

Orthotic and Prosthetic Assistants



Occupational Brief Title Codes:

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Occupational Subtitles:

- Orthotic and Prosthetic Technicians

Work Classification Based Related

D.O.T. Occupations:

- Medical Technologists
- Nuclear Medicine Technologists
- Ophthalmic Technicians
- Orthotists and Prosthetists

Interests Based Related

G.O.E. Occupations:

- Dental Laboratory Technicians
- Instrument Technicians
- Opticians
- Watch Repairers

Skills Based Related

O*NET Occupations:

- Commercial and Industrial Designers
- Medical Equipment Repairers
- Optometrists
- Orthodontists

Noteworthy Quote:

"It is difficult to explain the reward one gets from designing a device that allows someone in a wheelchair the ability to walk again. This is the essence of orthotics and prosthetics. Whether we are treating disabilities due to injury or disease, in children or adults, O&P is about building lifelong relationships as well as artificial limbs and braces, and allowing our patients to enjoy life to its fullest. Whether one chooses patient care, education, research or product development, there are wonderful opportunities around the country for anyone interested in this exciting and growing profession."

– Gary M. Berke, MS, CP, President Elect, American Academy of Orthotists and Prosthetists, Alexandria, Virginia

Orthotic and prosthetic assistants (or-`thot-ic and pros-`thet-ic as-`sist-ants) aid orthotists and prosthetists in providing care to patients, and fabricating and fitting orthopedic devices and prostheses. They work to restore mobility to the patient, to prevent or limit disability, and restore physiological function and/or cosmetic look of body parts and limbs due to muscle/bone impairment, disease, deformity, or amputation.

Orthotics and prosthetics (O&P) is an allied health profession that involves the evaluation, fabrication, and custom fitting of artificial limbs and orthopedic braces. O&P professionals are specialists within the rehabilitation or care team for patients with conditions that require orthoses (braces) or prostheses (artificial limbs). Orthoses are braces used for protective support or correction of body parts (neck, back, knees, ankles, wrists, etc.) due to muscle/bone impairments, diseases, or deformity. Prostheses are artificial limbs (arms, legs, knees, hands, feet, etc.) used to replace those deformed, missing, or amputated due to accidents, disabling diseases, or congenital birth problems.

At one time, the field of prosthetics and orthotics was the work of wood carvers and blacksmiths who would make crude replacements for legs that were amputated or injured. Today, artificial limbs resemble human arms or legs, and braces are increasingly more versatile. Flexible polymer materials provide increased comfort. Carbon fiber, Kevlar, and titanium are all used for reducing the weight and increasing the strength and durability of these devices. Many arm prostheses have electrically powered hands and elbows controlled by switches or sensors on the skin that detect signals generated by muscles. A computer chip allows electronic knee joints to sense changes in position, speed, and force. Some devices help people do specific tasks, such as prosthetic feet made for running, golfing, or swimming.

More than 3.5 million people in the United States use some kind of orthosis. By 2020, research predicts the demand for O&P services is expected to increase by 25 percent for orthotic care, and 47 percent for prosthetic care. The O&P profession includes practitioners who provide comprehensive orthotic and/or prosthetic care (further detailed in a separate brief on *Prosthetists and Orthotists*), assistants, technicians, and fitters.

Work Performed

Orthotic and prosthetic (O&P) assistants support O&P practitioners by assisting in orthotic and prosthetic patient care. Under the guidance and supervision of an orthotist/prosthetist, O&P assistants perform orthotic and prosthetic procedures, and related tasks in the management of patient care. They help prosthetists and orthotists to examine patients and maintain medical records. They often take the patient's medical history and review the primary physician's prescription or referral for O&P services.

O&P assistants may assist in testing the patient's muscle strength, range of motion in the joints, and how the person walks or moves. They use tape measures,

calipers, and other precision tools to measure the patient. They may make a plaster impression of the healthy limb, or perhaps the torso, from which they make a cast or model to work on. They work with the O&P practitioner to discuss the patient's specific needs and any conditions that may affect the fit, alignment, or use of the device by the patient.

Orthotic and prosthetic (O&P) technicians support O&P practitioners and assistants by providing the technical tasks and services associated with the support of patient care. Under the supervision of and in consultation with the practitioner, the O&P technician fabricates, repairs, and maintains the orthotic and prosthetic devices to provide maximum fit, function, and cosmetic appearance. Technicians may also service and repair the machinery used for the fabrication of these devices.

