Exercise and Sport Sciences

Academic Adviser: G. A. Shelley, Co-Chair of Graduate Program, gshelley@ithaca.edu

The School of Health Sciences and Human Performance offers a master of science degree program in exercise and sport sciences with concentrations in exercise physiology and sport psychology. Thesis and non-thesis plans within these two areas allow students to match their learning experiences to individual academic strengths and career plans. A small student body and knowledgeable, interested faculty enhance program individualization, as does the opportunity to take courses at nearby Cornell University and to pursue independent study.

Admission Requirements

Admission to these programs is granted on the basis of cumulative undergraduate grade point average, Graduate Record Examination scores, and recommendations. To be considered for admission, applicants must have an undergraduate degree from an accredited institution.

Consideration is given to those applicants whose academic preparation most closely aligns with their intended area of concentration (i.e., exercise physiology or sport psychology). Applicants for concentrations in exercise physiology usually have undergraduate degrees in areas such as exercise science, athletic training, nursing, or biology. For the sport psychology concentration, students usually have undergraduate degrees in conceptually related content areas that emphasize psychology.

Applications are reviewed on an individual basis, taking into account such factors as previous academic achievements, successful professional experience, and special personal circumstances. Applicants who have questions regarding their eligibility for admission are encouraged to contact the co-chair of the program gshelley@ithaca.edu, 607-274-1275.

Tuition Expenses

Tuition for the exercise and sport sciences program has been set at $555 per credit for the 2006-7 academic year.

Master of Science Degree with Thesis

(30 credits)

The master of science program with thesis serves a twofold purpose. First, it can be viewed as the initial step toward advanced study. Second, the program challenges those individuals who desire to advance their knowledge in exercise physiology or sport psychology. Both theoretical and applied research are emphasized. The thesis is based on the student’s independent research, but the work is guided, from selection of a topic through final revision, by a thesis committee. The completed thesis must receive the approval of both the department and the dean of graduate studies.

Graduation requirements -- Students need 24 credits of coursework and 6 credits of thesis to complete this program. In addition, the student must complete an oral examination in defense of the thesis. The thesis must be completed within the area of concentration.
Oral examination -- In order to be eligible for the oral examination in defense of the thesis, the student must have completed the required courses and have a cumulative GPA of 3.00 or higher for all graduate courses completed as part of the program. This includes graduate courses taken at Ithaca College, exchange courses at Cornell University, or approved transfer courses taken at other institutions.

**Thesis Plan Credits**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ESSG-61000</td>
<td>Survey of Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>ESSG-61100</td>
<td>Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>ESSG-62000</td>
<td>Thesis I</td>
<td>3</td>
</tr>
<tr>
<td>ESSG-62100</td>
<td>Thesis II</td>
<td>3</td>
</tr>
<tr>
<td>ESSG-61200</td>
<td>Leadership in Exercise and Sport</td>
<td>3</td>
</tr>
<tr>
<td>ESSG-64000</td>
<td>Seminar (two semesters)</td>
<td>0</td>
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<tr>
<td></td>
<td>Area of concentration</td>
<td>12</td>
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<tr>
<td></td>
<td>Electives</td>
<td>6</td>
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<td>Total</td>
<td>30</td>
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(The total may include up to 6 credits approved for transfer from other schools.)

**Master of Science Degree without Thesis**

(36 credits)

The non-thesis plan is designed for those whose major objective in graduate study is to enhance their professional background in exercise and sport sciences.

Graduation requirements -- A total of 36 credits (24 credits of required courses and 12 credits of electives) are needed to complete this program. In addition, the student must complete a written comprehensive examination.

Written comprehensive examination -- A written examination covering general knowledge of the field, research and statistical methods, and specific knowledge in the area of concentration constitutes the comprehensive examination for this degree program. In order to be eligible for the written comprehensive examination, the student must have completed the required courses and have a cumulative GPA of 3.00 or higher for all graduate courses completed as part of the program. This includes graduate courses taken at Ithaca College, exchange courses at Cornell University, or approved transfer courses taken at other institutions.

