الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties

Neurological Physiotherapy Board

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بسم الله الرحمن الرحيم

PREFACE

- The primary purpose of this document is to guide program directors, trainers, and residents through the Neurologic Physical Therapy Residency curriculum. This document is intended to provide specific details of the Saudi Commission for Health Specialties (SCFHS) postgraduate roles, process, and regulations, as well as the Neurologic Physical Therapy Residency program, learning objective (didactic and clinical practice), clinical rotations, and teaching and assessment methods. This curriculum may contain sections outlining some regulations of training; however, such regulations need to be sought from the training's General Bylaws and Executive Policies published by the Saudi Commission for Health Specialties (SCFHS), which can be accessed online through the official SCFHS website. If there is any discrepancy in regulation statements, the one stated in the most recent bylaws or executive policies document will be the reference to apply.
- As this curriculum is subjected to periodic refinements, please refer to the electronic version posted online for the most updated edition at *www.scfhs.org.sa/.*

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We would like to acknowledge that the CanMEDS framework is copyright of the Royal College of Physicians and Surgeons of Canada, and that many of the description's competencies have been acquired from their resources.

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INTRODUCTION

Physical Therapy: A Brief History

It is believed that the ancient Chinese, Egyptians, Persians, and Indians have practiced physical therapy as far back as history were able to record. Ancient writings show that these people had learned the benefits of exercises, movements, and massages to treat ailments. Around 460 BCE, Hippocrates, a Greek physician regarded as the father of modern medicine, introduced the use of hydrotherapy (aka water therapy) to relieve sore joints and muscles and treat skin diseases. The ancient Greeks found that natural hot springs have some healing properties. The Romans applied the same principle in imperial bath complexes called thermae, where the hot spring water was brought in by aqueducts.

In the 18th century, Per Henrik Ling, the father of Swedish gymnastics and founder of the Royal Central Institutes for Gymnastics (RCIG), introduced gymnastics for physical manipulation and exercise. In 1887, the National Board of Health and Welfare gave physical therapist its official recognition. Seven years later, the Chartered Society of Physiotherapy was formed in the United Kingdom, followed by establishment of schools of physiotherapy in New Zealand (1913) and United States (1914). In 1918, the term "reconstruction aides" became the official term used to refer to individuals practicing physical therapy.

The outbreak of polio in 1916 helped physical therapy treatments to be applied and promoted further. It was during the World War I when physical therapy was widely performed and women were recruited to restore physical functions to soldiers and people injured in the war. Mary McMillan, regarded as the mother of physical therapy, established the American Women's

Physical Therapeutic Association, which became the American Physical Therapy Association (APTA). Later, physiotherapy was institutionalized.

Through the 1940s, the primary treatments consisted of exercise, massage, and traction. Manipulative procedures to the spine and extremity joints began in the 1950s. Physiotherapists started to work beyond hospital-based practice to outpatient clinics in public schools and universities, rehabilitation centers, medical clinics, and health centers. In the 1950s, a major shift occurred in neurological physical therapy, and neuro-facilitation approaches were developed. The focus changed from muscular to non-muscular components in which methods were predominantly directed on stimulation of the nervous system.

In 1974, the specialization in physical therapy started in United States, in which the orthopedic section of APTA organized physical therapists to undergo specialization in orthopedics. In the same year, the International Federation of Orthopedic Manipulative Physical Therapists was established. In the 1980s, physical therapy advanced rapidly as electronic devices such as electric stimulators were introduced, and specialized techniques such sports therapy have revolutionized the field of physical therapy.

Beginning 1980s through the end of the 20th century, therapeutic approaches such as that of Bobath, and Kabat and Knott and Voss's Proprioceptive Neuromuscular Facilitation (PNF) were widely used, and new developments took advantage of the experimental work that focuses on motor learning, muscle biology, muscle adaptability, and psychology. Clinical-related studies helped develop neurological rehabilitation by deductive approach. Throughout the history, physical therapy treatment has improved, garnered popularity, and has been accepted worldwide as an effective treatment to improved various physical conditions.

Context of Practice

Neurological disorders such as multiple sclerosis, Parkinson's disease, cerebral palsy, and the consequences of stroke or traumatic brain injury affect an individual's functioning and result in disabilities or limit activities and restrict participation. Such disorders account 20% of the global burden of diseases, and are increasingly recognized as a major public health problem.[1]

Despite epidemiological studies are important in illuminating the prevalence of the disease in the community; there is limited published data on the estimation of the burden of major neurological disorders in the Kingdom of Saudi Arabia.[2] With steadily increases in Saudi Arabia's population and the age of the population, there is likely to be an increase in the prevalence of many neurological disorders. The World Health Organization defines rehabilitation as "an active process by which those affected by injury or disease achieve a full recovery or, if a full recovery is not possible, realize their optimal physical, mental and social potential and are integrated into their most appropriate environment."[2]

Neurological physical therapy is a clinically supervised regimen structured for people experiencing neurological dysfunction due to diseases, trauma, or disorders. Common problems of patients with neurological disorders include partial or complete paralysis, poor balance, lack of coordination and difficulty in walking, functional and daily activity that consequently lead to restriction on social and work participation. Neurological physical therapy can often improve function, reduce symptoms, and improve the well-being of the patient. A neurological physical therapy program is built to help improving the neurologic physical therapy service to meet the patient's needs. Such needs depend on the specific neurological problems or diseases. The success of the program cannot be achieved effectively without the active involvement of the patient and family. The neurological physical therapy aims to improve

the overall quality of life (physically, emotionally, and socially) of patients by enhancing the level of function and independence.

The Purpose of Establishing a Physical Therapy Specialty

The Kingdom of Saudi Arabia has made great strides, especially in healthcare services, by expanding the construction of medical cities, hospitals and primary care centers, and the establishment of faculties of medicine, applied medical sciences, nursing, and various other supportive medical specialties.

The Neurologic Physical Therapy Residency program was created in conformity with the initiatives of Saudi Vision 2030 described as the Health Sector Transformation Program, which aims to restructure the health sector to be a comprehensive, effective integrated health system by improving the quality and providing accessibility to effective healthcare services. There is a huge demand for neurologic rehabilitation services and its expansion will serve the existing demand and will minimize the current shortage on available inpatient rehabilitation beds in the kingdom. The high demand for rehabilitation services, especially in neurologic physical therapy, calls for its expansion; however, this specialized service is very limited due to shortage of completed facilities, lack of available staff, and low number of trained specialists to provide the service in specialized programs to patients using advance techniques and treatment approaches.

Contrary to the traditional pathway wherein majority of international academic institutes use academic programs such as Master of Science (MSc) or Doctor of Philosophy (PhD), which are designed for academic purposes, the Neurologic Physical Therapy Residency Program focuses on clinical practice to improve the resident's clinical skills, knowledge, and attitude, and real-life clinical experience. Establishing a clinical-based residency training program enriches the rehabilitation services in the kingdom and, at the same time, complies with the international academic standards.

RESIDENCY DESCRIPTION

This Neurologic Physical Therapy Residency program is based on multiple core clinical competencies including the diagnosis and treatment of patients with neurologic conditions. The competencies include being a medical expert, manager, professional, communicator, scholar, health advocate, and collaborator, which together form the CanMEDs framework. It offers an opportunity for physical therapists to improve their level of clinical practice and obtain complete proficiency in their profession. The program is designed to promote and cultivate critical thinking, leadership, and innovation-minded expert practitioners.

Residents will be trained to be specialized in Neurologic Physical Therapy to enable them to perform rationale diagnoses on diverse neurological cases to treat patients with disabilities using various approaches, based on the biopsychosocial model. Enabling residents to analyze medical findings and design appropriate treatment programs using advance treatment concepts and techniques is crucial.

Successful completion of this residency program creates greater opportunities for current and future residents to specialize in neurologic physical therapy and become a skilled and autonomous practitioner. Residents will be equipped with the information and practical experience they need, as well as a solid education in evidence-based practice toward the assessment, prevention, and treatment of patients with neurologic conditions.

GOALS AND RESPONSIBILITIES OF CURRICULUM IMPLEMENTATION

The Neurologic Physical Therapy Residency Board curriculum aims to provide the trained residents with a comprehensive, structured, theoretical, and practical education for advanced diagnostic, clinical reasoning, decision-making, manual skills, and intervention in Neurologic Physical Therapy. Ultimately, this curriculum will graduate highly trained physical therapists in neurological physical therapy with a comprehensive clinical education and excellent clinical skills and knowledge to serve the community with the highest standards of care.

Main Goals of the Neurologic Physical Therapy Residency

This program will provide residents with the following:

1. A consistent and comprehensive clinical and didactic experience in the field of Neurologic Physical Therapy.
2. High levels of clinical skills and up-to-date knowledge in the field of neurologic physical therapy.
3. High levels of critical skills in appraising scientific literature, incorporating relevant findings into clinical practice, and actively participating in research activities.

4. Ability to contribute as educators of patients, peers, and other healthcare providers.
5. Competent skills to exhibit and maintain the highest standards of professionalism.

Accordingly, these goals require a significant amount of effort and coordination from all stakeholders involved in postgraduate training. As "adult-learners," residents must be proactive, fully engaged, and must exhibit the following: a careful understanding of learning objectives, self-directed learning, problem-solving, an eagerness to apply learning by means of reflective practice from feedback and formative assessment, and self-awareness and willingness to ask for support when needed. The program director plays a vital role in ensuring the successful implementation of this curriculum. Moreover, training program committee members, particularly the program administrator, trainers, and the chief resident, have a significant impact on program implementation. Residents should be called to share responsibility in the curriculum implementation. The SCFHS applies the best models of training governance to achieve the highest quality of training. Additionally, academic affairs in training centers and the institute review committee play major roles in training supervision and implementation. The Specialty Scientific Committee will guarantee that the content of this curriculum is constantly updated to match the highest standards in the postgraduate education of each resident.

ABBREVIATIONS

Abbreviation	Description
BG	Basal ganglia
CanMEDS	Canadian Medical Education Directions for Specialists
CEP	Core Education Program
CNS	Central nervous system
EMG	Electromyography
FITER	Final In-training Evaluation Report
ICF	International Classification of Functioning, Disability, and Health
ICP	Intracranial pressure
ITER	In-Training Evaluation Report
MS	Multiple sclerosis
NCV	Nerve-conducting velocity
OSCE	Objective Structured Clinical Examination
OSPE	Objective Structured Practical Examination
PNF	Proprioceptive neuromuscular facilitation
SCFHS	Saudi Commission for Health Specialties
SCI	Spinal cord injury
SOE	Structured oral exam
TBI	Traumatic brain injury
DRP	Description of specialty practice

PROGRAM ENTRY REQUIREMENTS

To be accepted into the residency program, the candidate must fulfill the following, per the SCFHS Admission Requirements for Postgraduate Training Programs (www.*scfhs.org.sa*):

Academic:

- Bachelor of Science in Physical Therapy (BSc PT) or Doctor of Physical Therapy (DPT) degree (or equivalent) from an accredited program/university
- Official transcript of the physical therapy education program
- GPA of 3.5 or above unless exempted by the Residency Scientific Committee
- Passing the matching criteria at the SCFHS including the admission exam and interview

Professional:

- Two years of experience, at minimum, for BSc PT and one year for DPT, unless exempted by Residency Scientific Committee
- Registration with and certification by SCFHS
- Proof of sponsorship and/or proof of financial support for self-sponsoring resident
- Three letters of recommendation—two professional and one academic
- Statement of purpose

- Certificates of Equalization from the Ministry of Education and/or a Data Flow certificate for any qualification from outside the Kingdom of Saudi Arabia

These requirements are subject to change. Please refer to SCFHS website.

The SCFHS and the Residency Scientific Committee reserve the right to change and/or add other admission requirements.

LEARNING PROGRAM AND COMPETENCIES

Introduction to Learning Outcomes and Competency-Based Education

The residency is structured to increase the resident's knowledge base (through study), clinical skills (through clinical training, mentoring, and free practice) and attitude (through the stimulation of appreciation, motivation, values, self-reflection, and priorities).

This training program is guided by well-defined learning objectives that are driven by targeted learning outcomes of a particular program to serve specific specialty needs. Learning outcomes are supposed to reflect the professional competencies and tasks that are aimed to be entrusted by residents upon graduation. This will ensure that graduates will meet the expected demands of the healthcare system and patient care in relation to their specialty. Competency-based education (CBE) is an approach of adult-learning that is based on achieving predefined, fine-grained, and well-paced learning objectives that are driven from complex professional competencies.

Furthermore, CBE emphasizes the critical role of the informed judgment of the learner's competency progress, which is based on a staged and formative assessment that is driven from multiple workplace-based observations. The SCFHS has adopted the CanMEDS Competency Framework, which outlines the knowledge, skills, and attitude need for better patient outcomes. This Framework is based on seven roles: Medical expert, Communicator, Collaborator, Manager, Health Advocate, Scholar, and Professional. The

following are concepts to enhance the implementation of CBE in this curriculum:

Competency: Competency is a cognitive construct assessing the potential to perform efficiently in each situation based on the standard of the profession. Professional roles (e.g., medical expert, advocate, communicator, leader, scholar, collaborator, and professional) are used to define competency roles to make it applicable to learning and assessment.

Milestones: Milestones are stages along the developmental journey throughout the competency continuum. In their learning journey, residents from junior through senior levels will be assisted in the transformation from novice to proficient practitioner, from supervised to unsupervised. This should not undermine the role of supervisory/regulatory bodies toward the malpractice of independent practitioners. Milestones are expected to enhance the learning process by pacing the training/assessment to match the developmental level of residents (junior vs. senior).

Learning Domains: Whenever possible, efforts should be directed to annotate the learning outcomes with the corresponding domain (K=knowledge, S=skills, and A=attitude). You might have more than one annotation for a given learning outcome.

Content-area Categorization: It is advisable to categorize the learning outcomes in broad content areas related to the practice of profession—e.g., diagnostic versus therapeutic, simple versus complex, urgent versus chronic, etc.

Residents are expected to progress from novice to proficiency level in a certain set of professional competencies.

Program Durations and Structure

The Neurologic Physical Therapy Residency program should be completed within a minimum three years of full-time enrollment.

The program has been designed in modules and clinical rotations that address all areas of the neurology physical therapy practice. Residents will complete eight specialized core rotations in neurologic physical therapy areas, plus four other elective rotations. They will spend a minimum of 30 hours per week in practice, observing and treating patients with neurologic disorders. Residents will also have mentored clinic work; didactic study, including a combination of online study, small group discussion, independent study, individualized face-to-face instruction, ongoing assignments, and presenting case reports and case series; and participating in research projects, which provide residents with regular benchmarks to ensure their learning progresses throughout the program. Given the scope of residency learning opportunities, residents should expect to spend 40 to 48 hours per week completing activities related to the program.

The typical resident's weekly program will include:

- 30 hours of clinical practice in different clinical settings, of which eight hours will be mentored and focused time
- Eight hours of didactic/laboratory coursework
- Two hours of teaching and mentoring other residents, physiotherapy interns, and/or students
- Two hours of self-directed, independent learning and research activity, and community service activities

In focused time, the resident participates in activities such as shadowing other medical professionals (i.e., neurologists). Residents will have a minimum of four hours of focused time per month).

Annual Vacation. Per the hospital calendar, the resident is allowed to take four weeks annual leave per year, no more than two weeks is allowed for each clinical rotation.

PROGRAM LEARNING OBJECTIVES

By the completion of this residency program, the resident will be able to:

1. Integrate all the CanMEDs roles, applying expert medical knowledge, clinical skills, and professional attitude to the provision of patient-centered care under the scope of neurologic physical therapy practice.
2. Communicate effectively with patients, caregivers, and families to ensure the improvement of the function, quality of life, health, and health-related education of individuals with neurologic conditions.
3. Collaborate effectively with the multidisciplinary team, other healthcare providers, and administrators to achieve optimal patient care.
4. Illustrate good skills in making decisions about allocating resources, generating sustainable practices, managing healthcare organizations, and participating in the efficacy of the healthcare system.
5. Integrate their expertise and influence to develop the health of patients, communities, healthcare providers, and other organizations.
6. Illustrate effective teaching, training, and development to students, resident colleagues, caregivers, and other healthcare providers
7. Participate in scientific research using advanced critical appraisal skills of the literature in a way that ensures lifelong learning, and the creation, dissemination, application, and translation of medical knowledge.
8. Practice the core values of professionalism and commitment to the health and well-being of individuals and society by mastering profession-led regulations, ethical practices, and high personal patient-centric standards.

PROGRAM ROTATIONS

Residents will complete eight specialized core rotations in neurologic physical therapy, and four elective rotations (see Table 1). These clinical rotations should be completed in specialized healthcare facilities serving individual with different neurologic conditions including spinal cord injury, traumatic brain injury, stroke, multiple sclerosis, Parkinson's disease, lower motor neuron lesions, motor neurone diseases, as well as other complex neurologic conditions in both inpatient and outpatient settings. The resident should incorporate a minimum of 30 hours per week in clinical practice of which eight hours should be mentored by clinical trainer (this will be reduced to four hours a week in the last year), the majority of which involves the mentor observing the resident, followed by discussion.

Table 1. Neurologic Physical Therapy Program Clinical Rotation

<table>
<tr><th></th><th colspan="4">Oct Nov Dec Jan</th><th>Feb</th><th>March</th><th>April May</th><th>June</th><th>July</th><th>Aug</th><th>Sep</th></tr>
<tr><td>Year 1 (Foundation)</td><td colspan="4">General neuro physical therapy (Inpatient/outpatient)</td><td>MSK physical therapy</td><td>Post-surgery orthopedics PT</td><td colspan="2">Neurology Intensive Care Unit</td><td>Cardio vascular/ Pulmonary PT</td><td>Pediatric (In/outpatient)</td></tr>
<tr><td>Year 2 (Junior)</td><td colspan="4">Stroke rehabilitation (Inpatient/outpatient)</td><td colspan="4">Lower motor neuron pathology/injury rehabilitation</td><td colspan="3">Traumatic brain injury rehabilitation (Inpatient/outpatient)</td></tr>
<tr><td>Year 3 (Senior)</td><td colspan="4">Parkinson's, multiple sclerosis, Guillain-Barré syndrome, and central nervous system neoplasms (Inpatient/outpatient)</td><td colspan="4">Spinal cord injury rehabilitation (Inpatient/outpatient)</td><td colspan="3">Motor neuron diseases rehabilitation (Inpatient/outpatient)</td></tr>
</table>

The clinical rotation specialties, duration, and objectives are as follows.

Year 1 (Foundation Year)

General Neuro Physical Therapy Rotation

Duration: Four months

Setting: Inpatient and outpatient

Objective: By the end of this rotation, the resident will be able to:

1. Apply the physical therapy assessment and intervention, and principles of rehabilitation care of individuals with a broad range of neurological conditions.
2. Know evidenced-based interventional strategies to improve the patient's functional ability and mobility for a broad range of neurological conditions and their complications
3. Explain the principles and clinical application of physical therapy treatment modalities in neurological physical therapy practice.
4. Communicate effectively and compassionately with the patient, caregiver, family, and other healthcare providers.
5. Effectively allocate healthcare resources.
6. Demonstrate insight into personal limitations, and recognize when consultation is the most appropriate course of management.

Musculoskeletal Physical Therapy Rotation

Duration: One month

Setting: Outpatient

Objective: By the end of this rotation, the resident will be able to:

1. Conduct a basic clinical assessment for an individual with common musculoskeletal conditions include the following:

- Low back pain with or without radiculopathy
- Neck pain with or without radiculopathy
- Knee osteoarthritis
- Knee ligamentous Injury
- Shoulder adhesive capsulitis
- Rotator cuff / impingement syndrome
- Long bone fractures
- Pelvis/hip pain
- Tennis elbow

2. Design and provide an effective management plan for musculoskeletal disorders.
3. Use appropriate application of treatment modalities for musculoskeletal patients.
4. Show efficient patient communication skills.
5. Adhere to policies for proper collaboration, documentation, and reporting.

Post-surgery Orthopedics Physical Therapy Rotation

Duration: One month

Setting: Inpatient/outpatient

Objective: By the end of this rotation, the resident will be able to:

1. Perform an assessment and design a physical therapy treatment plan for the following conditions:

- Cervical foraminectomy or cervical fusion
- Rotator cuff repair or acromioplasty
- Carpal tunnel release, radial tunnel release, or cubital tunnel release
- Lumbar microdiscectomy or lumbar fusion
- Total hip arthroplasty or open reduction and internal fixation (ORIF) of a hip fracture
- Total knee/hip arthroplasty

- Anterior/posterior cruciate reconstruction
- Menisectomy or meniscal repair

2. Describe the process of postoperative recovery.
3. Identify common postoperative complications.
4. Explain and follow postoperative rehabilitation protocols.

Neurology Intensive Care Unit Rotation

Duration: Three months

Setting: Inpatient

Objective: By the end of this rotation, the resident will be able to:

1. Explain and implement the principles of physical therapy role in the ICU.
2. Perform a comprehensive neurology physical therapy assessment and design a treatment plan for an individual with acute neurological conditions.
3. Provide a plan for respiratory physical therapy management, prevention, and treatment of physical deconditioning.
4. Explain the role of an early intervention in the various neurological outcomes.
5. Describe the principles of critical brain injury: primary brain injuries (Ischemic brain injury, ischemic stroke, hemorrhagic strokes, CNS, and infections), and secondary brain injury (renal coma, hepatic coma, salt and water imbalance, disturbance of glucose metabolism, and other endocrinal causes of coma).
6. Explain the cardiopulmonary complications of acute neurological conditions/injuries.

Cardiovascular and Pulmonary Physical Therapy Rotation

Duration: One month

Setting: Inpatient

Objective: By the end of this rotation, the resident will be able to

1. Interpret specialized cardiopulmonary test and assessment
2. Provide basic assessment and treatment for patient experiencing cardiovascular and pulmonary dysfunction during acute and chronic stages.
3. Collaborate with other health professionals in improving outcomes-related-to-interventions to meet patients' needs.
4. Perform complementary interventions as a cardiovascular and pulmonary physical therapist.
5. Provide an appropriate patient education.

Pediatric Physical Therapy Rotation

Duration: Two months

Setting: Inpatient/outpatient

Objective: By the end of this rotation, the resident will be able to:

1. Apply basic physical therapy assessment and intervention, and principles of rehabilitation care of individual pediatric with congenital and/or acquired neurological conditions.
2. Know evidenced-based interventional strategies to improve the patient functional ability and mobility for a broad range of pediatric neurological conditions and their complications.
3. Communicate effectively and compassionately with the patient, caregiver, family, and other healthcare providers.
4. Effectively allocate healthcare resources.

Year 2 (Junior Level)

Stroke Rehabilitation Rotation

Duration: Four months

Setting: Inpatient/outpatient

Objective: By the end of this rotation, the resident will be able to:

1. Demonstrate clinical expertise in the examination of an individual with stroke conditions across the International Classification of Functioning, Disability, and Health (ICF) domains.
2. Develop clinical judgments based on data collected from the examination, and predict the optimal level and time to achieve improvement for an individual with a stroke condition.
3. Design a treatment plan that prioritizes interventions according to the patient's needs, recovery process, and available resources.
4. Apply the conceptual framework for treatment of an individual with stroke conditions, including motor control and motor learning, using the Bobath approach, proprioceptive neuromuscular facilitation, and all other physical therapy treatment concepts, approaches, and theories.
5. Integrate current evidence-based approaches in providing up-to-date neurologic physical therapy intervention for the management of a stroke patient in the context of the ICF model, including epidemiology, pathology, diagnostic testing, and medical and surgical management.
6. Collaborate with other healthcare professionals regarding examination and treatment needs that are out of the physical therapy scope of practice and refers as appropriate.

Lower Motor Neuron Pathology/Injury Rehabilitation Rotation

Duration: Four months

Setting: Inpatient/outpatient

Objective: By the end of this rotation, the resident will be able to:

1. Demonstrate clinical expertise to perform standardized, valid, and reliable tests and measures, using various examination methods to assess an individual with lower motor neuron pathology and/or injury
2. Distinguish between primary and secondary impairments, functional limitations, and disabilities related to lower motor neuron pathology and/or injury, and determine if the problem is amenable to physical therapy intervention.
3. Implement the physical therapy treatment concepts, approaches, and theories used in treating an individual with lower motor neuron pathology and/or injury.
4. Explain the treatment methods to enhance the ability to maximize the concepts of neuroplasticity in progressive rehabilitation programs.
5. Integrate specific physical therapy treatment program to treat and improve hypertonicity, rigidity, strengthening, functional ability, and mobilization for the neurological patient.

Traumatic Brain Injury Rehabilitation

Duration: Four months

Setting: Inpatient/outpatient

Objective: By the end of this rotation, the resident will be able to:

1. Prioritize optimal physical therapy assessment and treatment according to several factors, such as the type of impairment in body function and structures, activity limitations, and participation restrictions, and/or ongoing evaluation for an individual with traumatic brain injury
2. Prescribe devices and equipment, including assistive, adaptive, protective, or supportive), for an individual with traumatic brain injuries.
3. Select and perform outcome measures to monitor the progress of an individual with traumatic brain injury.
4. Apply effective communication strategies in individuals with traumatic brain injury.
5. Collaborate with the multidisciplinary team in delivering cognitive behavioral intervention therapy for neurologic populations.

Year 3 (Senior Level)

Parkinson's, Multiple Sclerosis, Guillain-Barré Syndrome, and Central Nervous System Neoplasms Rotation

Duration: Four months

Setting: Inpatient/outpatient

Objective: By the end of this rotation, the resident will be able to:

1. Summarize the prevalence, Incidence, prognostic indicators, morbidity, mortality, signs, symptoms, and natural history of the selected neurologic disease/conditions.
2. Identify the risk factors relevant to the selected neurological condition across the life span.
3. Perform a comprehensive patient centered assessment and treatment across all ICF domains, including information and

intervention related to health promotion, restoration, and prevention.

4. Explain the treatment methods to enhance the ability to maximize the concepts of neuroplasticity in progressive rehabilitation programs.
5. Manipulate communication style and method to meet the diverse needs of the patient, caregiver, and family.
6. Select the most appropriate outcome measurement, considering its sensitiveness and responsiveness), across the ICF domains and according to the patient diagnosis and prognosis.

Spinal Cord Injury Rehabilitation Rotation

Duration: Four months

Setting: Inpatient/outpatient

Objective: By the end of this rotation, the resident will be able to:

1. Evaluate an individual with spinal cord injury activity, functional ability, and mobility level including a comprehensive description of kinesiology, pathokinesiology, and biomechanics.
2. Analyze the similarities and differences between patient-reported measures and physical performance measures.
3. Educate patient, caregiver, and family on diagnosis, prognosis, physical therapy intervention; in addition to the patient's responsibility, and self-management according to the treatment plan.
4. Predict the optimal level and time to achieve improvement across the ICF domains in an individual with spinal cord injury.
5. Prioritize optimal physical therapy interventions according to several factors, such as the type of impairments in body function and structures, physical limitations and/or ongoing evaluation.

