

Qualifications for Prosthetists and Orthotists

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Introduction. During the past fifteen years the American Orthotics and Prosthetics Association, as well as the American Board for Certification in Orthotics and Prosthetics, Inc., has been concerned about the qualifications of prosthetists and orthotists. The former was concerned because of the programs of education it was called upon to offer to its membership; the latter, because of the standards it was called upon to establish and maintain.

As a result of this concern, in 1959, the then President of the Association, Karl Buschenfeldt, appointed a Committee on Education for the primary purpose of drawing a profile of the prosthetist and orthotist. After two years of work, the task of completing the "profile" was given to the newly formed Committee on Educational Standards of the American Board for Certification. It is the culmination of this three years of study and work that we now present to the readers of the *Journal*.

The reader is asked to keep in mind that the profile of the prosthetist and orthotist is being drawn today in an effort to direct the steps of the educators who will be training these specialists in the future. Nothing stated here is intended to be final; we are only setting down principles that will hold true in the future as we see them today. It is likely that developments in medicine, engineering, and our own fields, will alter what we have stated here. As a result, some will feel that what we have stated is too general, while others will feel, just as strongly, that our statements are too specific. The underlying philosophy, however, will not change.

The statements made by the Committee on Educational Standards are to be considered as guides to formal curriculum development for prosthetists and orthotists—they are *not* the curriculum itself. In this, the Committee has asked and reasked four questions:

1. What educational purposes should the institution of higher education be expected to attain?
2. What educational experiences are likely to achieve these purposes?
3. How can these experiences be effectively organized?
4. How can we determine whether these purposes are being achieved?

Definition. The Prosthetist is a person who is skilled in the fitting and fabricating of appliances that replace extremities which have been removed through accidents, as a result of disease, or due to a congenital anomaly.

The Orthotist is a person who is skilled in the fitting and fabricating of appliances which replace lost musculo-skeletal function following disease or trauma, and support weakened segments of the body.

¹ This is to be considered an interim report of the Committee on Educational Standards of the American Board for Certification in Orthotics and Prosthetics, Inc., M. P. Cestaro, Chairman; Thorkild Engen, Robert Gruman, and Basil Peters, Members; LeRoy Wm. Nattress, Jr., Secretary.

Both the prosthetist and the orthotist, when they have attained a level of proficiency in their specialty, may be recognized as Certified after successfully passing the examination of the American Board for Certification in Orthotics and Prosthetics, Inc.

Personal Qualifications. The qualifications for prosthetists and orthotists begin with the dedication to the service of the physically disabled. This is the cornerstone upon which the specialties of prosthetics and orthotics are built, and is their justification for existence within the field of medicine.

The prosthetist or orthotist must also develop and maintain personal relationships within the field of medicine, particularly with prescribing physicians. This is important so that the best understanding and mutual agreement may be promoted between both professions. It is equally important in providing the best possible service to the patient.

In addition, the prosthetist or orthotist must have a sincere desire to upgrade the status of his profession, and be willing to devote time and effort to effect the realization of this goal. He must be willing to share the responsibility of supporting and maintaining the ideas of his profession as embodied in the Certification Movement.

General Educational Requirements. We recognize that a broad foundation must underlie the specific educational requirements for persons desiring to enter the fields of prosthetics and orthotics. The major reason for this is that the prosthetist and orthotist must use the knowledge and resources of many fields to adequately serve the physically disabled. In addition, he must be able to communicate effectively with numerous, related specialties in the larger field of medicine and rehabilitation, as well as with the general public. Finally, he must have the academic background and discipline to utilize the many resources available to him for solving the problems with which he is confronted daily; problems to which there are no solutions today, but which, through future research, will be solved tomorrow; problems which today are considered unanswerable but, through continued study, will be solved; and problems which are not yet recognized.

In order to form this broad foundation it is indicated that a prosthetist and orthotist should begin his formal study in a Liberal Arts program.

The beginning of this program is the learning of self-expression and, with this, the appreciation of the expression of others. Basically, this beginning comes through the improvement of the skills of reading, writing and speaking. Implied in this is the study of literature and the mastery of the art of creative writing and public speaking.

Following this must come the study of the laws of natural science, beginning with mathematics, and including biology, chemistry, and physics. The study of each must include sufficient material to prepare the student for the advanced study of prosthetics and orthotics. In mathematics the foundation must be laid for the understanding of the principles of biomechanics, design and economics; in biology for anatomy, kinesiology and physiology; in chemistry for the property of materials; and in physics for mechanics. In this, the interrelation of the areas of natural science to specialization in prosthetics and orthotics is readily observed.

