

National Commission on Orthotic and Prosthetic Education
(NCOPE)

Core Curriculum for Orthotists and Prosthetists

*Appendix B of the Standards and Guidelines for
the Accreditation of Educational Programs in
Orthotics and Prosthetics*

2010 Edition

Core Curriculum for Orthotists and Prosthetists

Introduction

Programs that wish to offer and prepare students for the Orthotist and Prosthetist levels must demonstrate that the curriculum meets or exceeds the content of this edition of the *Core Curriculum for Orthotists and Prosthetist*. This curriculum content is listed in the *Standards and Guidelines for the Accreditation of Educational Programs in Orthotics and Prosthetics* as Appendix B. Programs seeking initial or continued accreditation must meet all of the standards identified including the core curriculum. Programs may access the standards on-line at one of the following locations:

- http://www.caahep.org/documents/ForProgramDirectors/OP_Standards.pdf
- <http://caahep.org/Content.aspx?ID=30>

Section A ENTRY-LEVEL COMPETENCIES

The graduate entering the profession must effectively demonstrate competence in the following constructs.

- A.2.1 Exemplify the role of the orthotist/prosthetist in providing ethical patient-centered care by applying nationally accepted professional responsibilities in clinical practice experiences.
- A.2.2 Practice safety of self and others, and adhere to safety procedures throughout the delivery of orthotic/prosthetic services.
- A.2.3 Demonstrate an awareness of the humanity and dignity of all patients and related individuals within a diverse and multicultural society.
- A.2.4 Demonstrate appropriate insight of clinical practice, clinical operations and practice management within the social, cultural, and economic constructs of human function and disability.
- A.2.5 Comprehend and demonstrate knowledge of the collaborative role of the orthotist/prosthetist as a member of the interdisciplinary rehabilitation team in providing patient-centered care.
- A.2.6 Demonstrate the ability to participate as a critical consumer of research and to integrate research findings as evidence in clinical practice.
- A.2.7 Demonstrate the ability to integrate knowledge of the fundamental science in human function (physically, cognitively, socially, psychologically) with the practice framework of assessment, formulation, implementation and follow-up of a comprehensive orthotic/prosthetic treatment plan.
- A.2.8 Demonstrate the ability to make clinical decisions designed to meet patient expectations, as well as achieve prescribed orthotic or prosthetic outcomes.
- A.2.9 Demonstrate, in a systematic and effective manner, the ability to impart knowledge when providing learning services for patients and their families, other health professionals and the public at large.
- A.2.10 Demonstrate the ability to participate in research activities through a working knowledge of the research process.

A.2.11 Document pertinent information in a manner that promotes efficient direction for patient care, supports effective collegial communication, and meets the requirements of legal, business and financial constraints.

A.2.12 Demonstrate proficiency in clinical and technical procedures that support the orthotic/prosthetic practice.

The 21 competencies for health professionals, as articulated by the PEW Commission, are strongly recommended for graduates of orthotic and prosthetic master's degree programs.

The 21 PEW Commission competencies for health profession practitioners:

1. Embrace a personal ethic of social responsibility and service.
2. Exhibit ethical behavior in all professional activities.
3. Provide evidence-based, clinically competent care.
4. Incorporate the multiple determinants of health in clinical care.
5. Apply knowledge of the new sciences.
6. Demonstrate critical thinking, reflection and problem-solving skills.
7. Understand the role of primary care.
8. Rigorously practice preventive health care.
9. Integrate population-based care and services into practice.
10. Improve access to health care for those with unmet health needs.
11. Practice relationship-centered care with individuals and families.
12. Provide culturally sensitive care to a diverse society.
13. Partner with communities in health care decisions.
14. Use communication and information technology effectively and appropriately.
15. Work in interdisciplinary teams.
16. Ensure care that balances individual, professional, system and societal needs.
17. Practice leadership.
18. Take responsibility for quality of care and health outcomes at all levels.
19. Contribute to continuous improvement of the health care system.
20. Advocate for public policy that promotes and protects the health of the public.
21. Continue to learn and help others learn

Section B GENERAL CONTENT AREAS

The basic science curriculum must include appropriate content in:

- B.1.1 Life Sciences/Biology with lab
- B.1.2 Chemistry with lab
- B.1.3 Physics with lab
- B.1.4 Human Anatomy and Physiology
- B.1.5 Human Growth & Development or Abnormal Psychology
- B.1.6 Statistics

In addition, the following topics are recommended, but not required:

- Business Management*
- Ethics*
- Human Anatomy and Physiology Lab*

Each sponsoring educational institution should determine whether the General Content Areas are incorporated into the professional curriculum or required prior to entry into the program.