Motor Neuron Diseases Rehabilitation Rotation

Duration: Four months

Setting: Inpatient/outpatient

Objective: By the end of this rotation, the resident will be able to:

1. Perform standardized, validated, and reliable tests and measures using various examination methods.
2. Summarize the prevalence, Incidence, signs, symptoms, prognostic indicators, morbidity, mortality, and natural history of selected motor neuron diseases.
3. Interpret the outcome measure scores for individuals with motor neuron diseases in a clinical decision.
4. Identify and apply the core principles of biomedical ethics in treatment of individual with motor neuron diseases.
5. Use information on drugs' therapeutic actions, potential side effects, and interpretation of lab result and neuroimaging to design and modify patient plans of care.
6. Design physical therapy treatment protocols that assist with enhancing patient functional ability and mobility.

DIDACTIC LEARNING—MODULES AND COURSES

Didactic/laboratory coursework is an academic learning segment completed by the resident outside of clinic time, which includes attending lectures, conferences, workshops, mentor/resident discussions, and online and self-study modules. Residents will participate in a neurologic focused research project in conjunction with or under the guidance of an expert researchers. Resident should also participate in approximately two hours a week in teaching activities, including giving lectures and/or leading small group discussions or community service activities.

The following modules form the Core Education Program (CEP), which includes universal and core specialty topics as following:

Universal Topics

These are high-value, interdisciplinary topics of utmost importance to the resident. The reason for delivering the topics centrally is to ensure that every resident receives high quality teaching and develops essential core knowledge. These topics are common to all specialties.

Topics included here meet one or more of the following criteria:

- Impactful: topics that include common or life-threatening problems
- Interdisciplinary: topics that are difficult to teach by a single discipline
- Orphan: topics that are poorly represented in the undergraduate curriculum
- Practical: topics that residents will encounter in hospital practice

Universal Topics Development and Delivery

Universal topics will be developed and delivered centrally by the SCFHS through an e-learning platform. A set of preliminary learning outcomes for each topic will be developed. Content experts, in collaboration with the central team, may modify the learning outcomes. These topics will be didactic in nature, with a focus on practical aspects of care. These topics will be more content-heavy compared to workshops and other face-to-face interactive sessions planned.

The suggested duration of each topic is 1.5 hours. Each universal topic will have a self-assessment at the end of the module. As indicated in the executive policies of continuous assessment and annual promotion (please refer to *www.scfhs.org*), universal topics will be a mandatory component of the criteria for the annual promotion of residents from their current level of training to the subsequent. Table 2 summarizes the universal topic distribution across the program.

Assessment

The selected topics will be introduced for residents in a modular fashion. By the end of every learning unit, an online formative assessment will be done. By the end of studying all topics, a combined summative assessment will be run as multiple choice questions. Minimum competency in the summative assessment must be achieved by the residents. Alternatively, these topics can be assessed in a summative manner along with specialty examination. Other assessment methods can be used as well, such as case scenarios, examples of prescribing drugs in disease states, high quality radiological images, and selected Internet resources.

Modules and Topics

Universal Topics

Module 1: Medical Fundamentals

Topic 2: Hospital-acquired infections

Topic 2: Hospital-acquired Infections (HAI): By the end of the learning unit, the resident should be able to:

a) Discuss the epidemiology of HAI with special reference to HAI in Saudi Arabia
b) Recognize HAI as one of the major emerging threats in healthcare
c) Identify the common sources and conditions of HAI
d) Describe the risk factors of common HAIs such as ventilator-associated pneumonia, methicillin-resistant Staphylococcus aureus (MRSA), central line-associated bloodstream infection (CLABSI), and vancomycin-resistant enterococcus (VRE)
e) Identify the role of healthcare workers in the prevention of HAI
f) Determine appropriate pharmacological (e.g., selected antibiotics) and non-pharmacological (e.g., removal of an indwelling catheter) measures in the treatment of HAI
g) Propose a plan to prevent HAI in the workplace.

Module 2: Cancer

Topic 7: Breast Cancer

Topic 7: Breast Cancer: By the end of the learning unit, the resident should be able to:

a) Identify the early warning signs of breast cancer
b) Differentiate between neo-adjuvant and adjuvant chemotherapy

c) Address complications of chemotherapy with patients, including fertility issues, body image issues, and cardiotoxicity

d) Recognize and manage oncological emergencies.

e) Counsel patients regarding radiotherapy treatment and associated side effects

f) Discus the role of palliative therapy

g) Monitor survivors for recurrence of cancer or development of new cancers

Module 3: Diabetes and Metabolic Disorders

Topic 11: Management of Diabetic Complications

Topic 12: Obesity

Topic 13: Cardiovascular Risk

Topic 11: Management of Diabetic Complications: By the end of the learning unit, the resident should be able to:

a) Screen patients for complications of type 2 diabetes mellitus.

b) Diagnose and manage diabetic retinopathy

c) Diagnose and manage diabetic nephropathy

d) Diagnose and manage peripheral neuropathy and peripheral vascular disease.

e) Counsel patients and families in relation to these complications with a special emphasis on prevention.

Topic 12: Obesity: By the end of the learning unit, the resident should be able to:

a) Identify the risk factors for diabetes

b) Describe the relationship between obesity and co-morbid conditions

c) Counsel patients in the management of obesity

d) Implement best-practice strategies to tackle obesity.

Topic 13: Cardiovascular Risk: By the end of the learning unit, the resident should be able to

a) Screen patients for cardiovascular risk associated with obesity and diabetes.
b) Prescribe appropriate medication for at-risk patients
c) Assess risk factors and appropriate treatments for metabolic syndrome
d) Identify when a risk stratification tool is appropriate
e) Advise patients on lifestyle changes to achieve weight loss and manage cardiovascular risk.

Module 4: Medical and Surgical Emergencies

Topic 14: Acute Chest Pain

Topic 15: Acute Breathlessness

Topic 16: Hypotension

Topic 17: Hypertension

Topic 14: Acute Chest Pain: By the end of the learning unit, the resident should be able to:

a) Take a full history of a patient presenting with acute chest pain
b) Identify cardiac and non-cardiac causes of chest pain
c) Recognize life-threatening causes of chest pain
d) Take immediate steps to mitigate risk
e) Order diagnostic tests
f) Monitor and control risk factors for acute chest pain
g) Counsel patients in the prevention of chest pain

h) Refer patients to the next level of care.

Topic 15: Acute Breathlessness: By the end of the learning unit, the resident should be able to:

a) Recognize signs of dyspnea
b) Realize dyspnea can be life-threatening
c) Apply oxygen to patient
d) Recognize when intubation is required and how to perform it
e) Recognize different causes of dyspnea
f) Take histories when dealing with patients suffering from dyspnea in emergency departments
g) Conduct a comprehensive physical examination of a patient with dyspnea
h) Order appropriate diagnostic tests
i) Manage the treatment of a patient with dyspnea

Topic 16: Hypotension: By the end of the learning unit, the resident should be able to:

a) Valuate and categorize patients with hypotension
b) Describe hypotension and its causes
c) Identify patients who need prompt medical attention
d) Manage patients presenting with different types of shock and hypotension
e) Describe orthostatic and post-prandial hypotension.

Topic 17: Hypertension: By the end of the learning unit, the resident should be able to:

a) Identify types of hypertension and risk factors
b) Recognize patients who need prompt medical attention

c) Interpret findings of physical examination in patients with hypertension

d) Differentiate between primary and secondary hypertension

e) Conduct diagnostic testing on patients with hypertension

f) Decide on appropriate treatment strategies for patients with hypertension

g) Discuss unique characteristics of hypertension in the Kingdom of Saudi Arabia.

Module 5: Acute Care

Topic 22: Preoperative Assessment

Topic 23: Postoperative Care

Topic 24: Acute and Chronic Pain Management

Topic 22: Preoperative Assessment: By the of the learning unit, the resident should be able to:

a) Describe how to conduct preoperative assessment in an uncomplicated patient

b) Categorize patients according to risks.

Topic 23: Postoperative Care: By the end of the learning unit, the resident should be able to:

a) Identify common postoperative complications

b) Devise a postoperative care plan

c) Hand over patients properly to the appropriate facilities.

Topic 24: Acute and Chronic Pain Management: By the end of the learning unit, the resident should be able to:

a) Proactively identify and assess patients who might be in acute or chronic pain

b) Provide adequate pain relief for uncomplicated patients with acute or chronic pain.

Module 6: Frail Elderly Patients

Topic 27: Second Consultation

Topic 28: Third Consultation

Topic 29: Hospital Consultation

Topic 30: Final Consultation

Topic 27: Second Consultation: By the end of the learning unit, the resident should be able to:

a) Comprehensively review a patient's history to inform decisions
b) Recognize how polypharmacy can affect the health of frail, elderly patients
c) Understand the concept of prescription cascade
d) Outline the principles of prescribing and deprescribing medication for the elderly
e) Use the STOPP/START criteria to assist with appropriate prescribing and deprescribing.

Topic 28: Third Consultation: By the end of the learning unit, the resident should be able to:

a) Recognize when a patient should be assessed for frailty
b) Use various tools to make an accurate diagnosis of frailty
c) Give the condition of frailty an agreed score using the Rockwood Clinical Frailty Scale
d) Recognize the needs and well-being of caregivers
e) Identify the types of care that caregivers provide

f) Describe the local and community resources available for the care of the elderly worldwide and in the Kingdom of Saudi Arabia.

Topic 29: Hospital Consultation: By the end of the learning unit, the resident should be able to:

a) Describe the concepts and tools used for conducting a Comprehensive Geriatric Assessment (CGA)
b) Identify the appropriate usages, advantages, and potential pitfalls of various tests of cognitive assessments
c) Use a Mini-Mental State Exam (MMSE) to screen patients for cognitive impairment
d) Understand the factors that can affect the outcome of an MMSE
e) Follow up on the results of a patient's CGA with appropriate actions.

Topic 30: Final Consultation: At the end of the learning unit, the resident should be able to:

a) Assess a patient for spatial dysfunction and neglect using the clock-drawing test
b) Use a patient's CGA results to create a problem list
c) Create an individualized care plan for an elderly patient using inputs from other healthcare professionals
d) Identify which medical professionals should assume responsibility for different parts of a care plan
e) Consult with caregivers on how to manage a patient's care plan in a pragmatic manner
f) Describe all the factors that need to be considered while planning care for the elderly.

Module 7: Ethics and Healthcare

Topic 17: Occupational Hazards of Healthcare Workers

Topic 18: Evidence-based Approach to Smoking Cessation

Topic 19: Patient Advocacy

Topic 20: Autonomy and Treatment Refusal

Topic 17: Occupation Hazards of Healthcare Workers: By the end of the learning unit, the resident should be able to:

a) Recognize risk factors for occupational hazards among healthcare workers
b) Describe common occupational hazards in the workplace
c) Adopt a proactive attitude to promote workplace safety
d) Protect themselves and colleagues against potential occupational hazards
e) Apply ethical principles when faced with occupational hazards
f) Recognize how the interplay of psychosocial work environment, physical work environment, and personal health can create hazards for workers.

Topic 18: Evidence-based Approach to Smoking Cessation: By the end of the learning unit, the resident should be able to:

a) Describe the epidemiology of smoking and tobacco use in Saudi Arabia
b) Review the effects of smoking and tobacco use on smokers and family members
c) Implement effective interventions to help patients quit smoking
d) Effectively use pharmacological and non-pharmacological measures to treat tobacco use and dependence
e) Identify unique needs of special population groups, such as pregnant patients, adolescents, and patients with psychiatric disorders
f) Define common problems experienced by patients during quitting

g) Arrange appropriate follow-up with a patient who is trying to quit smoking.

Topic 19: Patient Advocacy: By the end of the learning unit, the resident should be able to:

a) Define patient advocacy in the context of healthcare
b) Discuss why patient advocacy is a defining attribute in physician-patient relationships
c) Consider the code of ethics in dealing with patient confidentiality in healthcare
d) Examine how the "medicalization" phenomenon adversely impacts patient well-being
e) Propose ethical and responsible relationships between physicians and pharmaceutical companies.

Topic 20: Autonomy and Treatment Refusal: By the end of the learning unit, the resident should be able to:

a) Recognize that ethical decision-making is a complex process
b) Assess patient capacity
c) Determine what to do when patient autonomy comes in conflict with beneficence, non-maleficence, and justice
d) Apply practical management to a case of treatment refusal
e) Uphold the patient's autonomy and decision-making in the delivery of care
f) Describe the four models of the physician–patient relationship
g) Devise a practical plan to use when dealing with an ethical dilemma.

Table 2. Distribution of universal topics across the program

Universal Topics Distribution				
Training Year	Modules		Topics Name	
	Number	Name	Number	Name
Year 1	Module 1	Medical Fundamentals	Topic 2	Hospital-acquired Infections
	Module 7	Ethics and Healthcare	Topic 31	Occupational Hazards of Healthcare Workers
			Topic 32	Evidence-based Approach to Smoking Cessation
			Topic 33	Patient Advocacy
			Topic 35	Autonomy and Treatment Refusal
	Module 5	Acute Care	Topic 22	Preoperative Assessment
			Topic 23	Postoperative Care
			Topic 24	Acute and Chronic Pain Management
Year 2	Module 2	Cancer	Topic 7	Breast Cancer
	Module 3	Diabetes and Metabolic Disorders	Topic 11	Management of Diabetic Complications
			Topic 12	Obesity
			Topic 13	Cardiovascular Risk
	Module 4	Medical and Surgical Emergencies	Topic 14	Acute Chest Pain
			Topic 15	Acute Breathlessness
			Topic 16	Hypotension

Universal Topics Distribution				
Training Year	Modules		Topics Name	
	Number	Name	Number	Name
			Topic 17	Hypertension
	Module 6	Frail Elderly	Topic 27	Second Consultation
			Topic 28	Third Consultation
			Topic 29	Hospital Consultation
			Topic 30	Final Consultation

Core Topics

General Core Topics

These are high-value, hospital-work-related topics of outmost importance to the resident.

The reason for delivering such topics centrally is to ensure that every resident is fully aware of the healthcare system's ethical and professional requirements, including infection prevention and control and patient safety. These topics developed and delivered centrally by the SCFHS through the e-learning platform. They will be didactic in nature with a focus on the practical aspects of care. These topics will have more content-heavy as compared to workshops and other face-to-face interactive session planned.

The suggested duration of each topic is two hours. Each general core topic will have a self-assessment at the end of the module. As indicated in the Executive Policies of Continuous Assessment and Annual Promotion (please refer to ***www.scfhs.org***), general core topics will be a mandatory component

of the criteria for the annual promotion of residents from their one level of training to the next.

Assessment

The topics will be delivered in a modular fashion. At the end of each learning unit there will be a formative assessment. After completion of all topics there will be a combined summative assessment in the form of context-rich multiple-choice questions (MCQ). All residents must attain minimum competency in the summative assessment. Alternatively, these topics can be assessed in a summative manner along with the specialty examination.

Ideas may include case studies, high-quality images, examples of prescribing drugs in disease states, and Internet resources.

Modules

General Core Module 1: Code of Ethics: By the end of this module, the resident should be able to:

a) List the behaviors that constitute the good treatment of patients
b) Identify how to guard and maintain the patient's rights
c) Confirm that patients' rights are respected during a teaching and learning session on patients
d) Generate a checklist to follow when breaking bad news to a patient or his/her family
e) Assess how to talk to a patient and what information to disclose when sharing bad news
f) Respect the patient's right to know the truth
g) Contemplate the best ways to communicate with the patient's family during difficult situations
h) Identify the situations in which truth-telling to the patient needs to be approached with great caution

i) Contemplate how to break bad news to patients

j) Assess how to talk to patients in difficult situations

k) Identify the exceptional situations in which truth-telling to the patient needs to be approached with greater caution

l) Identify the conditions required to obtain a valid patient consent to treatment

m) Respect the patient's right to refuse medical treatment

n) Assess how to address patients refusing medical treatment

o) Discuss ethical issues in different emergency situations

p) State the ethical framework to follow in emergency situations

q) Assess the importance in emergency cases to sort patients according to clinical need.

General Core Module 2: Communication Skills for Healthcare Professionals:

By the end of this module, the resident should be able to:

a) Recognize real patient suffering.

b) Understand the concept of patient-centered interviewing skills

c) Identify the six stages in the communication cycle

d) Explain the ways to improve communication

e) Describe the barriers to communication

f) Explain the verbal communication process

g) Describe ways to convey proper diagnosis and health education to patients

h) List the benefits of health education

i) Identify the aspects of nonverbal communication

j) Explain the role of nonverbal cues

k) Identify the strategies used to communicate intelligently.

General Core Module 3: Infection Prevention and Control: By the end of this module, the resident should be able to:

a) Recognize the importance of infection prevention control
b) Explain the epidemiology of infection
c) Recognize the importance of hand hygiene
d) Identify when to apply hand hygiene
e) Illustrate the techniques of hand hygiene
f) Describe cough etiquette
g) Identify the principles of hospital environment cleaning
h) Differentiate between non-hazardous healthcare waste and infectious healthcare waste
i) Apply healthcare waste management plans to different infectious waste categories
j) Identify different types of personal protective equipment
k) List the properties of masks
l) Describe the steps for using different types of personal protective equipment
m) Recognize when contact, droplet, and airborne precautions need to be considered
n) Identify the transmission-based precautions that should be applied to different hospital care scenarios.

General Core Module 4: Patient Safety: By the end of this module, the resident should be able to:

a) Recognize that patient safety is the basis of quality care
b) Describe systems and the effect of complexity on patient care
c) Use quality improvement methods to improve care
d) Explain and manage clinical risk

e) Discuss the cascade effect of errors that could lead to inappropriate care

f) Discuss how human interactions with tools, procedures, and machines can have a serious effect on patient safety

g) Discuss narrow risk margins of high-risk drugs and their inappropriate administration

h) Discuss elements of a patient-centered approach to informed consent before surgery

i) Outline strategies to reduce the risk of HAI.

Core Specialty Topics

Core specialty topics are those relevant to the practice of neurologic physical therapy. These topics are designed to cover current knowledge and theories that help residents' proficiency in their field.

The resident will be supported to learn the following topics:

Year 1 (Foundation Year)

Foundation Science

Module 1: Human anatomy and physiology in health and neurologic populations, including:

- The musculoskeletal system
- The cardiovascular and pulmonary systems
- The integumentary system
- Exercise physiology
- Electrophysiology

Credit hours: 2

Number of teaching hours: 40

Level: Basic

Teaching method: Lecture/lab

Objective: By the end of this module, the resident will be able to:

1. Describe structural and functional features of the human body organ systems
2. Explain the biological processes essential for the maintenance of homeostasis
3. Link specific structural features of human body systems with their normal functions
4. Identify the changes that occur in human body systems during development, aging and disease
5. Apply the gained knowledge to clinical practice using current topics in scientific research.

Module 2: Neuroanatomy and neurophysiology, including:

- Central nervous system (CNS)
- Peripheral nervous system (PNS)
- Autonomic nervous systems (ANS)
- Pain-neurogenic and non-neurologic
- Impact of neurological conditions on other body systems
- Neurotransmission and neurotransmitters
- Perception, sensory, and motor physiology
- Nervous system responses to disorders (i.e., stress, exertion, trauma, etc.)
- Symptoms (positive and negative) related to neurological conditions
- Aging process and its relation to the life span and developmental neuroanatomy
- Motor systems
- Neural control of locomotion, balance, and posture
- Regulation and modulation of autonomic function and reflexes.

Credit hours: 2

Number of teaching hours: 40

Level: Basic

Teaching method: Lecture/lab

Objective: By the end of this module, the resident will be able to:

1. Describe the functional anatomy features of development in the human nervous systems.
2. Distinguish the functional consequences of a lesion on a neuroanatomical structure/pathway.
3. Identify the principles of the blood supply and venous drainage of the nervous system and their effects of major vessels' rupture or occlusion.
4. Describe the processes of nervous systems injury, plasticity and the natural defense mechanisms and protection of the human nervous system.
5. Integrate the gained knowledge to clinical practice using current topics in scientific research.
6. Synthesize the knowledge of the scope of neurophysiology, including somatosensory system and synaptic plasticity.

Module 3: Neuroplasticity, including:

- Intercellular responses to injuries
- Cortical re-modelling post-injuries
- Activity-dependent neuroplasticity
- CNS responses to learning and inquiry

Credit hours: 2

Number of teaching hours: 40

Level: Basic

Teaching method: Lecture/lab

Objective: By the end of the education course, the resident will be able to:

1. Identify the anatomic and physiological adaptations occur because of neuroplasticity
2. Understand and explain motor learning phases
3. Recognize the relevance of procedural learning as it relates to skilled movement
4. Demonstrate how behavioral and psychoemotional factors affect motor learning and functional recovery
5. Explain how to improve functional outcomes by applying the principles of variability of practice, attention, confidence, self-efficacy, autonomy, enhanced expectancies, and feedback.

Module 4: Skill acquisition in the neurological population, including:

- Movement science, motor learning, and motor control
- Movement systems (biomechanics and kinesiology)
- Functional movements, postural control, and gait using kinetic and kinematic analyses and pathokinesiology
- Constraints on movement due to an Individual's disability, including task, and environmental constraints

- Theories and principles related to motor control reflex and motor programming, including hierarchical, dynamic action systems and ecologic principles
- Theories and principles related to motor learning and skills acquisition
- Motor development (theories and principles)
- Interrelationship among cognitive, social, and movement systems
- Short and long-term effects of movement dysfunctions on body systems.

Credit hours: 2

Number of teaching hours: 40

Level: Basic

Teaching method: Lecture/lab

Objective: By the end of this module, the resident will be able to:

1. Integrate necessary knowledge and skills to assess an individual and measure performances to improve motor skill acquisition
2. Evaluate motor learning, motor control, and skill acquisition models and theories
3. Explain changes to motor performance that occur with learning, development, and diseases
4. Implement motor control theory and principles to lead motor skills, detect errors, correct movement, and create movement strategies in different movement scenarios
5. Evaluate common factors that limit or affect motor skill learning, including muscular and neuro-physiological properties and cognitive information processing.
6. Interpret how motor skill acquisition is influenced by different practice types and designs.

Behavioral Sciences

Module 5: Cognitive/behavioral dysfunction in clinical practice including:

- Expected emotional/behavioral responses to illness and recovery
- Cognitive processes including attention, thought, memory, analysis, and executive function
- Affective and behavioral disorders
- Effect of personality on disease and recovery
- Social and cultural systems on disease and recovery
- Behavioral change on illness and recovery
- Impact of cognitive/behavioral disorders on the movement system
- Learning disorders
- Memory, attention, cognitive processes, and executive functions
- Emotional and behavioral responses
- Motivational factors and adherence strategies

Credit hours: 1

Number of teaching hours: 10

Level: Basic

Teaching method: Lecture/practical

Objective: By the end of this module, the resident will be able to:

1. Explain the critical elements of a cognitive–behavioral case formulation
2. Describe the basic strategies employed in practice for clinical monitoring
3. Indicate the fundamental physiological and neuropsychological processes underlying human behavior
4. Explain common cognitive–behavioral models for psychological and neuropsychological disorders
5. Illustrate basic neuropsychological assessment and diagnostic skills of cognitive and behavior disorders in neurologic population
6. Collaborate with the multidisciplinary team in delivering cognitive behavioral intervention therapy for neurologic populations.

Module 6: Cultural and social system

Credit hours: 1

Number of teaching hours: 10

Level: Basic

Teaching method: Lecture

Objective: By the end of training session, the resident will be able to:

1. Identify the cultural differences and similarities within and among diverse populations
2. Differentiate individuals and cultural differences
3. Implement a trust-promoting method of inquiry
4. Modify any cultural or social issues that may influence the plan of care.

Module 7: Teaching and learning theory, including:

- Teaching and learning theory
- Teaching and learning styles
- Principles of teaching and learning
- Teaching strategies/methods
- Domains of learning
- Measurement of learning
- Educational theory and methods related to patients/clients with neurological conditions
- Development and implementation of educational planning process

Credit hours: 1

Number of teaching hours: 10

Level: Basic

Teaching method: Lecture

Objective: By the end of this module, the resident will be able to:

1. Apply key concepts, models, styles, and strategies related to different theories of teaching and learning
2. Perform the needed assessment in the neurologic physical therapy profession, including determining the characteristics of the learners
3. Create educational objectives according to the learning needs assessment of patients with neurologic condition and their caregivers and families, colleagues, and/or other healthcare providers
4. Design suitable teaching strategies and methods according to learning objectives and the learning style
5. Integrate effective feedback in designing and modifying an educational plan
6. Assess learning outcomes of teaching strategies and modify them accordingly.

Module 8: Effective communication, including:

- Principles of empathy
- Behavior modification strategies
- How to communicate with patients experiencing sensory or cognitive impairment
- How to select the most appropriate techniques for listening and observation
- How to select the most appropriate techniques for conflict management.

Credit hours: 1

Number of teaching hours: 10

Level: Basic

Teaching method: Lecture

Objective: By the end of the module, the resident will be able to:

1. Apply effective communication strategies in individuals with neurologic conditions, caregiver, and family

2. Reflect on different methods of communication
3. Integrate the role of body language and voice tone in effective communication
4. Manipulate communication style and method considering the various needs of the patients and their relatives (caregiver and family), such as cultural, age-specific, educational, and cognitive needs
5. Educate patient, caregiver and family on diagnosis, prognosis, physical therapy intervention, responsibility, and self-management within the treatment plan
6. Deliver effective instructions help in risk management and health promotion.

Module 9: Medical ethics code

Credit hours: 1

Number of teaching hours: 10

Level: Basic

Teaching method: Lecture

Objective: By the end of this module, the resident will be able to:

1. Identify ethical issues in medical rehabilitation, healthcare system and life sciences
2. Relate the concepts of human rights, confidentiality, and integrity
3. Provide rational justification for ethical issues.
4. Reflect upon, and present ethical positions in both written and verbal form
5. Relate the core principles of bioethics and the Islamic ethical concepts on solving medical ethical dilemmas
6. Apply a method of analysis to cases in clinical healthcare ethics.

Clinical Sciences

Module 10: Human movement analysis including:

- Kinesiology, including:
  - Electromyographic patterns during functional activity
  - Biomechanics
  - Joint morphology
- Pathokinesiology, including:
  - Automatic control of posture and movement
  - Voluntary control of movement
  - Relationship between spasticity and movement
  - The influence of movement dysfunction on the musculoskeletal system

Credit hours: 2

Number of teaching hours: 40

Level: intermediate

Teaching method: Lecture/lab/practical

Objective: By the end of this module, the resident will be able to:

1. Evaluate an individual with neurologic condition movement including a comprehensive description of kinesiology, pathokinesiology, and biomechanics
2. Integrate the principles of kinesiology, pathokinesiology, and biomechanics to functional movement assessment and treatment
3. Identify joint range of motion and body position specific to each muscle group
4. Analyze the structure and function of the human body joints
5. Analyze the gait cycle and gait pattern.

