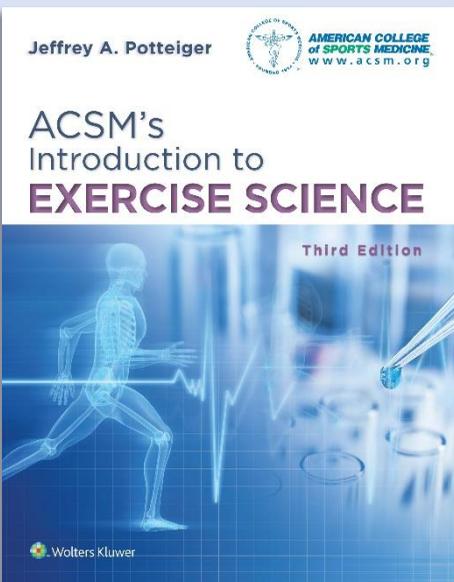


Careers in Exercise Science

Where will a degree in exercise science lead you?



- Athletic Trainer
- Biomechanist
- Clinical Exercise Physiologist
- Dietician/Sports Dietician
- Exercise and Sport Psychologist
- Graduate School and Researcher
- Medical Doctor
- Occupational Therapist
- Personal Trainer
- Physical Therapist
- Physician Assistant
- Strength and Conditioning Coach
- And more!

Information provided by the American College of Sports Medicine from *ACSM's Introduction to Exercise Science, Third Edition*.

To purchase this book, go to <https://www.acsm.org/read-research/books/acsm-introduction-to-exercise-science>. For more information about the American College of Sports Medicine, visit www.acsm.org.

CAREER EMPLOYMENT AND PROFESSIONAL OPPORTUNITIES

One of the most frequently asked questions of exercise science faculty by undergraduate students is, “What type of job can I get with a degree in exercise science?” Well, the possibilities for professional employment are numerous and vary widely. It is important that every undergraduate student take some time to seriously consider what he/she is willing to invest in professional education and career development and what he/she really wants to do with the professional aspect of their life. Thoughtful reflection is critical because it is important to consider the many different components of your professional education and development

as you prepare yourself for your professional career. Often professional careers require additional education in the form of a graduate degree in a specialized field (e.g., physical therapy or athletic training). Listed below are some questions every student should consider when deciding on a professional career in exercise science or related area (2).

- Do you participate in and enjoy physical activity, exercise, and sports?
- Have you enjoyed coursework in biology, chemistry, math, nutrition, physiology, and physical fitness?
- Are you willing to commit to the necessary investment in education, academic training, and professional education that are required of working exercise science and allied health professionals?
- Have you spoken to individuals who currently work in your particular field of interest?
- In what type of professional employment setting do you wish to work (e.g., hospital, clinic, school, fitness facility, industrial setting, corporate setting, outpatient clinic, college, university)?
- Do you enjoy working with all types of people or are you only interested in certain populations (e.g., athletes, children, elderly, or patients with a chronic disease condition)?
- Do you want to work with people to prevent disease and injury or with patients desiring treatment and rehabilitation?
- Do you prefer to work in a research or an educational capacity?

Starting salaries for individuals with an undergraduate degree and no experience will vary widely. Factors such as work experience, geographic location, employment setting, and market demand combined with other factors, such as whether you hold professional licensure or certification, will influence your beginning salary. Speaking to a professional who currently works in your field of interest in your geographic location is a good way to obtain an approximation of an expected starting salary (2).

There are numerous reasons for the increased opportunities for professional careers in exercise science and allied health professions. The greater interest in overall health by the general public has resulted in an explosion of possible career opportunities in exercise science–related fields, such as personal trainers, fitness directors, exercise and sport nutritionists, and exercise psychologists. The rise in lifestyle-related diseases has resulted in the need for more highly trained medical doctors, dietitians, physical and occupational therapists, rehabilitation specialists, and researchers. Advances in sport technology and product development, along with increases in participation in sport and athletics, have resulted in the need for more highly trained persons as athletic trainers, strength and conditioning coaches, sport biomechanists, sport psychologists, and researchers. The U.S. Department of Labor, Bureau of Labor Statistics (www.bls.gov/) periodically projects the employment opportunities in all sectors of the economy and is a good place to identify employment trends in many of the professional jobs that exercise science graduates can expect to gain (28). The following sections provide a short description of the major types of professional employment and career opportunities for



Thinking Critically

How does academic coursework and experiences in exercise science prepare future professionals for working in the allied health and exercise science professions?

graduates of exercise science programs. In some instances, an undergraduate degree is sufficient for employment, whereas in other professions an advanced or professional degree is required to work in a particular field. In almost every instance, obtaining a credential provides a benefit for gaining employment or is a required component of the job.