Section C PROFESSIONAL CURRICULUM

C.1.0 Foundational Content Areas

The following content areas related to orthotics and prosthetics must be covered in the curriculum:
(Additional explanation for content areas is below.)

- | | |
|--|-------------------------------------|
| C.1.1 Advanced clinical and applied technology | C.1.12 Gait analysis/pathomechanics |
| C.1.2 Applied clinical skills | C.1.13 Health care economics |
| C.1.3 Applied technical skills | C.1.14 Human anatomy and physiology |
| C.1.4 Behavioral sciences | C.1.15 Kinesiology |
| C.1.5 Bioethics | C.1.16 Materials science |
| C.1.6 Biomechanics | C.1.17 Models of disablement |
| C.1.7 Clinical pathology | C.1.18 Neuroscience |
| C.1.8 Clinical pharmacology | C.1.19 Practice management |
| C.1.9 Communication skills | C.1.20 Professional issues |
| C.1.10 Diagnostic studies | C.1.21 Rehabilitation science |
| C.1.11 Evidence-based practice | C.1.22 Research methods |

Definitions for foundational content areas:

Advanced Clinical and Applied Technology: Integration of non-traditional techniques in the measurement, fabrication, and devices delivered in contemporary O&P practice. This includes knowledge of computer aided design, electrical circuitry, and biomechanical and biomedical engineering concepts.

Applied Clinical Skills: Clinical evaluation skills include the students' ability to create relationships with patients and appropriately use standardized assessment tools (including functional measures) in concert with the clinical examination, as well as evidence from the literature, to determine the need for orthotic-prosthetic services and design appropriate intervention strategies. These skills include, but are not limited to: assessments, clinically oriented literature review, skilled observations, histories, consultations, interviews; psychomotor and social skills required to educate patients, caregivers and colleagues in functionally integrating a device and safely and effectively facilitate movement and initiate mobility training; the ability to produce written documentation of clinical practice, including decision-making in a clear, concise, complete and timely manner that meets legal, administrative and contractual requirements and is sufficient for use in quality improvement programs and clinical research.

Applied Technical Skills: The development of psychomotor skills in the application of contemporary technology, specifically to implement the treatment plan for appropriate patient care. The goal is to use specialized sets of technical skills in the assessment, measurement and fabrication processes to create an appropriate orthosis/prosthesis that will successfully implement the treatment plan.

Behavioral Science: The application of fundamental concepts in psychology to personality and disability in relation to health care service provision, self-care and the role of relationship building in clinical decision making. This includes the awareness of social supports and constraints and the ability to integrate them into clinical practice and outcomes. Also includes an understanding of strategies for dealing with patients in distress, motivational techniques, and the ability to identify problematic psychological symptoms necessitating referral to appropriate health care providers.

Bioethics: Study involving the research of and deployment in the ethical, efficient and compassionate practice of the life sciences and medicine.

Biomechanics: The application of mechanical principles on living organisms. It includes research and analysis of the mechanics of living organisms and the application of engineering principles to and from biological systems. This includes, but is not limited to, gait and locomotion analysis via multiple measurement methods as well as pathomechanics of joints and functional tasks (including walking).

Clinical Pathology: The wide spectrum of diseases that might cause an individual to need orthotic or prosthetic services will be developed based on anatomy and physiology instruction as well as instruction on pathologies such as diabetes, peripheral vascular disease, neurologic and orthopedic disorders, and psychological diseases.

Clinical Pharmacology: Clinical implications of current pharmacological treatment based on commonly medicated pathologies encountered in patient care. Recognizing effects of medication and its impact on the clinical decision making process. These clinical effects include physiological function (volume management, cardiac performance, pain, spasticity, dermatological) and cognitive function. This includes the ability to identify problematic signs and symptoms necessitating referral to appropriate healthcare providers.

Communication: Developing the ability to effectively share with and appropriately interact with others along the continuum of care; including the patient, the family and other caregivers, members of the healthcare team and others involved with achieving the expected intervention/treatment outcomes. Interactions should be sensitive to the cultural, psycho-social, age, disability and economic stance of the person(s) with whom the interaction takes place.