**Non-Thesis Plan Credits**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>ESSG-61200</td>
<td>Leadership in Exercise and Sport</td>
<td>3</td>
</tr>
<tr>
<td>ESSG-61000</td>
<td>Survey of Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>ESSG-61100</td>
<td>Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>ESSG-64000</td>
<td>Seminar (two semesters)</td>
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<td>Area of concentration</td>
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<td></td>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>36</td>
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</tbody>
</table>

(The total may include up to 6 credits approved for transfer from other schools.)
Area of Concentration

One of the unique characteristics of Ithaca College’s plan of study is the opportunity to pursue an area of concentration, an experience usually reserved for doctoral study at many institutions. The student must complete 9-15 credits of courses approved by the adviser in one area of concentration -- exercise physiology or sport psychology. The concentration approach to graduate study is designed to provide depth to the program and also to provide specific future employment opportunities. Included in each of the concentrations is the possibility of independent study and internship to increase relevant and practical learning opportunities.

Concentration in Exercise Physiology

Exercise physiology is the study of physiological responses and adaptations consequent to exercise. Through specific coursework, this concentration focuses on both the theoretical and applied/clinical aspects of exercise physiology. Students who want to emphasize theoretical learning are advised to pursue the thesis option while those with a clinical orientation should consider the non-thesis option with an internship. If desired, a student can have a more comprehensive experience by completing all prescribed coursework, the thesis, and an internship.

An objective of the exercise physiology concentration is to assist in preparation for registration as a clinical exercise physiologist and for external certification as a health/fitness instructor or exercise specialist through the American College of Sports Medicine. Students are actively encouraged to seek additional credentials of this nature.

Prerequisites for applicants to the exercise physiology concentration include completion of coursework in anatomy and physiology; biomechanics or kinesiology; exercise physiology; and statistics or tests and measurements.

Thesis plan students must take 12 credits and complete their thesis in this area of concentration. Students in the non-thesis plan must complete 18 credits in this area of concentration. All exercise physiology students are eligible for related internships. An internship is strongly encouraged for those following the non-thesis plan. Exercise physiology students may study special topics through ESSG-62000 Thesis I, ESSG-63000 Independent Research, and ESSG-63100 Independent Reading.

Exercise Physiology Concentration Courses

Required

<table>
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<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>ESSG-54000</td>
<td>Physiological Mechanisms of Exercise: Cellular Aspects</td>
</tr>
<tr>
<td>ESSG-54200</td>
<td>Physiological Mechanisms of Exercise: Systemic Aspects</td>
</tr>
<tr>
<td>ESSG-54400</td>
<td>Multidimensional Assessment of Physical Function</td>
</tr>
<tr>
<td>ESSG-54600</td>
<td>Cardiopulmonary Assessment for Exercise</td>
</tr>
<tr>
<td>ESSG-54800*</td>
<td>Pathophysiology, Limited Capacity, and Exercise</td>
</tr>
<tr>
<td>ESSG-64800*</td>
<td>Strength and Conditioning</td>
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*Required for non-thesis option; recommended for thesis plan

Selected Electives

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<th>Course</th>
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<tbody>
<tr>
<td>ESSG-51800</td>
<td>Exercise and Rehabilitation Psychology</td>
</tr>
<tr>
<td>ESSG-52000</td>
<td>Advanced Biomechanics of Human Movement</td>
</tr>
</tbody>
</table>
Concentration in Sport Psychology

The primary focus of this concentration is on the psychological factors that influence sport participation and performance. Topics are derived from clinical, developmental, educational, experimental, cognitive, and social psychology, and also from the basic understanding of sport and its varied task demands. Emphasis is on application, description, explanation, and prediction of sport participation and performance. Applicants for the sport psychology concentration need to show evidence of completed coursework in conceptually relevant content areas. A statistics or tests and measurements class is also a prerequisite.

Thesis plan students must take 9 credits and complete their thesis in this area of concentration. Students in the non-thesis plan must complete 18 credits in this area of concentration.

Sport Psychology Concentration Courses

**Required**

- ESSG-51200 Psychological Perspectives of Sport
- ESSG-51300 Psychological Applications to Sport Performance
- ESSG-51400 Counseling Student-Athletes
- ESSG-51500* Effective Team Building
- ESSG-51600* Motivation for Superior Performance
- ESSG-51800* Exercise and Rehabilitation Psychology
- ESSG-61400* Professional Practice Issues in Sport Psychology

*Required for non-thesis option; recommended for thesis plan

**Selected Electives**

- ESSG-54400 Multidimensional Assessment of Physical Function
- ESSG-64500 Psychophysiology of Exercise and Sport
- ESSG-66000 Internship

Academic Warning and Dismissal

The graduate program in exercise and sport sciences follows the Division of Graduate Studies policies regarding academic warning and academic dismissal. Students on academic warning are not permitted to enroll in thesis, independent research, or independent reading courses.

