BACHELOR OF SCIENCE: ADULT FITNESS AND EXERCISE SCIENCE (AFES)

Graduates of Exercise Science programs are trained to assess, design, and implement individual and group exercise and fitness programs for individuals who are apparently healthy and those with controlled disease. They are skilled in evaluating health behaviors and risk factors, conducting fitness assessments, writing appropriate exercise prescriptions, and motivating individuals to modify negative health habits and maintain positive lifestyle behaviors for health promotion. The Exercise Science professional has demonstrated competence as a leader of health and fitness programs in the university, corporate, commercial or community settings in which their clients participate in health promotion and fitness-related activities. ([http://www.caahep.org/documents/file/For-Program-Directors/ES_Standards.pdf](http://www.caahep.org/documents/file/For-Program-Directors/ES_Standards.pdf))

The Adult Fitness and Exercise Science Program (AFES), is a major within the department of Human Performance & Sport and is designed for the student desiring a career in the allied health care field of Adult Fitness and Exercise Science. The objective of the MSU DENVER AFES major is the professional preparation of pre-service Adult Fitness and Exercise Science specialists, qualifying them to sit for established nationally recognized certification examinations. Upon successful completion of a national certifying exam, the AFES graduate may practice as a certified professional in areas such as: Health Fitness Instructor, Certified Strength and Conditioning Specialist, or Performance Enhancement Specialist. A list of common career pathways (and an article describing several career choices) is included at the end of this document. Please see the official college catalog on-line at [www.msudenver.edu](http://www.msudenver.edu) for a complete list of graduation requirements.

The Adult Fitness and Exercise Science major does not encompass academic preparation for the professions Athletic Training (care and prevention of athletic injuries). Students who pursue a degree in AFES will not be eligible to take the National Athletic Trainer’s Board of Certification examination. The preparation for this specialty is covered in the Athletic Training Education Program concentration within the department of Human Performance & Sport.

Athletic Training Education Program Concentration Advisors:

Christine Odell, PhD, ATC  Theresa Miyashita, PhD, ATC  
PE 217C  PE 217D  
codell6@msudenver.edu  tdelano@msudenver.edu  
303-556-3148  303-556-3228

Please note the following:

- The Adult Fitness and Exercise Science program at MSU DENVER is accredited by The Commission on Accreditation of Allied Health Education Programs (CAAHEP), the accrediting body commissioned by the American College of Sports Medicine (ACSM). The MSU Denver AFES program has earned full accreditation status for five years and is accredited through 2016.
- According to the ACSM, plans are in place to change eligibility requirements for certification candidates. In the future, in order to be eligible to take the ACSM Health Fitness Specialist (HFS) certification examination students must graduate from an Adult Fitness and Exercise Science program accredited by the CAAHEP. The date for implementation of this policy has yet to be announced.
- Pursuit of the MSU DENVER AFES concentration requires completion of a minor program, in addition to all requirements for the major concentration. Minor programs are chosen by the student to compliment the coursework completed in the AFES major. Consultation with an AFES program advisor will assist the student in appropriate selection of a minor program.
The necessary steps for students wishing to pursue Adult Fitness and Exercise Science as a field of study are as follows:

- Contact the HPS department for an academic advising appointment with an AFES advisor. This initial advising appointment may be an individual or group advising appointment. Individual student needs and declaration of major will be addressed at that meeting.
- All AFES majors are expected to conduct themselves professionally and in compliance with the established professional disposition requirements listed on the AFES website. These requirements should be familiar to the prospective AFES student prior to attending an initial advising meeting. Questions about these requirements can be addressed at the initial advising meeting.
- All AFES majors must complete HPS 4880 (internship) which requires a 405 contact-hour commitment - after all other course requirements (major, minor, general studies and electives) have been completed. A mandatory meeting for all prospective interns will be held at the beginning of each term and must be attended during the term that precedes the desired internship term (i.e. August meeting for interns who wish to pursue a Spring term internship).