Diagnostic Studies: Use of information derived from instrumentation and other cogent tests and measures providing results that, when interpreted, most often lead to a diagnosis. Diagnostic studies significant for orthotic-prosthetic practice include, but are not limited to, radiography (x-ray), computerized tomography (CT), and magnetic resonance imaging (MRI), electromyography (EMG), electroencephalography (EEG), ultrasonography, pedobarography (pressure mapping), instrumented gait analysis, stress/strain loading of human tissue, blood chemistries and pulmonary function.

Evidence-Based Practice: Use of research-based evidence as justification of orthotic/prosthetic treatment interventions.

Gait Analysis/Pathomechanics: The study of locomotion in humans. The technique may employ camera recording, force plates, electromyography and computer analysis to objectively measure an individual's gait pattern.

Healthcare Economics: The social, financial and workplace dynamics involved in orthotic and prosthetic practice. Understandings of how the orthotic-prosthetic profession and industry sit in the context of the healthcare industry and economy as a whole and the implications for an individual practitioner in clinical decision making and business management.

Human Anatomy and Physiology: Study of the anatomical and physiological structuring of organisms.

Kinesiology: The study of the mechanics of body movement.

Materials Science: Study of various chemical and physical properties of materials and the relationship and implications of those properties in orthotic-prosthetic design and fabrication. Also, includes the implications of these properties when human are exposed. Includes, but not limited to concepts of stress/strain, elasticity, malleability, thermodynamics.

Models of Disablement: An understanding of the rehabilitation process in order to become more sensitive to the needs of the patient.

Neuroscience: Study of the anatomical substrate related to function of the nervous system. Topics include neuroanatomy, cellular and intercellular physiology, neuroplasticity (including motor control and motor learning), development of the nervous system and the somatic and motor systems. Neural disorders encountered in clinical practice are emphasized. Clinical correlation will provide an understanding of neurological disorders and deficits.

Practice Management: Global understanding of general business practices within orthotic-prosthetic practice, including its role in clinical decision making, documentation, time management and compliance with regulatory agencies, reimbursement and human resource management.

Professional Issues: Understanding of the expectations of an orthotist-prosthetist as a professional and his/her role within the profession itself and the profession within society. Includes, but not limited to, exploration and understanding of orthotic-prosthetic organizations and related statements and publications, the framework outlined in the Practice Analysis, relationships with other professionals, concepts in lifelong learning and professional development, legal issues (fraud, liability, patent, licensure) and self care.

Rehabilitation Science: The scope and variance of rehabilitation practices within sociocultural contexts. Includes models of disability, understanding of practice from the perspectives of all stakeholders and the implications of such on clinical decision making and clinical and functional outcomes

Research Methods: Coursework to support and direct the student to be able to critically review and utilize research to support evidenced based practice, be prepared to participate in research and initiate a research project that might be used as the basis of the required capstone project. This includes, but is not limited to understandings of the logistics and procedural supports and constraints of research, data management and interpretation.

C.2.0 Patient Assessment

The graduate must demonstrate the ability to complete the following essentials of the patient evaluation process competently.

- C.2.1 Perform a comprehensive assessment of the patient using standardized tools and methods to obtain an understanding of the individual's potential orthotic/prosthetic needs that includes the specific competencies in C.2.5
- C.2.2 Determine method and criteria for referring patients to other health care professionals.
- C.2.3 Document services using established record-keeping techniques to record patient assessment and treatment plans, to communicate fabrication requirements and to meet standards for reimbursement and regulations of external agencies.
- C.2.4 Establish a relationship and effectively communicate with the patient or caregiver to gather cogent and useful information for orthotic and/or prosthetic assessments.
- C.2.5 Specific competencies for patient assessment:

Students must be knowledgeable in commonly encountered pathologies when assessing patients and the potential impact on the treatment plan, including but not limited to:

A. Patient History

- i. Medical
- ii. Pathologies/dysfunctions
- iii. Wounds
- iv. Testing results from other disciplines
- v. Surgeries
- vi. Medications
- vii. Diagnostic imaging report(s)
- viii. Determine potential for safe use of device, including understanding instructions and “gadget tolerance”.
- ix. Patient goals
- x. Personal implications of impairment
- xi. Vocation
- xii. Recreational activities
- xiii. Daily functional demands
- xiv. Social
- xv. Financial information