Athletic Trainer

An athletic trainer is a sports medicine professional, with a professional credential of ATC, who is involved in the prevention, treatment, and rehabilitation of injuries to physically active individuals and athletes (see Chapter 6). Many people often view athletic trainers as only working with athletes in a sport setting; however, athletic trainers also work closely with other exercise science professionals, sports medicine physicians, and other allied health professionals to provide care to anyone who may have an injury caused by participation in physical activity, exercise, or sport (Fig. 12.3). Only graduates of an athletic training program accredited by the **Commission on Accreditation of Athletic Training Education** may take the national Board of Certification examination and become a certified athletic trainer. In most states, athletic trainers must also become licensed by the state to practice athletic training. Athletic trainers are employed in a variety of work environments, including secondary schools, colleges and universities, sports medicine clinics, professional sports programs, industrial and other occupational settings, as well as other allied health care employment settings, including those as a physician extender (2,13).

Biomechanist

With proper academic training and professional experience, an individual can work as a clinical or sport biomechanist and as an ergonomist. In general, an exercise science student will need additional undergraduate coursework in physics or engineering or possibly a graduate degree (MS or PhD) to work as a professional biomechanist. Clinical biomechanics focuses on the mechanics of injury and the principles of prevention, evaluation, and treatment of musculoskeletal problems. Sport biomechanics examines factors of human movement associated with exercise and training for the purpose of improving sport and athletic performance. Ergonomics is the study of the interaction between humans, the objects they use, and the environments in which they function and is similar to clinical biomechanics with ergonomists usually taking additional coursework in engineering (see Chapter 10). There is currently



Commission on Accreditation of Athletic Training Education The agency responsible for the accreditation of professional Athletic Training educational programs.



FIGURE 12.3 A clinical athletic trainer working with an athlete.

no credentialing available in the area of biomechanics, although certification in a related area may be helpful in gaining employment. Employment opportunities include working in colleges and universities, performance enhancement centers, private business, industrial ergonomic settings, sports medicine clinics, hospitals, and other allied health care environments (2,13).

Clinical Exercise Physiologist

Clinical exercise physiologists work with healthy and diseased individuals in a variety of employment settings. Individuals who have chronic disease conditions, including cardiovascular, respiratory, and metabolic diseases, can benefit from regular participation in physical activity and exercise. Clinical exercise physiologists are responsible for performing health and fitness assessments, developing and implementing exercise prescriptions, and monitoring the effectiveness of the interventions. Keeping appropriate records to determine the effectiveness of the physical activity or exercise intervention is often an important responsibility of the clinical exercise physiologist. Frequently advanced coursework in electrocardiography, pathophysiology, and specific populations (e.g., children or the elderly) is required. Certification and registration are becoming increasingly important and, in many instances, a requirement for employment as a clinical exercise physiologist. Employment opportunities exist primarily in hospitals, outpatient and allied health care centers, cardiac rehabilitation centers, and within wellness and fitness programs (2,13).

Dietitian/Sport Dietician

A dietitian is a licensed professional who assesses the nutritional needs of individuals and then develops and assists with the implementation of nutrition programs for those individuals (Fig. 12.4). Dietitians may also advise patients and clients on several health and disease-related conditions, including weight loss, diabetes control, high blood pressure control, and cholesterol reduction. Only individuals who graduate from an Academy of Nutrition and Dietetics accredited program, complete an Academy of Nutrition and Dietetics-approved internship, and pass



FIGURE 12.4 Dietitians perform counselling to healthy and diseased adults and children, as well as athletes.

the certification examination may become a licensed RDN. RDNs work in a variety of environments, including private practice, long-term care facilities, medical institutions, health departments, social service agencies, residential care facilities, hospitals, primary and secondary school systems, colleges and universities, and other allied health settings. RDNs may also practice sports nutrition by working with individuals to develop nutritional programs that will serve to improve sport and athletic performance (2).