The social sciences must also be included in this broad foundation. This begins with the knowledge of normal behavior in individuals and the practical application of these principles in everyday living, including the mechanisms of personal adjustment, emotion, and motivation. An understanding of the individual within a group, and of the group itself, is also a necessity, as is the study of the systems of reasoning as they occur in ordi-

nary life and the theories of the ethical aspects of human conduct. Finally, an appreciation of the development of our civilization and the factors which have created our modern world must be obtained.

Specific Educational Requirements. Up to this point we recognize that the qualifications for prosthetists and orthotists do not vary considerably from the qualifications of those wishing to prepare for other professions. However, at this point, the prosthetist and orthotist must begin specialized study intended to develop necessary skills for his profession. The study of numerous curricula leads us to believe that this can only be done by creating new course material from the research and development carried on in these fields, and not by borrowing course material from curricula already established leading to proficiency in other professions. If the latter approach is followed, we cannot conceive of an adequately trained prosthetist or orthotist resulting from a program whose duration is but four of five years.

We consider the following eleven areas of subject matter vital to the qualifications of a prosthetist and orthotist:

1. *Anatomy and Physiology:* The study of the human body and its systems with emphasis on the skeletal structure of the body; the muscles and their enervation; the vascular system as it applies to prosthetic or orthotic service; and the pulmonary system relating vital capacity to rehabilitation potential.

2. *Kinesiology:* The study of musculo-skeletal systems of the human body as they relate to normal and abnormal human movement.

3. *Biomechanics:* The study of man-machine relationships with emphasis upon the replacement of normal musculo-skeletal systems with mechanical systems. In this the concepts of support and correction, of assistance and resistance, of dynamic and static forces, and of comfort and cosmesis must receive special attention.

4. *Property of Materials:* The study of the working characteristics of materials used in prosthetics and orthotics.

5. *Survey of Pathological Conditions:* An overview of the etiology and course of conditions leading to prosthetic and orthotic care, concluding with the medical considerations involved in the prescription of appliances, the importance of proper hygiene and an introduction to dermatological conditions.

6. *Survey of the Rehabilitation Field:* An overview of the patient and selected community resources available for his care; patient-centered organization and treatment planning.

7. *Mechanical Aids for the Disabled:* An overview of the devices and appliances in current practice which are used to ameliorate disability and which are fitted by prosthetists and orthotists.

8. *Professional Development of Prosthetics and Orthotics:* The study of the history of the professions of prosthetics and orthotics with emphasis on the factors which maintain professional standing such as ethics, the preparation of technical reports, continued education, affiliation with professional organizations, etc.

9. *Business Management:* The study of sound business principles as they apply to the establishment and maintenance of the practice of prosthetics and orthotics.

10. *Fabricating and Fitting Appliances:* The study of fabricating and fitting all the basic types of prosthetic and orthotic appliances through the construction and fitting of appliances to patients.

11. *Clinical Affiliation*: The application of the principles of prosthetics and orthotics under supervision in approved facilities. The emphasis during this period, which should be considered as a post graduate residency or internship, is on the fitting of appliances, the analysis of post-fitting problems and the solution of these problems as well as on the practical aspects of functioning within the structure of a prosthetic and/or orthotic facility.

Conclusion: In considering the qualifications for prosthetists and orthotists we have put forth what we consider to be the educational purposes which an institution should accept, and the educational experiences which an institution should provide in attaining these purposes.

We have not discussed whether prosthetics and orthotics should be combined or separated specialties. While there is a trend toward the combination of these two paramedical specialties, as seen in the development of private practice, centralized fabrication, and the physician requiring more total service for his patient, the answer will come in time, not through reflection.

New Facilities Certified

By action of the Committee on Facilities of the American Board for Certification, the following Facilities have been granted Certification since the publication of the 1962 *Registry of Certified Prosthetic and Orthopedic Appliance Facilities*.

CALIFORNIA

Whittier:

LERMAN AND SON	O
16541 East Whittier Blvd.	OWen 1-4619
Max Lerman, C.O.	

ILLINOIS

Peoria:

MODERN ORTHESIS	O
4615 North Prospect Road	683-0431
James Russ, C.O.	

IOWA

Waterloo:

RAY TRAUTMAN AND SON	P
217 East Fifth Street	ADams 4-4010
Dale Clark, C.P.	

PENNSYLVANIA

Lemoyne:

KLINGEMAN ARTIFICIAL LIMB CO.	P
722 State Street	REgent 7-7831
Thomas J. Klingeman, C.P.	

Pittsburgh:

HOME FOR CRIPPLED CHILDREN	O
1426 Denniston Avenue	521-8608
Theodore P. Hipkens, Executive Director	

WISCONSIN

Milwaukee:

ACME SURGICAL APPLIANCE CO.	P&O
1116 South 16th Street	EVERgreen 4-0660
George A. Schultz, C.O.	