MSU PM&R Study Modules

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion. Have your attending initial objectives as completed.

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# Module 1 - Introduction to PM&R.

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. State a working definition of the specialty of Physical Medicine and Rehabilitation.
2. Define: disability, impairment, handicap
3. List at least 3 functions unique to the disciplines of:
   1. Rehabilitation Nursing
   2. Physical Therapy
   3. Occupational Therapy
   4. Speech Language Pathology
   5. Rehabilitation Psychology/Neuropsychology
   6. Rehabilitation Social Work
4. State a rationale for interdisciplinary team approach to rehabilitation care.
5. Summarize early history of physiatry, with emphasis on World Wars I and II, contributions of Drs Frank Husen, Howard Rusk, Frederic Kottke.
6. Distinguish the purposes, functions, and membership of the American Academy of Physical Medicine and Rehabilitation and the American Congress of Rehabilitation Medicine.

[www.acrm.org](http://www.acrm.org) [www.aocpmr.com](http://www.aocpmr.com).

1. For MD and DO residents: What is a DO and what does Osteopathic training Osteopathic Manual Medicine bring to the field of PM&R?

[www.academyofosteopathy.org](http://www.academyofosteopathy.org). [www.osteopathic.org](http://www.osteopathic.org). [www.aocpmr.com](http://www.aocpmr.com).

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 2 - Patient Assessment, Functional Emphasis.

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. Elicit and accurately record a functionally oriented patient history. In addition to the usual items, include ambulation, transfers, dressing, feeding, personal care, communication, lost function, residual impairments, employment status, home environment, housing (2 story, 3STE, ramp, right side stair rails, grab bars in shower, etc.) family supports, community services and supports, vocational goals, etc.
2. Describe, Demonstrate, Quantify:
   1. Manual muscle strength testing,
   2. Reflex testing
   3. Babinski’s
   4. Hoffman’s
   5. Clonus
   6. Frontal release signs
   7. Dual simultaneous stimulation
   8. Visual field testing
   9. Cranial nerves
   10. Proprioception, sensation
   11. Mini Mental Status
   12. Coordination, judgment
   13. Gait
   14. Dysarthria vs aphasia
3. Describe, Demonstrate and Quantify other elements of physical exam including: Heart, lungs, abdomen, skin, range of motion, joint stability, affect, HEENT, lymphatics, GU, GI, Osteopathic exam.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 3 - Stroke Rehabilitation

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. State a working definition of stroke.
2. List 5 conditions in the differential diagnosis of stroke, with emphasis on stroke mimics.
3. List and discuss at least 5 risk factors for stroke and how to control them.
4. Compare lesions of the anterior and posterior circulation with emphasis on functional implications. List the typical deficits found in the anterior cerebral artery, posterior cerebral artery, and middle cerebral artery.
5. Comment on basic epidemiology of stroke. Include frequency, incidence, mortality rate, and place of stroke in overall disability.
6. Describe the forms of vascular disease in the brain and discuss functional ramifications of each.
7. State at least 3 criteria for assessing stroke for inpatient rehabilitation with attention to cognitive function. Define dyspraxia and describe at least 3 types, discussing the functional ramification of each.
8. Discuss motor and sensory recovery patterns with attention to synergy patterns and factors affecting sensory and motor return.
9. Compare elements of conventional, neurophysiologic, biofeedback, FES and other techniques used in stroke rehabilitation.
10. Define spasticity pathophysiology and discuss management.
11. Discuss post stroke depression etiology, diagnosis, incidence and treatment.
12. Discuss incidence, cause, diagnosis, management, functional implications of:
    1. DVT
    2. RSD
    3. Shoulder subluxation, Adhesive capsulitis
    4. Contracture
    5. Dysphagia
    6. Brachial plexus injury
    7. Bowel/bladder incontinence
13. Discuss at least 5 things to consider in discharge planning for stroke patients with emphasis on community re-entry, home access, on-going therapy in-home vs. outpatient, transportation.
14. Outline a plan for physiatric follow up after discharge for stroke patients.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 4 - Rehabilitation of Traumatic Brain Injury