B. Patient Assessment

- i. Strength
- ii. Joint integrity and range of motion
- iii. Sensory testing
- iv. Proprioceptive sense
- v. Joint stability
- vi. Volumetric measures
- vii. Pain and effect/affect
- viii. Tone
- ix. Neuromusculoskeletal integration
- x. Observational gait analysis
- xi. Postural evaluation
- xii. Balance evaluation
- xiii. Motor control
- xiv. Cognitive ability
- xv. Relevant psychological/emotional assessment(s)
- xvi. Skin integrity
- xvii. Functional measures
- xviii. Evaluation of current orthotic/prosthetic management
- xix. Reviewing charted evidence of vital signs, including blood pressure, pulse and respiratory rate

C. Consult with other caregivers and other health care professionals.

D. Possess a basic understanding of surgical procedures related to orthotic and prosthetic care and how these surgical techniques impact orthotic and prosthetic design and function. *The following are recommended, but not all inclusive, surgical procedures:*

- i. Amputation surgery and revision*
- ii. Rotationplasty*
- iii. Joint replacement*
- iv. Tendon lengthening*
- v. Ligament repairs/reconstruction*

- vi. *Skin grafting*
- vii. *Bone resection for ulcer management*
- viii. *Rhizotomy*
- ix. *Spinal stabilization*
- x. *Internal fixation*
- xi. *Nerve release*
- xii. *Joint fusion*

E. Pathologies

Musculoskeletal disorders

abnormal pronation and supination
 adhesive capsulitis (shoulder)
 articular cartilage disorders
 bursitis
 contractures
 convex pes valgus
 De Quevain's disease
 disc herniation
 dislocations
 Dupuytren's contracture
 first ray insufficiency
 first ray insufficiency
 forefoot valgus
 forefoot varus
 fractures
 hallux rigidus
 hallux valgus
 kyphosis
 ligamentous injuries
 mallet finger
 metatarsalgia
 metatarsus adductus
 metatarsus abductus
 Morton's neuroma
 osteoarthritis
 osteoporosis
 plagiocephaly and related cranial disorders
 plantar fasciitis
 plantar flexed first ray
 posterior tibial dysfunction
 rearfoot varus
 repetitive stress injuries
 rheumatoid arthritis
 rotator cuff injuries
 scoliosis
 spinal stenosis
 spondylolysis
 spondylolisthesis
 talipes calcaneovalgus
 tarsal coalitions
 trigger thumb and fingers
 vertebral osseomyelitis

Volkman's contracture

Neurologic disorders

cerebral vascular accident
 Gullain Barre
 hereditary motor and sensory disorders
 multiple sclerosis
 peripheral nerve injuries
 peripheral neuropathies
 poliomyelitis
 spinal cord injuries
 transverse myelitis
 traumatic brain injuries

Neuropathic disorders

Buerger's disease
 diabetes mellitus
 vascular disease

Pediatric disorders

arthrogyposis multiplex cogenita
 cerebral palsy
 developmental dysplasia of the hip
 fibular deficiency
 Legg-Calve-Perthes
 osteogenesis imperfecta
 proximal femoral focal deficiency
 spina bifida
 spinal muscular atrophy
 talipes equinovarus

Other

burn injuries
 cancers
 complex regional pain syndrome
 multiple limb loss
 muscular dystrophies
 osteogenic sarcoma
 osteomyelitis
 post-operative complications
 spasticity
 trauma

tumors

C.3.0 Formulation

The graduate must demonstrate the ability to integrate and apply foundational knowledge and patient information to direct potential orthotic or prosthetic management.

- C.3.1 Synthesize and integrate foundational knowledge and evidence from literature with findings of the assessment of a patient.
- C.3.2. Identify impairments or functional limitations, discern patient goals and determine related biomechanical objectives.
- C.3.3. In collaboration with the patient, design an intervention plan and an appropriate orthotic and/or prosthetic device to meet the needs of the patient and the biomechanical objectives.
- C.3.4 Demonstrate the ability to formulate a comprehensive treatment plan.

C.4.0 Implementation

The graduate must demonstrate the ability to apply the necessary skills and procedures, including fabrication, to provide orthotic or prosthetic care.

- C.4.1 Perform the necessary procedures and fabrication processes to provide prosthetic or orthotic services by using appropriate techniques, tools and equipment.
- C.4.2 Discern the possible interaction between the device and the patient with respect to corrective and accommodative treatment.
- C.4.3 Assess quality and structural stability of the orthosis or prosthesis based on the needs and goals of the patient.
- C.4.4 Evaluate the fit and function of the orthosis or prosthesis as used by the patient, making adjustments as necessary to obtain optimal function and meet patient goals.
- C.4.5 Perform transfer methods and initial gait and mobility instructions that provide for patient safety during appointments.
- C.4.6 Provide effective, culturally appropriate instruction to patients, family members and caregivers on the care, use and maintenance of the orthosis or prosthesis, as well as skin care information and wearing schedules for the device.
- C.4.7 Evaluate and document the level of patient comprehension of these instructions.