Exercise and Sport Psychologist

Exercise and sport psychology professionals work with healthy and diseased individuals, as well as athletes of all performance and competition levels to enhance the psychological components related to successful performance. The principles of exercise and sport psychology are also used by other exercise science and allied health professionals in a variety of employment settings, including the wellness and fitness industry, athletic training, coaching, clinical exercise and rehabilitation settings, and long-term care facilities. Individuals who obtain a graduate degree and become certified as consultants by the Association for Applied Sport Psychology (AASP) can seek consultant positions with individual athletes and sport and athletic teams. Advanced academic coursework resulting in licensure as a clinical psychologist can also be valuable for developing a professional career in exercise or sport psychology. Attaining an advanced degree (PhD or EdD) can lead to employment as an instructor of exercise and sport psychology at a college or university (2,13). Employment opportunities exist primarily in outpatient and allied health care centers, cardiac rehabilitation centers, wellness and fitness programs in colleges and universities, performance enhancement centers, private business, industrial ergonomic settings, and sports medicine clinics.

Graduate School and Researcher

Individuals with an undergraduate degree in exercise science or related area who wish to pursue an advanced graduate degree in a particular area of exercise science or become actively involved in research have several opportunities to

choose from. A master's degree (MS or MEd) generally requires 1 to 2 years of graduate coursework and related experiences. The culminating experience may be a master's thesis, independent research project, or possibly an internship. The completion of a master's degree generally requires 30 to 40 credit hours beyond the undergraduate degree. A doctoral degree (PhD, DSci, or EdD) typically requires between 3 and 5 years of graduate coursework and research experiences. The traditional culminating experience is a doctoral dissertation demonstrating competency in conducting independent research. Table 12.3 provides some examples of areas of advanced study and research in exercise science. Advanced coursework and participation in research activities are the cornerstones of graduate school education. Additional coursework in research design and statistical analysis is critical for pursuing a career in research. Individuals with graduate degrees work in a variety of environments, including pharmaceutical companies, food and beverage companies, technology companies, sports apparel/equipment companies, colleges and universities, hospitals, medical schools and institutions, governmental agencies including state and local health departments, and private research foundations (2).

Table 12.3 Areas of Advanced Graduate Study in Exercise Science

Biomechanics
Cardiac rehabilitation
Environmental physiology
Epidemiology
Exercise and aging
Exercise behavior and psychology
Exercise biochemistry
Exercise physiology
Integrative physiology
Motor behavior
Motor control
Motor development
Neuroscience/Neurophysiology
Occupational physiology
Pediatric exercise physiology
Sport psychology
Therapeutic exercise

Medical Doctor

A medical doctor is a licensed professional who is involved in the prevention, treatment, and rehabilitation of illness and injuries to individuals. Medical doctors can be educated to practice medicine in the following areas: allopathic, chiropractic, osteopathic, podiatric, and ophthalmology. Each type of medical doctor has a defined scope of practice that can involve work with individuals participating in physical activity, exercise, sport, and athletic competition. Many people often view medical doctors as only working with ill or sick individuals in a health care setting. Medical doctors, however, work closely with other allied health professionals to provide preventive care to a wide range of healthy and diseased individuals. Individuals can also work as a sports medicine physician in private practice or with local high school, college, or university sports teams. Only graduates of an accredited medical school may become a licensed medical doctor. Physicians also provide medical coverage at amateur, collegiate, and professional sport and athletic competitions. Certification as a sports medicine specialist is also becoming increasingly important if an individual has a desire to work with athletes. Medical doctors work in a variety of environments, including private practice, long-term care facilities, medical institutions, health departments, residential care facilities, hospitals, colleges, universities, and other health care settings (2).

Occupational Therapist

Occupational therapists are licensed professionals who assist individuals with physically, mentally, emotionally, or developmentally crippling conditions to maintain or recover working skills and daily function. Often, occupational therapists teach individuals how to compensate for some temporary or permanent loss of motor function. Occupational therapists help individuals learn or regain the ability to perform activities of daily living, including dressing, preparing meals, and eating. To become a licensed occupational therapist, students must graduate from an occupational therapy program accredited by the Accreditation Council for Occupational Therapy Education, complete a fieldwork requirement, and pass a certification examination administered by the National Board for Certification in Occupational Therapy. Occupational therapists work in a variety of environments, including private practice, long-term health care facilities, medical institutions, community health centers, residential care facilities, hospitals, school systems, adult daycare centers, and other health care settings (13,21).