Module 11: Medical management and assessment for the neurologic population (pharmacology, imaging, additional tests), including:

- Pharmacology, including:
  - Drug reactions and dosage effects
  - Effects of medications on the musculoskeletal and nervous systems
  - Interaction of pharmacological agents
  - The effects of long-term usage of drugs
  - Toxicology of medication
  - Integration of instruments, tests, screens, and evaluations done by other healthcare team members
  - Neuroimaging such as CT scan, MRI, x-ray, and fMRI

Credit hours: 2

Number of teaching hours: 40

Level: intermediate

Teaching method: Lecture/lab/practical

Objective: By the end of this module, the resident will be able to:

1. Explain the basics of pharmacokinetic and pharmacotherapeutic principles and their impact on neurologic patients
2. Identify indications for common classes of drugs, intended therapeutic actions, potential side effects, and potential implications on neurologic physical therapy practice
3. Use information on drugs' therapeutic actions, potential side effects, interpretation of lab result and neuroimaging to design and modify patient plans of care
4. Identify key indications for requesting clinical lab tests, the ranges for normal test results and their effect on therapeutic exercise
5. Interpret neuroimaging result including MRI, fMRI, CT scan, and x-ray for neurologic cases.

Module 12: Evaluation, diagnosis, and prognosis in neurological conditions

Credit hours: 3

Number of teaching hours: 60

Level: Advance

Teaching method: Lecture/practical

Objective: By the end of this module, the resident will be able to:

Evaluation

1. Discriminate examination findings across ICF domains that require substitute movement strategies versus remediation

2. Create clinical judgments according to data collected from the examination
3. Integrate examination findings collected by health team members to the physical therapy findings and treatment plan.

Diagnosis

1. Identify a differential diagnosis based on neurologic signs, symptoms, and examination findings
2. Distinguish between primary and secondary impairments, functional limitations, disabilities related to the health condition and determine if it is amenable to physical therapy intervention.

Prognosis

1. Predict the optimal level and time to achieve improvement across the ICF domains in an individual with a neurologic condition
2. Analyzes barriers that limit the individual with neurologic conditions in achieving optimal outcomes
3. Collaborate with individuals, caregiver, and their families in making treatment goals
4. Create a treatment plan that prioritizes interventions related to important factors such as recovery process, patient goals, available resources, and health promotion.

Year 2 (Junior Level)

Sciences Related to Critical Inquiry

Module 13: Research, scientific Inquiry and practice in neurologic physical therapy, including:

- Qualitative/quantitative study design
- Neurologic physical therapy database

- Literature review
- Research methodology
- Sensitivity/specificity reliability/validity
- Statistics and biostatistics including:
    - parametric/non-parametric tests
    - descriptive statistics
    - statistical testing (correlation, T-test, ANOVA, regression, Chi-square)
    - statistical power
- How to write a scientific paper

Credit hours: 2

Number of teaching hours: 40

Level: Intermediate

Teaching method: Lecture/practical

Objective: By the end of this module, the resident will be able to:

1. Explain the essential role of observation, hypothesis, experimentation, and measurement in neurologic physical therapy
2. Use the electronic databases to find the relevant evidence
3. Critically appraise the available evidence to identify the gap in the field of neurologic physical therapy
4. Write a research proposal to obtain institutional review board (IRB) approval to conduct a research study
5. Participate in planning and conducting clinical research including the data collection process
6. Develop academic writing skills to publish a scientific paper in a peer-reviewed journal.

Module 14: Evidence-based Practice (EBP)

Credit hours: 2

Number of teaching hours: 40

Level: Intermediate

Teaching method: Lecture/practical

Objective: By the end of this module, the resident will be able to:

1. Analyze the major components of the EBP process
2. Critically analyze research articles based on levels of evidence
3. Evaluate the efficacy and effectiveness of new and established examination tools, interventions, and technologies
4. Appropriately apply new research information, methods, or instruments to clinical practice
5. Critically appraising a peer-reviewed research evidence to translate research evidence into clinical practice
6. Synthesize information from a variety of sources to develop evidence-based clinical practice.

Module 15: Theoretical and clinical framework for examination of individuals with neurological conditions

Credit hours: 3

Number of teaching hours: 60

Level: Advanced

Teaching method: Lecture/practical

Objective: By the end of this module, the resident will be able to:

- Demonstrate clinical expertise in the examination of an individual with neurological conditions on the following topics:
    1. A comprehensive patient-centered interview that includes information targeting health promotion, restoration, and prevention

2. Integration of the knowledge of diseases along with history-taking, including medical, surgical, and drug history.
3. Prioritization of relevant screening process according to the health condition, previous tests and treatment, history (personal, present, and past), palpation, and observation
4. Identify red flags, signs, and symptoms that require urgent referrals to other healthcare services
5. Important tests and measures according to data collected from history and systems review
6. Risk assessment and risk-benefit analysis
7. Measures to assess the patient across the ICF domains, including activity limitations, body function and structures, and participation restrictions
8. Standardized, valid, and reliable tests and measures, using various examination methods, including:
    - Mental functions (consciousness, cognition, attention, orientation, and dual-task functions)
    - Joint integrity and mobility
    - Pain assessment (multidimensional, pain scales)
    - Muscle performance (i.e., strength, endurance, and power)
    - Range of motion, considering muscle flexibility and extensibility
    - Normal and pathological reflexes
    - Aerobic capacity
    - Assistive technology, such as orthotics and prosthetics (protective and supportive devices)
    - Balance during different situations, such as static, dynamic, and functional activities, with or without the usage of devices
    - Posture, body structure, and bone alignment
    - Perception of sensory input, including vertical orientation, body

schema, depth perception, neglect, and motion sensitivity

- Sensory integrity of peripheral and central systems
- Functional performance measures, including measures used for classification, prognosis, and to examine activities and participation
- Specialized sensory and motor tests (the Dix–Hallpike maneuver, positional testing)
- Dexterity and coordination
- Impairment-based measures to delineate body function and structure
- Task and motion analysis considering kinematic, kinetic, behavioral, and environmental factors
- Integration and reintegration of social, community, and civic life
- Cranial nerve integrity
- Gait, locomotion, and mobility in different environments with and without devices and equipment
- Environmental factors (educational, domestic, social, work, community, and civic life)
- Quality of life measures
- Activity of daily living, *s*elf-care, and domestic life
- Ventilation and respiration (auscultation, pulmonary function, and cough assessment).
- Ergonomics and return-to-work assessments

Module 16: Theoretical Framework for Management of Individuals with Neurological Conditions

This module help resident to understand and implement the conceptual framework for treatment of individuals with neurological conditions including motor control, motor learning, using the Bobath approach, proprioceptive

neuromuscular facilitation, and all other physical therapy treatment concepts, approaches, and theories.

Credit hours: 2

Number of teaching hours: 40

Level: Advanced

Teaching method: Lecture/practical

Objective: By the end of this module, the resident will be able to:

1. Implement the physical therapy treatment concepts, approaches, and theories that are used in neurological rehabilitation
2. Explain the treatment methods to enhance the ability to maximize the concepts of neuroplasticity in progressive rehabilitation programs
3. Develop a physical therapy treatment program to enhance motor control, movement patterns, and motor learning in the neurological patient
4. Integrate specific physical therapy treatment program to treat and improve hypertonicity, rigidity, strengthening, functional ability, and mobilization for the neurological patient
5. Design physical therapy treatment protocols that assist with enhancing perception, focus, environmental awareness, visual-motor control, and balance in the neurological patient.

Module 17: Clinical Management of Neurological Conditions I

Credit hours: 3

Number of teaching hours: 60

Level: Advanced

Teaching method: Lecture/practical

- This module helps resident to demonstrate advance clinical management of individuals with *stroke, traumatic brain injury, and spinal cord injury*.

This module also will help residents in reviewing and implementing current evidence-based approaches to provide up-to-date neurologic physical therapy intervention for management in the context of the ICF model. Epidemiology, pathology, diagnostic testing, and medical and surgical management will also be covered. Course learning objectives will be described below in Module 19.

Year 3 (Senior level)

Module 18: Clinical Management of Neurological Conditions II

Credit hours: 3

Number of teaching hours: 60

Level: Advanced

Teaching method: Lecture/practical

This module helps residents to demonstrate advance clinical management of individuals with *Parkinson's disease, multiple sclerosis, and central nervous system neoplasms*. This module also will help residents in reviewing and implementing current evidence-based approaches to provide up-to-date neurologic physical therapy intervention for management in the context of the ICF model. It will also cover the epidemiology, pathology, diagnostic testing, and medical and surgical management. Course learning objectives are described below in Module 19.

Module 19: Clinical Management of Neurological Conditions III

Credit hours: 3

Number of teaching hours: 60

Level: Advanced

Teaching method: Lecture/practical

This module help resident to demonstrate advance clinical management of individuals with *lower motor neuron pathology, amyotrophic lateral sclerosis, central nervous system infections, and vestibular disorders*. This module will also help residents review and implement current evidence-based approaches to provide up-to-date neurologic physical therapy intervention for management in the context of the ICF model. Epidemiology, pathology, diagnostic testing, and medical and surgical management will also be covered

Objective: By the end of Clinical Management of Neurological Conditions I, II, and III modules, the resident will be able to:

1. Summarize the prevalence, incidence, prognostic indicators, risk factors, morbidity, mortality, and natural history of a selected neurologic disease/condition/sign/symptom
2. Prioritize optimal physical therapy assessment and treatment according to the type of impairments in body function and structures, physical activity limitations, and/or ongoing evaluation
3. Designs a customized therapeutic exercise program based on body structure/function impairment, activity limitations, and participation restrictions with appropriate timing, intensity, and dosage to maximize rehabilitation program outcomes related to a specific neurological condition
4. Explain how the exercise biomechanics and the functional outcome are integrated at the task level
5. Implement an effective physical therapy exercise program that addresses multisystem impairments
6. Integrate physiological findings and behavioral responses in the alteration and progression of exercise therapy programs

7. Evaluate patient environmental and recommend modifications if it is needed to optimize functional independence and participation
8. Adapt training techniques and environmental modifications to maintain safety, avoid injury, and decrease potential risk
9. Apply advanced technologies in physical therapy intervention to enhance skill training and acquisition including robotics, virtual reality (VR), and assistive technology
10. Integrate manual therapy such as joint and soft tissue mobilization into physical therapy management plan of patients with neurologic conditions
11. Prescribe devices and equipment, including orthotic and prosthetic (assistive, adaptive, protective, or supportive), for the complex patient, considering their impact on the biomechanics, movement, functional activity, and participation
12. Integrate different neurodevelopment concepts during the application of electrotherapeutic modalities (NMES, FES, and biofeedback), with a firm grasp of neurologic pathology, plasticity, and recovery patterns.

Module 20: Outcome Measures Toolbox: Choosing outcome measures for a patient with a neurological condition

This module provides an in-depth, comprehensive review of commonly used patient-reported and performance-based outcome measures in neurologic physical therapy practice.

Credit hours: 2

Number of teaching hours: 40

Level: Advanced

Teaching method: Lecture/practical

Objective: By the end of this module, the resident will be able to:

1. Select the most appropriate outcome measure by considering its sensitiveness and responsiveness, across the ICF domains, according to patient diagnosis and prognosis
2. Identify the advantages and disadvantages of patient-reported outcome measures as part of neurologic physical therapist practice
3. Analyze the similarities and differences between patient-reported measures and physical performance measures
4. Interpret the outcome measure scores for individuals with neurologic conditions, informing the clinical decision
5. Design the physical therapy treatment plan within and across episodes based on the interpretation of outcome measure results.

PRACTICE-BASED LEARNING—NEUROLOGIC DESCRIPTION OF RESIDENCY PRACTICE

Neurologic Physical Therapy Residency programs provide access to practice-based learning through variety of learning experiences during the residency clinical rotations. The components of the neurologic Description of Residency Practice (DRP) are addressed in the program in both didactic and clinical learning. The DRP was built by the American Board of Physical Therapy Residency and Fellowship Education (ABPTRFE) board to establish a consistent curriculum matching similar residency programs in the field of neurology specialty and resident's learning and assessment. A list of neurologic DRP topics and their learning domains are described below. These domains and topics will be covered through a variety of clinical and academic teaching methods during the program (more details about DRP topics, examples of didactic and clinical objectives, teaching methods, and assessment methods can be found in Appendix I).

Teaching method

- Weekly case conference meetings are held at which trainees present patient cases. The cases are discussed in a detailed and rigorous review, including the neurologic disease, its assessment, treatment, course, etc.
- Problem-solving complex issues are enhanced by facilitating interactions between the residents, trainers, and other healthcare providers.

- Trainees are exposed to patients across different practice settings in collaboration with other health professionals.
- Students will participate in interactive lectures, course work, and attend workshops and conferences.
- Lectures will concern public health, ethics in developmental disability, psychological factors, family systems, etc.
- Students will participate as teaching assistants with assigned responsibilities to teach undergraduate and postgraduate programs
- Public health education.

DRP topic:

YEAR 1 (Foundation Year)

A. KNOWLEDGE AREAS of neurological physical therapy practice

Foundation Sciences

Topic 1: Applied human anatomy and physiology in healthy and neurologic populations

- Musculoskeletal system
- Cardiovascular and pulmonary systems
- Lymphatic system
- Integumentary system
- Exercise physiology
- Electrophysiology

Topic 2: Human neuroanatomy and neurophysiology

- Nervous system including the anatomical organization and functional specialization of the central and peripheral nervous system
- Neural growth and plasticity
- Postural control and neural control of balance
- Perception and sensory systems

- Motor systems including neural control of locomotion (i.e., central pattern generators)
- Regulation and modulation of reflexes and autonomic function
- Pain

Topic 3: Movement sciences

- Movement systems (biomechanics and kinesiology)
- Functional movements, postural control, and gait, including kinematic and kinetic analyses and pathokinesiology
- Motor control theories and principles (skill acquisition)
- Theories and principles of motor development
- Effect of movement dysfunctions on body systems

Behavioral Sciences

Topic 4: Neuropsychology

- Cognitive behavior processes such as attention, executive, memory, communication, and learning disorders
- Affective disorders
- Behavioral responses, and coping strategies for disability and recovery
- Effect of motivational factors and compliance strategies to enhance behavioral performance on disability and recovery
- Impact of personal and environmental factors on disability and recovery

Topic 5: Psychiatry

- Common psychiatric illness related to neurological cases including the signs, symptoms, and syndromes, and the effect of psychiatric-related condition and management on cognition, behavior learning, and functional activities

Topic 6: Teaching and learning theory

- Teaching and learning principles and theories
- Develop and implement educational planning process in clinical practice

Topic 6: Ethical issues in practice

- Ethics and related decision-making

Topic 7: Communication skills

- Communication skills, including:
    - Principles of empathy and behavior modification strategies,
    - Communication listening and observation techniques, and
    - Conflict management techniques.

Clinical Sciences

Topic 8: Pathology and pathophysiology, including the congenital and acquired impact of neurologic disorders on body systems:

- Neuromuscular system
- Musculoskeletal system
- Cardiovascular and pulmonary systems
- Physiological response to trauma and stress

Topic 9: Movement analysis

- Kinesiology, pathokinesiology, and biomechanics

Topic 10: Principles of epidemiology

- Incidence and prevalence
- Prognostic indicators
- Risk factors
- Morbidity and mortality

Topic 11: Medical management (imaging, pharmacology, laboratory, surgery)

- Radiology and Imaging for neurological conditions
- Clinical diagnostic procedures, such as electromyography (EMG) and nerve conduction velocity (NCV)
- Laboratory tests
- Surgical and nonsurgical interventions for neurologic disorders including the monitoring, and activity modifications related to medical procedures
- Pharmacokinetics and pharmacodynamics
- Medication effects on body systems

Year 2 (Junior Level)

Topic 12: Clinical reasoning and critical inquiry/scientific inquiry and practice

- Application of decision-making models to clinical practice

- ICF framework in clinical practice
- Clinical research methodology
- Critical evaluation of test psychometrics and application of principles of measurement in clinical practice
- Critical appraisal

B. PRACTICE EXPECTATIONS

Professional Competencies (Roles, Responsibilities/Attitudes, and Values)

Topic 13: Communication skills

- Effective communication strategies, including verbal, nonverbal, and assistive technologies.
- Use empowering models/theories and strategies
- Collaborative team management and transitions of care
- Awareness of cultural and social factors

Topic 14: Teaching and education

- Educational needs assessment, including characteristics of individual learners and groups of learners
- Develops educational objectives based on educational needs
- Utilizes appropriate teaching strategies and methods
- Implements educational plans
- Assesses learning outcomes and modify teaching strategies based on outcomes
- Teaches fellow juniors and other physical therapy staff
- Educates other healthcare professionals about neurologic physical therapy
- Performs various community education and social awareness activity

Topic 15: Consultation skills

- Provides consultative services to colleagues and other healthcare providers

- Contributes to multidisciplinary team decision-making
- Condenses expert opinion about an individual with a neurological disorder for an interdisciplinary and multidisciplinary healthcare team, both inside and outside the institute

Topic 16: Evidence-based practice

- The efficacy and effectiveness of the currently used and newly developed assessment tools, outcome measures, interventions, and treatment concepts and/or approaches
- Critical appraisal and translating evidence into practice
- Participates in conducting clinical research following ethical guidelines
- Participates in collecting and interpreting patient and client outcome data
- Synthesizes information from a variety of sources to develop evidence-based clinical practice

Topic 17: Prevention, wellness, and health promotion

- Health and fitness promotion
- Social screening programs to design health promotion plans serving at-risk populations

Topic 18: Social responsibility and advocacy

- Develops and implements solutions for an individual with a neurological condition to access the health and community services and is provided with all necessary equipment
- Advocates for individuals with neurological conditions
- Promotes advanced neurologic practice
- Introduces the role of neurologic physical therapy to other healthcare providers, community professionals and professional communities/institutes

Topic 19: Leadership

- Principles of interpersonal interactions and decision-making

- Mentorship skills
- Conflicts and/or challenging resolves strategies
- Implement the scientific evidence into clinical practice
- Use available evidence to create and update policies and procedure

Topic 20: Professional development

- Reflection and self-evaluation process
- Self-learning to pursue additional knowledge and skills

Topic 21: History

- Implementing ICF as a framework for providing patient-centered care within the scope of neurologic physical therapy
- Integrates knowledge of disease with history-taking

Topic 22: System review

- Screening procedures
- Red flags in neurologic conditions

Topic 23: Patient and client examination

- Neurologic physical therapy subjective assessment including the history taken and reviewing the system
- Neurologic physical therapy tests and measures based on scientific merit and clinical utility
- Using ICF to design the assessment criteria which cover all domains, including body function and structures, activity limitations, and participation restrictions for an individual with a neurologic condition

Topic 24: Tests and measures

- Pain assessments
- Range of motion, including muscle tone and flexibility
- Muscle performance, including power and endurance
- Endurance assessment
- Assistive technology, including orthotic, prosthetic, and durable medical equipment
- Static, dynamic, and functional balance
- Joint integrity and mobility
- Sensory integrity of peripheral and central systems
- Specialized sensory and motor tests
- Mental functions
- Coordination and movement pattern assessment
- Reflex integrity
- Cranial nerve integrity
- Motor functions of peripheral and central nervous system
- Vestibular system integrity and perception of sensory input, including vertical orientation, body schema, depth perception, neglect, and motion sensitivity
- Motor control measures
- Task and motion analysis, including kinematic and kinetic

- Ventilation and respiration, including pulmonary function and cough assessment
- Gait and mobility, including observational and objective analysis of biomechanics, both kinematic and kinetic
- Safety strategy
- Analysis of ambulation and wheelchair functional mobility to examine activities and participation
- Self-care and domestic life
- Quality of life measures
- Environmental factors (home, work, education, work, community and social life)
- Community, social, and civic life integration and reintegration
- Ergonomics and return-to-work assessments
- Observational assessment of movement and functional activity
- Examination of finding across ICF domains that require modification and/or compensatory strategies
- The link between personal/environmental factors, and the patient's and caregiver's expressed goals(s)
- Interdisciplinary team examination and assessment
- Appropriate clinical judgements based on patient assessment and examination

Topic 25: Diagnosis

- Differential diagnosis of neurological disorders based on reported and non-reported sign and symptoms
- Diagnoses the body structure and function
- Refers patient to other rehabilitation services

Topic 26: Prognosis

- Analyzes barriers that limit achieving the optimal treatment outcomes for an individual with neurologic conditions

- Establishes potential improvement and time for recovery for an individual with a neurologic condition
- Provides patient centered goal-setting
- Creates effective treatment plan

Year 3 (Senior Level)

Topic 27: Intervention

Clinical Decision-Making and Prioritization of Interventions

- Short term and prevention interventions plan with consideration of ICF domains including individual's body function and structure, activity limitations, and participation restrictions
- Interventions based on physiological and/or behavioral changes of individual with neurological condition across the lifespan
- Optimal physical therapy interventions based on the type and severity of impairments in body function and structures, activity limitations, and participation restrictions
- Risk versus benefits regarding intervention selection
- Modifying intervention plan based on ongoing evaluation
- Communication with patient, caregiver, and family to discuss intervention
- Communication with patient, caregiver, and family to meet the individual's diverse needs based on personal and environmental factors, such as cultural, age, sex, educational level, health literacy, and cognitive needs
- Patient, caregiver, and family interview skills
- Coordinates patient management across care settings, disciplines, and community

Patient and Client Instruction

- Patient, caregiver, and family education on diagnosis, prognosis, intervention, responsibility, and self-management

- Patient, caregiver, and family education on risk management
- Patient, caregiver, and family education using available advanced technology, such as applications and web-based resources

Procedural Interventions—Therapeutic exercise

- Therapeutic exercise program related to activity limitations
- Appropriate timed, intensive therapeutic exercise program
- Relationship between therapeutic exercise, biomechanics, and the expected outcome at the task level
- Exercise program for multisystem impairments
- Aerobic conditioning programs
- Balance training programs
- Therapeutic exercise and physiological findings and behavioral responses

Procedural Interventions—Functional training in activity of daily living at self-care and in domestic, education, work, community, and social life

- Interaction between multiple body system structure and function impairments activity limitations, and participation restrictions with a consideration of personal and environment factors
- Chronic disability management
- Participate in domestic training program, including education, work, community, social, and public activities
- Environmental modifications to minimize the risk, improve patient safety, prevent injury, optimize independency, and improve participation
- Task-specific training
- Biofeedback to facilitate skill acquisition
- Intervention adjustment based on the interpretation of body movement and function

- Promote skill training using advanced technologies, such as virtual reality and robotics

Procedural Interventions—Manual therapy techniques

- Manual therapy

Procedural Interventions—Prescription, application, and, as appropriate, fabrication of devices and equipment such as orthotic and prosthetic (assistive, adaptive, protective, supportive)

- Assistive device and durable medical equipment for complex cases
- Impact of the assistive device and durable medical equipment on the movement considering biomechanics and efficiency of locomotion
- Impact of the assistive device and equipment according to functional activities and participation
- Assistive technology (AT) to optimize activity and participation
- Orthotics and prosthetics for neurologic populations

Procedural Interventions—Airway clearance techniques

- Physical therapy interventions to maximize pulmonary function

Procedural Interventions—Integumentary repair and protective techniques

- Pressure injury prevention and management using equipment (i.e., seating systems, pressure mapping, and cushion and orthotic prescriptions).
- Pressure injury prevention and management through education, exercise, positioning, and mobility and activity prescriptions

Procedural Interventions—Electrotherapeutic modalities

- Application of electrotherapeutic modalities in neurologic cases
- Electrotherapeutic agents considering neurologic pathology, plasticity, and recovery patterns

Topic 28: Outcomes Assessment

- Outcome measures in neurologic physical therapy
- Adjustment of physical therapy treatment plan based on interpretation of outcome measure results

The following tables (Tables 3, 4, and 5) summarize the distribution of didactic and practice-based learning (description of residency practice, or DRP) activity based on domains and competencies across the residency program

Table 3. Distribution of didactic and DRP activity based on domains and competencies across the residency program (First Year—Foundation)

First Year (Foundation)							
Program learning	Area	Didactic course work/module	Practice-based learning (PBL)– Neurologic description of residency practice (DRP)	Domain			Competency
				Knowledge	Skills	Attitude	
Knowledge areas of neurologic practice	Foundation sciences	Human anatomy and physiology in health and neurologic populations	Applied anatomy and physiology in humans who are healthy or with neurologic disorders	X			Medical expert
		Neuroanatomy and neurophysiology	Applied human neuroanatomy and neurophysiology	X			
		Neuroplasticity		X			
		Skill acquisition in neurological population	Movement sciences	X	X		
	Behavioral sciences	Cognitive/behavioral dysfunction in clinical practice	Neuropsychology, psychiatry, and psychosocial Issues	X	X	X	

First Year (Foundation)							
Program learning	Area	Didactic course work/module	Practice-based learning (PBL)– Neurologic description of residency practice (DRP)	Domain			Competency
				Knowledge	Skills	Attitude	
		Cultural and social system	Prevention, health promotion, and wellness	X	X	X	
			Social responsibility and health advocacy	X	X	X	
		Teaching and learning theory	Teaching and learning practice	X	X		Scholar
			Teaching and education	X	X		
		Effective communication	Communication skills	X	X	X	Communicator
			Patient and client instruction	X	X	X	
		Medical ethics code	Ethical issues in practice			X	Professional
			Leadership	X	X	X	Manager
			Professional development	X	X		Scholar
	Clinical sciences	Human movement analysis	congenital and acquired pathology and pathophysiology	X			Medical expert
			Movement analysis	X	X		
			Principles of epidemiology	X			
		Medical management and assessment for neurologic population	Medical management (imaging, pharmacology, laboratory, surgery)	X			

First Year (Foundation)							
Program learning	Area	Didactic course work/module	Practice-based learning (PBL)– Neurologic description of residency practice (DRP)	Domain			Competency
				Knowledge	Skills	Attitude	
		Evaluation, diagnosis, and prognosis in neurological conditions	Patient and client examination, tests and measures, evaluation, diagnosis, and prognosis	X	X		

Table 4. Distribution of didactic and DRP activity based on domains and competencies across the residency program (Second Year—Junior)

Second Year (Junior)							
Program learning domain	Area	Didactic course work/module	Practice-based learning (PBL)—Neurologic description of residency practice (DRP)	Domain			Competency
				Knowledge	Skills	Attitude	
Psychomotor skills of neurologic physical therapists	Sciences and critical inquiry	Research, scientific Inquiry and Practice in neurologic physical therapy	Clinical reasoning and critical inquiry/scientific inquiry and practice	X	X		Scholar
		Evidence-based practice (EBP)		X	X		
	Patient management	Theoretical and clinical framework for examination of individuals with neurological conditions	History and system review	X	X		Medical expert

Second Year (Junior)							
Program learning domain	Area	Didactic course work/module	Practice-based learning (PBL)—Neurologic description of residency practice (DRP)	Domain			Competency
				Knowledge	Skills	Attitude	
		Theoretical framework for management of individuals with neurological conditions	Clinical decision-making and prioritization of interventions	X	X		Medical expert
		Clinical Management of Neurological Conditions I	Procedural Interventions; therapeutic exercise, manual therapy, functional training in self-care, education, work, community, social and civic life, prescription, application, and, as appropriate, fabrication of devices and equipment, including orthotic and prosthetic (assistive, adaptive, protective, supportive), airway clearance techniques, Integumentary intervention and electrotherapeutic agents.	X	X		Medical expert

Table 5. Distribution of didactic and DRP activity based on domains and competencies across the residency program (Third Year—SeniorLevel)

Third Year (Senior Level)							
Program learning domain	Area	Didactic course work/module	Practice-based learning (PBL)– Neurologic description of residency practice (DRP)	Domain			Competency
				Knowledge	Skills	Attitude	
Psychomotor skills of neurologic physical therapists	Patient management Patient management Patient management Patient management	Clinical Management of Neurological Conditions II	Procedural Interventions; therapeutic exercise, manual therapy, functional training in self-care, education, work, community, social and civic life, prescription, application, and, as appropriate, fabrication of devices and equipment, including orthotic and prosthetic (assistive, adaptive, protective, supportive), airway clearance techniques, Integumentary intervention and electrotherapeutic agents.	X	X		Medical expert
		Clinical Management of Neurological Conditions III		X	X		
		An outcome measures toolbox: selecting appropriate outcome measurements for patients experiencing neurological conditions	Outcomes assessment	X	X		Medical expert

Table 6. Program Rotation and Didactic Modules/Courses Time Plan

	October	November	December	January	February	March	April	May	June	July	August	September
Year 1 (Foundation / Junior)	General Orientation General neuro physical therapy (PT) (Inpatient/outpatient)				MSK - PT (Outpatient)	Post-surgery orthopedics	Neurology Intensive Care Unit			Cardiovascular/ pulmonary	Pediatric physical therapy (Inpatient/outpatient)	
	Human anatomy and physiology in health and neurologic populations					Applied neuroanatomy and neurophysiology						
	Module 1 Medical fundamentals	Skill acquisition in neurological population					Neuroplasticity					
			Module 7 Ethics and healthcare	Evaluation, diagnosis, and prognosis in neurological conditions					Cognitive/behavioral dysfunction in clinical practice			
	Core module: Code of ethics	Core module: infection		Teaching and learning theory		Module 5 Acute care			Core module: Communication		Core module: Patient safety	
	Effective communication			Medical ethics code (1)								
	Human movement analysis			Medical management and assessment for neurologic population							Cultural and social system	

	October	November	December	January	February	March	April	May	June	July	August	September
Year 2 (Junior)	Stroke rehabilitation (Inpatient/outpatient)				Lower motor neuron pathology/injury rehabilitation				Traumatic brain injury rehabilitation (Inpatient/outpatient)			
	Theoretical Framework for Management of Individuals with Neurological Conditions						Research, scientific Inquiry and Practice					
	Evidence-based practice (EBP)			Module 2 Cancer				Module 6 Frail elderly				
	Theoretical and clinical framework for examination					Clinical Management of Neurological Conditions I						
	Cont. cultural and social			Module 3 DM disorder			Module 4 Medical and					
Year 3 (Senior)	Parkinson' s, multiple sclerosis, Guillain-Barré syndrome, and central nervous system neoplasms				Spinal cord injury rehabilitation (Inpatient/outpatient)				Motor neuron diseases rehabilitation (Inpatient/outpatient)			
	Clinical Management of Neurological Conditions II					Clinical Management of Neurological Conditions III						
	An outcome measures toolbox: Choosing outcome measures for a patient with											

Clinical rotation

Didactic modules/courses

ASSESSMENT AND EVALUATION

Purpose of assessment

Assessment plays a vital role in the success of postgraduate training. Accordance to the Saudi Commission for Health Specialty's training and examination rules and regulations, residents will go through serious of formative and summative assessments during the program. Continuous assessment and feedback will help and guide residents to achieve the targeted learning objectives. The assessment process is designed to assess learning domains, including knowledge, skills, and attitude.