Although some assistants may fabricate, repair, and maintain devices, technicians are specially trained in fabricating techniques and equipment, as well as the properties of applicable materials. O&P technicians or assistants begin by drawing layouts, and making blueprints of the proposed design. Many now use computer-aided design and manufacturing (CAD/CAM) technology. Measurements describing the size and shape of the limb can be scanned in by laser or by using a special hand-held wand. The program then uses these measurements to automatically create a detailed three-dimensional blueprint of the prosthesis or orthosis needed. The blueprint can then be fed or downloaded into an automated carving machine that shapes the actual device.

To make the devices, O&P technicians may use foam, plastics, resins, fabric, steel, aluminum, fiberglass, and leather. They use hand and power tools including saws, drills, sewing machines, and lathes. They may glue, bolt, weld, sew, and rivet parts together, or they use advanced thermoforming techniques. They assemble parts and attach padding. The components used are based on the patient's individual needs, including height, weight, and the activities they participate in. Technicians then integrate commercially available components with custom-made sections to make the finished product. They may also mix and apply pigments (dyes or stains) to the artificial limb or brace to match the patient's skin color.

O&P assistants teach the patient how to put on, use, and care for their prosthesis or orthosis. Their main concern is to ensure that the patient finds the prosthesis or orthosis usable, comfortable, and aesthetically acceptable. Over a period of weeks or months the assistant or technician may make further adjustments to the orthoses or prostheses to make it fit better or to make it more comfortable. Their association with patients may last for years, especially when working with children—who require regular replacements for their devices as they grow. Over time orthoses or prostheses will also wear down, so technicians and assistants must repair and maintain the devices.

Other O&P professionals include **mastectomy** and **orthotic fitters**. Mastectomy fitters are trained to participate in the fitting and delivery of breast prostheses and mastectomy products and services. Orthotic fitters are trained to participate in the fitting and delivery of prefabricated and off-the-shelf orthotic devices and/or soft goods. The duties they are allowed to perform are limited, however. They may fit cervical orthoses not requiring more than minor modification; pressure gradient hose; and trusses. They may fit prefabricated spinal orthoses, except those used in the treatment of scoliosis, rigid body jackets made of thermoformable materials, and "halo" devices. They may also fit prefabricated orthoses of upper and lower extremities, except those used in the treatment of bone fractures.

Working Conditions

Orthotic and prosthetic assistants talk and work with patients in examining rooms, and fitting rooms equipped with parallel bars and a full-length mirror. They or technicians make the prostheses or orthoses in a laboratory. In a small practice or clinic, the assistant may work with the practitioner during patient care and make the device, or they may send the measurements to a lab to have the device made by a technician. In a large hospital or clinic, they often have the assistance of one or more technicians to help them make the prostheses or orthoses. Both assistants and technicians stand a great deal of the time. They may also wear goggles, gloves, masks, and other protective devices when fabricating orthoses and prostheses.

Hours and Earnings

Many assistants and technicians work 40 hours a week, but some work part-time. Work schedules may include some evening and Saturday hours. They may also work overtime to finish a device, make an adjustment or repair, or complete a fitting.

In general, earnings of O&P professionals compare favorably with other health professionals. Individual earnings, however, vary with their duties, education, experience, certification, employer, and geographic location. According to the Bureau of Labor Statistics, orthotic and prosthetic assistants earned an average of \$59,560 a year in 2004. Overall, their earnings ranged from a low of around \$28,000 a year to well over \$90,000 a year. According to the American Orthotic & Prosthetic Association (AOPA), the average salary for certified technicians was \$40,454 a year, and \$34,386 a year for fitters.

Most employers offer paid holidays, vacation time, and sick leave. Employers may also offer medical insurance, life insurance, pension plans, and continuing education incentives.

Education and Training

Although some assistants and technicians are taught on the job, many employers prefer to hire those with formal training in orthotics and prosthetics or a related field. There is currently one associate degree O&P assistant training program, and four O&P technician training programs actively accredited by the National Commission on Orthotic and Prosthetic Education (NCOPE). The technician programs offer either an associate degree for orthotic and prosthetic technicians, or a one-year certificate for orthotic or prosthetic technicians.

High school students interested in becoming an O&P professional should take courses in English, health, biology, chemistry, physics, mathematics, metal and wood shop, art, and drafting. Business courses can be useful. Technicians and assistants using automated systems will find computer skills valuable. Because there are so few O&P programs, having related experience, such as volunteering or working in an O&P office, clinic, or lab, is also extremely helpful.

Postsecondary O&P assistant and technician training programs include instruction in human anatomy and physiology, orthotic and prosthetic equipment and materials, and applied biomechanical principles to customize orthoses or prostheses. The assistant program provides additional training in direct patient care and practice management. The technician programs focus specifically on fabrication skills and equipment. Both types of programs also include clinical rotations to provide hands-on experience.