**Internship Examples:**

**Cardiac Rehabilitation**
- Sky Ridge Medical Center
- Longmont United Hospital
- St. Anthony's Hospital

**Strength and Conditioning**
- Impact Sports Performance – Broomfield, CO
- Air Force Academy S & C Department
- Steadman-Hawkins DTC Clinic

**Municipal Recreation**
- South Suburban Parks and Recreation
- Foothills Parks and Recreation
- Englewood Parks and Recreation

**Worksite Health Promotion**
- Miller-Coors Wellness Center
- Health Break Inc.
- West Metro Fire Department

**Physical Therapy/Medicine Clinics**
- Next Level P.T.
- Colorado Physical Therapy Institute (CPTI)
- Physio Pro – Cherry Creek

**Other**
- IMAGE Group – Metabolism/Body Composition Research
- Med Ex of Estes – Older Adult Therapy
- Optimize Endurance Services – Endurance Athlete Coaching

IN ADDITION to ALL MSU DENVER graduation requirements (total credits, upper division credits, general studies classes, etc.), the following course list represents the specific requirements for the Bachelor of Science in Adult Fitness and Exercise Science:

**PROFESSIONAL ACTIVITY COURSES**

<table>
<thead>
<tr>
<th>COURSES</th>
<th>SEMESTER HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSL 1020 Skills and Methods of Teaching Weight Training</td>
<td>2</td>
</tr>
</tbody>
</table>

Subtotal: 2

**BASIC THEORY COURSES**

<table>
<thead>
<tr>
<th>COURSES</th>
<th>SEMESTER HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPS 1623 Prevention and Care of Athletic Injuries</td>
<td>3</td>
</tr>
<tr>
<td>HPS 1640 Physical Fitness Techniques and Programs</td>
<td>2</td>
</tr>
<tr>
<td>HPS 3300 Anatomical Kinesiology</td>
<td>3</td>
</tr>
<tr>
<td>HPS 3340 Physiology of Exercise</td>
<td>3</td>
</tr>
<tr>
<td>HPS 3780 Fitness Programs for Special Populations</td>
<td>2</td>
</tr>
<tr>
<td>HPS 3790 Fitness Programs for Children, Adolescents and Older Adults</td>
<td>3</td>
</tr>
<tr>
<td>HPS 4200 Community Fitness Testing and Program Planning</td>
<td>3</td>
</tr>
<tr>
<td>HPS 4660 Legal Liability for Physical Educators, Coaches and Administrators</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Name</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>HPS 4680</td>
<td>Advanced Exercise Assessment Techniques</td>
</tr>
<tr>
<td>HPS 4840</td>
<td>Comparative Fitness Programs</td>
</tr>
<tr>
<td>HPS 4880</td>
<td>Internship for Adult Fitness</td>
</tr>
<tr>
<td>NUT 2040</td>
<td>Introduction to Nutrition</td>
</tr>
<tr>
<td>PSY 2410</td>
<td>Social Psychology</td>
</tr>
</tbody>
</table>

Select one 2-credit course from the following

- HSL 1440 Skills and Methods of Teaching Stress Management: 2

Or

- HPS 2890 Personal Training: Concepts and Application: 2

**Subtotal**: 43

**Total**: 47

*Note: Students must have a 2.75 GPA to be eligible for an internship. It is recommended that students take HPS 2060, Emergency Rescue/First Responder and CPR, or verify equivalent certification.*

**Important Notes:**

- **Required Biology Prerequisites** (Two of the following classes will fulfill Natural Science General Studies requirement):
  - BIO 1080 & 1090 – General Introduction to Biology & Lab
  - BIO 2310 – Anatomy and Physiology I
  - BIO 2320 – Anatomy and Physiology II

- Unless otherwise authorized by your AFES advisor, all AFES majors must enroll in and complete the courses listed above. Please note that all major and minor courses must be completed with a grade of ‘C’ or better.