Formative assessment

Formative assessment will be performed throughout the program—weekly, every other week, and after each didactic learning activity and clinical rotation. The training center, program directors, and trainers will select the assessment method and tools to assess the resident. According to the executive policy on continuous assessment, a minimum of four to seven tools are needed to cover the three learning domains. Residents should show satisfied competency in each assessment tool to be promoted to the subsequent training level. Input from the overall formative assessment tools will be utilized at the end of the second and final years to determine whether individual

residents will be promoted from the current training level to next. Formative assessment will have the following features:

- Multisourced: a minimum of four tools.
- Comprehensive: covering all learning domains (knowledge, skills, and attitude).
- Relevant: focusing on workplace-based observations.
- Competency milestone-oriented: reflecting the residents' expected competencies matching their developmental level.

The trainers will complete the resident's assessment forms and submit them to the program director by the end of each rotation. If there is low performance, the trainer and the program director should hold a formal meeting with the resident to discuss it, and prepare a remediation plan to improve the unsatisfactory performance level. These meetings are documented in the resident's electronic evaluation form at the SCFHS website

For further details, please refer to the policy at *www.scfhs.org*.

The following are different formative assessment methods will be used to assess the residents.

a. Written exams

This assessment method delivered in multiple choice and/or short answer format, and held once per rotation/didactic activity and at the end of each year. The written examination assesses the resident's theoretical knowledge base and problem-solving capabilities. The number of examination items, eligibility, and passing score are established in accordance with the commission's training and examination rules and regulations.

Examination details and a blueprint are available in the program completion requirements section.

b. Structured academic activities

The residents will produce a patient case reports and journal/research study appraisals (a case study/analysis and staff presentation) at least once every two months (six times a year). Trainers and attendants will assess the resident's performance using the clinical faculty evaluation form and classroom/lab presentation evaluation form (see Appendix VIII and Appendix IX).

c. End of rotation procedures performance assessment tool

It is an assessment form to evaluate the resident's performance to demonstrate core competencies with respect to the program and rotation objectives and tasks (See Appendix III, Appendix IIIa, Appendix IIIb, Appendix IIIc, Appendix IIId, Appendix IIIe, and Appendix IIIf)

d. Neurologic Physical Therapists Description of Specialty Practice Assessment Tool

The Neurologic Physical Therapists Description of Specialty Practice Assessment Tool is an assessment form that allows the mentor to evaluate the residents' level of advance clinical knowledge and skills in the field of neurologic physical therapy (see Appendix IV).

e. Objective Structured Clinical Exam

The Objective Structured Clinical Exam (OSCE) is an assessment method to examine aspects of clinical judgement, including diagnosis, treatment planning, prognosis, treatment methods, and clinical decision-making. Resident will require to review the information provided (e.g., a case scenario) and answer multiple

response type questions (see Appendix VI for an example of OSCE exam questions).

f. Professional Evaluation Performance Tool

Professional Evaluation Performance tool is an assessment method to evaluate the residents' attitude as they relate to an established standard of patient care and clinical performance including knowledge and attitude. Such clinical skills are developed gradually by residents during the training program. Professional evaluation performance assessment provides information to the residents about their performance to improve the quality and safety of the patient care provided (see Appendix V).

g. In-Training Evaluation Report

In-Training Evaluation Reports (ITERs) are the summary evaluations of the resident's performance on a given rotation. The ITER shows the resident's achievement of the rotation's objectives. All ITERs are completed using a system called One45 on the SCFHS website. Residents, program directors, and trainers will receive a username and password at the beginning of the residency. Residents must review these summary evaluations and plan to work on the skills identified as areas for ongoing improvement.

Table 7 summarizes the formative assessment methods and frequency based on domains across the residency program.

Table 7. Formative assessment methods and frequency based on domains

Domain	Assessment method (Appendices)	Frequency	Description
Knowledge	Written exams	After each didactic session	Resident will be assessed using multiple choice and/or essay questions after each core specialty didactic course. Questions will be designed in accordance with the subject of the didactic course and/or clinical rotation. Structured academic activities including assignments, presentations, discussions, and case study reports will be assigned during each core specialty course and clinical rotation. Successful performance will be based on accomplishment of the minimum requirements for the knowledge.
	Structured academic activities (assignments, presentations, discussions, case study report) (Appentices IX and X)	Six activities every year	
Skills	End of rotation procedures performance assessment tool (Appendices III, IIIa, IIIb, IIIc, IIId, IIIe, and IIIf)	At the end of each rotation	Resident will be assessed using the End of Rotation Procedures Performance Assessment Tool and the Neurologic Physical Therapists Description of Specialty Practice Assessment Tool while he/she is evaluating and treating patient after each clinical rotation (this assessment tool use to assess the knowledge and skills learning domains). S/he will also be assessed using the OSCE at the end of each rotation. Successful performance will be based on accomplishment of the minimum requirements for the procedures and clinical skills.
	Neurologic physical therapists' Description of Specialty Practice assessment tool (Appendix IV)	End of second and third year	

Domain	Assessment method (Appendices)	Frequency	Description
	Objective Structured Clinical Exam (OSCE) (Appendix VI)	At the end of each rotation	
Attitude	Professional evaluation performance tool (Appendix V)	After each rotation	Resident's attitude will be assessed using different evaluation forms including the clinical evaluation performance tool, weekly clinical mentoring forms, neurologic physical therapists' Description of Specialty Practice assessment tool
	ITER: In-Training Evaluation Report (One45)	End of each rotation	

Summative Assessment

General principles

Summative assessment is the component of assessment that aims primarily to make informed decisions on residents' competency. A summative assessment evaluates the resident's learning, knowledge, skills, proficiency, or success at the end of each academic year. Compared to the formative assessment, summative assessment does not aim to provide constructive feedback. Indeed, it is used to determine whether an individual resident will be promoted from the current level to the next training level. Just in case, the resident fails to pass the summative assessments, s/he will repeat whole last year.

Second year promotion and final specialty examinations

The Second year promotion and final specialty examinations are comprehensive exams that are given at the end of second and the final years to determine whether individual resident will be promoted from junior to senior level, and grant the specialty's certification, respectively. Residents are required to pass formative assessments during their rotations to be eligible to sit for second year promotion and final specialty exams. In addition, s/he should have the Certification of Training Completion to be eligible to sit for the final specialty exam.

The second-year promotions examinations and final specialty examinations consist of two parts: a written exam and the OSCE.

1. The written examination assesses the resident's theoretical knowledge base and problem-solving capabilities. It is delivered in multiple-choice question (MCQ) format and/or short answer format, and held at the end of second and the final years. The number of examination items, eligibility, and passing score are established in accordance with the commission's training, as well as examination rules and regulations. Examination details and a blueprint are available in the completion requirement section.
2. The OSCE will take place at the end of both the second and the final years. Residents will be required to pass the written exam to be eligible to set for the OSCE. This examination assesses whether a resident has demonstrated a high-level clinical approach, including data-gathering, differential diagnosis, problem-solving, communications, and patient management. The examination is held in the form of case scenario and problem-solving approaches. Eligibility and

passing score are established in accordance with the SCFHS's training and examination rules and regulations. Examination details and a blueprint are available on the program completion requirement section.

Final In-training Evaluation Report (FITER)

The FITER is a document prepared by program directors for each resident at the end of his or her final year in training. This report shall be the basis for obtaining the certificate of training program completion; in addition to, the qualification to set for the final specialty exams based on the resident's performance in all formative assessments during his/her first-, second-, and/or third-year rotations.

Certification of Training Completion

To be eligible to set for final specialty examinations, each resident is required to obtain a Certification of Training Completion. Residents will be granted this certification once the following criteria is fulfilled:

a. Successful completion of all training rotations.

b. Completion of training requirements (logbook, research, etc.) as outlined in FITER and approved by the scientific committee of the specialty.

c. Clearance from the SCFHS training affairs office, which ensures compliance with tuition payment and the completion of universal topics.

d. Passing the formative assessments/examinations.

e. Passing the second-year promotion examination.

The Certification of Training-Completion will be issued and approved by the supervisory committee or its equivalent, according to SCFHS policies.

Table 8 summarizes the summative assessment methods and passing scores based on domains across the residency program.

Table 8. Summative assessment tools based on learning domain

Learning domain	Summative assessment tools	Passing score
Knowledge	Written examination	At least passing grades in each tool, in accordance with the standard setting method used by the executive administration of assessment
Skills	Objective Structured Oral Exam (OSCE)	At least passing grades in each tool, in accordance with the standard setting method used by the executive administration of assessment
Attitude	FITER: In-training Evaluation Report	Successfully pass FITER

PROGRAM COMPLETION REQUIREMENTS

Formative Assessment

Junior Level (Years 1 and 2):

To successfully complete this level, the resident should complete the following clinical experience:

1. Participate in the following clinical education (total = 3,500 hours):
    - 590 hours of classroom/lab instruction
    - 768 hours of 1:1 mentored sessions
    - 2,112 hours of unsupervised clinical practice
    - 30 hours of clinical supervision for physical therapy student and/or interns

A maximum of 10% discrepancy is allowed due to absence, permission to leave, or any unexpected resident situations.

2. Score a minimum of 60% in the written exam for the following courses:
    - Human Anatomy and Physiology in Health and Neurologic Populations
    - Applied Neuroanatomy and Neurophysiology
    - Skill Acquisition in the Neurological Population
    - Neuroplasticity
    - Evaluation, Diagnosis, and Prognosis in the Neurological Condition
    - Cognitive/Behavioral Dysfunction in Clinical Practice

- Effective Communication
- Medical Ethics Code
- Human Movement Analysis
- Medical Management and Assessment for the Neurologic Population
- Cultural and Social Systems
- Theoretical Framework for the Management of Individuals with Neurological Conditions
- Research, Scientific Inquiry, and Practice
- Evidence-based Practice (EBP)
- Theoretical and Clinical Framework for Examination
- Clinical Management of Neurological Conditions I

3. Complete and pass all universal and general core topics at the SCFHS platform.
4. Score a minimum of 60% in the second-year promotion exam.
5. Demonstrate satisfactory performance (minimum borderline passing grades) in all clinical examination assessments using the End of Rotation Procedures Performance Assessment Tool and the Professional Evaluation Performance Tool (See Table 9 for more details about passing criteria).

Table 9. Passing criteria for this clinical program

Percentage	< 50%	50–59.4%	60–69.4%	>70%
Description	Clear failure	Borderline failure	Borderline pass	Clear pass

6. Score "consistently" on at least 70% of all categories on the Clinical Faculty Evaluation Form and Classroom/Lab Presentation Evaluation Form on the feedback that the physical therapy student and/or interns provide for the junior resident (see Appendix IX and Appendix X).

7. Completed 12 different structured clinical activities and submit the reports and feedbacks (see Appendix IX, Appendix X, and Appendix XI).
8. Score 70% (at least 400 out of 570) on the Neurologic Physical Therapists Description of Specialty Practice Assessment Tool.
9. Submit a research proposal to be conducted during senior level of the program.
10. Complete the Logbook (Appendix VII) and the Weekly Clinical Mentoring Form (Appendix II). The Logbook and Weekly Clinical Mentoring Form should be reviewed, approved, and signed by the program director.

Logbook

This is a document completed by the resident to keep record of all academic activities, including clinical procedures, lectures, journal clubs, meetings, training courses, workshops, symposia, and case presentations undertaken throughout the training program.

- Residents are required to complete and maintain logbooks during the entire training period.
- Logbook should be completed on the day on which activities occur, and signed by the mentor in within five working days of the activity.
- Training progress recorded in the logbook should be discussed with the mentor and/or program director every month.
- Residents should submit their completed logbooks to the program director at the end of each rotation to be discussed and signed (see Appendix VII).

Weekly Clinical Mentoring Form

A regular weekly activity to discuss overall clinical experience of the residents with particular attention to any concerns raised during the week. Residents and trainers will complete the weekly clinical mentoring form: a list of all patient/s seen in the mentoring session/s during the week, the goals of mentoring session/s and topic discussed, the competency and learning domain feedback received during the session, and future plans (see Appendix II).

The program director can still recommend the promotion of candidates if the above is not met in some situations:

- If the candidate scored "borderline failure" in one or two components at maximum, and these scores should not belong to the same area of assessment (for example: both borderline failures should not belong to skills)
- The candidate must have passed all other components and has scored a minimum of clear pass in at least two components.

Senior Level (Year 3)

To successfully complete this program, the resident must achieve/complete the following:

1. Participate in the following clinical, teaching and research activity (total = 1,802 hours) as following:
   - 70 hours of classroom/lab instruction
   - 240 hours of 1:1 mentored session
   - 1180 hours of unsupervised clinical practice
   - 112 hours as an instructor of continuing education seminars for physical therapists
   - 100 hours of clinical supervision for junior residents

- 100 hours of research activities

A maximum of 10% discrepancy is allowed due to absence, permission to leave, or any unexpected resident situations.

2. Score a minimum of 60% in the written exam for the following courses:
   - Clinical Management of Neurological Conditions II
   - Clinical Management of Neurological Conditions III
   - Outcome Measures Toolbox: Choosing outcome measures for a patient with a neurological condition.
3. Demonstrate satisfactory performance during the three clinical examinations after each rotation using the End of Rotation Procedures Performance Assessment Tool (see Table 9 for the passing criteria)
4. Complete six different structured clinical activities and "consistently" score at least 70% of all categories on the Clinical Faculty Evaluation Form and the Classroom/Lab Presentation Evaluation Form on the feedback the junior resident provides to the senior resident (see Appendix IX and Appendix X).
5. Submit a research paper manuscript ready to be published in a peer-reviewed journal or presented at a scientific conference.
6. Score at least 70% (at least 400 out of 570) on the Neurologic Physical Therapists Description of Specialty Practice Assessment Tool.
7. Complete the Logbook and the Weekly Clinical Mentoring Form, and submit them by the end of the third year. The Logbook and the Weekly Clinical Mentoring Form should be reviewed, approved, and signed by the program director.

Summative Assessment

Second Year Promotion Examination

This written examination is conducted in multiple choice and/or short answer question formats, held at the end of second year to promote the resident from the junior to the senior level of training. The examination will focus on applied basic science knowledge related to Neurologic Physical Therapy and other core rotational specialties. The number of exam items, eligibility, and passing score will be in accordance with the Commission's training and examination rules and regulations. Examination details and blueprints will be published on the commission website: ***www.scfhs.org.sa***/.

The blueprint of Second Year Promotion Exam for the Saudi Board for Neurologic Physical Therapy is shown in the following tables (Table 10, 11, and 12) (numbers in each cell represent number of exam questions).

Table 10. Blueprint of first part of the exam (First Year—Foundation)

Category	First Year (Foundation)					
	Proportions	Basic medical knowledge	Assessment	Intervention	Diagnosis	Outcomes
Neurologic physical therapy	22%	4	5	5	4	4
MSK physical therapy	13%	3	3	3	2	2
Post-surgery orthopedics	7%	1	2	2	1	1
Neurology Intensive Care Unit	22%	4	5	5	4	4
Cardio vascular/Pulmonary	7%	1	2	2	1	1

Category	First Year (Foundation)					
	Proportions	Basic medical knowledge	Assessment	Intervention	Diagnosis	Outcomes
Pediatric	13%	3	3	3	2	2
Scholarly Activities	8%	3	3	2	0	0
Professional rules, values, and responsibilities	8%	3	3	2	0	0
Total	100%	22	26	24	14	14

Table 11. Blueprint of first part of the exam (Second Year—Junior)

Category	Second Year (Junior)					
	Proportions	Basic medical knowledge	Assessment	Intervention	Diagnosis	Outcomes
Stroke	25%	4	7	7	4	3
lower motor neuron pathology/injury	25%	4	7	7	4	3
Traumatic Brain Injury	25%	4	7	7	4	3
Scholarly Activities	12%	4	4	4	0	0
Professional rules, values, and responsibilities	13%	4	5	4	0	0
Total	100 %	20	30	29	12	9

Table 12. Blueprint of first part of the exam (Third Year—Senior)

Category	Third Year (Senior)					
	Proportions	Basic medical knowledge	Assessment	Intervention	Diagnosis	Outcomes
Parkinson's, multiple sclerosis, Guillain-Barré syndrome, and central nervous system neoplasms	25%	4	7	7	4	3
Spinal Cord Injury	25%	4	7	7	4	3
Motor Neuron Diseases	25%	4	7	7	4	3
Scholarly Activities	12%	4	4	4	0	0
Motor Neuron Diseases	13%	4	5	4	0	0
Total	100%	20	30	29	12	9

Final Specialty Examinations

The final specialty examination is the summative assessment component that grant residents the specialty's certification. It has two elements:

a. Final written exam: To be eligible for this exam, residents are required to fulfill all requirements mentioned previously including the Certification of Training Completion. The blueprint of the final written exam is shown in Table 13 (numbers in each cell represent the number of exam questions).

b. Final OSCE: Residents will be required to pass the final written exam to be eligible to set for the final clinical/practical

exam. The blueprint of the final clinical/practical exams is shown in Table 14.

Table 13. Blueprint of the final written exam

Category	Final written exam blueprint					
	Proportions	Medical knowledge	Assessment	Intervention	Diagnosis	Outcomes
Stroke	15%	3	4	4	2	2
lower motor neuron pathology/injury	10%	2	3	3	1	1
Traumatic brain injury	15%	3	4	4	2	2
Parkinson's, multiple sclerosis, Guillain-Barré syndrome, and central nervous system neoplasms	20%	4	5	5	3	3
Spinal cord injury	15%	4	4	4	2	1
Motor neuron diseases	15%	4	4	4	2	1
Scholarly activities	10%	4	3	3	0	0
Total	100%	24	27	27	12	10

Table 14. Blueprint of the final clinical/practical exams

		DIMENSIONS OF CARE			
		Health Promotion and Illness prevention	Acute	Chronic	Psychological aspects
DOMAINS FOR INTEGRATED CLINICAL ENCOUNT	Patient care	1	1	1	1
	Patient safety and procedural Skills		1		
	Communication and interpersonal skills			1	1
	Professional behaviors		1		
	Total	2	3	2	2

PROGRAM AND COURSE EVALUATION

SCFHS will apply variable measures to evaluate the implementation of this curriculum. Training outcomes of this program will undergo the quality assurance framework endorsed by the Central Training Committee at SCFHS. Residents' assessment (both formative and summative) results will be analyzed and mapped to curriculum content. Other indicators that will be incorporated are:

- Report of the annual residents' satisfaction survey
- Reports from the residents' program evaluation form
- Reports from the annual survey of program directors
- Data available from program accreditations
- Reports from direct field communications with residents and trainers
- Clinical faculty evaluation form

Goal-based evaluation: The intended milestones achievement will be evaluated at the end of each stage to assess the progress of the curriculum delivery, and any deficiency will be addressed in the following stages, utilizing the time set aside for the resident-selected topics and professional session.

In addition to subject matter knowledge and the best practices from benchmarked international programs, SCFHS will apply a robust method to ensure that this curriculum will utilize all the data available when revising this curriculum in the future.

POLICIES AND PROCEDURES

This curriculum represents the means and materials outlines the learning objectives with which residents and trainers will interact for the purpose of achieving the identified educational outcomes. The SCFHS has a full set of general bylaws and executive policies (published on the official SCFHS website) that regulate all training-related procedures. The general bylaws of training, assessment, and accreditation as well as executive policies on admission, registration, continuous assessment and promotion, examination, resident representation and support, duty hours, and leaves of absence are examples of regulations that need to be implemented. Under this curriculum, residents, trainers, and supervisors must comply with the most updated bylaws and policies, which can be accessed at the official SCFHS website.

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APPENDICES

Appendix I: Practice-based learning (PBL)—Neurologic description of residency practice (DRP)