C.5.0 Follow-Up

The graduate must demonstrate the ability to develop and implement an effective follow-up plan to assure optimal fit and function of the orthosis or prosthesis and monitor the outcome of the treatment plan.

- C.5.1 Provide continuing patient care and periodic evaluation to assure, maintain and document optimal fit and function of the orthosis or prosthesis.
- C.5.2 Develop an effective long-term follow-up plan for comprehensive orthotic or prosthetic care.
- C.5.3 Provide adequate education to assure the patient and caregivers understand the importance of adhering to the treatment plan and regular follow-up visits.
- C.5.4 Document all interactions with the patient and caregivers.
- C.5.5 Demonstrate follow-up assessment regarding fit and function of the device.
- C.5.6 Assess the function and reliability of the device using scientifically-validated outcome measures.

C.6.0 Practice Management

The graduate must demonstrate the ability to identify and observe policies and procedures regarding human resource management, physical environment management, financial management and organizational management, including the following:

- C.6.1 Demonstrate knowledge of basic billing and coding procedures.
- C.6.2 Demonstrate knowledge of applicability of federal and state legislation and regulations associated with orthotic and prosthetic services.
- C.6.3 Demonstrate the ability to document clinical chart notes, legal compliance and insurance issues.
- C.6.4 Demonstrate an understanding of how orthotists and prosthetists may deal with ethical and legal responsibilities related to patient management.
- C.6.5 Demonstrate knowledge of the terminology specific to Medicare, with an understanding of L-coding history and usage, state regulations and third-party insurance reimbursements.

C.7.0 Professional/Personal Development

The graduate must be able to articulate the importance of personal and professional development including the following areas:

- C.7.1 Lifelong learning with the goal of maintaining knowledge and skills at the most current level.
- C.7.2 Engagement in community service.

- C.7.3 Engagement in service to and development of the profession.
- C.7.4 Attention to personal coping skills and potential for compassion fatigue.
- C.7.5 Exemplification of professional responsibility and ethics.
- C.7.6 Advocacy for and engagement in research to support the professions.
- C.7.7 Knowledge of O & P in the international community.

C.8.0 Orthoses/Prostheses

This section provides a comprehensive list of procedures that must be covered in the curriculum. The program must provide, at a minimum, the designated level of incorporation into the curriculum for each device/component listed. The determined levels of educational inclusion reflect the current demands of the patient population and the profession.

Upper Limb Orthoses

- 1. Knowledge of:**
- 2. Knowledge of assessment or supervised assessment:**
- 3. Knowledge of formulation of treatment plan or supervised formulation of treatment plan:**
- 4. Knowledge of follow-up plan:**
 - Finger orthoses
 - Thermoplastic and metal hand orthoses (HO)
 - Thermoplastic and metal wrist-hand orthoses (WHO)
 - Prehension orthoses
 - Additions and outriggers to HOs and WHOs
 - Elbow orthoses
 - Elbow-wrist-hand orthoses
 - Shoulder–elbow-wrist-hand orthoses, custom fit
 - Shoulder orthoses
 - Wrist joints
 - Elbow joints
 - Shoulder joints
 - Fracture orthoses
- 5. Supervised assessment, formulation of treatment plan and implementation of device design, fabrication, fitting and patient education:**
 - Thermoplastic and metal wrist-hand orthoses (WHO)
 - Prehension orthoses
 - Shoulder–elbow-wrist-hand orthoses, custom fit

Upper Limb Prostheses

- 1. Knowledge of:**
- 2. Knowledge of assessment or supervised assessment:**
- 3. Knowledge of formulation of treatment plan or supervised formulation of treatment plan:**
- 4. Knowledge of follow-up plan:**

- Passive hands
- Mechanical hands
- Terminal devices
- Sports, recreation and work terminal devices
- Voluntary opening
- Voluntary closing
- Terminal devices, microprocessor control feature
- Wrists, constant friction
- Wrists, quick disconnect
- Rigid hinges
- Polycentric hinges
- Step-up hinges
- Residual limb-activated hinges
- Flexible hinges
- Outside locking elbow hinges
- Elbow joints, conventional
- Shoulder joints
- Lift assist
- Excursion amplifier
- Electric hands
- Electric wrist rotator
- Electric elbows
- Digital control
- Proportional control
- Myoelectric control
- Switch control
- Touch pad
- Linear transducer
- Hybrid control