**Transfer Students:**

Transfer students must meet all of the criteria specified for equivalent required major courses. Each transfer students’ transcripts will be evaluated individually by an AFES Faculty Member. **Transfer course acceptability is NOT guaranteed.**

**Adult Fitness and Exercise Science Program Concentration Advisors:**

<table>
<thead>
<tr>
<th>Advisor</th>
<th>Email Address</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mrs. Julie Mancuso</td>
<td><a href="mailto:rummelj@msudenver.edu">rummelj@msudenver.edu</a></td>
<td>303 556-4618</td>
</tr>
<tr>
<td>Dr. Joe Quatrochi</td>
<td><a href="mailto:quatrocj@msudenver.edu">quatrocj@msudenver.edu</a></td>
<td>303 556-2898</td>
</tr>
<tr>
<td>Dr. Ben Thompson</td>
<td><a href="mailto:bthomp50@msudenver.edu">bthomp50@msudenver.edu</a></td>
<td>303 352-4426</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE 209A</td>
<td>PE 209B</td>
</tr>
<tr>
<td>PE 217</td>
<td></td>
</tr>
</tbody>
</table>
ADULT FITNESS AND EXERCISE SCIENCE –
COMMON CAREER PATHWAYS

* **CHILREN’S FITNESS PROGRAMS**
* **COACHING**
  * ENDURANCE ATHLETES
  * FITNESS COMPETITORS
* **NOT-FOR-PROFIT ORGANIZATIONS** (I.E. Am. Heart Assn., ACS, etc…)
* **PERSONAL TRAINING**
  * CLUB/FITNESS CENTER/CLINIC-BASED
  * HOME-BASED
* **PUBLIC SERVICE PROFESSIONALS** (Fitness Assessment/Ex.Testing/ Leadership)
  * POLICE/FIRE PROFESSIONALS
  * MILITARY PROFESSIONALS
  * SECURITY PROFESSIONALS
* **RECREATION**
  * MUNICIPAL RECREATION CENTERS: COMMUNITY WELLNESS
  * UNIVERSITY-BASED RECREATION/FITNESS
* **REHABILITATION**
  * PHYSICAL MEDICINE -clinical exercise specialists (working with physical therapists/OT’s & occupational medicine physicians)
  * CARDIAC REHABILITATION
  * PULMONARY REHABILITATION
* **RESEARCH**
  * PROFESSIONAL RESEARCH ASSISTANT
* **RESORT FITNESS**
  * HOTEL RESORTS (Marriott, Club Med)
  * CRUISE SHIPS
* **SALES** (treadmills, EKG equipment, etc…)
* **SENIOR FITNESS/WELLNESS**
* **SPECIAL POPULATIONS**
  * PHYSICALLY CHALLENGED POPULATIONS
  * CANCER EXERCISE SPECIALIST
* **STRENGTH AND CONDITIONING**
  * COLLEGE STRENGTH AND CONDITIONING PROGRAMS
  * PROFESSIONAL ATHLETES
  * YOUTH/PRIVATE AGENCIES
* **WELLNESS COACHING**
* **WORKSITE HEALTH PROMOTION/WELLNESS**
* **OTHERS** (this is not an all-inclusive list!)
Careers in Sports Medicine and Exercise Science

Career decisions are often difficult to make. The fields of sports medicine and exercise science are developing so rapidly that choosing the right career in this area can be overwhelming. The American College of Sports Medicine has created this guide to help you better understand the career opportunities available to you in sports medicine and exercise science.

What is Sports Medicine and Exercise Science?

SPORTS MEDICINE is the field of medicine dealing with injuries sustained in athletic endeavors and/or illnesses impacting sport performance. Sports medicine focuses not only on the diagnosis and treatment of diseases and injuries related to sports, but also on injury/disease prevention and management. The goal of sports medicine is to assist the athlete in achieving both optimal health and peak performance.

Historically, sports medicine was provided by the “team physician” who worked primarily with college, professional, and other elite caliber athletes. Today, sports medicine involves a comprehensive team of health care professionals trained in a variety of backgrounds such as athletic training, biomechanics, exercise physiology, physical therapy, nursing, sport psychology, and nutrition. Additionally, sports medicine is available to individuals participating at all performance levels ranging from the recreational to the professional athlete.