Certification and Professional Societies

In 2006, eleven states had licensure laws regulating the practice of orthotics and prosthetics. Voluntary credentials are also available through the American Board for Certification in Orthotics and Prosthetics (ABC). ABC offers practitioner certification, technician registration, and fitter certification. In general, applicants must meet education and experience requirements, and pass an examination.

To earn the ABC Registered Orthotic Technician (RTO), Registered Prosthetic Technician (RTP), or Registered Prosthetic-Orthotic Technician (RTPO) designation, candidates must complete a NCOPE accredited orthotic and/or prosthetic technician education program, or have two years of technician experience in the appropriate discipline(s) under the supervision of an ABC certified practitioner.

O&P assistants, technicians, and fitters may find additional support by joining any of a number of associations which promote the field of prosthetics and orthotics. Such organizations include the American Academy of Orthotists and Prosthetists (AAOP), the American Orthotic and Prosthetic Association (AOPA), the International

Society for Prosthetics and Orthotics (ISPO), the Amputee Coalition of America (ACA), the National Association for the Advancement of Orthotics and Prosthetics (NAAOP), and the Association of Children's Prosthetic-Orthotic Clinics. These groups offer networking, educational, and career resources, as well as advocacy and other professional services.

Personal Qualifications

O&P professionals must have a real desire to help people. They need strong interpersonal and communication skills, the ability to problem solve, and an aptitude for math and science. Fabricating orthoses and prostheses requires a high degree of manual dexterity, good vision, and the ability to recognize very fine color shadings and variations in shape. An artistic aptitude for detailed and precise work is also important.

Occupations can be adapted for workers with disabilities. Persons should contact their school or employment counselors, their state office of vocational rehabilitation, or their state department of labor to explore fully their individual needs and requirements as well as the requirements of the occupation.

Where Employed

There are no exact figures on the number of O&P professionals or facilities in the United States. As of 2005, the American Board for Certification in Orthotics and Prosthetics has issued credentials to more than 5,000 practitioners; 2,800 assistants, technicians, and fitters; and 1,250 patient care facilities. According to the Bureau of Labor Statistics, orthotists, prosthetists, and their assistants held roughly 6,000 jobs in 2004. Orthotics, prosthetics, and other related medical appliance technicians held around 11,000 jobs.

Orthotic and prosthetic assistants and technicians work in a variety of settings, including private practices, hospitals, rehabilitation facilities, specialty clinics and home health settings, nursing homes, and government agencies such as the Department of Veterans Affairs. Around 3 out of 5 technician jobs were in orthotic and prosthetic laboratories, which are usually small, privately owned businesses.

Employment Outlook

Employment prospects for these professional are excellent. At the present time, the need for all types of O&P professionals is actually greater than the supply. The Bureau of Labor Statistics projects employment to grow by 18 percent—an increase of 1,000 jobs—for orthotists, prosthetists, and assistants; and by 13.2 percent—an increase of 2,000 jobs—for orthotic, prosthetic, and other medical appliance technicians through the year 2014. Several thousand additional jobs will also open each year due to replacement needs.

An increasing older population will continue to require more prosthetics and orthotic aids. The explosion in cases of diabetes and cardiovascular disease, the leading causes of limb loss, are expected to result in escalated amputations. Increased insurance reimbursement options are allowing for greater access to O&P services. Advances in technology and materials are helping O&P professionals to design and make devices that are more comfortable, safer, and less restricting than ever before. Medical advances are saving more lives, and recent increases in natural disasters and armed combat are also increasing the need for O&P services.

Entry Methods

Graduates of an accredited O&P educational program can find help in their job search through their schools' career services office. Internships and other part-time, temporary, and volunteer experience in an O&P facility often leads to permanent employment. Membership in professional groups and networking with other O&P professionals can offer job leads. Several O&P publications and Web sites also list job openings and employment opportunities.

Advancement

In large practices, hospitals, clinics, and laboratories, assistants and technicians may become supervisors or managers. Experienced assistants and technicians may also teach or take jobs with orthotic and prosthetic suppliers in such areas as product development, marketing, and sales. A few technicians go on to open their own laboratory or fabrication facility. With additional formal education, O&P assistants and technicians can advance to become orthotists and prosthetists.

For Further Research

American Academy of Orthotists and Prosthetists, 526 King Street, Suite 201, Alexandria, VA 22314. Web site: www.oandp.org or www.opcareers.org

American Board for Certification in Orthotics and Prosthetics, 330 John Carlyle Street, Suite 210, Alexandria, VA 22314. Web site: www.abcop.org

National Commission on Orthotic and Prosthetic Education, 330 John Carlyle Street, Suite 200, Alexandria, VA 22314. Web site: www.ncope.org

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