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
I. KNOWLEDGE AREAS					
A. Foundation sciences					
Applied human anatomy and physiology in healthy and neurologic populations					
Musculoskeletal system Cardiovascular and pulmonary systems Lymphatic system Integumentary system	Describe how the disorder will affect the patient's musculoskeletal, cardiovascular, and pulmonary, lymphatic, and integumentary systems for a patient With a neurologic disorder (K)	Plan and implement a treatment program to prevent associated secondary musculoskeletal, cardiovascular, and pulmonary, lymphatic, and integumentary system complications for a patient with a neurologic disorder (K, S,)	- Lectures or continuous education courses - Small group discussion - Case based learning - Self-directed review and reading of anatomy/physiology using textbooks, diagrams, models, CT, and MRI images.	- Written exam - OSCE - Direct observation	Medical expert
Exercise physiology	Explain how the disorder will affect the physiological response to exercise of a patient with a specific neurologic disorder (K)	Describe and demonstrate how you appropriately respond to abnormal responses to therapeutic exercise for a patient with a neurologic disorder (K, S)	- Role play practice exercise - Interactive lectures - Observation experiences - Self-directed reading	- Written exam - Simulation	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Electrophysiology	Differentiate between neuropathy, myopathy, and radiculopathy based on the electrophysiological test results (K)	Formulate an appropriate plan of care using the electrophysiological test results for patient with a neurologic disorder (K,S)	- Shadow observation experiences - Case studies discussion	- Written exam - Direct observation and ITER	Medical expert
Applied human neuroanatomy and neurophysiology					
Nervous system including the anatomical organization and functional specialization of the central and peripheral nervous system	Predict alterations in body structure and function given in neuroanatomy or neurophysiology for a patient With a neurologic disorder (K)	Select appropriate assessment tests and measures based on the alterations in body structure and function administer, in given individual with specific change in neuroanatomy or neurophysiology (K,S)	- Lectures or continuing education courses - Observation experiences - Case studies discussion - Self-directed review of neuroanatomy and neurophysiology using textbooks, diagrams, models, CT, and MRI images	- Written Exam - OSCE - Direct observation and ITER - Mini-CEX	Medical expert
Neural growth and plasticity	Identify the association between neuroanatomical and neurophysiological processes and the recovery from central nervous system injury (K)	Articulate the principles of long-term recovery and neuroplasticity processes in an individual with a neurological condition (K,S)	- Lectures or continuing education courses - Small group discussion - Direct observation of practice - Case-based learning	- Direct observation and ITER - OSCE - Written and/or oral exam - Cased-based discussion (CbD)	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Perception and sensory systems	Identify the differences between the common sensory and perceptual disorders in term of etiology, clinical characteristics, and neurophysiological basis (K)	Distinguish between sensory versus perceptual disturbances on individual with a neurologic disorder (K,S)	- Small group discussion - Direct observation of practice - Case-based learning	- Direct observation and ITER - Written exam - Short case	Medical expert
Motor systems	Describe the changes in motor function of an individual with neurologic disorder/damage to specific areas of the nervous system (K)	Address motor systems deficits in an individual with a neurologic disorder (K,S)	- Lectures or continuing education courses - Self-directed review and reading of motor system	- Direct observation and ITER - Written exam	Medical expert
Neural control of locomotion, such as central pattern generators	Describe the neural components of human locomotion in neurologic condition (K)	Design and implement evidence-based locomotor training in individuals with neurologic disorders (K,S)	- Lectures or continuing education courses - Self-directed review and reading	- Direct observation and ITER - Mini-CEX - Written exam	Medical expert
Postural control and neural control of balance	Describe the balance and postural control deficits in related to the damage in the neurologic structures (K)	Evaluate and treat balance and postural control deficits (K,S)	- Self-directed review and reading - Case based learning	- Direct observation and ITER - Mini-CEX - OSCE - Written exam	Medical expert
Regulation and modulation of reflexes	Identify the anatomical structures and physiological processes associated with regulation and modulation of reflexes (K)	Identify and implement an appropriate clinical intervention considering the presence of abnormal reflexes and/or spasticity in an	- Interactive lectures - Lectures or continuing education courses - Video demonstration	- Direct observation and ITER - Mini-CEX - Written exam	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
		individual with a neurologic disorder (K,S)			
Regulation and modulation of autonomic function	Link the effects of autonomic nervous system dysfunction to abnormal body responses (K)	Identify and apply appropriate and safe exercise intervention, given an individual with autonomic nervous system dysfunction (K)	- Attend lectures or continuing education courses - Self-directed review and reading of nervous system neurophysiology	- Mini-CEX - Written exam	Medical expert
Pain	Compare and contrast the etiology, clinical characteristics, and neurophysiological basis for neurogenic vs non-neurogenic pain (K)	Differentiate between neurogenic and non- neurogenic origins, based on examination findings of an individual with pain (K,S)	- Self-directed review and reading - Direct observation of practice - Case-based learning	- Written or oral exam - Cased-based discussion (CbD) - Short case	Medical expert
Movement sciences					
Biomechanics and kinesiology of movement systems	Explain the musculoskeletal and neuromuscular contributions to functional activity such as rolling, sit-to-stand transfers, walking, and stair navigation (K)	Identify an appropriate assessment method of neuromuscular and musculoskeletal impairments of an individual with functional task deficits (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences - Case-based learning	- Written exam - Cased-based discussion (CbD)	Medical expert
Kinematic and kinetic analysis of functional movements, postural control, and gait	Describe how the kinetics of functional movements are altered, given an individual with a neurological disorder (K)	Perform an objective analysis of functional movement and/or gait alternation of an individuals with neurologic disorders (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences - Case-based learning	- Direct observation and ITER - Written exam - Cased-based discussion (CbD)	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Pathokinesiology of functional movement such as gait, posture, and reaching	Relate the changes in functional movements to the damage of a specific neurologic structure (K)	Hypothesize corresponding movement changes and perform appropriate objective assessment of an individual with damage to a specific neurologic structure (K,S)	- Lectures or continuing education courses - Self-directed review and reading on the pathokinesiology of functional movements	- Direct observation and ITER - Written exam - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Motor control theories and principles including the theories and principles of skill acquisition	Describe treatment options and progressions for individual with functional deficits, using motor control theories and/or principles (K)	Choose appropriate interventions based on specific motor control theories and/or principles for individual with functional deficits (K,S)	- Self-directed review and reading - Observation experiences - Case studies learning	- Cased-based discussion (CbD) - Mini-CEX - Direct observation and ITER	Medical expert
Theories and principles of motor development	Describe the potential modification of interventions based on an individual's level of motor development (K)	Select appropriate interventions for individuals with neurologic disorders considering the knowledge of age-related changes in motor development (K,S)	- Self-directed review and reading - Observation experiences - Case studies learning	- Cased-based discussion (CbD) - Written exam (MCQs, SAQs) - Short and long cases	Medical expert
Effects of movement dysfunctions on body systems	Discuss the potential effect associated between the movement dysfunction and musculoskeletal system (K)	Appropriately modify treatment plan for an individual with a neurologic movement dysfunction, considering the effects on other body systems (K,S)	- Observation experiences - Case studies learning - Self-directed review and reading	- Direct observation and ITER - Case-based discussion (CbD) - Mini-CEX	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
B. Behavioral sciences					
Neuropsychology					
Cognitive processes (attention, memory, executive, language, and learning disorders)	Explain cognitive-motor interference theories and their relation to physical therapy assessment and treatment for an individual with neurologic disorders(K)	Address cognitive or behavioral impairments of an individual with a neurologic condition (K,S,A)	- Self-directed review and reading - Observation experiences - Case studies discussion	- Written exam - Direct observation and ITER - Cased-based discussion (CbD)	Medical expert Collaborator
Affective and behavioral disorders	Compare and contrast the pathophysiology and symptoms associated with the affective and behavioral disorders (K,)	Describe the individual's presentation and potential need for other healthcare team members for an individual with symptoms indicative of an affective and/or behavioral disorder (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences with a psychiatrist, psychologist, and social worker	- Written exam - Direct observation and ITER	Medical expert
Emotional and behavioral responses, and individualized coping strategies to illness and recovery	Identify the expected emotional and behavioral responses, and individualized coping strategies in individuals with specific neurologic disorders (K)	Perform appropriate assessments and interventions to minimize symptoms of psychological distress in individuals with neurologic disorders (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences with a psychiatrist, psychologist, and social worker	- Written exam - Direct observation and ITER	Medical expert
Influence of motivational factors and adherence strategies to facilitate behavioral change on illness and recovery	Describe potential motivational barriers associated with behavioral, non-motor aspects of the disorder for	Apply motivational factors and adherence strategies to facilitate behavioral	- Self-directed review and reading - Observation experiences	- Written exam - Direct observation and ITER	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	individuals with a specific neurologic disorder (K)	change on illness and recovery, given an individual with neurologic disorders (K,S)			
Impact of cultural and social systems on illness and recovery	Identify the impact of cultural and social systems on illness and recovery in patients with neurologic disorders (K)	Coordinate with other healthcare providers to report the benefits of treatment strategy to a local, national and/or international patient with neurologic disorders (K,A)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences	- Written exam - Direct observation and ITER - Peer evaluation	Medical expert Collaborator
Psychiatry					
Common psychiatric symptoms, syndromes, and classifications and the effect of psychiatric disease and treatment on cognition, learning, and function	Differentiate between the etiology, clinical characteristics, and neurophysiological basis of different psychiatric syndromes (K)	Plan and implement physical therapy treatment program for an individual with psychiatric symptoms (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences	- Direct observation and ITER - Written exam	Medical expert
Teaching and learning theory					
Principles of teaching and learning	Explain principles of adult teaching learning across the lifespan to patients with neurologic deficits, specifically addressing how they should change based on age (K)	Modify a home exercise program based on a patient's cognitive ability (K,S)	- Practice exercise and demonstration of teaching sessions - Observation experiences	- Direct observation and ITER - OSCE/Std Pt - 360°/peer evaluation	Communicator

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Development and implementation of educational planning process	Distinguish the components of educational planning processes (goals, needs, objectives, methods, evaluation) (K)	Develop a patient-specific educational planning process (K,S)	- Formulate educational planning process	- Direct observation and ITER - OSCE/Std Pt - 360°/peer evaluation	Communicator
Ethical issues in practice					
Ethics and related decision-making	Identify the essential components of an ethical decision-making model for an individual with neurologic condition (K)	Analyze an ethical issue involving a neurologic patient and link it to the rules, regulation, and professional requirement (K,A)	- Role model practice exercise - Case studies discussion	- Direct observation and ITER - 360°/peer evaluation - Logbook	Professional
Communication skills					
Communication skills, including: - Principles of empathy and behavior modification strategies - Communication listening and observation techniques - Conflict management techniques	- Explain conflict management techniques - Select and modify communication style to accommodate an individual with a cognitive impairment (K)	- Implement empathetic listening skills in an individual with a neurological disorder (K,S)	- Role model practice exercise - Case studies discussion - Simulation session	- OSCE - Direct observation and ITER - 360°/peer evaluation	Communicator
C. Clinical sciences (signs and symptoms, management)					
Pathology and pathophysiology, including congenital and acquired pathology/pathophysiology					
Body systems	- Illustrate how a specific neurologic condition affects other body systems - Communicator (K)	Apply and modify the physical therapy assessment, and treatment based on the impact of a	- Interactive lectures or continuing education courses - Self-directed review and reading	- Written exam - Direct observation and ITER - Mini-CEX - Simulatio	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
		specific neurological disorder on other body systems (K,S,)	- Observation experiences - Case studies discussion	ns	
Neuromuscular system	Describe the pathology/ pathophysiology changes of neuromuscular system for an individual with specific neurological disorder (K)	Explain the pathology/ pathophysiology of a neuromuscular disorder, given an individual with a specific neurological disorder (K)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences	- Written exam - Short case	Medical expert
Musculoskeletal system	Differentiate the pathology/ pathophysiology of musculoskeletal disorders for an individual with a specific neurological disorder (K)	Describe the impact of a specific musculoskeletal disorder on the patient's physical therapy treatment plan and prognosis for an individual with specific neurological and musculoskeletal disorders (K)	- Attend lectures or continuing education courses - Self-directed review and reading - Case studies discussion - Observation experiences	- Written test (MCQs, SAQs) - Short case	Medical expert
Cardiovascular and pulmonary systems	Describe how the pathology/ pathophysiology of the cardiovascular and pulmonary system disorders will affect the response to an exercise for an individual with a neurologic disorder (K)	Appropriately modify exercise program for a patient with a neurologic disorder based on knowledge of the pathology/ pathophysiology of their cardiovascular and pulmonary system disorders (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Case studies discussion - Observation experiences	- Written exam - Direct observation and ITER - OSCE - Mini-CEX	Medical expert
Physiological response to trauma and stress	Synthesize current available evidence to describe the physiological	Predict the prognosis for an individual with an acute neurological	- Lectures or continuing education courses - Self-directed	- Written - Direct observation and ITER	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	response to a specific traumatic neurologic injury (K)	disorder based on their clinical presentation, medical assessment, and personal/ environmental (K,S)	review and reading - Case studies discussion - Observation experiences	- OSCE - Mini-CEX	
Movement analysis					
Kinesiology, pathokinesiology and biomechanics	Describe the potential impact of movement impairment on the musculoskeletal system over time including the voluntary control of movement, including timing, speed, and sequencing, and considering an individual with a neurological condition (K)	Identify alternation in movement sequences, phases of movement, and possible underlying barriers to optimal functional movement throughout the task, by observing an individual with a neurological disorder performing a specific functional task (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Case studies discussion - Observation experiences	- Written exam - Direct observation and ITER - Mini-CEX	Medical expert
Principles of epidemiology					
Incidence and prevalence	Differentiate the prevalence, incidence, and signs and symptoms of different neurologic condition (K)	Construct a differential diagnosis of an individual with specific individual condition based on the knowledge of disease epidemiology (K,S)	- Lectures or continuing education courses - Self-directed review and reading	- Written test (MCQs, SAQs)	Medical expert
Prognostic indicators	Identify prognostic indicators for activity maintenance/reco	Design realistic physical therapy treatment plans of care for an	- Lectures or continuing education courses	- Written test (MCQs, SAQs)	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	very and physical therapy goals attainment of an individual with specific neurological condition (K)	individual with a specific neurological condition considering and cover all domains of ICF (K,S)	- Self-directed review and reading - Observation experiences		
Risk factors	Predict potential risk factors of patients with specific neurologic disorders and their effect on the physical therapy long-term plan (K)	Design an educational program to promote and maintain health and wellness of an individual with chronic neurologic disorder (K,S)	- Attend lectures or continuing education courses - Self-directed review and reading - Case studies discussion	- Written exam - OSCE - Direct observation and ITER	
Natural history, morbidity, and mortality	Develop health prevention and maintenance programs based on the knowledge of disease natural history, morbidity, and mortality of specific neurological condition (K)	Determine a patient's long-term physical therapy plan of care by apply the knowledge of the natural history, morbidity, and mortality of a neurologic disorder (K,S)	- Attend lectures or continuing education courses - Self-directed review and reading - Case studies discussion	- Written test (MCQs, SAQs)	Medical expert
Medical management (imaging, pharmacology, laboratory, surgery)					
Radiology and Imaging, such as MRI, CT scan, and x-ray	Considering an individual with specific neurologic condition, compare and contrast all neuroimaging techniques necessary to assess the condition in terms of indications, advantages and disadvantages, and cerebral landmarks (K)	Educate an individual with a neurologic disorder on types of imaging and explain the use of different imaging techniques in the management process (K,S)	- Attend lectures or continuing education courses - Self-directed review and reading - Observation experiences	- Written test (MCQs, SAQs)	Medical expert Communicator

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Clinical diagnostic procedures, such as EMG, NCV, and evoked potential exam	Provide rationale for the use of nerve conduction velocity (NCV) and/or electromyography (EMG) test to diagnose a specific neuromuscular disorder considering an individual with specific neurological condition (K)	Integrate and analyze results from electromyography and/or nerve conduction tests to evaluate and treat an individual with a neurologic disorder (K, S)	- Attend lectures or continuing education courses - Self-directed review and reading - Observation experiences	- Written test (MCQs, SAQs)	Medical expert
Laboratory tests	Differentiate normal and abnormal values for common blood laboratory that are important for deciding and selecting the therapeutic exercise program for an individual with neurologic condition (K)	Explain how abnormal lab result /finding can affect the physical therapy treatment program (K, S)	- Attend lectures or continuing education courses - Self-directed review and reading - Observation experiences	- Written test (MCQs, SAQs)	Medical expert
Surgical and nonsurgical interventions for neurologic disorders including the monitoring, and activity modifications related to medical procedures	Explain the most common surgical and nonsurgical interventions, considering individuals with specific neurologic conditions. Explain how to monitor and modify the physical therapy treatment of an individual undergoing medical procedures (K)	Perform a concise and accurate an educational session for an individual with a neurologic condition of all common surgical and nonsurgical interventions (K,S)	- Self-directed review and reading - Observation experiences - Lectures - Case-based learning - Problem-based learning	- Direct observation and ITER - Peer evaluation - Case-based discussion	Medical expert Communicator
Pharmacokinetics and	Compare and contrast the	Articulate and discuss with	- Self-directed review and	- Written exam	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
pharmacodynamics including abnormal drug reactions, interactions, and adverse dosage effects	pharmacological management including the normal and abnormal effects of given medication for an individual with neurologic condition (K)	the physician a possible need for modifying the drugs dose for an individual with a neurologic disorder to improve the patient level of participation in physical activity (K,S,A)	reading - Observation experiences	- OSCE - Case-based discussion - Short case	Collaborator
Medication effects on the body systems, including common short- and long-term effects	Describe the action mechanisms, mode of administration, effects, clinical applications, and side effects of certain medication used to treat specific symptoms for individuals with a neurological disorder (K)	Explain certain drug actions and effects to evaluate its effectiveness in maximizing the patient's level of activity (K)	- Self-directed review and reading - Observation experiences - Problem-based learning	- Written test (MCQs, SAQs) - Case-based discussion - Short case	Medical expert
D. Clinical reasoning and critical inquiry/scientific inquiry and practice					
Application of decision-making models to clinical practice	Identify decision-making algorithms and models to be applied to the plan of care of an individual with a neurologic condition (K)	Apply knowledge of decision-making algorithms and models to the plan of care for an individual with a neurologic condition (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Case studies discussion - Problem-based learning	- Direct observation and ITER - Case-based discussion - Short case - Written test (MCQs, SAQs)	Medical expert
ICF framework in clinical practice	Describe how to comprehensively assess an individual with a specific	Prioritize treatment plan for an individual with a neurologic	- Lectures or continuing education courses - Self-directed	- Direct observation and ITER - Case-	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	neurologic condition based on the ICF domains and factors (K)	condition based on the most significant alternation in body structure/function, activity limitations and participation restrictions contributing to those limitation (K,S)	review and reading - Case studies discussion - Problem-based learning	based discussion - Short case - Written test (MCQs, SAQs)	
Clinical research methodology	Describe optimal research designs to study a certain neurologic disease prognosis, and intervention (K)	Select and conduct the most appropriate statistical analysis test to answer a clinical research question (K,S)	- Research practice exercise - Interactive lectures - Small group discussion	- Written test (MCQs, SAQs) - Written test - Direct observation and ITER - Logbook	Scholar
Critical evaluation of test psychometrics and application of principles of measurement in clinical practice	Interpret a research article's data finding reported in data table to measures the precision (reliability, correlation, confidence interval, power) and accuracy (sensitivity, specificity, responsiveness, etc.) (K)	Apply knowledge retrieved from a research article finding to select and administrate the optimal assessment measures of a certain limitation of an individual with a neurologic condition (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Problem-based learning - Web-based learning	- Written test (MCQs, SAQs) - Direct observation and ITER - Logbook	Scholar
Critical appraisal	Critically evaluate a published article to select the best assessments/ interventions for an individual with specific neurologic condition (K)	Compare and evaluate current practice within a clinical setting regarding a certain used intervention for and individual with a neurologic	- Lectures or continuing education courses - Self-directed review and reading - Problem-based learning - Web-based	- Written test (MCQs, SAQs) - Direct observation and ITER - Logbook	Scholar

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
		condition versus current best available evidence (K,S)	learning		
II. PRACTICE EXPECTATIONS					
Professional competencies (roles, responsibilities/attitudes, and values)					
Communication skills					
Effective communication strategies including verbal, nonverbal, and assistive technologies	Identify effective communication strategies including verbal, nonverbal, and assistive technology to communicate with an individual with neurologic disorders and their family/caregivers, considering their personal, environmental, medical, and mental status (K)	Apply effective verbal, nonverbal, and assistive technology communication strategies to communicate with an individual with neurologic disorders and their family/caregivers, considering their personal, environmental, medical, and mental status (K,S,A)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences	- OSCE - Direct observation and ITER - 360°/peer evaluation - Case studies evaluation	Communicator
Empowers models/theories and strategies	Describe empowerment models/theories and/or strategies to build self confidence in an individual with neurologic disorders to manage their own health (K)	Apply empowerment models/theories and strategies to build self confidence in individual with neurologic disorders to manage their own health (K,S,A)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences	- OSCE - Direct observation and ITER - 360°/peer evaluation - Case studies evaluation	Communicator
Collaborative team management and transitions of care	Describe the best method for facilitating collaborative team management and transitions of care for individuals	Apply best method for facilitating collaborative team management and transitions of care for	- Self-directed review and reading - Simulation - Role play	- Direct observation and ITER - 360°/peer evaluation	Collaborator

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	with neurologic disorders (K)	individuals with neurologic disorders (K,S,A)			
Cultural and social factors	Explain how cultural beliefs and social factors can influence the care delivery for an individual with a neurologic condition (K)	Modify the plans of care for an individual with a neurologic condition considering the patient's cultural needs (K,S,A)	- Simulation - Role play - Observation experiences	- 360°/peer evaluation - Logbook	Health advocate Communicator
Teaching and education					
Educational needs assessment, including characteristics of individual learners and a group of learners.	Identify educational needs assessment of a different group of learners (e.g., undergraduate and post-professional students, other healthcare providers and patients/caregivers) in neurologic physical therapy (K)	Design an educational program for post-graduate students in neurologic physical therapy (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences - Problem-based learning	- Written test (MCQs, SAQs) - Direct observation and ITER - Logbook - 360°/peer evaluation	Scholar
The development of educational objectives based on educational needs with consideration of learning domains and level of expected outcomes for learners and groups of learners	Design educational objectives based on the learning needs of a different group of learners (e.g., undergraduate and post-professional students, other healthcare providers and patients/caregivers) in neurologic physical therapy (K)	Develop an educational program for post-graduate students in neurologic physical therapy (K,S)	- Interactive lectures or continuing education courses - Self-directed review and reading - Observation experiences - Small groups discussion	- Written test (MCQs, SAQs) - Direct observation and ITER - Logbook - 360°/peer evaluation	Scholar

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Appropriate teaching strategies and methods	Create an educational material for postgraduate student in neurologic physical therapy based on the educational objectives and needs assessment, and identify the most appropriate learning style (K)	Accurately modify an educational program and apply the preferred learning styles based on the learner's needs (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences - Small group discussion	- Written test (MCQs, SAQs) - Direct observation and ITER - Logbook - 360°/peer evaluation	Scholar
Educational plan implementation	Design an effective educational plan for individual with a specific cognitive dysfunction (K)	Apply an effective educational plan for individual with a specific cognitive dysfunction using appropriate teaching and learning theories based on outcome data and/or patient, family, or caregiver feedback (K,S)	- Interactive lectures or continuing education courses - Self-directed review and reading - Observation experiences - Small group discussion	- Written test (MCQs, SAQs) - Direct observation and ITER - Logbook - 360°/peer evaluation	Scholar Communicator
Assesses learning outcomes and modify teaching strategies based on outcomes	Evaluate the outcome of educational material for an individual with neurological condition based on assessment data (K)	Modify home program teaching strategy for an individual with neurological condition based on patient/caregiver performance and adherence (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences - Small group discussion	- Written test (MCQs, SAQs) - Direct observation and ITER - Logbook - 360°/peer evaluation	Scholar Communicator
Teaching junior fellow and other physical therapy colleagues to	Design an educational program to teach post-graduate	Demonstrate an educational session for post-graduate	- Lectures or continuing education courses	- Written test (MCQs, SAQs)	Scholar

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
enhance knowledge and skills in neurologic physical therapy	physical therapy students in a specific area of neurologic physical therapy field (K)	physical therapy students during mentored sessions (K,S)	- Self-directed review and reading - Observation experiences - Web-based learning	- Direct observation and ITER - Logbook - 360°/peer evaluation	
Educates other healthcare professionals about neurologic physical therapy	Develop a program to educate other member of the multidisciplinary team and explain the role of neurologic physical therapist in specific condition (K)	Demonstrate an educational session to other member of the multidisciplinary team to explain the role of neurologic physical therapist in specific condition (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences - Small group discussion	- Written test (MCQs, SAQs) - Direct observation and ITER - Logbook - 360°/peer evaluation	Scholar
Community education and social awareness activity	Propose an educational program to community groups about the risk factors of a specific neurological condition (K)	Present an educational program to community groups about the risk factors of a specific neurological condition (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Observation experiences - Debate	- Logbook - 360°/Peer evaluation - Direct observation and ITER - Written test (MCQs, SAQs)	Health Advocate Communicator
Consultation skills					
Providing consultative services to colleagues and other healthcare providers	Create a comprehensive treatment guideline based on available evidence-based sources for consultation within a neurologic subspecialty (K,S)	Provide consultative recommendations according to patient medical status (K,S)	- Self-directed review and reading - Observation experiences - Problem-based learning	- Direct observation and ITER - Logbook - 360°/peer evaluation	Collaborator Scholar
Contribute to multidisciplinary team decision-making	Provide appropriate interprofessional consultations for an individual with	Explain relevant recommendations for an individual with neurologic	- Observation experiences - Simulation - Role play - Case-based	- Direct observation and ITER - 360°/Pee	Collaborator

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	a neurologic disorder and their caregivers taking into consideration the patient's biopsychosocial factors (K,S)	condition and caregivers upon discharge (K,S)	learning -	r evaluation	
Condenses expert opinion about an individual with neurological dysfunction to other healthcare professionals and external institute	Explain the role of physical therapy within the multidisciplinary team to potential referral sources (K)	Produce an appropriate physical therapy opinion within communication to physicians (K,A)	- Observation experiences - Simulation - Role play - Web-based learning	- Direct observation and ITER - 360°/peer evaluation	Collaborator Scholar
Peer and utilization review	Completes peer and utilization review (K,S)	Discover missing or incomplete documentation during peer and utilization review (K,S,A)	- Self-directed review and reading - Observation experiences - Small group discussion	- Logbook - Direct observation and ITER - 360°/peer evaluation	Scholar Health Advocate
Evidence-based practice					
The efficacy and effectiveness of new assessment tools, outcome measure, interventions, and treatment concept and/or approaches	Identify scientific evidence regarding the efficacy and effectiveness of new assessment tools, outcome measure, interventions, and treatment concept and/or approaches for individuals with neurologic disorders (K,S)	Write a case study report to examine the efficacy and effectiveness of new assessment tools, outcome measure, interventions, and treatment concept and/or approaches for individuals with neurologic disorders (K,S)	- Self-directed review and reading - Debate - Small group discussion	- Logbook - Direct observation and ITER - Written test (MCQs, SAQs)	Medical expert Scholar Health advocate
Critical appraisal and translating evidence into practice	Describe the appropriate steps followed in supporting evidence-based practice (K)	Modify a care plan based on the best available evidence-based practice (K,S)	- Self-directed review and reading - Case study discussion - Debate - Small group discussion	- Logbook - Written test (MCQs, SAQs)	Medical expert Scholar

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Participates in conducting clinical research following ethical guidelines	Identify a clinical research question in the neurologic physical therapy area (K,S)	Participate in clinical research to investigate a clinical question in the neurologic physical therapy area (K,S)	- Self-directed review and reading - Problem-based learning - Debate	- Logbook - Written test (MCQs, SAQs)	Scholar
Participates in collecting and interpreting patient and client outcomes data	Identify appropriate method to collect patient's outcomes data of an individual with a neurologic condition (K,S)	Participate in collecting and interpreting patient's outcomes data of individual with a neurologic condition to improve the quality of service of an individual with a neurologic condition (K,S)	- Self-directed review and reading - Experiential learning - Case studies discussion	- Logbook - Direct observation and ITER	Scholar
Synthesizes information from a variety of sources to develop evidence- based clinical practice	Define knowledge translation models, strategies, and measures Explain its role in evidence- based practice (K)	Apply knowledge translation models, strategies, and measures to implement best evidence into clinical practice (K,S)	- Self-directed review and reading - Experiential learning - Case studies discussion	- Logbook - Written test (MCQs, SAQs)	Scholar
Prevention, wellness, and health promotion					
Health and fitness promotion	Develop a program to promote health and fitness Improve quality of life using the current available evidence for individuals and society (K)	Design and deliver wellness class for individuals with neurologic disorders (K,S)	- Participate in health promotion campaigns - Design health promotion campaigns - Provide teaching sessions - Case-based learning - Debriefing	- 360°/Peer evaluation - Logbook	Health Advocate
Screening programs to identify populations at risk	Identify the components of a screening program to	Develop and implement a screening program to early	- Self-directed review and reading - Debriefing	- Written test (MCQs, SAQs)	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	identify at-risk populations (K)	identify the risk of a populations having neurologic problems (K,S)	- Case studies discussion - Web-based learning	- Direct observation and ITER	
Social responsibility and advocacy					
Solutions to challenging problems for the individual such as access to health services, equipment, and community resources	Identify the disparities in healthcare services for patients with neurologic disorders such as the access to healthcare system, equipment, and community resources (K)	Perform audit of current healthcare service for individual with neurologic disorders to identify preliminary trends in characteristics and available service (K,A)	- Simulation - Role play practice exercise - Self-directed review and reading of government report, and national and international benchmarks	- 360°/Peer evaluation - Logbook	Health Advocate
Advocates for neurologically impaired individuals with government and non-government bodies including the health insurance companies	Review and interpret health insurance policy to advocate for patients with neurologic disorders (K)	Accurately document and justify the medical need for a durable medical equipment for an individual with a neurologic disorder, to be advocated through medical review process (K,A)	- Simulation - Role play practice exercise - Self-directed review and reading of policies and procedures - Small group discussion	- 360°/Peer evaluation - Logbook - Case-based discussion	Health Advocate
Promotes advanced neurologic practice at the local, regional, national, and/or international levels	Attend physical therapy conferences associated with advanced neurologic practice (K,A)	Present a poster/talk of how to promotes advanced neurologic practice at local, regional, national, and/or international physical therapy conferences (K,S,A)	- Attend lectures, conferences, or continuing education courses - Debriefing	- Direct observation and ITER - Logbook - Written test (MCQs, SAQs)	Scholar
Introduce the role neurologic physical therapy to other professionals and	Attend inter-professional conferences associated with	Participate at inter-professional task force to	- Attend lectures, conference, professional meeting or	- 360°/Peer evaluation - Direct	Collaborator Health Advocate