EXERCISE SCIENCE is the study of physiological and functional adaptations to movement. Most colleges and universities provide specific curriculum and/or academic majors in the exercise sciences. Undergraduate programs are typically broad based and include general study in biology, chemistry, biochemistry, anatomy and physiology, kinesiology, exercise physiology, and fitness programming. Graduate level programs typically provide systematic study in specific areas of exercise physiology with an emphasis on research.

Career opportunities for individuals graduating with degrees in exercise science are numerous. Common career tracks range from the research scientist to the exercise practitioner in fitness and/or clinical settings. In addition, other disciplines find it helpful to include coursework in the exercise sciences. It is very common for individuals studying in the exercise sciences to work in the field of sports medicine.

What Can I Do With a Degree in Sports Medicine or Exercise Science?

The list below is just a sampling of career opportunities available in sports medicine and exercise science. Typical job responsibilities as well as educational requirements are included.

GROUP EXERCISE INSTRUCTOR
A group exercise instructor leads exercise sessions for a group of participants. The group may be heterogeneous — for example, individuals with different fitness levels, medical concerns and ages; or the group may be homogeneous — for example, individuals who have similar characteristics such as those with arthritis, older adults who are frail, or women who are pregnant. Examples of group exercise instruction include land- or water-based general classes, dance/step aerobics, chair aerobics, and cycling. Group exercise instructors can be employed in a variety of settings including commercial fitness centers, employee fitness programs, and hospitals. Minimal requirements should be an undergraduate degree in a health-related field and a recognized certification.

ATHLETIC TRAINER
Athletic trainers work with team physicians, exercise physiologists, physical therapists, and coaches in the care and prevention of illness and injuries related to sport and exercise. An undergraduate degree from an accredited program by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) is required to sit for the National Athletic Trainers’ Association (NATA) certification examination beginning in the year 2004. In most states licensure is required. One of the requirements for licensure is to successfully pass the NATA certification examination. Athletic trainers typically work with athletes at the high school, college, or professional level. They are also employed in sports medicine clinics.
BIOMECHANIST
Biomechanics is the study and explanation of the laws of physics as applied to physical activity, exercise, and sport. Biomechanics can be used to explain how muscles, bones, and joints are injured under certain conditions, and to improve performance using motion analysis techniques. Biomechanists are typically employed in research settings and clinical sites, but future growth appears to be in industrial ergonomic settings. Minimal requirement is a master's degree.

CARDIOPULMONARY REHABILITATION SPECIALIST
Clinical exercise physiologists, nurses, physical therapists, and respiratory therapists are most often employed in cardiopulmonary rehabilitation programs. These clinicians are typically responsible for providing exercise education regarding disease management, lifestyle modification, and psychosocial support to patients with cardiac and/or pulmonary disease. Clinical settings generally include hospitals, outpatient clinics, and medically supervised fitness centers. An undergraduate degree in one or more of the disciplines noted above is required, however, advanced degrees with specialty certification (e.g., American College of Sports Medicine Exercise Specialist® certification) improves opportunities for employment.

DIETITIAN / SPORTS NUTRITIONIST
Dietetics is the study of nutrient intake and how foods are digested and metabolized in order to provide the necessary energy to fuel muscular activity. Dietitians also study dietary patterns in order to maximize performance and prevent disease and improve health. To become a registered dietitian, you must complete an undergraduate degree in dietetics, complete a nine-month American Dietetics Association (ADA)-approved internship and pass the ADA certification examination. Additional specialized training is necessary. Dietitians can be employed in a variety of settings including hospitals, clinics, sports complexes, school systems, and public health facilities.