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. Discuss epidemiology of TBI with attention to frequency, incidence, age, sex, most common causes and risk factors.
2. Discuss TBI recovery including criteria, prognosis, incidence, definitions of minor, moderate, severe head injury.
3. Discuss functional approaches to measuring TBI severity using Glasgow Coma Score, Galveston Orientation and Amnesia Test, post-traumatic amnesia, Rancho Los Amigos Scale of Cognitive Function, Disability Rating Scale of Rappaport.
4. Discuss pathophysiology of head injury with emphasis on primary injury (diffuse axonal injury, cerebral contusion) and secondary injury (intracranial pressure).
5. Describe the rationale for use of CT, MRI, PET scan, EEG, Evoked potentials in evaluating the TBI patient’s medical status.
6. Describe 4 possible mechanisms of functional recovery from TBI
7. Discuss at least 10 factors to consider for a comprehensive TBI rehabilitation program. Emphasize primary medical management, acute rehabilitation, discharge planning, patient age/developmental status, premorbid medical and psychological status.
8. Discuss diagnosis, treatment, functional implications and rehabilitation considerations for at least 5 of the following:
   1. Seizure
   2. Hydroencephalitis
   3. Hypertension
   4. Cranial nerve dysfunction
   5. Heterotopic ossification
   6. Spasticity
   7. Contracture
   8. Behavioral dysfunction
   9. Cognitive deficit
9. Discuss/perform history and physical exam and ongoing evaluations of TBI patients.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 5 - Rehabilitation of Spinal Cord Injury

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. Discuss frequency, incidence, age distribution, sex predilection, most common causes, outcome trends, and most frequent risk factors of SCI.
2. Comment upon common mechanisms of injury and their implications for functional recovery and prognosis, including:
   1. Fracture (define: Jefferson Fx)
   2. Shear or transitional injury
   3. Underlying instability.
   4. Vascular compromise
   5. Tumor
   6. Central cord syndrome
   7. Syringomyelia
3. List 5 principles of initial emergency management of a person with traumatic SCI.
4. State 3 strategies for initial surgical management of a patient with SCI (i.e. unstable spine and vertebral body fracture).
5. Discuss the functional significance of level of spinal cord injury, most common physical findings and their functional ramifications at the following levels of injury: C4, C5, C6, C7, C8, T6, T10, and L3.
6. Discuss cause, diagnosis, treatment, and rehabilitation implications of following complications of SCI:
   1. Respiratory failure
   2. Impaired communication
   3. Orthostatic hypotension
   4. Bradyarrhythmia
   5. DVT
   6. GI bleeding
   7. Superior mesenteric artery syndrome
   8. Hypercalcemia
   9. Hypercalciuria
   10. Syringomyelia
   11. Heterotopic ossification
7. Describe, in detail, the following about autonomic dysreflexia:
   1. Most common causes
   2. Pathophysiology
   3. Diagnosis
   4. Treatment: pharmacologic and non-pharmacologic
   5. Prevention
8. Describe the pathophysiology of spasticity and comment management strategies.
9. Define and describe: ASIA revised scale
10. Discuss the following as they pertain to SCI rehabilitation:
    * + - 1. Functional mobility training
          2. Vocational issues
          3. Community re-entry
          4. Driving
          5. Recreation and leisure
          6. Discharge planning
          7. Sexual function
11. List and discuss 5 special considerations for SCI rehabilitation that are unique to the elderly patient, with emphasis upon pre-existing health concerns, community resources and re-entry, and discharge planning.
12. Discuss/perform history and physical exam and ongoing evaluations of TBI patients

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 6 - Geriatric Rehabilitation

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. Describe some normal physiologic changes that occur with aging in the following body systems...skin and nails, cardiovascular, pulmonary, GI, GU, nervous, hematologic, endocrine, and musculoskeletal systems, hearing and sight, and sexual function.

2. List several causes of bedrest/immobility.

3. Discuss the potential complications and results of bedrest, inactivity, and prolonged immobilization as they pertain to function of the following body systems.

1. skin and musculoskeletal -

2. cardiovascular -

3. respiratory -

4. nervous -

5 .GI & GU systems -

4. Describe methods used to accurately screen/assess a geriatric patient’s perceptual and cognitive status at the bedside.

5. State at least 5 general principles regarding the assessment and management of common medical problems of geriatric rehabilitation, to include…

1. incontinence

2. sleep disturbance

3. malnutrition.

6. Describe the initial evaluation of dementia, and briefly discuss the different etiologies.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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# Module 7 - Bladder Function

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. Describe pertinent bladder anatomy/neuroanatomy and neuropharmacology, as they pertain to dysfunction, including innervation of the lower urinary tract.

2. Describe the normal micturition process, physiologically and sequentially.

3. Outline the components of, and rationale for, comprehensive urodynamic evaluation.

4. Discuss the epidemiology and pathophysiology of neurogenic bladder, mentioning specific considerations posed by the following disease processes:

a. Diabetes mellitus.

b. Spinal cord injury.

c. TBI.

d. Stroke.

e. Cerebral Palsy.

f. Lumbar spine pathology.

5. Differentiate between uninhibited, UMN and LMN bladder dysfunction and comment on the functional implications of each.