Personal Trainer

Personal trainers work with individuals to assess functional capacity and then develop and implement exercise programs for enhancing physical fitness and health. The exercise sessions are generally individual or small group (4–8 individuals) sessions, and they typically occur in the client's home, the personal trainer's place of employment, or at a fitness facility. Personal trainers also conduct group exercise sessions in activities, such as spinning, yoga, pilates, kickboxing, Zumba, core strengthening, aerobics, and water aerobics. Personal trainers benefit from having a strong academic background in exercise physiology, biomechanics, fitness assessment, exercise

prescription, exercise psychology, and nutrition because many aspects of this job involve the development of individualized muscular strength and endurance training programs and sound nutritional practices, as well as providing goal setting and motivational strategies for success. In addition to obtaining an undergraduate degree in exercise science, gaining professional certification as a personal trainer or exercise leader from one of the organizations listed in Table 12.2 is highly recommended (2).

Physical Therapist

Physical therapists are licensed professionals who help individuals recover from an injury or disabling physical condition (Fig. 12.5). Physical therapists develop structured treatment and rehabilitation programs designed to improve mobility, reduce pain, and prevent or limit permanent disability. Physical therapists conduct evaluations of muscular fitness, range of motion, and muscle and joint functions and then use that information to develop and implement individualized treatment programs for patients. Only graduates of physical therapy professional education programs accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE) may take the national licensure examination that allows them to



FIGURE 12.5 Physical therapist treating a patient.

practice as a licensed physical therapist. Graduates of foreign programs may apply for a physical therapy license. CAPTE now requires all academic programs to offer the Doctor of Physical Therapy (DPT) as the minimal entry-level degree. Physical therapists work in a variety of employment environments, including private practice, long-term care facilities, medical schools and institutions, community health centers, residential care facilities, hospitals, school systems, adult daycare centers, and other allied health care facilities (2).

Physician Assistant

A PA is a licensed professional who practices medicine under physician supervision in the prevention, diagnosis, treatment, and rehabilitation of illness and injuries to individuals (Fig. 12.6). PAs work closely with other allied health professionals to provide health care to a wide range of healthy and diseased individuals. PAs can benefit from undergraduate coursework in fitness assessment, exercise physiology, biomechanics, nutrition, exercise psychology, and premedicine courses. Only graduates of an accredited program may take the Physician Assistant National Certification Examination to become a certified PA. Once certified, an individual may apply for state licensure. PAs may practice in all medical specialty areas. PAs work in a variety of environments, including private practice, long-term care facilities, medical institutions, health departments, residential care facilities, surgical centers, hospitals, colleges and universities, and other allied health care settings.

Podiatrist

A doctor of podiatric medicine (often called a podiatrist) may diagnose and treat conditions of the leg, ankle, and foot. Podiatrists complete 4 years of training in a medical school and then complete 3 years of residency training. A podiatrist can specialize in sports medicine, diabetic care, wound care, pediatrics, and surgery. A podiatrist can earn board certification after completing advanced training, gaining clinical experience, and taking an examination provided by either the American Board of Foot and Ankle Surgery or the American Board of Podiatric Medicine. Additional information about podiatric medicine can be found through the American Podiatric Medical Association (www.apma.org).

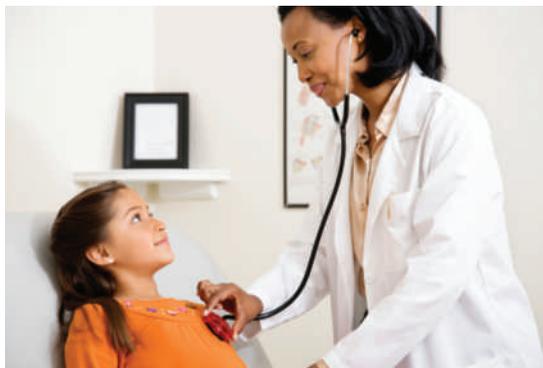


FIGURE 12.6 Physician assistant evaluating a patient. (Photo courtesy of Lifesize/Monica Rodriguez/Getty Images.)