EMPLOYEE FITNESS DIRECTOR
Employee fitness programs are common in the workplace, especially in the corporate, commercial, and hospital setting. Along with conducting exercise programs and supervising all fitness staff, the employee fitness director may also be trained as a wellness specialist to provide broad-based health promotion and wellness education programs. These may include stress management and nutrition education programs. Traditionally, workplace exercise programs have been for healthy individuals only. However, employee fitness centers are becoming more clinically based in terms of exercise training for all types of clients, including those with cardiac, pulmonary, or musculoskeletal problems. An undergraduate degree is typically required to work with special population clients. It is also recommended to obtain a recognized certification, such as the ACSM Health/Fitness Instructor®.

EXERCISE PHYSIOLOGIST
An exercise physiologist studies the acute and chronic physiological responses and adaptations resulting from physical activity. They can apply this knowledge to improve or maintain health, fitness, or performance. Traditionally, exercise physiologists worked and studied only with athletes to improve performance. Today, however, exercise physiologists also work and study in commercial, clinical, and workplace settings to increase health, fitness, and quality of life in the general population. For example, an exercise physiologist may work as a cardiopulmonary rehabilitation specialist, a personal trainer, or direct an employee fitness program. At least an undergraduate degree is required. It is also recommended to obtain a recognized certification, such as one from the American College of Sports Medicine.

MEDICAL DOCTOR
A medical doctor is highly trained in the art and science of the diagnosis and treatment of disease and the maintenance of health. Medical schools require a minimum of four years after a basic college degree. Beyond medical school there are many specialties to choose from in order to be part of a sports medicine or exercise science team, including primary care sports medicine, orthopedic surgery, or cardiology. Each specialty has three to five years of internship and residency training and perhaps an additional one to two years of fellowship training. Most medical doctors are employed in clinics or hospitals.

OCCUPATIONAL PHYSIOLOGIST
Occupational physiologists work with many different professionals to improve the performance of workers by enhancing their health and occupational abilities, preventing or rehabilitating workplace injuries, and redesigning the work environment to fit the worker. They may also develop and administer pre-employment physical capacity tests to determine if the worker is fit to perform the job. An advanced degree beyond the undergraduate level is typically required, and it is helpful to be certified by the Board of Certification in Professional Ergonomics.
PERSONAL TRAINER
A personal trainer typically works one-on-one with an individual and is generally paid by the hour or exercise session. The exercise session can take place at the client’s home, the trainer’s place of employment or business, or at a third-party fitness facility. A personal trainer should have a strong background in anatomy and kinesiology as a large part of this job deals with muscular strength and endurance training. At least an undergraduate degree and recognized certification, such as the American College of Sports Medicine Health/Fitness Instructor, is recommended.

PHYSICAL / OCCUPATIONAL THERAPIST
The physical therapist helps people recover from injuries or diseases of the muscles, joints, nerves, or bones. The occupational therapist works more with fine motor skills and dexterity. Both therapists use various physical modalities and exercise, focusing on movement dysfunction. There are many areas of specialization in physical therapy including cardiopulmonary rehabilitation, sports medicine, and biomechanics. Most physical and occupational therapy schools require two to three years after a four-year undergraduate degree. After formal training, one must pass a national examination to become a licensed physical or occupational therapist. Professionals interested in continuing their education in this field may want to consider the ACSM Health/Fitness Instructor certification along with the national examination. Most employment opportunities are in hospitals and clinics.

RESEARCHER
Researchers conduct studies from either a basic or applied scientist’s perspective. Basic researchers usually conduct studies with a focus on the cellular and molecular levels, such as how organ systems work, adapt or respond to various factors. Sometimes this is referred to as bench research, especially if animal models are used. Applied researchers usually conduct studies with a focus on more practical questions that appear to be more applicable for immediate use, such as ways to increase athletic performance or how to improve health and reduce disease. Either career requires getting a terminal degree, such as a Ph.D., which involves at least four to five years beyond the undergraduate level. Most researchers are employed by universities and hospitals.

STRENGTH (SPORT) AND CONDITIONING COACH
Sport teams at the high school, college, and professional levels employ strength and conditioning coaches. Their role is to develop and supervise specific conditioning programs to increase athletic performance such as speed, agility, strength, endurance, flexibility, and power. Positions usually require a master’s degree and certification by the National Strength and Conditioning Association.