Academic Advising

The chair of the graduate program in exercise and sport sciences serves as the academic adviser for all students enrolled in the program. Students writing a thesis select, with approval of the chair, a thesis adviser and reader from among the graduate faculty in exercise and sport sciences.
**Pass/Fail Option**

All graduate courses other than Thesis II must be taken for a letter grade. There is no pass/fail option for graduate courses in exercise and sport sciences.

**Graduate Assistantships**

A limited number of assistantships are available for full-time matriculated graduate students and for admitted degree candidates. The assistantships include a scholarship, which is applied to the tuition bill, and a taxable salary for carrying out assigned duties. Students must have an undergraduate cumulative GPA of 3.00 or higher in order to be considered for assistantships. Assistantships are typically awarded on a two-semester basis and involve 8-15 hours per week of duties and responsibilities arranged and supervised by a faculty member. Assistantships are offered in the fitness center and wellness clinic; in the anatomy, physiology, kinesiology, biomechanics, exercise physiology, and neuromuscular control laboratories; for recreational sports; and for coaching varsity athletic teams. Additional assistantships are offered in athletic training and for research supervision. In any given year about 75 percent of the full-time matriculated graduate students in exercise and sport sciences hold assistantships.

**Exercise and Sport Sciences Course Descriptions**

Courses may be offered in alternate semesters. Additional courses will be offered during the summer (see the [summer sessions catalog](#)). Other courses are offered only on demand.

**ESSG-51200 Psychological Perspectives of Sport**

Focuses on personal factors and theoretical perspectives important to the understanding and subsequent improvement of sport performance. Topics include anxiety, arousal, attention, team building, motivation, leadership, communication, and peak performance training. 3 credits.

**ESSG-51300 Psychological Applications to Sport Performance**

Emphasizes a variety of psychological concepts related to the enhancement of sport performance. The course is conducted as a seminar emphasizing participant interaction. Small group and cooperative learning formats are used in developing performance workshops and a mental training program for application when working with and consulting student-athletes. 3 credits.

**ESSG-51400 Counseling Student-Athletes**

Introduces the student to the many areas of study within the sport consulting and counseling fields. Concepts of an applied nature focus on skills currently used in counseling student-athletes. The basics for applying appropriate counseling strategies to various student-athlete populations are developed through lecture, role playing, and modeling formats. 3 credits.

**ESSG-51500 Effective Team Building**

Focuses on an understanding of people and the interpersonal communications and leadership skills necessary for effective and cohesive team development. Stages of group development, barriers to change, and conflict resolution are discussed. 1 credit. (SU)

**ESSG-51600 Motivation for Superior Performance**
Focuses on an understanding of motivation and its importance to performance. Various motivational approaches are discussed, with emphasis on influencing others toward goal adherence and attainment. 2 credits. (SU)

ESSG-51800 Exercise and Rehabilitation Psychology

Focuses on personal factors and theoretical perspectives important to understanding exercise behavior. Topics include the mental health aspects of exercise, the biopsychology of stress and disease, the factors that influence exercise participation and adherence, theories of behavior change, interventions to change physical activity behavior, and the psychological factors related to perceived exertion. Students may not get credit for both ESSG-51800 and EXSS-46500. Graduate students have additional workload and responsibilities. 3 credits. (F, Y)

ESSG-52000 Advanced Biomechanics of Human Movement

An in-depth exploration of the biomechanics of human motion focusing on the concepts and skills needed to perform and interpret biomechanical analyses of a variety of human movements. Topics include anthropometry, kinematics, kinetics and mechanical work, energy, and power. Selected human movement skills from sport, clinical, and occupational settings will be examined in lecture and during hands-on laboratory experiences. Students may not get credit for both ESSG-52000 and EXSS-42000. Graduate students have additional workload and responsibilities. Prerequisites: Undergraduate physics or biomechanics. 3 credits. (S, Y)

ESSG-52100 Advanced Study in Exercise Physiology

The physiological mechanisms that regulate the body’s responses and adaptations to exercise. Special physiological considerations of gender, development and aging, obesity, pregnancy, and environmental stress (e.g., altitude, pollution, extreme temperature) are emphasized. Popular pharmaceutical and dietary manipulations used to enhance exercise performance are discussed. Experimental research in exercise physiology is introduced, and limited laboratory experiences are scheduled during class time. Students may not get credit for both ESSG-52100 and EXSS-42100. Graduate students have additional workload and responsibilities. Prerequisites: One course in exercise physiology. 3 credits. (S, F, Y)

ESSG-54000 Physiological Mechanisms of Exercise: Cellular Aspects

Focuses on metabolic and muscular aspects of exercise, primarily addressing cellular mechanisms that explain physiological responses and adaptations occurring with exercise. Discussion of related endocrinological issues and performance enhancing agents augments presentation of basic cellular material. Data collection using key pieces of laboratory equipment is selectively integrated. Prerequisites: Undergraduate exercise physiology course. 3 credits.