6. Outline strategies for managing each of the bladder dysfunctions in #5 above with consideration given to pharmacologic agents, bladder re-training, catheterization, and surgery..

7. Comment upon the social and functional ramifications of bladder dysfunction.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 8 - Electrodiagnosis

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. Discuss the basics of:
   1. Nerve conduction studies
      1. Latency, Amplitude, Conduction Velocity
      2. Sensory vs Motor conduction studies
      3. Antidromic and Orthodromic recording
      4. Neuropraxia vs Axonotomesis vs Neurotomesis
   2. Needle electromyography
      1. Be familiar with the terms: insertional activity, endplate noise, endplate spikes, fibrillation, positive sharp waves, fasciculations
   3. Repetitive stimulation
   4. Single fiber EMG
   5. Evoked potentials.
2. List 5 general clinical indications for electrodiagnostic evaluation of a patient.
3. Discuss the causes, pathophysiology, and value of electrodiagnostic evaluation of:
   1. Carpal Tunnel Syndrome
   2. Acute and chronic radiculopathy
   3. Peripheral neuropathy.
4. Describe the following anomalous Innervations and what you may see on NCS
   1. Martin-Gruber Anastomosis
   2. “Ulnar” hand
   3. Accessory Peroneal
5. State what would be reasonable to expect from an electromyographer after an electrodiagnostic evaluation of a patient.
6. Demonstrate knowledge of how electromyographers are credentialed.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 9 - Gait

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. State the phases of the gait cycle.
2. List and briefly discuss the 6 main determinants of gait.
3. Describe the etiology and comment on the functional implication of each of the following types of abnormal gait:
   1. Hemiparetic gait.
   2. Ataxic gait.
   3. Propulsive/festinating gait.
   4. Hip extensor gait.
   5. Quadriceps gait.
4. Discuss the energy cost of ambulation in a patient with
   1. Hemiplegia
   2. Below and above knee amputation
   3. Use of axillary crutch and single ended cane.
5. Given a real or simulated patient, analyze the observed gait with reference to pathologic findings and discuss the functional implications of this at a 70% level of proficiency.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 10 – Pediatric Rehabilitation

Please use whatever resources you have available to research and be ready to discuss these modules.  The greater emphasis should be the use of standard PM&R texts such as Cuccurullo PM&R Board Reveiw, Braddom’s, and Delisa, with particular attention to Pediatric Rehabilitation by Murphy, McMahon, and Houtrow as well as current literature, lecture materials and other sources available online through the MSU library.  Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives completed.

1. Discuss principles of pediatric rehabilitation:
   1. Family-centered care and cultural competency
   2. Interdisciplinary team approach
   3. Developmental approach
   4. Role of technology and assistive devices
   5. School integration
2. Pediatric History & Physical: Standard H&P Plus the following
   1. Birth History
   2. Developmental History
   3. Function based on developmental milestones.
   4. Primitive reflexes
3. Pediatric Limb Loss:
   1. Classification Systems
   2. Etiologies
   3. Prosthetics for kids
4. Scoliosis:
   1. Adolescent Idiopathic vs. Neuromuscular- similarities and differences in screening and treatment
   2. Utility of Cobb angle
   3. Specific diagnosis that requires screening for NM scoliosis
5. What is spina bifida?
   1. Hydrocephalus
   2. Tethered cord
   3. Syringomyelia
   4. Neurogenic bowel/bladder
   5. Intellectual function
   6. Ambulation
6. Define cerebral palsy.
   1. Risk factors
   2. What is the GMFCS (Gross Motor Function Classification System) scale and how is it used?
   3. What is the HINE (Hammersmith Infant Neurological Examination)?
   4. What is the MACS? Why is it important?

Discuss rehabilitation implications of the following complications of CP:

* 1. Seizures
  2. Hearing loss
  3. Common Musculoskeletal problems
  4. Bone health

1. Neuromuscular diseases – outline the inheritance and primary management of each
   1. Duchennes Muscular Dystrophy (DMD)
   2. Beckers Muscular Dystrophy (BMD)
   3. Limb Girdle MD
   4. Myotonic MD
   5. Infantile Botulism
   6. Acute inflammatory Demyelinating Polyradiculopathy
   7. Hereditary motor sensory neuropathy
   8. Spinal Muscular Atrophies
   9. Friedreich’s Ataxia
2. Spasticity Management in children- Outline the treatment options
   1. Therapy/Bracing/Casting
   2. Oral Agents
   3. Injections
   4. Surgical procedures
3. TBI/Anoxic brain injury: Compare and contrast the etiology, severity, treatment, and recovery of children with traumatic vs. anoxic brain injuries and children
4. Adaptive Sports and Equipment Evaluation: Discuss the importance of adaptive sports in children with disabilities. In addition, outline necessary medical clearance or considerations prior to participation in sport.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 11 - Physiatric Therapeutics and Prescription Writing