TEACHER
Teachers can be employed at the elementary through college level. If you desire to teach physical education or coach at the elementary or secondary level, an undergraduate degree is required and you must be certified in the state where you teach. With a master’s degree you may be able to teach at a college, junior college, or university, especially if coupled with practical experience. However, these opportunities are limited. In higher education, it is customary to hire those with a terminal degree, such as a Ph.D., which is four to five years beyond the undergraduate level. Teachers at the college or university level are often expected to conduct research.

As you can tell from the sampling of careers listed above, there is a diversity of career opportunities, fields of study, and specialty areas in sports medicine and exercise science. Most undergraduate degrees in sports medicine or exercise science require a strong background in the basic sciences which will prepare you for graduate level work or professional school should you choose to pursue an advanced degree. Check with schools that interest you to identify the specific requirements for admission to graduate or professional degree programs.

What Starting Salary Can I Expect?
With an undergraduate degree and no experience, you may find that starting annual salaries vary widely, with some starting in the $25,000-$35,000 range. Understand that starting salaries for sports medicine and exercise science professionals are so varied because of factors such as experience, geographic location, employment setting, and market demand. Other factors, such as advanced degrees, professional licensure, and certification will influence pay scales. A good way to gauge what salary you can expect is to speak with professionals who currently work in your field of interest.

Attaining a Career in Sports Medicine or Exercise Science
Now that you know a little more about sports medicine and exercise science, how do you know whether a career in this profession is for you? Answering the questions and following the advice provided below may be helpful in making your decision.
Assess Your Interests
Do you participate in and enjoy exercise? Are you interested in any of the specialty areas, career opportunities, or fields of study mentioned in the previous section such as medicine, rehabilitation, teaching, research, or fitness? Have you enjoyed classes in high school or college such as physical fitness, biology, health and wellness, and nutrition? Do you enjoy reading health and wellness magazines or journals in medicine, health, and fitness? Do you enjoy helping and working with people? When you read job opportunities in the classifieds do you get excited about the possibility of working in sports medicine/exercise settings?

Determine Your Career Goals
Where do you see yourself in five years? Are you willing to commit to the necessary education, academic training and professional preparation that are required? Can you afford higher education costs? Will you enjoy taking courses in anatomy and physiology, chemistry, biology, and math? How about courses such as exercise physiology, nutrition, behavior modification, kinesiology, and exercise prescription? Do the colleges and universities that are of interest to you offer the coursework and preparation that will help you to achieve your goals? Have you talked to people who currently work in your field of interest including college professors who teach in sports medicine or exercise science programs? Ask your teachers or guidance counselors to invite sports medicine or exercise science professionals to your school's career fairs. Have you volunteered or observed in sports medicine or exercise science settings? If not, ask your teachers, guidance counselors, parents, relatives, or friends to arrange opportunities for you to spend some time with sports medicine and exercise science professionals.

Get an Education
Most degree programs in sports medicine and exercise science have an “introduction to the profession” survey course. They are usually open to any student enrolled at the institution and can be taken during the freshman year. The course will provide you with a great deal of information about the field as well as educate you on the coursework, specific degree requirements, and specialty areas that are provided at your school. More than likely, you will be required to volunteer and observe at various sports medicine and exercise science facilities in your area.

Get Certified
There are many organizations that offer certifications in exercise science. You will want to determine which one best fits your needs and educational background. While a college degree is generally the most desired type of formal training and experience, some employers also require a certification documenting a specific foundation in exercise science knowledge, skills, and abilities. ACSM certifications and registry credentials show employers that you have passed one of the most rigorous and up-to-date health/fitness and clinical exercise testing and programming examinations that attests to your reliability and credibility as an exercise science professional.

Getting Started
Sports medicine and exercise science offer exciting career opportunities. If you are interested in pursuing a career in these areas, you are strongly encouraged to obtain as much information as you can about the profession. We hope this information provided you with enough information to get you started. We wish you the best of luck as you prepare for your future.