ESSG-54200 Physiological Mechanisms of Exercise: Systemic Aspects

Focuses on cardiovascular, pulmonary, thermoregulatory, immunological, and renal aspects of exercise, primarily addressing the physiological responses and adaptations these systems undergo with exercise. Data collection using key pieces of laboratory equipment is integrated into the course. Prerequisites: Undergraduate exercise physiology course. 3 credits.

ESSG-54400 Multidimensional Assessment of Physical Function

Team-taught survey of the physical functions that affect performance, physical abilities, and activities of daily living (ADL) in various populations. Musculoskeletal function, coordination and motor skills behavior, and body composition are examined as they influence performance decrements, physical dysfunction, pain, and the ability to perform ADLs. Also examined are evaluations of physical function and alternative approaches to
movement training so as to enable appropriate recommendation or referral. Prerequisites: Undergraduate exercise physiology and biomechanics or kinesiology. 3 credits.

ESSG-54500 Instrumentation in Biomechanics

An introduction to the tools and techniques used in biomechanical analyses of human movement. Emphasis is placed on video analysis, including video equipment, videographic principles, qualitative analysis, and 2D and 3D quantitative analysis. Hands-on experiences with different types of video equipment and analysis systems are provided. Students complete human movement analysis projects using different video systems. Familiarity with other biomechanics instrumentation such as force plates will be provided based on student interest. Prerequisites: Advanced undergraduate biomechanics, graduate biomechanics, or permission of instructor. 3 credits. (IRR).

ESSG-54600 Cardiopulmonary Assessment for Exercise

Techniques for assessment of cardiovascular and pulmonary disease as well as functional capacity in these conditions. Emphasis is placed on electrocardiography and maximal graded exercise testing. Other diagnostic techniques (e.g., echocardiography, nuclear imaging) are also presented. Discussion of the impact of assessment information and medications on appropriate exercise prescriptions. Material will help in meeting requirements for certification by outside agencies (e.g., ACSM). Credit may not be received for both this course and EXSS-46400. Graduate students have additional workload and responsibilities. 3 credits. (F, Y)

ESSG-54800 Pathophysiology, Limited Capacity, and Exercise

Study of the pathophysiology of disease and disabling states, the assessment of exercise potential, and the special considerations for the prescription of exercise in these cases. Cardiac and pulmonary rehabilitation, diabetic and special considerations for aging are discussed. Renal disease, osteoporosis, arthritis, brain disorders (e.g., Parkinson’s), low back pain, chronic fatigue, multiple sclerosis, and depression are also addressed. Material will help in meeting requirements for certification by outside agencies (e.g., ACSM). Credit may not be received for both this course and EXSS-44800. Graduate students have additional workload and responsibilities. (S, Y)

ESSG-61000 Survey of Statistical Methods

Survey of modern statistical techniques. Descriptive statistics: use of scales, measures of central tendency and dispersion, organization of data, and correlations. Inferential statistics: parametric and nonparametric methods. Prerequisites: ESSG-7100 or permission of instructor. Required. 3 credits.

ESSG-61100 Research Methods

Introduction to the research process. Consideration and analysis of each type of research (e.g., philosophical-historical, descriptive, and experimental). Development of library and writing skills, use of research tools for data collection and analysis, and interpretation of data. Required. 3 credits.

