity* 19(5):423-35.

Senchina DS, McCann DA, Asp JM, Johnson JA, Cunnick JE, Kaiser M, **Kohut, ML**. 2005. Changes in immunomodulatory properties of Echinacea spp. root infusions and tinctures stored at 4°C

for four days. *Clinica Chimica Acta*. 355:67-82.

**Kohut ML**, Lee W, Martin A, Arnston B, Russell DW, Ekkekakis P, Yoon KJ, Bishop A, Cunnick JE. 2005. The exercise-induced enhancement of influenza immunity is mediated in part by improvements in psychosocial factors in older adults. *Brain, Behavior, Immunity*. 19:357-366.

**Kohut ML**, David S. Senchina, Kelley S. Madden, Aisha E. Martin, David L. Felten, Jan A. Moynihan. 2004. Age effects on macrophage function vary by tissue site, nature of stimulant, and exercise behavior. *Exp Gerontol* 39(9):1347-1360.

**Kohut ML**, Thompson JR, Lee W, Cunnick JE. 2004. Exercise training-induced adaptations of immune response are mediated by beta-adrenergic receptors in aged, but not young mice. *J. Appl. Physiol*. 96:1312-1322.

**Kohut ML**, Arntson BA, Lee W, Rozeboom KA, Yoon K, Cunnick JE, Wang R, McElhaney JA. 2004. Moderate exercise improves antibody response to influenza vaccine in older adults. *Vaccine* 22:2298-2306, 2004.

Constanzo ES, Lutgendorf SK, **Kohut ML**, Nisely N, Spooner SS, Rozeboom KA, McElhaney JA. 2004. Mood and the cytokine response to influenza virus in the elderly. *J. Gerontol: Med. Sci.*59A:1328-1333.

**Kohut ML**, Thompson JR, Campbell J, Brown GA, King DS. 2003 Ingestion of a dietary supplement containing androgens has minimal effect on immunity, but alters serum hormones in middle-aged men. *J. Am Coll Nutr*. 22:363-371.

**Kohut ML**, Cunnick JA, Cooper MM, Nickolaus MS, Russell DW. 2002. Exercise, psychosocial factors and multivitamin supplementation are associated with enhanced immune response to influenza immunization in older adults. *J. Gerontol.:Med Sci*. 57A:M577-M562.

Brown GA, Vukovich MD, Martini ER, **Kohut ML**, Franke WD, Jackson DA, King DS. 2001. Endocrine and lipid response to chronic androstendiol-herbal intake in 30-58 year old men. *J. Am. Coll. Nutr.*20:520-528.

Brown GA, Vukovich MD, Martini ER, **Kohut ML**, Franke WD, Jackson DA, King DS. 2001. Effects of androstenedione-herbal supplement on serum sex hormone concentrations in 30 - 59 year old men. *Int. J. Vit. Nutr. Res.*71:27-31.

**Kohut ML**, Boehm GW, Moynihan JA. 2001. Moderate exercise is associated with enhanced-antigen specific cytokine production in aged mice. *Mech. Ageing Dev.* 122:1135-1150

**Kohut ML**, Boehm GW, Moynihan, JA. 2001. Prolonged exercise suppresses antigen-specific cytokine response to upper respiratory infection. *J Appl. Physiol*. 90:678-684.

Brown GA, Vukovich MD, Martini ER, **Kohut ML**, Franke WD, Jackson DA, King DS. 2000. Endocrine responses to chronic androstendione intake in 30 - 56 year old men. *J. Clin. Endocrinol. Metab.* 85:4074-4080.

**Kohut ML**, Davis JM Jackson DA, Jani P, Mayer EP, Ghaffar A, Essig D 1998. Exercise effects on IFN- $\beta$  expression and viral replication in lung macrophages following HSV-1 infection. *Am. J. Physiol.* 275:L1089-L1094.

Davis JM, **Kohut ML**, Colbert LH, Jackson DA, Mayer EP, Ghaffar A. 1998 Exercise effects on lung tumor metastases and in vitro alveolar macrophage antitumor cytotoxicity, *Am. J. Physiol.*, 274: R1454-R1459.

**Kohut ML**, Davis JM, Jackson DA, Colbert LH, Strasner A, Essig DA, Pate RR, Ghaffar A, Mayer EP.  
1998. The role of stress hormones in exercise-induced suppression of alveolar macrophage antiviral function.  
*J. Neuroimmunol.* 81:193-200.

Davis JM, Weaver AM, **Kohut ML**, Mayer EP, Ghaffar A. 1998. Immune system activation and fatigue during treadmill running: Role of interferon alpha/beta. *Med. Sci. Sports Exerc.* 30:863-868.

Davis JM, **Kohut ML**, Colbert LH, Jackson DA, Ghaffar A, Mayer EP 1997. Exercise, alveolar macrophage, function and susceptibility to respiratory infection. *J. Appl. Physiol.* 83:1461-1466.

Strasner A, Davis JM, **Kohut ML**, Mayer EP, Ghaffar A. 1997. Effects of exercise intensity of NK cell activity in women. *Int. J. Sports Med.* 18:56-62.

Woods JA, Davis JM, **Kohut ML**, Ghaffar A, Mayer EP, Pate RR. 1994. Effects of exercise on the immune response to cancer. *Med. Sci. Sports Exerc.* 26:1109-1115.

### **Book chapters and invited review articles**

Senchina DS, **Kohut ML**, Immunological Outcomes of Exercise in Older Adults, (*In review, Clinical Interventions in Ageing*) (invited review)

**Kohut ML**, Senchina DS 2004. Reversing age-associated immunosenescence via exercise. *Exerc. Immunol. Rev.* 10: 6-41. (invited review)

**Kohut ML.**, 2001. Immune system modulators. In: *Sports Supplements*. J. Antonio, J.R. Stout (Eds) Baltimore, MD: Lippincott Williams & Wilkins, 72-104.

## **SERVICE**

### ***Responsibilities / Appointments National or International***

#### **Reviewer for National Review Panels**

Reviewer on NIH study section “Basic Sciences Section” – NCCAM

Reviewer for NIH-funded Pilot Proposals on Botanical Center grant - NIEHS

### ***Responsibilities / Appointments at ISU***

- 1. Department committees in HHP** include, Graduate Faculty, Teacher Education Committee, Social Committee, Curriculum Committee
- 2. Other program/department committees** include, Immunobiology Admissions Committee, Immunobiology Supervisory Committee, Gerontology Advisory Committee
- 3. College Committees** include Academic Standards Committee (past), Diversity and Equity (past), Research Committee (past)

### ***Journal Reviews***

Reviewer for following journals:

Brain, Behavior, Immunity  
Journal of Applied Physiology  
American Journal of Physiology  
International Journal of Sports Medicine  
Canadian Journal of Physiology and Pharmacology  
Journal of Leukocyte Biology  
Journal of Psychosomatic Medicine  
Medicine, Science, Sports & Exercise  
Health Psychology  
Physiology and Behavior  
Expert Review of Vaccines  
Biomed Central Geriatrics  
Psychoneuroendocrinology  
Psychophysiology

### ***Committees / Other Service responsibility***

International Society of Exercise Immunology, Former Chair of Membership Committee

International Society of Exercise Immunology, Chair for sessions at meetings

American College of Sports Medicine – Chair for sessions at annual meetings  
Psychoneuroimmunology Research Society, Chair for sessions at annual meetings