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
professional community/institutes	advanced neurologic practice (K,A)	improve neurologic physical therapy care standards (K,S,A)	continuing education courses - Debriefing	observation and ITER - Written test (MCQs, SAQs)	
Leadership					
Ethical principles in decision-making and interpersonal interactions	Justify ethical decisions based on current available evidence for individual with neurologic disorders (K)	Design a plan of physical therapy care for an individual with a neurologic disorder that includes consideration of ethical principles and interpersonal interactions (K,S,A)	- Self-directed review and reading of ethical documents - Attend lectures, conferences, or continuing education courses - Experiential learning	- 360°/Peer evaluation - Direct observation and ITER - Logbook - Case-based discussion	Professional
Mentorship skills including mentor others and seeks mentors	Describe the attributes of effective and non-effective mentoring strategies (K)	Conduct an effective mentoring session with other junior residents (K,S,A)	- Role modeling - Simulation - Web-based scenarios - Attend lectures, conferences, or continuing education courses	- 360°/Peer evaluation - Direct observation and ITER - Logbook	Leader
Conflicts and/or challenging resolves strategies	List different strategies of effective conflict management (K)	Effectively respond to challenging situations with an individual/caregiver with a neurologic disorder (K,A)	- Analyze clinical narrative scenarios - Role modeling - Simulation - Web-based scenarios	- 360°/Peer evaluation - Direct observation and ITER - Logbook	Leader
Translation of evidence into clinical practice	Describe knowledge translation and its application within clinical practice based on the current available literature (K)	Select and interpret evidence to support clinical interventions (K,S)	- Case-based learning - Small group discussion - Experiential learning	- Written test - ITER - CbD	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Use of evidence to formulate system policies and procedure	Define how evidence can contributes to policy and procedural change (K)	Design and Perform chart audit to assess staff adherence to clinical policies and procedures (K,A)	- Self-directed review and reading - Attend lectures, conferences, or continuing education courses - Small group discussion	- 360°/Peer evaluation - Direct observation and ITER - Logbook	Professional
Professional development					
Active reflection and self- evaluation	Identify the relevant between self-assessment and professional development (K)	Modify interactions method for an individual with a neurologic condition and/or caregiver based on self-assessment strategies (K,S)	- Self-directed review and reading on active reflection and self- evaluation - Experiential learning - Case studies discussion	- Written exam - 360°/Peer evaluation - Direct observation and ITER - Logbook	Medical expert Scholar
Facilitates a continued pursuit of additional and advanced knowledge, skills, and competencies	Create a professional development plan including the pursuit of advanced knowledge, skills, and competencies (K,S)	Implement specific clinical skills and competencies to obtain additional knowledge (S)	- Self-directed review and reading - Attend lectures, conferences, or continuing education courses - Experiential learning	- 360°/Peer evaluation - Direct observation and ITER - Logbook - Written test (MCQs, SAQs)	Scholar
B. Psychomotor skills in the patient/client management model					
History					
Implementing ICF as a framework for providing patient-centered care within the scope of neurologic physical therapy	Identify and integrate the personal and environmental factors into health restoration, promotion, and prevention of an individual with a neurologic condition (K)	Share collected information relevant to health restoration, promotion, and prevention of an individual with a neurologic disorder (K,S,A)	- Self-directed review and reading on ICF - Interactive lectures - Continuing education courses - Observation experiences - Experiential learning	- Written test (MCQs, SAQs) - Direct observation and ITER - Logbook	Medical expert Collaborator

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Integrates knowledge of disease with history taking	Justify the selected objective assessment of an individual with a neurologic disease based on relevant past medical history (K)	Perform a comprehensive medical history interview of an individual with a neurologic disease that integrates knowledge of disease (K,S)	- Self-directed review and reading - Interactive lectures - Continuing education courses - Experiential learning	- Direct observation and ITER - Written test (MCQs, SAQs) - Logbook	Medical expert
System Review					
Screening procedures	Plan a comprehensive objective assessment of an individual with a neurologic disorder based on your finding in the patient interview (K)	Perform objective assessments of an individual with a neurologic disorder based on the patient's specific clinical presentation, history, and plan of care goals (K,S)	- Case-based learning - Problem-based learning - Experiential learning	- Direct observation and ITER - Simulation - Written test (MCQs, SAQs) - Logbook	Medical expert
Red flags in neurologic conditions	Recognize red flags requiring urgent medical attention in an individual with neurologic condition (K)	Respond to signs and symptoms requiring urgent medical attention in an individual with a neurologic disorder (K,S)	- Self-directed review and reading on ICF - Interactive lectures - Continuing education courses - Experiential learning role play practice	- Direct observation and ITER - Written test (MCQs, SAQs) - Oral exam - Logbook - OSCE - DOPS	Medical expert
Patient and client examination					
Neurologic physical therapy tests and measures based on history and systems review	List important objective tests and measures based on the history taken and systems review for an	Prioritize important objective tests and measures based on the history taken	- Self-directed review and reading - Experiential learning - Role-play	- Direct observation and ITER - OSCE	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	individual with a neurologic disorder (K)	and systems review for an individual with a neurologic disorder (K,S)	practice	- Written test (MCQs, SAQs)	
Neurologic physical therapy tests and measures based on scientific merit and clinical utility	Analyze the scientific merit and clinical utility of tests and measures used to objectively examine an individual with neurologic disorders (K,S)	Select tests and measures with the best scientific merit and clinical utility to objectively examine an individual with neurologic disorders (K,S)	- Self-directed review and reading - Observation experiences - Case-based learning	- Direct observation and ITER - OSCE - Written test (MCQs, SAQs)	Medical expert
Using ICF to Selects assessment and measures covers all domains including body function and structures, activity limitations, and participation restrictions for an individual with a neurologic condition	Design an assessment plan and measures to examine an individual with a neurologic disorder across all ICF domains including body function and structures, activity limitations (K,S)	Select measures to assess patients with neurologic diagnoses across the ICF domains (K,S)	- Self-directed review and reading on ICF - Experiential learning - Problem-based learning	- Direct observation and ITER - OSCE - Written test (MCQs, SAQs)	Medical expert
Tests and measures					
Pain assessments	Compare and contrast different types of pain in neurologic disorders (K)	Accurately interpret tests and measures to assess pain (multidimensional, pain scales) in an individual with a neurologic disorder (K,S)	- Self-directed review and reading of pain assessment - Interactive lectures - Continuing education courses - Experiential learning - Case-based learning	- Direct observation and ITER - OSCE - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Range of motion, including muscle tone and flexibility	Describe different methods to assess range of motion, including muscle	Accurately perform and interpret tests to measure and	- Self-directed review and reading of range of motion	- Direct observation and ITER	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	tone and flexibility, in an individual with neurologic disorders (K)	assess range of motion, including muscle tone and flexibility in an individual with neurologic disorders (K,S)	assessment and assessment muscle tone and flexibility - Attend lectures - Observation experiences - Case studies discussion	- OSCE - Written exam - Cased-based discussion (CbD) - Mini-CEX	
Muscle performance, including strength, power, and endurance	Explain the method to assess muscle performance, including strength, power, and endurance in an individual with neurologic disorders (K)	Competently administer and accurately interpret method to assess muscle performance, including strength, power, and endurance in an individual with neurologic disorders (K,S)	- Self-directed review and reading of muscle performance - Attend lectures, conferences, or continuing education courses - Experiential learning case-based learning	- Direct observation and ITER - OSCE - Written test (MCQs, SAQs) - CbD - Mini-CEX	Medical expert
Endurance assessment	List common tests and outcome measures used to assess endurance in an individual with neurologic disorders (K)	Perform and interpret tests and measures to assess endurance in individuals with neurologic disorders (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning	- Direct observation and ITER - Written exam	Medical expert
Assistive technology, including orthotic, prosthetic, and durable medical equipment	Evaluate the patient's need for orthotic, prosthetic and/or and durable medical equipment with consideration of their indications, use, effectiveness, and safety (K,S)	Prescribe effective and safe assistive technologies for patients with neurologic disorders (K,S)	- Self-directed review and reading - Experiential learning case-based learning - Problem-based learning	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Static, dynamic, and functional balance	Describe the process of assessing an	Interpret tests and outcome measures used	- Self-directed review and reading on	- Direct observati	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	individual with neurological balance during static, dynamic, and functional activities (K,S)	to assess balance during static, dynamic, and functional activities in individuals with neurologic disorders (K,S)	balance assessment - Experiential learning - Case-based learning - Problem-based learning	on and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	
Joint integrity and mobility	Mention common tests and outcome measures used to assess joint integrity and mobility in an individual with neurologic disorders (K)	Perform and interpret tests and outcome measures that assess joint integrity and mobility in an individual with neurological condition (K,S)	- Self-directed review and reading on Joint integrity and mobility - Experiential learning - Case-based learning - Problem-based learning	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Sensory integrity of peripheral and central systems	Demonstrate sensory tests of the peripheral and central nervous systems for an individual with a neurologic disorder (K)	Administer and interpret sensory tests of the peripheral and central nervous systems in an individual with neurologic diagnoses (K,S)	- Self-directed review and reading on sensory assessment - Experiential learning - Case-based learning - Problem-based learning - Role play	- Direct observation and ITER - Written test (MCQs, SAQs) - CbD - Mini-CEX	Medical expert
Specialized sensory and motor tests	Describe specialized sensory and motor tests (e.g., the Dix Hallpike maneuver, positional testing) for an individual with a neurologic condition (K)	Administer and interpret specialized sensory and motor tests (e.g., the Dix Hallpike maneuver, positional testing) for an individual with neurologic condition (K,S)	- Self-directed review and reading on specialized sensory and motor tests - Experiential learning - Case-based learning - Problem-based learning	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Mental functions including consciousness, orientation, attention, cognition, and dual-task functions	Demonstrate tests and measures used to assess mental functions in an individual with neurologic disorders (K)	Administer and interpret tests and measures that assess mental functions in an individual with neurologic disorders (K,S)	- Self-directed review and reading on mental function - Experiential learning - Case-based learning - Problem-based learning	- Direct observation and ITER - Written test (MCQs, SAQs) - CbD - Mini-CEX	Medical expert
Coordination and movement pattern assessment	Describe tests and measures used to assess coordination and movement pattern in an individual with neurologic disorders (K)	Administer and interpret tests and measures used to assess coordination and movement pattern in an individual with neurologic disorders (K,S)	- Self-directed review and reading on coordination and movement pattern assessment - Experiential learning - Case-based learning - Problem-based learning	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Reflex integrity	Demonstrate tests and measures used to assess reflex integrity including normal and pathological in an individual with neurologic disorders (K,S)	Administer and interpret tests and measures used to assess reflex integrity including normal and pathological in an individual with neurologic disorders (K,S)	- Self-directed review and reading on Reflex integrity - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written exam - CbD - Mini-CEX	Medical expert
Cranial nerve integrity	Describe and interpret tests and measures used to assess cranial nerve integrity in an individual with neurologic disorders (K)	Administer and interpret tests and measures used to assess cranial nerve integrity in an individual with neurologic disorders (K,S)	- Self-directed review and reading on cranial nerve integrity - Experiential learning - Case-based learning	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
			- Problem-based learning - Review of videos	discussion (CbD) - Mini-CEX	
Motor functions of peripheral and central nervous system	Demonstrate the most common tests and measures used to assess motor functions of the peripheral and central nervous system in an individual with neurologic disorders (K,S)	Administer and interpret tests and measures used to assess motor functions of the peripheral and central nervous system to in an individual with neurologic disorders (K,S)	- Self-directed review and reading on motor function - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Vestibular system integrity and perception of sensory input, including vertical orientation, body schema, depth perception, neglect, and motion sensitivity	Report tests and measures used to assess vestibular system integrity and perception of sensory input, including vertical orientation, body schema, depth perception, neglect, and motion sensitivity in an individual with neurologic disorders (K,S)	Administer and interpret tests and measures used to assess vestibular system integrity and perception of sensory input, including vertical orientation, body schema, depth Perception, neglect, and motion sensitivity in an individual with neurologic disorders (K,S)	- Self-directed review and reading on vestibular system assessment - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Motor control measures	Describe the frequently used motor control measures to assess and classify movement control and performance in an	Administer and interpret motor control measures to assess and classify movement control and	- Self-directed review and reading on motor control - Experiential learning - Case-based learning	- Direct observation and ITER - Written exam - CbD - Mini-CEX	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	individual with neurologic disorders (K)	performance in an individual with neurologic disorders (K,S)	- Problem-based learning - Review of videos		
Task and motion analysis considering kinematic, kinetic, behavioral, and environmental factors	Analyze patient's tasks and movements considering kinematic, kinetic, behavioral, and environmental factors for an individual with neurological condition (K,S)	Select appropriate tests and measures to assess task and motion analysis considering kinematic, kinetic, behavioral, and environmental factors for an individual with neurological condition (K,S)	- Self-directed review and reading on task and motion analysis - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Ventilation and respiration, including pulmonary function and cough assessment	Report the basic assessment methods of ventilation and respiration, including pulmonary function and cough assessments in an individual with neurological condition (K,S)	Administer and interpret basic assessment methods of ventilation and respiration, including pulmonary function and cough assessments in an individual with neurological condition (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written test (MCQs, SAQs) -	Medical expert
Gait and mobility, including - Observational and objective analysis of biomechanics, kinematic and kinetic - Safety strategy - Analysis of ambulation and	Outline the phases of the gait cycle and the implications of certain activity limitation on patient's mobility Summarize and outline gait cycles of normal and	Perform observational and/or objective gait analysis for an individual with neurologic disorders (K,S)	- Self-directed review and reading on gait and mobility analysis - Experiential learning - Case-based learning - Problem-based learning	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussio	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
wheelchair functional mobility to examine activities and participation	pathological gait (K,S)		- Review of videos	n (CbD) - Mini-CEX	
Self-care and domestic life	Demonstrate tests and outcome measures used to assess self-care and domestic life in an individual with neurologic disorders (K,S)	Administer and interpret tests and outcome measures used to assess self-care and domestic life in an individual with neurologic disorders (K,S)	- Self-directed review and reading on self-care and domestic life - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written test (MCQs, SAQs) -	Medical expert
Quality of life measures	Describe tests and measures used to assess quality of life, including disease and non-disease specific measures in patients with neurologic disorders (K)	Administer and interpret tests and measures used to assess quality of life, including disease and non-disease specific measures in patients with neurologic disorders with neurologic disorders (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written test (MCQs, SAQs) -	Medical expert
Environmental factors (domestic, educational, work, community, social, and civic life)	Summarize the impact of environmental factors on the patient's quality of life and physical therapy outcomes in an individual with neurologic disorders (K)	Administrate appropriate questionnaires and subjective reporting measures to report the impact of environmental factors on the physical therapy plan of care (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written test (MCQs, SAQs) -	Medical expert
Community, social, and civic life integration, and reintegration	Use appropriate tests and measures to assess community, social	Interpret tests and measures used to assess community, social and civic	- Self-directed review and reading - Experiential learning	- Direct observation and ITER - Written	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	and civic life integration and reintegration in an individual with neurologic disorders (K,S)	life integration and reintegration in an individual with neurologic disorders (K,S)	- Case-based learning - Problem-based learning - Review of videos	test (MCQs, SAQs) -	
Ergonomics and return-to-work assessments	Explain legislation and administrative processes related to return-to-work accommodations and modifications applicable for an individual with neurologic disorders (K)	Perform an ergonomic workspace assessment and return-to-work training for an individual with neurologic disorders (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written test (MCQs, SAQs) -	Medical expert
Evaluation					
Observational assessment of movement and functional activity	Determine movement and functional impairment in an individual with a neurological disorder using observational skills without the use of objective measurement tools (K,S)	Interpret observed movements and function impairment in an individual with neurologic disorders (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Examination of findings across ICF domains that require remediation or compensatory strategies	Summarize available evidence to describe how movement impairments respond to interventions in an individual with neurologic condition (K)	Develop a plan of care that appropriately facilitating neurologic recovery where possible and compensatory behaviors were indicated in an individual with a neurologic disorder (K,S)	- Self-directed review and reading on ICF - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert
The link between personal/environmental factors, and the patient's and	Design a plan of care for an individual with a neurological	Adapt the plan of care for an individual with a neurological	- Self-directed review and reading - Experiential	- Direct observation and ITER	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
caregiver's expressed goals(s)	condition considering the personal and environmental factors and the patient's personal preferences and specific participation goals (K,S)	condition considering the personal and environmental factors and the patient's and caregiver's expressed goals(s) (K,S)	learning - Case-based learning - Problem-based learning - Review of videos Role play	- Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	
Interdisciplinary team examination and assessment	Integrate findings by other members of the interdisciplinary team into the physical therapy assessment and plan of care for an individual with a neurologic disorder (K,S.A)	Modify the physical therapy plan of care based on examination findings by other members of the interdisciplinary team for an individual with neurologic condition (K,S)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos role-play session	- Direct observation and ITER - CbD - Mini-CEX - Multisource feedback	Collaborator
Appropriate clinical judgements based on patient assessment and examination	Summarize objective findings to determine appropriate physical therapy assessment and plan of care (K)	Identify a physical therapy diagnosis and write a plan of care that appropriately integrates subjective and objective findings from the examination of an individual with a neurologic diagnosis (K,S)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX - Written test (MCQs, SAQs)	Medical expert
Diagnosis					
Differential diagnosis of neurological disorders through emergent and non-emergent signs and symptoms	Link the subjective and/or objective findings to the change in neurologic signs or symptoms (K,S)	Interpret subjective and/or objective findings that indicate a meaningful change in neurologic signs or symptoms in an individual	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
		with a neurologic disorder (K,S)	videos - Role play session	discussion (CbD) - Mini-CEX	
Diagnoses of body function, structures, and functional performance	Differentiate between subjective and objective body function/structure and functional performance for an individual with neurologic disorder, and if the findings are amenable to physical therapy interventions (K,S)	Outline subjective and objective findings which would be consistent and inconsistent with a specific neurologic condition, and if the findings are amenable to physical therapy interventions (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role play session	- Direct observation and ITER - Written test (MCQs, SAQs) - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Patient's referral to other rehabilitation services	Identify which examination and/or treatment beyond the scope of physical therapy are necessary and make the appropriate referral for an individual with neurologic condition, (K,S)	Collaborate with an interdisciplinary team member to refer an individual with neurological condition for examination and/or treatment (K,S,A)	- Self-directed review and reading - Case studies discussion - Role play session	- Direct observation and ITER - 360/peer evaluation - Written test (MCQs, SAQs) - CbD - Mini-CEX	Collaborator
Prognosis					
Analyzes barriers that limit achieving the optimal treatment outcomes for an individual with neurologic conditions	Identify barriers that may limit an individual with a neurologic disorder from achieving optimal outcomes (K,S)	Modify a treatment plan based on the barriers that may limit an individual with a neurologic disorder from achieving the optimal outcomes (K,S)	- Debriefing - Role play session - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Potential improvement and time for recovery for an individual	Summarize available evidence regarding recovery progress for an individual	Develop a prognosis for an individual with a neurological disorder (K,S)	- Role modeling - Role play session - Experiential learning	- Direct observation and ITER - Cased-	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
with a neurologic condition	with neurologic disorders (K,S)		- Case-based learning - Problem-based learning - Review of videos	based discussion (CbD) - Mini-CEX	
Patient centered goal setting	Explain how important is to include an individual with a neurologic condition, their family and /or caregiver in the process of goal setting to achieve an optimal level of improvement (K)	Involve the individual, their family and/or caregiver in collaborative goal setting (K,S,A)	- Role modeling Role play - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert Communicator
Effective treatment plan	Compare and contrast multiple plans of care and describe how to best prioritize the intervention, recovery process, patient's goals, resources, prevention, health, and wellness (K,S)	Accurately implement a plan of care that prioritizes interventions related to the intervention, recovery process, patient's goals, and resources, prevention, health, and wellness (K,S)	- Role modeling Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Intervention					
Clinical decision-making and prioritization of interventions					
Short term and prevention interventions plan with consideration of individual's body function and structure, activity limitations, and participation restrictions	Design a specific physical therapy interventions plan based on potential short-term impact and secondary prevention benefits base on your examination finding and body function/ structure impairments to improve patient's	Implement and, if needed, modify physical therapy interventions plan based on potential short-term impact and secondary prevention benefits base on your examination finding and body function/	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	activity limitations, and participation restrictions (K,S)	structure impairments to improve an individual with neurologic deficit's activity limitations, and participation restrictions (K,S)			
Interventions based on physiological or behavioral changes across the lifespan	Design a physical therapy intervention related to specific physiological and behavioral changes across the lifespan in an individual with neurologic disorders (K,S)	Justify and, if needed, modify a selected intervention related to anticipated diagnosis-specific physiological and behavioral changes across the lifespan in an individual with neurologic disorders (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Optimal interventions based on the type and severity of impairments in body function and structures, activity limitations, and participation restrictions	Explain the physical therapy intervention strategies based on the type and severity of an individual's case with specific neurological impairments in body function and structures, activity limitations, and participation restrictions (K)	Justify and, if needed, modify plan of physical therapy intervention to an individual with a neurologic disorder based on the type and severity of the patient's body function/ structure impairments, activity limitations, and participation restrictions (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX - DOPS	Medical expert
Risk versus benefits when selecting interventions	Assess potential risks versus benefits of physical therapy interventions, for	Design a physical therapy intervention for an individual with specific	- Self-directed review and reading - Observation experiences	- Direct observation and ITER - Cased-	Professional

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	an individual with specific neurological condition (K,S)	neurological impairment that maximizes potential benefit while minimizing risk (K,S,A)	- Case studies discussion - Role-play session	based discussion (CbD)Mini-CEX - Multisource feedback	
Modifying intervention plan based on ongoing evaluation	Describe the metacognition and strategies for reflection in action specific to clinical decision making regarding the modification of interventions plan based on ongoing evaluation of an individual with a neurologic disorder (K)	Modify physical therapy interventions plan to optimize patient outcomes based on the findings of the re-evaluation for an individual with neurological condition (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Communication with patient, caregiver, and family to discuss intervention	Identify the best communication strategies to facilitate effective negotiation of interventions with a patient caregiver and family (K)	Effectively negotiate an intervention plan with patient, caregiver and family (K,S)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Simulation - Written test (MCQs, SAQs)	Communicator
Communication with patient, caregiver and/or family to meet the individual's diverse needs based on the personal and environmental factors, such as cultural, age, gender educational level, health	Identify various communication strategies to meet the needs of the patient, caregiver and/or family, considering the personal and environmental factors, such as cultural, age, gender educational level,	Collaborate with other healthcare profession to implement effective alternative or augmentative communication strategies for a patient with a neurologic disorder (K,S,A)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Written test (MCQs, SAQs) - Simulation	Communicator Collaborator

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
literacy and cognitive needs	and cognitive needs (K)				
Patient, caregiver and/or family interview skills, include asking appropriate questions which help to determine an in-depth understanding of the patient's problems	Conduct a patient interview and categorize questions and responses based on the applicable principle(s) of neural plasticity in an individual with neurological condition (K,S)	Conduct a semi structured interview with an individual with neurological condition to guide further discussion related to understanding the patient's problems (K,S)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Simulation - Mini-CEX	Medical expert Communicator
Coordinates patient management across care settings, disciplines, and community	Describe the patient flow in healthcare system and available regional resource to ensure an individual with neurologic condition continuity of treatment across healthcare system (K)	Explain the plan of physical therapy treatment continuity of care for an individual with a neurologic condition with patient, caregiver, family, and the interdisciplinary team (K,A)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - 360°/Peer evaluation - DOPS - Mini-CEX	Communicator Collaborator
Patient and client instruction					
Patient, caregiver, and family education on diagnosis, prognosis, intervention, responsibility, and self-management	Identify the best education method for patient, caregiver and/or family to discuss the patient's diagnosis, prognosis, intervention, responsibility, and self- management within the plan of care (K)	Perform an education session with a patient, caregiver and/or family to discuss the patient's diagnosis, prognosis, intervention, responsibility, and self-management within the plan of care (K,S)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Simulation - Written test (MCQs, SAQs)	Communicator
Patient, caregiver, and family	Identify the best education method for patient,	Effectively perform an education	- Experiential learning - Case-based	- Direct observation and	Communicator