ESSG-61200 Leadership in Exercise and Sport

Study and better understand the importance of developing effective individual, team, and corporate sport leadership. Emphasis is placed on assessing and enhancing leadership qualities, developing strategies for building influential and effective leadership personnel, mentoring (identifying, nurturing, and equipping) leaders, and understanding situational, transformational, charismatic, and servant leadership. Material is presented via small group, seminar, lecture, and student-taught workshop and student-based (cooperative learning) discussion formats. 3 credits. (SU, Y)
665-61400 Professional Practice Issues in Sport Psychology

Examines various issues pertinent to professional practice in sport psychology. Topics include clarification of a sport psychology consultant’s role, ethical guidelines, supervision, AAASP certification, working with diverse populations and youth athletes, and the use of psychological tests and inventories. Developing a consulting business and marketing as a sport psychology consultant are also covered. Students have the opportunity to develop their own consulting philosophy, a professional portfolio, and a résumé/vita. 3 credits. (S, Y)

ESSG-62000 Thesis I

Open only to qualified and preapproved students who are preparing a proposal for an original scholarly thesis. Conducted on a conference basis with the thesis adviser, the course culminates in a thesis proposal. The thesis proposal must gain approval of the thesis adviser, thesis committee, and the graduate chair. Guidelines are available from the office of the graduate chair. The completed thesis must gain departmental and graduate office approval. Required for thesis plan. 3 credits.

ESSG-62100 Thesis II

Open only to qualified and preapproved students who are continuing to complete a scholarly thesis. Conducted on a conference basis with the thesis adviser. Guidelines are available from the office of the graduate chair. The completed thesis must gain approval of the thesis adviser, graduate chair, and the graduate dean. Pass/fail only. Required for thesis plan. Prerequisites: Thesis I and approval of thesis adviser and graduate chair. This includes 1-3 credits repeated for a required total of 3 credits of Thesis II (ESSG-62100).

ESSG-63000 Independent Research

Student works in close cooperation with a graduate faculty in a self-directed study, problem-solving, or research investigation. Topic, proposal, and a design statement must be approved in advance by the sponsoring professor and graduate chair. This includes 1-3 credits per course that may be repeated for a total of no more than 6 credits of independent study courses (ESSG-63000 and ESSG-63100).

ESSG-63100 Independent Reading

Reading in the field, arranged between the student and a sponsoring graduate faculty. Topic, proposal, and a design statement must be approved in advance by the sponsoring professor and graduate chair. This includes 1-3 credits per course that may be repeated for a total of no more than 6 credits of independent study courses (ESSG-63000 and ESSG-63100).

665-63200 Group Research

Group participation in a research project. Small groups of students, under the direction of a faculty adviser, engage in the research process, from literature review, proposal development, submission of human subjects review documents, data collection, data analysis, and presentation of the data. 1-3 credits. (IRR)

665-64000 Seminar

In-depth seminar on particular topics associated with academic concentrations offered in exercise and sport sciences. Students together with instructors explore and critically examine current readings, philosophies, theories, and/or practices associated with a given topic and discuss potential applications of these concepts to actual or simulated situations. Students may present research findings, thesis proposals, or thesis defenses. Students must pass two semesters of seminar. Pass/fail only. 0 credits. (F, S)
665-64500: Psychophysiology of Exercise and Sport

Examines the interaction between psychological states and physiological function, particularly within the realm of exercise and sport. Specific topics include neurohormonal and physiological correlates of disordered eating behaviors, body image, perceived exertion, aggression, stress responses, overtraining, and other behaviors. How exercise works as a mind-body medicine modality, including mental health and maintenance of cognitive function is examined. Cognitive states, including arousal and intentionality, are examined as they influence physiological adaptations made during training. 3 credits. (F)

665-64800 Strength and Conditioning: Theories, Mechanisms and Applications

Evidence-based presentation and discussion of methods practiced for improvement of strength and conditioning. Enhancement of athletic performance through new or accepted strength and conditioning techniques will be emphasized, though rehabilitative issues may also be addressed. Prerequisite: One course in exercise physiology. 3 credits. (SU)

ESSG-66000 Internship

Supervised work experience in an agency related to the student’s concentration in the master’s degree program. Approval and support of a graduate faculty sponsor and the graduate chair are required, and prerequisite coursework may be needed. This includes 1-3 credits for a total of 3 credits.

ESSG-69900 Special Topics

Advanced courses on particular topics associated with academic concentrations offered in the exercise and sport sciences programs. Courses are offered at irregular intervals on topics chosen by faculty members or resulting from student requests. Course may be repeated for credit for selected topics on different subjects. Prerequisites: Permission of instructor. 1-3 credits. (IRR)

ESSG-74200 Advanced Techniques of Athletic Training

Consideration of the prevention, management, and rehabilitation of sports injuries. Essential concepts include anatomical basis of common injuries, injury assessment, and principles of therapeutic exercise for areas often injured. Laboratory time is included. Prerequisites: EXSS-24700 or equivalent, or permission of instructor.