Partial Hand

- Passive
- Body-powered, finger-driven prostheses
- Body-powered, cable-driven prostheses
- Task-specific prostheses

Wrist Disarticulation

- Passive
- Figure 9 harness
- Figure 8 harness
- Shoulder saddle with chest strap harness
- Medial opening
- Expandable wall socket
- Foam sleeve suspension in continuous socket
- Frame with flexible inner liner
- Gel liners
- Suspension sleeves
- Single control cable

Transradial

- Passive prostheses
- Figure 9 harness
- Figure 8 harness
- Shoulder saddle with chest strap harness
- Anatomical suspension variants
- Frame with flexible inner liner
- Locking roll-on gel liners
- Suspension sleeves
- Single control cable

Elbow Disarticulation

- Passive
- Figure 8 harness
- Shoulder saddle with chest strap harness
- Medial opening
- Expandable wall socket
- Foam sleeve suspension in continuous socket
- Frame with flexible inner liner
- Gel liners
- Dual-control cable

Transhumeral

- Passive
- Figure 8 harness
- Shoulder saddle with chest strap harness
- Frame with flexible inner liner
- Locking liners
- Suction
- Dual-control cable

Shoulder Disarticulation/Interscapulothoracic

- Passive
- Figure 8 harness
- Chest strap harness
- Frame with flexible inner liner
- Gel liners
- Dual-control cable

5. Supervised assessment, formulation of treatment plan and implementation of device design, fabrication, fitting and patient education:

- Terminal devices
- Voluntary opening
- Wrists, constant friction
- Flexible hinges
- Elbow joints, conventional

Transradial

- Figure 9 harness
- Figure 8 harness
- Anatomical suspension variants
- Single control cable

Transhumeral

- Figure 8 harness
- Dual-control cable

Lower Limb Orthoses

1. Knowledge of:
2. Knowledge of assessment or supervised assessment:
3. Knowledge of formulation of treatment plan or supervised formulation of treatment plan:
4. Knowledge of follow-up plan:

- Foot orthoses - accommodative, supportive/corrective
- Rigid foot orthoses
- UCBL
- Thermoplastic ankle-foot orthoses (AFO) - solid, posterior leaf spring, articulated
- Supramalleolar AFO
- Thermoplastic knee-ankle-foot orthoses (KAFO)
- Hip-knee-ankle-foot orthoses (HKAFO)
- Metal – AFO
- Metal – KAFO
- Metal - HKAFO
- Hybrid - AFO, KAFO, HKAFO designs
- Floor reaction AFO
- Axial resist AFO
- Axial resist KAFO
- CROW / neuropathic walker
- Total contact cast application
- Fracture orthoses
- Standing frames
- Reciprocating gait orthoses
- Knee orthoses - compartmental unloading
- Knee orthoses -rehabilitative/post-operative stabilization
- Knee orthoses - dynamic
- Pediatric hip orthoses - Scottish Rite hip orthoses, Pavlik harness
- Hip orthoses
- Knee joints - Free motion (standard, offset), locked (drop, bail, ratchet, step lock) stance lock, free swing (stance control)
- Ankle joints for plastic and metal – free, limited motion, assist
- Ankle, knee and hip stops, assists/resists
- Hip joints – free, locking, reciprocating
- Carlson modification
- Varus/valgus controls- modifications
- Mid/hind foot posting
- Thermoplastic thigh cuff designs

5. Supervised assessment, formulation of treatment plan and implementation of device design, fabrication, fitting and patient education:

- Foot orthoses - accommodative, supportive/corrective
- Rigid foot orthoses
- UCBL
- Thermoplastic ankle-foot orthoses (AFO) - solid, posterior leaf spring, articulated
- Thermoplastic knee-ankle-foot orthoses (KAFO)
- Metal – AFO
- Metal – KAFO
- Ankle, knee and hip stops, assists/resists
- Carlson modification
- Mid/hind foot posting

Lower Limb Prostheses

1. Knowledge of:
2. Knowledge of assessment or supervised assessment:
3. Knowledge of formulation of treatment plan or supervised formulation of treatment plan:
4. Knowledge of follow-up plan:

- SACH feet
- Flexible keel feet
- Dynamic response feet
- Articulated feet
- Articulated, simulated feet
- Hybrid feet
- Vertical shock, feature
- Heel height adjustability