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. State and describe 2 general categories of therapeutic heat
   1. Discuss local and systemic physiologic effects of heat application
2. Describe the mechanism, usual clinical indications, general principles of the applications and use, and precautions applicable regarding each of the following:
   1. Hot packs
   2. Hydrotherapy
   3. Contrast baths
   4. Paraffin bath
   5. Ultrasound
   6. Short wave Diathermy
3. Give a real/simulated scenario, write a complete/accurate prescription for:
   1. Ultrasound
   2. Hot packs
4. Discuss the local and systemic physiologic effects of cold application
   1. Describe 2 techniques of cold application and state the rationale for each
   2. Describe appropriate clinical indications, precautions, and contraindications of the use of therapeutic cold
5. Give a real/simulated scenario, write a complete/accurate prescription for one therapeutic cold modality
6. Discuss the use of therapeutic heat and/or cold in the treatment of the following conditions/disease states:
   1. Muscle pain or spasm
   2. Contracture
   3. Joint stiffness or pain
   4. Bursitis
   5. Vascular disease
7. Briefly discuss the mechanism, technique of use and indications/contraindications for ultraviolet light, iontophoresis, biofeedback, and TENS unit
8. Give a real/simulated scenario, write a complete/accurate prescription for a TENS Unit
9. Discuss the importance of being able to correctly write a therapy prescription.
10. List and discuss all the essential elements of a well-written therapy prescription (not using physical modalities).
11. List and discuss at least 3 common errors in therapy prescriptions (not using physical modalities).
12. Discuss different aspects of prescription writing as they pertain to the disciplines below. Give specific examples of reasons you may need to modify your prescriptions.
    1. Physical therapy
    2. Occupational therapy
    3. Speech-Language pathology
    4. Recreation therapy.
13. Using a blank sheet of paper or voided prescription, be able to demonstrate proficiency in therapeutic prescription writing. A sample patient scenario may be given by the attending at their discretion to demonstrate proficiency.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 12 - Psychological Issues in Rehabilitation

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. Compare the fields of psychology psychiatry, neuropsychology, neuropsychiatry and their roles in rehabilitation and discuss reasons for referral to these specialties.
2. Discuss functional considerations/responses to disability for the following:
   1. Denial of illness vs anisognosia
   2. Determining supervision needs
   3. Driving
   4. Decision making capacity
   5. Comorbid psychopathology
   6. Support systems
   7. Depression
   8. Societal attitudes
   9. Emotional state
   10. Intellectual ability
   11. Personality/behavior changes
   12. Roles/role reversals
3. Discuss coping models, positive and negative adaptation
4. Discuss prevalence and functional considerations of mood disorders, cognitive impairments and substance abuse in rehabilitation populations.
5. Discuss factors affecting sexual function associated with physical disability: impaired mobility, sensory deficit, age of disability onset, progression of impairments, body image.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Module 13 - Rehabilitation of Pressure Ulcers

Please use whatever resources you have available to research and be ready to discuss these modules. The greater emphasis should be the use of standard PM&R texts such as Braddom and Delisa, current literature, lecture materials and other sources available online through the MSU library. Your attending may have alternate or additional assignments, current literature review and readings to complete at his or her discretion.

Have your attending initial objectives as completed.

1. Comment upon the incidence and prevalence of pressure (decubitus) ulcers among hospitalized persons.
2. Discuss the pathophysiology of the development of decubitus (pressure) ulcers.
   1. Discuss the role of pressure, shear, and time on the development of decubitus ulcers.
   2. Discuss additional multifactorial causes of decubitus ulcers.
3. List the 5 most common sites of pressure (decubitus) ulcers.
4. List and discuss at least 5 physical and psychosocial factors that are risk factors for developing decubitus (pressure) ulcers.
5. List and describe at least 2 methods for classifying decubitus (pressure) ulcers and comment on the clinical utility of each.
6. List and discuss at least 4 complications of decubitus (pressure) ulcers.
7. Comment on the role of the following in the medical management of pressure (decubitus) ulcers:
   1. Natural wound healing process.
   2. Nutrition.
   3. Fluid intake.
   4. Levels of protein, zinc, and vitamin C.
8. Discuss the general principles of ulcer treatment including pressure relief, debridement, topical agents, infection control, growth factor, dressings and surgical repair.
9. Discuss at least 5 principles/mechanisms of ulcer prevention, including attention to basic principles of skin care.
10. Comment upon the medical, social, educational, and societal impact of pressure ulcers.

Attending Physician:

Resident has completed objectives:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_