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
education on risk management	caregiver and/or family to discuss the risk reduction, prevention, and health promotion (K)	session with a patient, caregiver and/or family to discuss your strategy to reduce the risk, prevention, and health promotion (K,S,A)	learning - Problem-based learning - Review of videos - Role-play session	ITER - Cased-based discussion (CbD) - Simulation - Written test (MCQs, SAQs)	
Patient, caregiver, and family education using advanced technology, such as web-based resources	Identify a web-based resources focused on patient education for an individual with neurological condition, caregiver and/or family (K)	Effectively administer an education session for an individual with neurologic condition, caregiver and/or and family using web-based resources (K,S)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session - Web-based learning	- Direct observation and ITER - CbD - Simulation - Written test (MCQs, SAQs)	Communicator
Procedural interventions—therapeutic exercise					
Exercise program related to activity limitations	Summarize available evidence regarding the designing of exercise programs addressing activity limitations for an individual with a neurologic disorder (K)	Design and implement exercise program addressing activity limitations for an individual with a neurologic disorder (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX - DOPS	Medical expert
Appropriate timed, intensive exercise program	Explain the timing, intensity, and dosage of exercise programs to maximize the patient's mobility in an individual with neurologic disorders (K,S)	Develop an appropriate timed, intensive exercise program to maximize the patient's mobility in an individual with neurologic disorders (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - CbD - Mini-CEX - Written test (MCQs, SAQs)	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
			- Role-play session		
Relationship between exercise biomechanics and the intended outcome at the task level including the impact of faulty biomechanics on short- and long-term health	Appropriately incorporates and justify exercise biomechanics constructs to improve patient's functional activity in an individual with a neurologic disorder (K,S)	Provide an exercise intervention for an individual with a neurologic condition, which appropriately considers biomechanical considerations for the intended treatment task (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - CbD - Mini-CEX - Written test (MCQs, SAQs)	Medical expert
Exercise program for multisystem impairments	Design an exercise program for an individual with a neurologic condition considering the cardiovascular, musculoskeletal, and neurologic impairments (K,S)	Provide exercise intervention to treat a given neurologic impairment while appropriately considering the cardiovascular and musculoskeletal comorbidities (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos Role play session - Role modeling	- Direct observation and ITER - CbD - Mini-CEX - DOPS - Written test (MCQs, SAQs)	Medical expert
Aerobic conditioning programs	Summarize available evidence regarding the use of aerobic training for individuals with a neurologic disorder (K,S)	Provide evidence- based aerobic training intervention for an individual with a neurologic disorder (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Balance training programs	Design a balance training program based on patient's structure/function impairment, activity limitations and participation	Implement a balance training intervention for an individual with a neurologic disorder based	- Self-directed review and reading - Observation experiences - Case studies discussion	- Direct observation and ITER - Cased-based discussio	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	restrictions and explain the factors that influence selection of a balance-training program for an individual with a neurologic disorder (K,S)	on body structure/function impairment, activity limitations, and participation restrictions (K,S)	- Role-play session	n (CbD) - Mini-CEX - Written test (MCQs, SAQs)	
Therapeutic exercise and physiological findings and behavioral responses	Describe potential exercise modifications in response to pain complaints in an individual with a neurologic disorder (K)	Modify an exercise intervention based on the patient's pain complaints in an individual with a neurologic disorder (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - CbD - Mini-CEX - Multisource feedback	Medical expert
Procedural interventions—functional training in self-care and in domestic, education, work, community, social, and civic life					
Interaction between multiple body system structure/function impairments, activity limitations, and participation restrictions with a consideration of personal and environment factors	Describe the interaction between structure/function impairments, activity limitations, and participation restrictions, and how the personal and environmental factors can affect the functional status of individuals with neurologic disorders (K)	Analyze the interaction between structure/function impairments, activity limitations, and participation restrictions, and how the personal and environmental factors can affect the functional status of individuals with neurologic disorders (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role-play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX - DOPS - Written test (MCQs, SAQs)	Medical expert
Chronic disability management	Synthesize available evidence regarding a certain problem related to chronic disability that are amenable to	Differentiate between certain problems related to chronic and/or disability that are amenable to	- Self-directed review and reading - Experiential learning - Case-based learning	- Direct observation and ITER - Cased-based discussio	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	training in an individual with neurologic disorders (K,S)	intervention versus those that require a compensatory approach in an individual with neurologic disorders (K,S)	- Problem-based learning - Review of videos - Role-play session	n (CbD) - Mini-CEX - Written test (MCQs, SAQs)	
Participate in domestic training program including; education, work, community, social, and public activities	Summarize available literature on physical therapy training program that enhances the participation of An individual with neurologic disorders in self-care and domestic, education, work, community, social, and public activities (K)	Provide training activity to enhance patient's participation in education, work, community, social, and public activities (K,S)	- Experiential learning - Participate in health promotion campaigns - Design health promotion campaigns - Provide teaching sessions - Review of videos - Problem-based learning	- 360°/Peer evaluation - Logbook - Written test (MCQs, SAQs)	Medical expert
Environmental modifications to maximize safety, prevent injury, optimize functional independence and participation	Identify barriers to patient's functional independence and participation and recommend all necessary modification to the patient's environment (K)	Assess patient environment including home, work, school, and community and make recommendations for environmental modifications to improve the neurological condition of an individual's to provide functional independence and participation (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert Health Advocate
Task-specific training, considering appropriate timing, intensity, and	Synthesizes available evidence on task-specific training to determine the appropriate	Perform task-specific training at the appropriate time,	- Self-directed review and reading - Experiential learning - Case-based	- Direct observation and ITER - Cased-based	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
dosage to maximize outcomes	timing, intensity, and dosage needed to maximize outcomes for an individual with neurologic disorders (K,S)	intensity, and dosage to maximize outcomes for an individual with neurologic disorders (K,S)	learning - Problem-based learning - Review of videos - Role play session	discussion (CbD) - Mini-CEX	
Biofeedback to facilitate skill acquisition	Review the literature to identify manual assistance techniques, cueing strategies, and feedback types to promote skill acquisition for an individual with neurologic condition (K,S)	Provide personalized manual assistance techniques, cueing strategies, and feedback types to promote skill acquisition for an individual with neurologic condition (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Intervention adjustment based on the interpretation of body movement and function	Analyze patient movements during interventions and adjust the physical therapy intervention as needed (K,S)	Evaluate patient movements during the physical therapy intervention and adjust the intervention as indicated (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Advanced technologies to promote skill training and acquisition, such as virtual reality, robotics, and assistive technology	Summarized evidence regarding available and emerging advanced technologies used to promote skill training and acquisition, such as virtual reality, robotics, and assistive technologies for	Interprets motion analysis findings to maximize skill acquisition in an individual with a neurologic disorder (K,S)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	an individual with a neurologic disorder (K)				
Procedural Interventions – manual therapy techniques					
Manual therapy	Synthesizes available evidence recommending the use of manual therapy interventions on an individual with neurologic disorders (K,S)	Apply manual therapy techniques, for an individual with neurologic disorders (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos - Role play session	- Direct observation and ITER - Cased-based discussion (CbD) - Mini-CEX	Medical expert
Procedural Interventions—prescription, application, and, as appropriate, fabrication of devices and equipment, including assistive, adaptive, orthotic, protective, supportive, or prosthetic equipment					
Assistive device and durable medical equipment for complex cases	Identify various mobility-related devices and medical equipment, such as orthoses and prostheses used to improve the mobility of an individual with neurologic disorders (K)	Select the appropriate assistive device to improve the patient mobility and refer the patient to the orthotic and prosthetic specialist, given an individual with a neurological deficit and mobility restriction (K,S)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion - Multisource feedback - Mini-CEX	Medical expert
The impact of the assistive device and durable medical equipment on the biomechanics and efficiency of movement	Compare and contrast the potential impact of various assistive device and durable medical equipment on the biomechanics of certain functional	Justify selection of a specific assistive device and durable medical equipment for a patient with a neurologic disorder (K,S)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
	activity on an individual with a neurologic disorder (K)			- Written test (MCQs, SAQs)	
The impact of the assistive device and durable medical equipment across a wide range of functional activities and participation	Identify the potential impact of assistive device and durable medical equipment use on certain functional activity and participation in society of individuals with neurologic disorders (K)	Perform community-based training for an individual with neurologic condition using an assistive device and/or medical equipment prescribed specifically to increase individuals' participation (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion - Written test (MCQs, SAQs)	Medical expert
Assistive technology (AT) to optimizes activity and participation	Identify different types of assistive technology that optimize activity and participation for individuals with neurologic disorders (K)	Prescribe or recommend assistive technology that effectively optimizes activity and participation for an individual with neurologic disorders (K,S)	- Lectures or continuing education courses - Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion - Written test (MCQs, SAQs)	Medical expert
Orthotics and prosthetic for neurologic population	Identify the most appropriate orthotic/ prosthetic to optimize function for individuals with neurologic disorders (K)	Select the most appropriate orthotic/prosthetic to optimize function for individuals with neurologic disorders (K,S)	- Interactive lectures - Continuing education courses - Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning	- Direct observation and ITER - Cased-based discussion - Written test (MCQs, SAQs)	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
			- Review of videos		
Procedural interventions—airway clearance techniques					
Physical therapy interventions to maximize pulmonary function	Demonstrate positional and functional interventions to maximize pulmonary function (K,S)	Apply physical therapy interventions to maximize pulmonary function among complicated neurological patients (K,S)	- Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - CbD - Written test (MCQs, SAQs)	Medical expert
Procedural interventions—integumentary repair and protective techniques					
Pressure injury prevention and management using equipment, such as pressure mapping, seating systems, and cushion and orthotic prescriptions	Explain the potential contributions of pressure mapping, seating systems, cushions, and orthotics to prevent and manage pressure injury in an individual with neurologic condition (K)	Select the appropriate equipment to manage pressure injury in an individual with neurologic condition (K,S)	- Interactive lectures - Continuing education courses - Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion - Simulation - Written test (MCQs, SAQs)	Medical expert
Pressure injury prevention and management through education, exercise, positioning, and mobility and activity prescription	Discuss roles of education, exercise, positioning, mobility, and activity prescription in preventing and managing pressure injury (K,S)	Provide appropriate education, exercise, positioning, mobility, and activity prescription to manage pressure injury in an individual with neurologic condition (K,S,A)	- Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion - Written test (MCQs, SAQs)	Medical expert Scholar Collaborator Communicator
Procedural interventions—electrotherapeutic modalities					

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
Application of electrotherapeutic modalities in neurologic cases	Describe the use of electrotherapeutic modalities to improve the functional ability of an individual with a neurologic disorder (K)	Incorporate selected electrotherapeutic modalities into physical therapy interventions to promote functional activity in an individual with a neurologic disorder (K,S)	- Interactive lectures - Continuing education courses - Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion - Simulation - Written test (MCQs, SAQs)	Medical expert
Electrotherapeutic modalities with knowledge of plasticity, neurologic pathology, and recovery patterns	Describe the effect of using electrotherapeutic modalities on plasticity, neurologic pathology, and recovery patterns for an individual with a neurologic condition (K)	Design and implement an intervention utilizing electrotherapeutic modalities for a patient with a neurologic disorder (K,S)	- Interactive lectures - Continuing education courses - Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion - Simulation - Written test (MCQs, SAQs)	Medical expert
Outcome assessments					
Outcome measures in neurologic physical therapy	Summarize the available evidence regarding appropriate outcome measure selection for a patient with a specific neurologic disorder (K,S)	Select appropriate outcome measures based on the patient's acuity, diagnosis, prognosis, and practice setting (K,S)	- Interactive lectures - Continuing education courses - Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of	- Direct observation and ITER - Cased-based discussion - Simulation - Written test (MCQs, SAQs)	Medical expert

DRP topic	Sample didactic objectives	Sample clinical practice objectives	Sample instructional methods	Sample methods of assessment	Competencies
			videos		
Adjustment of physical therapy treatment plan based on interpretation of outcome measure results	Explain how treatment modification strategies can happen within and across episodes based on the interpretation of outcome measure results (K)	Accurately interpret outcome measure results to determine the need for physical therapy treatment adjustment in an individual with neurologic condition (K,S)	- Interactive lectures - Continuing education courses - Self-directed review and reading - Experiential learning - Case-based learning - Problem-based learning - Review of videos	- Direct observation and ITER - Cased-based discussion - Simulation - Written test (MCQs, SAQs)	Medical expert

K: Knowledge S: Skill A: Attitude

The original neurologic description of residency practice (DRP) has been developed by the American Board of Physical Therapy Residency and Fellowship Education (ABPTRFE) and can be accessed through the American Physical Therapy Association (APTA) website.

Appendix II: Weekly Clinical Mentoring Form

Resident's name: .....

Date of mentoring: .....

Rotation name: .....

Total number of hours spent mentoring the resident this week:

.....

Mentor's name/ training center name: .....

Please list the type of all patient(s) seen during mentoring session(s) this week

1. .....
2. .....
3. .....
4. .....

Please list the goal of mentoring session/s and topic been discussed, competency and learning domains

Goal of mentoring session(s)	Topic been discussed	Competency	Learning domains

List the types of feedback the resident has received, including strengths and areas for improvement

Type of feedback the resident has received	Strengths	Areas for improvement

List what future task has the resident been given for next mentoring session

1. .....
2. .....
3. .....
4. .....

Clinical skill		Comment
EXAMINATION TASKS	Identify problems/concerns	
	Obtain symptom history	
	Screen for disease/complications	
	Administer tests and measures	
	- Community/work integration	
	- Level of pain	
	- Posture/structural assessment	
	- Gait/balance assessment	
	- Integumentary tissue quality	
	- Circulatory assessment	

	Clinical skill	Comment
	- Sensory Integrity	
	- Reflex Integrity	
	- Active range of motion	
	- Motor function/coordination	
	- Joint integrity	
	- Muscle performance	
	- Other tests and measures	
EVALUATION TASKS	Interpret data from history	
	Develop working hypothesis	
	Determine appropriateness of physical therapy	
	Plan tests and measures	
	Respond to emerging data from patient evaluation	
	Interpret data from PE	
	Correlate history and PE findings	
	Identify cause of problem	
	Select Intervention approach	
	Respond to emerging data from prescription medication	
DIAGNOSIS TASKS	Establish diagnosis	
	Determine Intervention approach	
PROGNOSIS TASKS	Predict optimal level of function	
	Establish plan of care	
	Choose assessment measures	

Clinical skill		Comment
INTERVENTION TASKS	Provide patient education	
	Implement therapeutic exercise instruction	
	Implement functional training	
	Implement manual therapy procedures	
	Administer protective/assistive devices	
OUTCOMES REVIEW	Review outcomes related to prevention	
	Review functional limitations outcomes	
	Review disability remediation outcomes	
	Review patient satisfaction outcomes	

0 = Not Acceptable

1 = Minimal level of competence

2 = Superior level of competence

3 = Exceptional level of competence

Appendix III: End-of-Rotation Procedures Performance Assessment Tool

Clinical Rotation: General Neuro Physical Therapy Rotation

Year: One

Duration: Three months

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Clinical instructor will assess the resident ability to present basic knowledge and skills in the following topics					
Demonstrate an understanding of neurologic physical therapy service for an individual with a neurological condition					
Perform a patient centered neurologic physical therapy assessment using the ICF main domains and factors including body function and structures, activity limitations, and participation restrictions and personal and environment factors					
Identify red flags, signs, and symptoms that require urgent action					
Complete risk assessment and risk-benefit analysis					
Using standardized, valid, and reliable tests and measures to assess the following:					
- Mental and cognitive functions including orientation, attention, cognition, and dual-task functions					
- Joint integrity and mobility					

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
- Muscle performance, including strength, power, and endurance					
- Range of motion, including muscle extensibility and flexibility					
- Reflex integrity, including normal and pathological					
- Pain assessment (multidimensional pain scales)					
- Aerobic capacity/endurance					
- Static, dynamic, and functional balance during with or without the use of assistive devices and/or equipment					
- Posture and body alignment					
- Perception including body schema, orientation, neglect, and motion sensitivity					
- Peripheral and central systems sensory integrity					
- Specialized motor and sensory (positional testing, the Dix Hallpike maneuver)					
- Impairment-based measures to describe body function and structure					
- Motor functions of peripheral and central nervous system					
- Motor control measures to assess and classify movement control and performance					
- Task and motion analysis considering kinematic, kinetic, behavioral, and environmental factors					

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
- Functional performance measures, including measures used for classification, prognosis, and to examine activities and participation					
- Social and community participation					
- Cranial nerve integrity					
- Environmental factors including domestic, work, educational, community, social, and civic life					
- Dexterity and coordination					
- Gait, locomotion, and mobility in different environments with and without devices and equipment					
- Quality-of-life measures					
- Activity of daily living and self-care and domestic life					
- Ergonomics and return-to-work assessments					
Predict a present or potential disability based on history - taking and examination					
Use the examination finding to develop clinical judgments					
Integrate other healthcare professionals examination findings to the physical therapy treatment plan					
Identify and analyzes the difficulties that limit the individual with neurologic condition in achieving his/her optimal outcomes					
Collaborate and include individuals, caregivers, and families in the process of goal-setting					

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Develop a treatment plan that prioritizes interventions related to the recovery process, patient and client goals, resources, prevention, health, and wellness					
Develop a physical therapy treatment program enhancing the movement patterns, motor control and motor learning					
Integrate specific physical therapy treatment program to treat and improve hypertonicity, rigidity, strengthening, functional ability and mobilization for the neurological patient					

Appendix III a: End-of-Rotation Procedures Performance Assessment Tool

Clinical Rotation: MSK Physical Therapy Rotation (Outpatient)

Year: One

Duration: Two months

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Clinical instructor assesses the resident's ability to present basic knowledge and skills in the following:					
Conducting a comprehensive clinical assessment for an individual with musculoskeletal conditions including:					
- Low back pain with or without radiculopathy					
- Knee osteoarthritis					
- Neck pain with or without radiculopathy					
- Knee ligamentous injury					
- Shoulder adhesive capsulitis					
- Rotator cuff/impingement syndrome					
- Long bones fractures					
- Pelvis/hip pain					
- Tennis elbow					
Design and provide an effective management plan for musculoskeletal disorders					

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Appropriate application of treatment modalities for musculoskeletal patient					
Efficient patient communication and adherence to policies for proper collaboration, documentation, and reporting					

Appendix III b: End-of-Rotation Procedures Performance Assessment Tool

Clinical Rotation: Post-surgery Orthopedics PT

Year: One

Duration: Two months

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Clinical instructor assesses the resident ability to present basic knowledge and skills in following:					
Perform an assessment and design a physical therapy treatment plan for the following condition:					
- Cervical foraminectomy or cervical fusion					
- Rotator cuff repair or acromioplasty					
- Carpal tunnel release or radial tunnel release or cubital tunnel release					
- Lumbar microdiscectomy or lumbar fusion					
- Total hip arthroplasty or ORIF of a hip fracture					
- Total knee arthroplasty					
- Anterior/posterior cruciate reconstruction					
- Menisectomy or meniscal repair					

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Describe the process of postoperative recovery					
Identify common postoperative complications					
Ability to understand and follow postoperative rehabilitation protocol					

Appendix III c: End-of-Rotation Procedures Performance Assessment Tool

Clinical Rotation: Cardiovascular/Pulmonary PT

Year: One

Duration: Two months

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Clinical instructor assesses the resident ability to present basic knowledge and skills in following:					
Demonstrate an understanding of the cardiovascular and pulmonary epidemiology as a basis for Informing contemporary physical therapy practice					
Interpret the cardiopulmonary assessment and tests					
Monitoring systems, catheters, and devices in the ICU					
Provide intensive care management of individuals with primary cardiovascular and pulmonary dysfunction at ICU, acute, and chronic stages					
Maximizing outcomes: relating Interventions to an individual's needs					
Provide airway clearance Interventions including body positioning techniques					
Facilitating ventilation patterns and breathing strategies					
Provide complementary therapies as cardiovascular and pulmonary physical therapy interventions					
Provide an appropriate patient education					

Appendix III d: End-of-Rotation Procedures Performance Assessment Tool

Clinical Rotation: Pediatric Physical Therapy

Year: One

Duration: Two months

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Clinical instructor assesses the resident's ability to present basic knowledge and skills in following:					
Apply basic physical therapy assessment and intervention, and principles of rehabilitation care of individual pediatric with congenital and/or acquired neurological conditions					
Know evidenced-based interventional strategies to improve the pediatric patient functional ability and mobility for a broad range of neurological conditions and their complications					
Communicate effectively and compassionately with the pediatric patient, caregiver, family, and other healthcare providers					
Effectively allocate healthcare resources					

Appendix III e: End-of-Rotation Procedures Performance Assessment Tool

Clinical Rotation: Neurology Intensive Care Unit

Year: One

Duration: Three months

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Clinical instructor assesses the resident ability to present expert knowledge and skills in following:					
Describe and implement the principles of physical therapy role in ICU: the neuro-critical for primary or secondary neurosurgical and neurological problems					
Provide a respiratory physical therapy management, prevention, and treatment of physical deconditioning					
Explain the role of early mobilization in the various neurological outcomes					
Determine the promotion of consciousness and sensory perception					
Describe the principles of critical brain injury: primary brain injuries (ischemic brain injury, ischemic stroke, hemorrhagic strokes, CNS, infections, and secondary brain injury (renal coma, hepatic coma, salt and water imbalance, disturbance of glucose metabolism, and other endocrinal causes of coma)					
Explain intracranial pressure (ICP), intracranial hemorrhage, and the complications of subarachnoid hemorrhage					
Understand the cardiopulmonary complications of brain injury					

Appendix III f: End-of-Rotation Procedures Performance Assessment Tool

Clinical Rotation:

☐ Stroke rehabilitation

☐ Lower motor neuron pathology/injury

☐ Traumatic brain injury

☐ Parkinson's, multiple sclerosis, Guillain-Barré syndrome, and central nervous system neoplasms

☐ Spinal cord injury

☐ Motor neuron diseases

Location:

☐ Inpatient ☐ Outpatient

☐ Both inpatient and outpatient

Year: ☐ Second ☐ Third

Duration: Four months

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Clinical instructor assesses the resident ability to present expert knowledge and skills in following:					
Summarize the prevalence, Incidence, prognostic indicators, morbidity, mortality, and natural history of the rotation specialty condition					
Identify the risk factors relevant to an individual with the rotation's specialty condition across his/her life span					
Link the limitation of activity functional consequences of a lesion to a neuroanatomical structure/pathway change					
Demonstrate clinical expertise in the examination of an individual with the rotation's specialty conditions across ICF domains include showing an expert ability to assess the following:					
• Pain					
• Range of motion (ROM), muscle tone, and flexibility					
• Muscle performance, including strength, power, and endurance					
• Endurance					
• Assistive technology, including orthotic, prosthetic, and durable medical equipment					
• Static, dynamic, and functional balance					
• Joint integrity and mobility					
• Peripheral and central system sensory integrity					
• Specialized sensory and motor tests					

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
• Mental and cognitive functions including attention, orientation, cognition, and dual-task functions					
• Coordination and movement pattern					
• Reflex integrity					
• Cranial nerve integrity					
• Peripheral and central nervous system motor functions					
• Vestibular system integrity and perception of sensory input, including vertical orientation, body schema, depth perception, neglect, and motion sensitivity					
• Motor control measures					
• Task and motion analysis including kinematic, kinetic, behavioral, and environmental factors					
• Ventilation and respiration, including pulmonary function, and cough assessment					
• Gait and mobility including - Observational and objective analysis of biomechanics, kinematic and kinetic - Safety strategy					
• Analysis of ambulation and wheelchair functional mobility to examine activities and participation					
• Self-care and domestic life					
• Quality-of-life measures					

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
• Environmental factors, including domestic, educational, work, community, social, and civic life					
• Social, community, and civic life participation					
• Ergonomics and return-to-work/social live assessment					
• Observational and objective assessment of functional activity					
• Examination of findings across ICF domains that require compensatory strategies					
• Identify the link between the patient's and caregiver's goals(s) and the personal/environmental factors					
• Apply appropriate clinical judgements based on patient assessment and examination					
Describe the processes of nervous systems injury, repair, and plasticity					
Identify the anatomic and physiological adaptations occur because of neuroplasticity					
Recognize the relevance of procedural learning as it relates to skilled movement					
Demonstrate how behavioral and psychoemotional factors affect motor learning and functional recovery					
Modify physical therapy interventions considering the potential impact and/or physiological or behavioral changes					
Prioritize optimal physical therapy interventions based on the ICF domains and/or ongoing evaluation					

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Implement a customized physical therapy intervention program based on and related body structure/function impairment, activity limitations, and participation restrictions with appropriate timing, intensity, and dosage to maximize rehabilitation program outcomes of an individual with neurological condition					
Implement an effective physical therapy exercise program addresses multisystem impairments					
Integrate physiological findings and behavioral responses during and after the modification of the physical therapy programs					
Design and implement training program that enhances patient ability to participate in community, social, work, and education activity					
Recommend modifications to patient environment if it is needed to improve patient's functional and daily activities and participation					
Perform task-specific functional training, considering appropriate timing, intensity, and dosage to maximize rehabilitation outcomes					
Facilitate skill acquisition by providing a customized assistance, cues, and feedback					
Modify the training method and environment to ensure safety and prevent injury, and address risk reduction					
Apply advanced technologies in physical therapy intervention to, such as virtual reality (VR) and robotics					

Topic	Number to achieve competency	UNSATISFACTORY PERFORMANCE (Date)	SATISFACTORY PERFORMANCE (Date)	SUPERIOR PERFORMANCE (Date)	CI initials
Prescribe durable medical equipment (DME) when it is needed					
Analyze the impact of devices and equipment on the biomechanics, movement, functional activity, and participation					
Integrate manual therapy such as joint and soft tissue mobilization into physical therapy management plan of patients with neurologic conditions					
Apply electrotherapeutic modalities using his/her knowledge of plasticity, recovery patterns, and neurologic pathology					

- Unsatisfactory: Application of the process is deficient, which leads to less-than-optimal patient outcomes.
- Satisfactory: Utilizes procedural implementation that is consistent with what is
  1) described in clinical practice guidelines for common neurological conditions, and
  2) taught during the lab portion of the residency curriculum.
- Superior: Clinical reasoning and procedures are utilized consistently with a high level of skill, or with a patient for which a high level of skill was required to achieve the desired outcome.

Appendix IV: Neurologic Physical Therapists Description of Specialty Practice Assessment Tool

Neurologic Physical Therapists Description of Specialty Practice Assessment Tool				
1. Assess the performance of the resident by placing an (x) in the box that BEST describes the behavior (unsatisfactory, satisfactory, or superior performance) on this aspect of the competency. 2. After marking each item associated with the competency, calculate the cumulative rating for each knowledge-based area or clinical practice expectation and record in the provided summary box: 1 point for each "Unsatisfactory performance" rating, 2 points for each "Satisfactory performance" rating, and 3 points for each "Superior performance" rating. Please note: the maximum number of possible rating points is provided in each knowledge area/clinical practice expectation summary box. 3. Once you have completed the entire assessment tool, copy each rating into the summary form on page 26. You will then have a global perspective for each competency and the description of specialty practice.				
Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	**Unsatisfactory performance 1**	**Satisfactory performance 2**	**Superior performance 3**	**Rating**
I. Knowledge areas of neurologic clinical specialty practice				
A. Foundation Sciences				
1. Is knowledgeable about the human anatomy and physiology in healthy and neurologic populations, including:				
a) Musculoskeletal system				
b) Cardiovascular and pulmonary systems				
c) Integumentary system				
d) Exercise physiology				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
e) Electrophysiology				
			Cumulative rating for this section	/15
2. Is knowledgeable about neuroanatomy and neurophysiology, including knowledge of central, peripheral, and autonomic nervous systems in populations with and without neurologic conditions:				
a) Anatomical organization and functional specialization				
b) Age-related changes across the life span, including developmental neuroanatomy				
c) Neural growth and plasticity, such as cortical remodeling, activity-dependent changes				
d) Neurotransmission and neurotransmitters				
e) Perception and sensory systems				
f) Motor systems				
g) Neural control of locomotion, such as central pattern generators				
h) Neural control of balance and postural control				
i) Regulation and modulation of reflexes				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
j) Regulation and modulation of autonomic function				
k) Pain, including neurogenic and nonneurogenic				
			Cumulative rating for this section	/33
3 Is knowledgeable about movement sciences in populations with and without neurologic conditions, including the following:				
a) Biomechanics and kinesiology of movement systems				
b) Kinematic and kinetic analysis of functional movements, postural control, and gait				
c) Pathokinesiology of functional movement, such as gait, posture, and reaching				
d) Theories and principles of motor control				
e) Theories and principles of skill acquisition and motor learning				
f) Theories and principles of motor development				
g) Interrelationship among social, cognitive, and movement systems				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
h) Effects of movement dysfunctions on multiple body systems, both immediate and in the long-term				
			Cumulative rating for this section	/24
B. Behavioral sciences				
1. Is knowledgeable about psychology and neuropsychology, including knowledge of:				
a) Cognitive processes (attention, memory, and executive dysfunction)				
b) Cognitive, language, and learning disorders				
c) Affective and behavioral disorders				
d) Expected emotional and behavioral responses, and individualized coping strategies to illness and recovery				
e) Influence of motivational factors and adherence strategies to facilitate behavioral change on illness				
f) Impact of cultural and social systems on illness and recovery				
			Cumulative rating for this section	/18