Post-Operative Issues

- Post-op volume management
- Soft dressings
- Removable and non-removable rigid dressings
- Immediate postoperative prostheses
- Preparatory prostheses
- Diagnostic sockets

Partial Foot

- Toe filler
- Slipper prostheses
- Rocker sole, rigid sole shoe modification
- Solid/articulated AFO style partial foot prostheses
- Silicone prostheses
- Posterior opening prostheses

Symes

- Patellar tendon bearing
- Total surface bearing
- Posterior opening
- Medial opening
- Expandable wall socket
- Foam sleeve suspension in continuous socket

Transtibial

- Patellar tendon bearing
- Total surface bearing
- Liners, gel, etc.
- Socks
- Suspension sleeves
- Locking mechanisms
- Suction with gel liner
- Vacuum assist suspension
- Suprapatellar cuff
- Supracondylar, supracondylar-suprapatellar
- Joint and thigh lacer
- Waist belt and fork strap

Knee Disarticulation

- Polycentric knees
- Outside knee joints
- Condylar suspension (foam liner, inner sleeve, medial opening, molded socket)

Transfemoral

- Mechanical knees
- Microprocessor knees
- Axis - single, polycentric
- Cadence control - constant friction, fluid
- Stance control – geometric lock, manual lock, fluid
- Stance flexion
- Quadrilateral
- Ischial containment design variations
- Flexible inner liner with rigid frame
- Silesian bandage
- Liners, gel, etc.
- Socks
- Elastic belt
- Hip joint and pelvic belt
- Locking mechanisms
- Suction suspension
- Suction with gel liner
- Vacuum assist suspension

Hip Disarticulation/Transpelvic/Translumbar

- One-piece socket design
- Two-piece socket design
- Iliac suspension
- Custom gel liner suspension

5. Supervised assessment, formulation of treatment plan and implementation of device design, fabrication, fitting and patient education:

- Dynamic response feet
- Diagnostic sockets
- Patellar tendon bearing
- Total surface bearing
- Liners, gel, etc.
- Socks
- Suspension sleeves
- Post-op volume management
- Locking mechanisms
- Supracondylar, supracondylar-suprapatellar
- Mechanical knees
- Axis - single, polycentric
- Cadence control - constant friction, fluid
- Ischial containment design variations
- Suction suspension

Spinal Orthoses

1. Knowledge of:

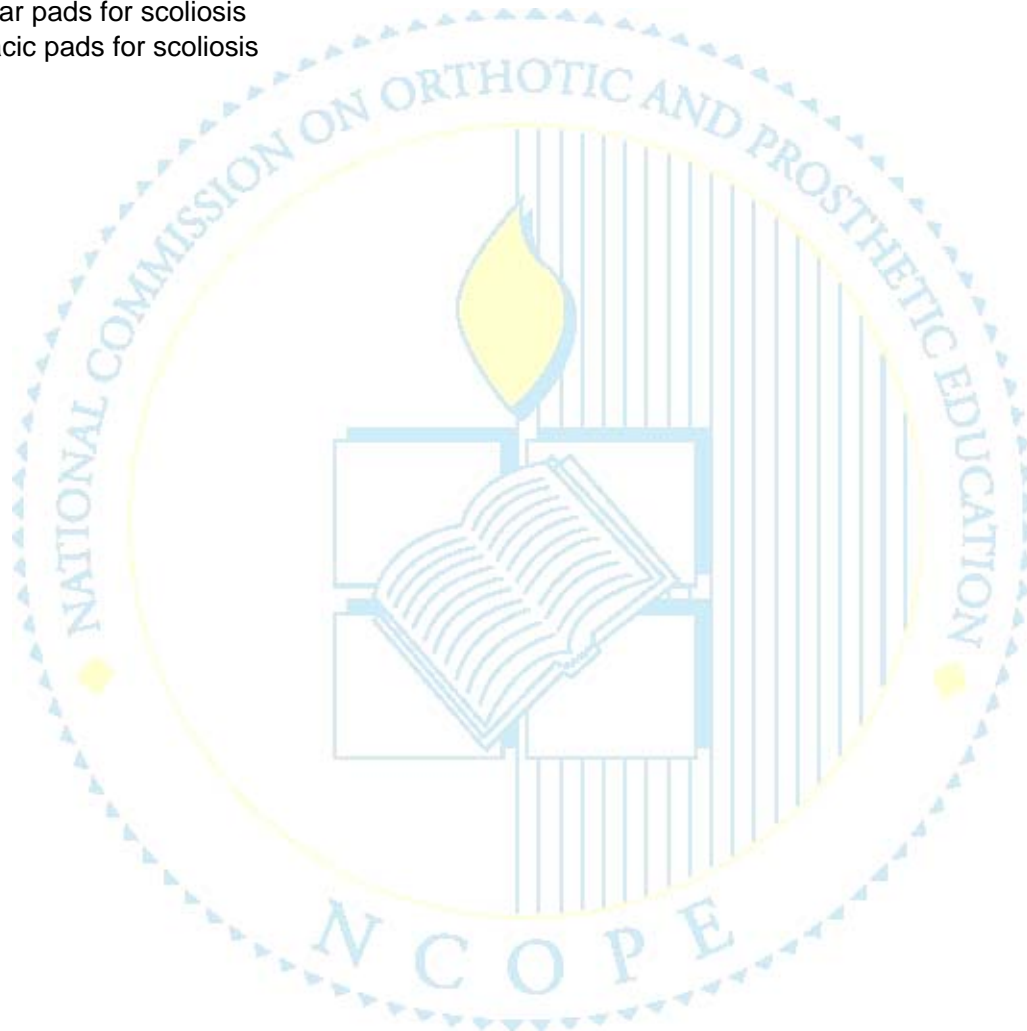
2. Knowledge of assessment or supervised assessment:

3. Knowledge of formulation of treatment plan or supervised formulation of treatment plan:

4. Knowledge of follow-up plan:

- Custom fit cervical orthoses – soft, semi-rigid, rigid (CO)
- Cervical-thoracic orthoses (CTO) - HALO, Minerva
- Cervical-thoracic-lumbar-sacral orthoses (CTLSO) Milwaukee
- Custom fit thoracic-lumbar-sacral orthoses (TLSO) - soft/flexible, sagittal control, sagittal-coronal control
- Custom fit thoracic-lumbar-sacral orthoses - rigid, sagittal control, sagittal-coronal control
- Custom-fabricated thoracic–lumbar-sacral orthoses - rigid, sagittal control, sagittal-coronal control
- TLSOs for treatment of scoliosis: low profile - custom made and custom fit, nocturnal orthoses
- Custom fit lumbar-sacral orthoses – soft/flexible, sagittal control, sagittal-coronal control, posterior-coronal control

- Custom fit lumbar-sacral orthoses - rigid, sagittal control, sagittal-coronal control, posterior-coronal control
- Custom fabricated lumbar-sacral orthoses - rigid, sagittal control, sagittal-coronal control, posterior-coronal control
- Sacral orthoses
- Thigh extensions
- Rotary control techniques
- Trochanteric extension
- Lumbar pads for scoliosis
- Thoracic pads for scoliosis



Cranial Management

- Cranial molding helmet
- Facial orthoses

5. Supervised assessment, formulation of treatment plan and implementation of device design, fabrication, fitting and patient education:

- Custom fit cervical orthoses – soft, semi-rigid, rigid (CO)
- Custom fit thoracic-lumbar-sacral orthoses (TLSO) - soft/flexible, sagittal control, sagittal-coronal control
- Custom fit thoracic-lumbar-sacral orthoses - rigid, sagittal control, sagittal-coronal control
- Custom-fabricated thoracic–lumbar-sacral orthoses - rigid, sagittal control, sagittal-coronal control

Section D RESEARCH

The graduate must demonstrate the ability to perform, at an autonomous level, literature reviews as an effective component of evidence-based-practice and to participate with clinical research projects. The graduate must be able to develop viable literature searches in support of research-based activities. Each graduate is expected to complete a “capstone project/experience” as a part of the curriculum sequence.

Section E CLINICAL EXPERIENCE

The student must be able to articulate how the theoretical concepts learned within didactic coursework are exemplified in clinical settings within all of the domains listed. The student also must have had opportunities to, under supervision, participate and demonstrate novice skills within any or all of these domains.

- E.1 Patient evaluation
- E.2 Formulation of an orthotic or prosthetic treatment plan
- E.3 Implementation of an orthotic or prosthetic treatment plan
- E.4 Follow-up assessment and continued implementation of an orthotic or prosthetic treatment plan
- E.5 Documentation of patient/practitioner encounters for clinical decision making, communication, legal and reimbursement purposes
- E.6 Interpersonal communication among practitioners, patients, caregivers and others encountered in the clinical environment
- E.7 Business management functions within the orthotic/prosthetic practice