Public and Private School Teacher

Health and physical education teachers are licensed professionals who work to help children, adolescents, and young adults develop motor skills, physical fitness, and good health within a school setting. With proper academic training, an individual can pursue a career as a teacher. Individuals interested in teaching health education and/or physical education must graduate from an accredited program and pass a state and national licensing examination. This is typically accomplished as an undergraduate teacher education major. However, many colleges and universities are offering graduate programs to prepare individuals to become licensed teachers. The cornerstone of teacher education programs is the practicum teaching experience, which must be completed before the licensure examination. The majority of teachers work in public and private school systems teaching kindergarten through grade 12. Coaching sport and athletic teams can often be a part of the additional responsibilities of a health education or physical education teacher. Individuals can also pursue teaching careers at the college and university levels. Employment at this level does not require passing a licensure examination but almost always requires a master's or doctoral degree, usually in one of the areas of study listed previously in Table 12.3 (2).

Strength and Conditioning Coach

Strength and conditioning coaches are involved in the development and implementation of specialized training programs for athletes (Fig. 12.7). Strength and



FIGURE 12.7 Strength and conditioning coaches work with athletes of all ages. (Photo courtesy of Stockbyte/DKP/Getty Images.)

conditioning coaches work with a variety of individual and team sport athletes to increase muscular strength and endurance, cardiovascular fitness, flexibility, and movement skills in an effort to improve athletic performance. The evaluation and assessment of physical performance and training improvements are important responsibilities of the strength and conditioning coach. In addition to coursework in an exercise science curriculum, individuals wishing to pursue this career option should complete an internship or acquire volunteer training experience within an established strength and conditioning program. Individuals should strongly consider obtaining an appropriate certification credential and possibly a graduate degree in an exercise science–related area of study. Strength and conditioning coaches work primarily in secondary schools, colleges and universities, professional sports programs, sports medicine clinics, and commercial sports performance enhancement and development businesses (2).

Wellness and Fitness Industry Professional

A wellness and **fitness industry** professional can expect to work with members of the general public to develop and implement physical activity and exercise programs to improve health, wellness, and fitness and reduce the risk for lifestyle-related diseases. Exercise science graduates can obtain employment in a variety of professional jobs within the wellness and fitness industry. A broad knowledge of biomechanics, fitness assessment, exercise physiology, and exercise psychology is critical for an exercise science graduate to establish and develop a professional career in the wellness and fitness industry. As more individuals use participation in physical activity and exercise as a means to improve health, wellness, and fitness and reduce the risk of developing lifestyle diseases, there will be an increased need for professional employees in the wellness and fitness industry (13). Table 12.4 provides examples of some employment opportunities in the wellness and fitness industry. Within each of the work settings, exercise science professionals have the opportunity to work as individual and group exercise leaders, fitness director, operations or facility

Table 12.4 Employment Opportunities in the Wellness and Fitness Industry

EMPLOYMENT OPPORTUNITY	DESCRIPTION
Club fitness programs	For-profit business operating to provide a service to members who join the club
Community programs	Operated by local communities and nonprofit organizations, such as the YMCA and the YWCA
Corporate wellness programs	Operated by large businesses and corporations as a means by which to provide employees with an opportunity to enhance health and wellness
Spa fitness programs	For-profit business operating to provide a variety of traditional and nontraditional exercise, health, and relaxation programs to guests

manager, club manager, or general manager. Each of these positions requires a specific content knowledge base and in some instances years of experience (e.g., club manager or general manager). In many instances, professional certification is expected and often required.

As a professional employed in one of the wellness and fitness industry settings, you can expect to work with individuals across the lifespan from preschool aged children to the older adult. In many instances, the individuals will be healthy, but physically **deconditioned**. There is the possibility of undiagnosed disease and often individuals will want to begin an exercise program with risk factors for a variety of disease conditions. That makes it very important to follow appropriate guidelines for exercise testing and exercise prescription (4). Participants in wellness and fitness programs will also have a wide variety of knowledge, skills, and abilities related to physical activity and exercise. Within the wellness and fitness industry, exercise science professionals can be expected to be involved in health and fitness screening and assessment, fitness program development and implementation, and program evaluation and assessment (13).



Thinking Critically

Why is it important to thoughtfully consider personal and professional goals when deciding on a career in an allied health or exercise science profession?