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
2. Is knowledgeable about psychiatry, including knowledge of:				
a) Common psychiatric symptoms, syndromes, and classifications				
b) Effect of psychiatric disease/treatment on cognition, learning, and function				
c) Aphysiologic presentation				
			Cumulative rating for this section	/9
3. Is knowledgeable about teaching and learning theory, including knowledge of:				
a) Principles of teaching and learning				
b) Development and implementation of educational planning process				
			Cumulative rating for this section	/6
C. Clinical sciences (signs and symptoms, management, and epidemiology of injuries and diseases)				
1. Is knowledgeable about pathology, including the congenital and acquired pathology/pathophysiology of:				
a) Neuromuscular system				
b) Musculoskeletal system				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
c) Cardiovascular and pulmonary systems				
d) Physiologic response to trauma and stress				
e) Impact of neurologic conditions on other body systems				
			Cumulative rating for this section	/15
2. Is knowledgeable about epidemiology, including knowledge of:				
a) Incidence and prevalence				
b) Prognostic indicators				
c) Risk factors relevant to health status across the lifespan				
d) Natural history, morbidity, and mortality				
			Cumulative rating for this section	/12
3. Is knowledgeable about medical management, including knowledge of:				
a) Imaging, such as MRI, f-MRI, CT scans, and PET scans				
b) Clinical diagnostic procedures, such as EMG, NCV, and evoked potential exam				
c) Laboratory tests, including normal and abnormal findings				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
d) Surgical and nonsurgical interventions performed for neurologic conditions				
e) Assessment, monitoring, and activity modifications related to medical procedures				
			Cumulative rating for this section	/15
4. Is knowledgeable about pharmacology, including knowledge of:				
a) Pharmacokinetics and pharmacodynamics				
b) Abnormal drug reactions, interactions, and adverse dosage effects				
c) Effects on the body systems, including common short- and long-term effects				
			Cumulative rating for this section	/9
D. Clinical reasoning and critical inquiry				
a) Is knowledgeable about application of decision-making algorithms and models to clinical practice.				
b) Is knowledgeable about integration of ICF framework to inform clinical decisions and prioritize plan of care.				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
c) Is knowledgeable about clinical research methodology appraisal.				
d) Is knowledgeable about critical evaluation of test psychometrics and application of principles of measurement in clinical practice.				
e) Is knowledgeable about judicious evaluation of components and merit of published evidence.				
			Cumulative rating for this section	/15
II. Professional roles, responsibilities, and values of neurologic clinical specialists				
A. Communication				
1. Can employ effective communication strategies in individuals with neurologic conditions, including verbal, nonverbal, and assistive technologies				
2. Can empower individuals in the management of their own health				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
3. Can facilitate collaborative team management and transitions of care for individuals with neurologic conditions				
4. Can address cultural or social issues that affect the plan of care				
			Cumulative rating for this section	/12
B. Education				
1. Can perform a needs assessment, including determining the educational needs and unique characteristics of the learners and group of learners				
2. Can develop educational objectives based on the learning needs of individuals and their families, significant others, and caregivers; colleagues; and/or the public with consideration of learning domains and level of expected outcomes for learners and groups of learners				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
3. Can develop and customize appropriate teaching strategies and methods based on learning objectives and identified learning style preferences of individuals and their families, significant others, and caregivers				
4. Can implement an educational plan that includes explanation, demonstration, practice, and effective use of feedback as appropriate				
5. Can accurately and objectively assess learning outcomes of teaching strategies and modifies strategies based on outcomes				
6. Can educate physical therapy students and colleagues to enhance knowledge and skills in neurologic physical therapy				
7. Can educate healthcare professionals outside of physical therapy and outside agencies about neurologic physical therapy				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
8. Can educate community groups in primary, secondary, and tertiary prevention				
			Cumulative rating for this section	/24
C. Consultation				
1. Can synthesize information from a wide variety of sources when providing consultative services to colleagues				
2. Can effectively contribute to multidisciplinary team decision-making to maximize patient and client outcomes				
3. Can render specialist opinion about patients and clients with neurological dysfunction to other health professionals and external organizations				
4. Can provide peer and utilization review				
			Cumulative rating for this section	/24
D. Evidence-based practice				
Can evaluate the efficacy and effectiveness of new and established examination tools, interventions				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
Can critically appraise peer-reviewed evidence and judiciously translate evidence into practice				
Can participate in conducting and disseminating clinical research following ethical guidelines				
Can participate in collecting and interpreting patient and client outcomes data, such as programmatic assessment				
Can synthesize information from a variety of sources, such as clinical practice guidelines, to develop evidence-based clinical practice				
			Cumulative rating for this section	/15
E. Prevention, wellness, and health promotion				
1. Can develop and implement programs to promote health and fitness at the individual and societal level				
2. Can promote health and quality of life for individuals with and without neurologic conditions				
3. Can establish screening programs for neurologic problems and uses				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
screening programs to identify at-risk				
			Cumulative rating for this section	/9
F. Social responsibility and advocacy				
1. Can seek unique solutions to challenging problems for the individual patient or client, such as access to health services, equipment, and community resources				
2. Can advocate for neurologically impaired individuals with policy- and lawmaking bodies				
3. Can promote advanced neurologic practice at the local, regional, national, and/or international levels				
4. Can represent neurologic physical therapy to other professionals and professional organizations				
			Cumulative rating for this section	/12
G. Leadership				
1. Can model and facilitate ethical principles in decision-making and interpersonal interactions				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
2. Can pursue opportunities to mentor others and seek mentors to expand own knowledge, skills				
3. Can resolve conflicts or challenging situations using multiple strategies				
4. Can model and facilitate the translation of evidence into clinical practice				
5. Can facilitate the use of evidence to shape system policies and procedure				
			Cumulative rating for this section	/15
H. Professional development				
1. Can practice active reflection and self-evaluation.				
2. Can model and facilitate a continued pursuit of additional and advanced knowledge, skills, and competencies.				
3. Can maintain current knowledge of regional, national, and international developments that impact neurologic physical therapist practice.				
			Cumulative rating for this section	/9

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
III. Patient and client management				
1. History				
a. Can perform an interview that is patient- or client-centered and that includes information relevant to health restoration, promotion, and prevention				
b. Can integrate knowledge of disease with history-taking, such as medical, surgical, pharmacological knowledge				
			Cumulative rating for this section	/6
2. Systems review				
a) Can prioritize relevant screening procedures based on identified health condition, previous tests and interventions, patient history, and observation				
b) Can recognize signs and symptoms that require urgent referral to physician or emergency care				
			Cumulative rating for this section	/6
2. Examination procedures				
a) Can prioritize important tests and measures based				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
on history and systems review				
b) Can prioritize test selection based on scientific merit and clinical utility				
c) Can incorporate risk–benefit analysis, such as physiologic cost to the patient or client, in selection of tests and measures				
d) Can select measures that help assess the patient or client across the ICF domains of body function and structures, activity limitations, and participation restrictions				
e) Can perform measures such that data are accurate and precise, considering communication, cognition, affect, and learning styles of the patient or client				
			Cumulative rating for this section	/15
3. Tests and measures				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
a) Can perform tests and measures, using self-report, quantitative, and functional performance tools, with standardized, valid, reliable, and population-appropriate methodologies				
Can perform tests and measures, including: 1) Aerobic capacity/endurance				
2) Assistive technology, including orthotic, prosthetic, protective and supportive devices, and including indications, use, effectiveness, and safety				
3) Balance during static, dynamic, and functional activities with/without the use of devices, including: - Static posture, structure, and alignment - Impairment-based measures to delineate body				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
function/structure - Functional performance measures, including measures used for classification, prognosis, and to examine activity				
4) Circulation abnormalities, auscultation, and activity tolerance				
5) Community, social, and civic life integration, and reintegration				
6) Cranial nerve integrity				
7) Disease-specific scales for classification and prognosis				
8) Environmental factors (domestic, educational, work, community, social, and civic life)				
9) Ergonomics and return-to-work assessments				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
10) Gait and locomotion, ambulatory and nonambulatory mobility (biomechanical, kinematic, kinetic, temporal–spatial characteristics), to include: - Analysis of safety, strategy, with and without devices and equipment, in various terrains, and in different environments - Observational analysis				
11) Functional performance measures of ambulation and wheelchair mobility used for classification, prognosis, and to examine activities and participation				
12) Integumentary integrity				
13) Joint integrity and mobility				
14) Mental functions, including: - Consciousness - Orientation - Attention - Cognition - Dual-task functions				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
15) Motor function of peripheral and central nervous system, including: - Motor control measures to assess and classify movement control and performance - Dexterity and coordination - Task and motion analysis, considering kinematic, kinetic, behavioral, and environmental factors				
13) Muscle performance, including strength, power, and endurance				
14) Pain assessment (multidimensional, pain scales)				
15) Perception of sensory input, including vertical orientation, body schema, depth perception, neglect, and motion sensitivity				
16) Quality-of-life measures, including disease- and non-disease-specific measures				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
17) Range of motion, including muscle extensibility and flexibility				
18) Reflex integrity, including normal and pathological				
19) Self-care and domestic life				
20) Self-efficacy scales				
a. Tests and Measures (cont'd)				
21) Sensory integrity of peripheral and central systems				
22) Specialized sensory and motor tests (maneuver, positional testing)				
23) Ventilation and respiration, including pulmonary function, auscultation, and cough assessment				
			Cumulative rating for this section	/78
b. Evaluation				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
1. Can skillfully interpret observed movement and function, particularly when objective measures are not available or cannot be applied				
2. Can differentiate examination findings across ICF domains that require remediation versus compensatory strategies				
3. Can link examination findings, personal modifiers, and environmental factors, with the individual's and caregiver's expressed goal(s)				
4. Can integrate examination findings obtained by other healthcare professionals				
5. Can develop sound clinical judgements based on data collected from the examination				
			Cumulative rating for this section	/15
c. Diagnosis				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
1. Can differentially diagnose emergent versus nonemergent neurologic signs and symptoms				
2. Can differentially diagnose body function, body structures, and functional performance findings consistent or inconsistent with health condition, and if amenable to intervention.				
3. Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency.				
4. Can confer with other professionals regarding examination needs that are beyond the scope of physical therapy and refers as appropriate				
			Cumulative rating for this section	/12
d. Prognosis				
1. Can analyze barriers, such as resources and psychosocial barriers that limit the individual in achieving optimal				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
outcomes based on neurologic condition				
2. Can predict potential for recovery and time to achieve optimal level of improvement across the ICF domains				
3. Can collaborate with individuals and their families, significant others, and caregivers in setting goals				
4. Can develop a plan of care that prioritizes interventions related to the recovery process, patient and client goals, and resources				
5. Can develop a plan of care that prioritizes interventions related to all levels of prevention, health, and wellness				
			Cumulative rating for this section	/15
A. Intervention				
1. Clinical decision-making and prioritization of interventions				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
a) Can select and, if needed, modify interventions based on potential short- term impact and secondary prevention benefits with consideration of the individual's body function and structure, activity limitations, and participation restrictions				
b) Can select and, if needed, modify interventions based on physiological or behavioral changes across the lifespan				
c) Can prioritize optimal interventions based on ICF domain				
d) Can analyze risk versus benefit when selecting interventions				
e) Can negotiate interventions with the patient or client and family, significant others, and caregivers				
f) Can modify or continue intervention based on ongoing evaluation				
			Cumulative rating for this section	/18
2. Coordination, communication, documentation				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
a) Can adapt communication to meet the diverse needs of the patient or client and family, significant others, and caregivers, such as cultural, age-specific, educational, and cognitive				
b) Can adapt communication to meet the health literacy needs of the patient or client and family, significant others, and caregivers				
c) Can ask questions which help to determine an in-depth understanding of the patient's or client's problems				
d) Can coordinate patient and client management across care settings, disciplines, and community and funding resources				
			Cumulative rating for this section	/12
3. Patient and client instruction				
a) Can educate patients or clients and family, significant others, and caregivers on diagnosis, prognosis, treatment,				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
responsibility, and self-management within the plan of care				
b) Can provide instruction aimed at risk reduction, prevention, and health promotion				
c) Can provide instruction using advances in technology, such as web-based resources				
			Cumulative rating for this section	/9
4. Procedural interventions				
(a) Can perform skilled and effective procedural interventions, including therapeutic exercise - Can design and implement a customized exercise program related to activity limitations				
- Can prescribe an exercise program with appropriate timing, intensity, and dosage to maximize outcomes.				
- Can analyze the relationship between exercise biomechanics and				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
the intended functional outcome at the task level				
- Can effectively address multi- system impairments when designing and implementing an exercise program				
- Can adapt aerobic conditioning programs for patients and clients with neurologic dysfunction				
- Can skillfully design and implement customized balance training programs based on body structure/function, activity limitations and participation restrictions				
- Can skillfully design and implement gait and locomotion training strategies customized to body structure/function, activity limitations and participation restrictions				
- Can integrate physiological findings and behavioral response(s), including pain behaviors in the				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
modification and progression of therapeutic exercise programs				
(b) Functional training in self-care and in domestic, education, work, community, social, and civic life: - Can analyze the interaction between multiple body system impairments, activity limitations, and participation restrictions, and the environment.				
- Can determine which problems related to chronic disability are amenable to training.				
- Can select and implement training that enhances the ability to participate in domestic, education, work, community, social, and civic activities				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
- Can make recommendations for environmental modifications in domestic, education, work, community, social, and civic environments to optimize functional independence and participation				
- Can perform task-specific training, considering appropriate timing, intensity, and dosage to maximize outcomes, such as early mobilization and locomotor training				
- Can provide customized assistance, cues, and feedback to facilitate skill acquisition				
- Can interpret observed movements and function during intervention and adjusts intervention accordingly, including the interrelationship between body segments and movement phases				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
- Can anticipate and address the impact of faulty biomechanics on short- and long-term health				
(c) Functional training in self-care and in domestic, education, work, community, social, and civic life: (cont'd) - Can judiciously apply available or emerging technologies that promote skill training and acquisition, such as virtual reality, robotics, and assistive technology				
- Can interpret motion analysis findings and applies to interventions				
(d) Manual therapy techniques: - Can integrate manual therapy into the management of patients and clients with neurologic conditions, such as joint and soft tissue mobilization				
(e) Prescription, application, and, as appropriate, fabrication of devices and				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
equipment, including assistive, adaptive, orthotic, protective, supportive, or prosthetic: - Can skillfully prescribe and adapt devices and equipment for the complex patient in collaboration with the patient or client and family, significant others, and caregivers				
- Can predict the impact of devices and equipment on the biomechanics and efficiency of movement				
- Can analyze the impact of the devices and equipment across a wide range of functional activities and participation in social and environmental contexts				
- Can prescribe or recommend assistive technology that optimizes activity and participation, such as environmental control units and powered mobility				
- Can prescribe devices and equipment, considering the financial implications for the individual				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
- Can select or recommend appropriate orthotics for use in a neurologic population, including electro-orthotics				
(f) Airway clearance techniques: - Can skillfully adapt airway clearance techniques for the unique needs of neurologic patients				
- Can apply a variety of interventions, such as seating and functional activities, to maximize pulmonary function for complex patients and clients.				
- Can integrate knowledge of the interrelationship between pulmonary status, and swallowing function				
- Can design and modify interventions considering the impact of mechanical ventilation on the patient's or client's function				
- Can prevent and manage integumentary impairment through the use of equipment, such as				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
pressure mapping, seating systems, and cushion and orthotic prescriptions				
(g) Integumentary repair and protective techniques (cont'd); - Can prevent and manage integumentary impairment through education, exercise, positioning, and mobility and activity prescription.				
a) Electrotherapeutic modalities: - Can integrate motor learning and motor control concepts into the application of electrotherapeutic modalities, such as biofeedback and NMES				
- Can apply electrotherapeutic modalities with knowledge of plasticity, neurologic pathology, and recovery patterns				
			Cumulative rating for this section	/99
B. Outcomes assessment				

Directions: Place an "x" in the box that BEST describes behavior observed for aspect of the competency	Unsatisfactory performance 1	Satisfactory performance 2	Superior performance 3	Rating
1. Can select appropriate outcome measures, such as sensitive and responsive, across the ICF domains, based on patient or client acuity, diagnosis, prognosis, and practice setting				
2. Can adjust the plan of care within and across episodes based on interpretation of outcome measure results				
3. Can analyze and interpret patient and client outcomes to modify own future practice and perform programmatic assessments				
			Cumulative rating for this section	/9

This Neurologic Physical Therapists Description of Specialty Practice Assessment Tool has been developed by the American Board of Physical Therapy Specialties and can be accessed through the American Physical Therapy Association (APTA).

Neurologic Physical Therapists

Description of Specialty Practice Assessment Tool

SUMMARY FORM

Use this summary to gain an overview of the ratings you recorded for each behavior. Copy each rating you recorded to this page. You will then have a global perspective for each competency.

I. Knowledge Areas of Neurologic Clinical Specialty Practice	Maximum Score	Obtained score
A. Foundation sciences		
1. Anatomy and physiology	15	
2. Neuroanatomy and neurophysiology	33	
3. Movement sciences	24	
B. Behavioral sciences		
1. Psychology and neurophysiology	18	
2. Psychiatry	9	
3. Teaching and learning theory	6	
C. Clinical sciences		
1. Pathology	15	
2. Epidemiology	12	
3. Medical management	15	
4. Pharmacology	9	
D. Clinical reasoning and critical inquiry	15	
Cumulative rating for Section I	171	

II. Professional roles, responsibilities, and values of neurologic clinical specialists	Maximum Score	Obtained score
A. Communication	12	
B. Education	24	
C. Consultation	12	
D. Evidence-based practice	15	
E. Prevention, wellness, and health promotion	9	
F. Social responsibility and advocacy	12	
G. Leadership	15	
H. Professional development	9	
Cumulative rating for Section II	108	

III. Patient and client management	Maximum Score	Obtained score
A. Patient and client examination		
1. History	6	
2. Systems review	6	
3. Examination procedures	15	
4. Tests and measures	78	
5. Evaluation	15	
6. Diagnosis	9	
7. Prognosis	15	

III. Patient and client management	Maximum Score	Obtained score
B. Intervention		
1. Clinical Decision-making and prioritization of interventions	18	
2. Coordination, communication, documentation	12	
3. Patient and client instruction	9	
4. Procedural interventions	99	
C. Outcomes assessment	**9**	
Cumulative rating for Section III	291	
Total cumulative rating	570	

Appendix V: Professional Evaluation Performance Tool (EPT)

Scoring rules

1. The resident must demonstrate evidence in all categories to demonstrate competence.
2. The resident must deem "overall" competent in every category to pass the EPT and the supervised clinical practice (SCP).
3. Evaluator should observe all the essential criteria in every category to pass the resident.
4. All essential criteria from every category must be a "yes" to pass the SCP.
5. Evaluative criteria are different for each category. Please follow the passing standard described below

Evaluative criteria passing scale

Category	Minimum number of Yeses required to pass	Maximum number of Nos allowed to pass
PROFESSIONAL BEHAVIORS	3	2
COMMUNICATION AND DOCUMENTATION	2	1
EXAMINATION	10	3
EVALUATION, DIAGNOSIS, AND PLAN OF CARE	3	2
INTERVENTION	2	2
HEALTHCARE SYSTEM	5	2

Essential criteria are those behavior elements that are common and necessary to every treatment setting to provide safe and effective care; every essential criterion must be observed.

Evaluative criteria are those behavior elements that are not common to every treatment setting and may or may not be observed during the SCP. The evaluator should indicate one of three scoring options, as follows:

Y: Yes—observed to be competent

N: No—observed to be not competent

N/O: Not observed

Scoring tool

Category	Essential criteria	Evaluative criteria YES	Evaluative criteria NO	Explanation
PROFESSIONAL BEHAVIORS				
COMMUNICATION AND DOCUMENTATION				
EXAMINATION				
EVALUATION, DIAGNOSIS AND PLAN OF CARE				
INTERVENTION				
HEALTHCARE SYSTEM				

Scoring Examples:

Scenario No. 1

- Resident scores a Yes on all essential criteria in every category
- Resident scores the minimum number of Yeses on the evaluative criteria in every category

Conclusion: Resident passes the EPT and the supervised clinical practice

Category	Essential criteria	Evaluative criteria YES	Evaluative criteria NO	Explanation
PROFESSIONAL BEHAVIORS	All Yes	3	2	Essential criteria met. Evaluative criteria passing standard met
COMMUNICATION AND DOCUMENTATION	All Yes	2	1	Essential criteria met. Evaluative criteria passing standard met
EXAMINATION	All Yes	10	3	Essential criteria met. Evaluative criteria passing standard met
EVALUATION, DIAGNOSIS AND PLAN OF CARE	All Yes	3	2	Essential criteria met. Evaluative criteria passing standard met
INTERVENTION	All Yes	2	2	Essential criteria met. Evaluative criteria passing standard met
HEALTHCARE SYSTEM	All Yes	5	2	Essential criteria met. Evaluative criteria passing standard met

Scenario No. 2

- Resident scores a Yes on all essential criteria in every category
- Resident scores the above the maximum number of Nos and one Yes on the evaluative criteria in every category

Conclusion: Resident fails the EPT and the supervised clinical practice

Category	Essential criteria	Evaluative criteria YES	Evaluative criteria NO	Explanation
PROFESSIONAL BEHAVIORS	All Yes	3	2	Essential criteria met. Evaluative criteria passing standard met.
COMMUNICATION AND DOCUMENTATION	All Yes	3	0	Essential criteria met. Evaluative criteria passing standard met. Has more than the minimum Yeses required and has fewer than the maximum Nos allowed
EXAMINATION	All Yes	8	3	Essential criteria met. Evaluative criteria passing standard NOT met. Does not have the minimum number of Yeses. Category NOT passed
EVALUATION, DIAGNOSIS AND PLAN OF CARE	All Yes	2	2	Essential criteria met. Evaluative criteria passing standard NOT met. Does not have the minimum number of Yeses. Category is NOT passed.
INTERVENTION	All Yes	2	1	Essential criteria met. Evaluative criteria passing standard met. Has the minimum number of Yeses and fewer than maximum Nos.
HEALTHCARE SYSTEM	All Yes	5	2	Essential criteria met. Evaluative criteria passing standard met

Overall resident rating: Four of six categories passed. EPT NOT passed. Supervised clinical practice NOT passed.

Appendix VI: Objective Structured Clinical Exam (OSCE)

Neurologic Physical Therapy Residency program	Instructions to the resident

Case Scenario 1

A 50-year-old woman presents to the rehabilitation clinic after an acute stroke three weeks earlier complains of acute onset of right-side weakness and sensory loss with acute dysarthria, vertigo, hearing loss, and diplopia.

Clinical assessment shows:

- Very severe weakness in the right upper and lower extremities (generally 1/5 in the upper limbs and 2/5 in the lower limbs)
- Moderate spasticity in the right upper extremity
- Total loss of light touch sensation in both the right upper and lower limbs.

Patient is completely dependent and needs maximum assistance with bed activity, and to transfer form lying to sitting, from bed to chair, and from chair to toilet.

YOU HAVE 10 MINUTES TO ANSWER THE EXAMINER'S QUESTIONS:

STATION

Instructions to candidate: Please answer the following questions based on the information given in the above case scenario

	Examination	Not done	Incomplete—½ score	Done—Full score
Examiner	Please specify which of brain arteries is affected.			
	(Total score: 20%)			
Candidate				
Examiner	Please specify what outcome measurement you would use to assess the upper limb muscle tone, describing the outcome measurement in detail.			
	(Total marks: 30%)			
Candidate				
Instruction				
Examiner	Please describe what strategies for clearer communication you would follow with this patient.			
	(Total score: 30%)			
Candidate				
Examiner	As a member of a multidisciplinary team, what would be your suggested strategy to enhance a patient-centered multidisciplinary care system?			
	(Total score: 20%)			
Candidate				
	Total station points: Calculated MPL:			

Appendix VII: Logbook

Resident Name: .....

Rotation: .....

Trainer: .....

Date From ..../..../..... To ..../..../.....

Date	Patient name and MRN#	Body region(s) examined	Treatment provided

Educational activity attended

Topic	Type of activity	Date	Duration

Case presentation

Title	Date	Duration

Title	Date	Duration

Other educational activity

Description	Date	Duration

Appendix VIII: Clinical Faculty Evaluation Form

Date: .....

Name of resident: .....

Name of clinical faculty: .....

The clinical faculty member listed above:	Consistently	Occasionally	Infrequently
1. Can build rapport with patients			
2. Can identify the needs of the patients			
3. Can identify my needs as a resident			
4. Demonstrates superior clinical reasoning			
5. Demonstrates superior treatment skills			
6. Can provide the cues I need to improve my clinical reasoning and treatment skills			
7. Is on time and fully present during our designated clinical supervising periods			
8. Is considerate and professional when providing feedback to me when the patient is present			
9. Participates in data collection and publication of clinical research			

The clinical faculty member listed above:	Consistently	Occasionally	Infrequently
10. Has a thorough understanding of the curriculum and performance measures utilized in this residency			
11. Has a pleasant demeanor and mood			

Up to this point, the aspects most valuable to me during our clinical supervision periods are:

1. .....
2. .....
3. .....
4. .....
5. .....

I would have a better experience if the following changes could me made:

1. .....
2. .....
3. .....
4. .....
5. .....

(Feel free to use space on additional pages when providing feedback)

Appendix IX: Classroom/Lab Presentation Evaluation Form

Date: .....

Name of resident: .....

Name of clinical faculty: .....

The instructor listed above:	Consistently	Occasionally	Infrequently
1. Began presentation(s) promptly on time			
2. Was able to identify the learning needs of the residents			
3. Clearly communicated the objectives on the instruction			
4. Utilized content that was appropriate to the level of instruction and interest to the resident			
5. Has a thorough understanding of the content area of the topic(s) presented			
6. Utilized audiovisuals/explanations that were helpful in describing the key concepts of the presentation			

The instructor listed above:	Consistently	Occasionally	Infrequently
7. Is a skilled and effective teacher/educator			
8. Has a pleasant demeanor and mood			
9. Ended presentations at an appropriate time			
10. The content of this presentation was appropriate for the seven- to eight-hour block of instruction provided			

The aspects of this presentation that were most valuable to me were:

Appendix X: Program Evaluation Form

Date: ..... Module: .....

Name of resident: .....

Up to this point in the residency program, regarding the following points, I am dissatisfied/satisfied/highly satisfied:	Dissatisfied	Satisfied	Highly satisfied
1. with the extent and breadth of clinical practice opportunities			
2. with the quality and content of classroom/lab instruction			
3. with the one-on-one clinical supervision while treating patients			

Up to this point in the residency program, regarding the following points, I am dissatisfied/satisfied/highly satisfied:	Dissatisfied	Satisfied	Highly satisfied
4. with the performance evaluations (daily feedback, procedure check-off lists, clinical performance evaluation)			
5. with the administrative aspects of the program (i.e., scheduling, administrative supervision, clerical support)			
6. with the opportunities and resources for mentoring students			
7. with the opportunities and resources for improving cultural competence			

Please provide any feedback you have regarding the above issues:

Up to this point, the most valuable aspects of this program for me are:

1. .....
2. .....
3. .....
4. .....

5. .....

I would have a better experience if the following changes could be made:

1. .....
2. .....
3. .....
4. .....
5. .....

(Feel free to use space on additional pages when providing feedback)

Appendix XI: Research activity evaluation criteria form

Resident name(s)	Title	Reviewer

Rate items on a scale of 1–10 where 10 = excellent/highest; 8–9 = good/high; 6–7 = average/adequate; 4–5 = fair/lower; 2–3 = poor/low; and 0–1 = missing/lacking/not evaluated on this item

Evaluation category	*Points (10)*
1. Introduction *(Background information, problem statements, aims/objectives)*	
2. Literature review *(Relevant studies, reasonable review parameter, recent development, organization of issues, etc.)*	
3. Methodology or procedures: Research methodology *(Description of method, experimental design, etc.)*	
4. Timeline: Is the timeline realistic regarding the proposed methodology/procedures?	
5. Feasibility of study and preliminary results *(In terms of scope, time, resources and practicality; observation to date, presentation—statistical analysis, graphs, tables, etc.)*	
6. Overall performance *(Presentation skills, shows confidence during Q and A session, etc.)*	
7. References cited: Does the proposal include complete bibliographic information for all references cited using an appropriate style for the discipline?	
TOTAL	

OVERALL DECISION (Check ✓ the appropriate box)	☐ SATISFACTORY	☐ SATISFACTORY[#] *With minor amendments/comments to improve the objectives, problem statement, work plan of research, etc.*	☐ UNSATISFACTORY[#] (fewer than 50 points)