Exam Prep

Contents

OTA GUIDE

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OT Review

This section is the complete OT review consisting of 600+ OT terms and questions.

The left column contains the term/question and the right column contains the definition/answer. Fold the page in half down the middle or cover the answers/definitions as you study.

Review this material for 2 weeks taking note of topics you feel weak in. Then fill out your study schedule in the next section focusing on those weak areas.

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Allen Cognitive Level Test	Population: Psychotic disorers, brain injury, Dementia Use: Screening tool to estimate cognitive level of function
ACL 1	Automatic Actions/Reflexive--> TOTAL ASSIST Motor Actions: walking, eating, drinking, standing Attention Span: Seconds Activities: Sensory Stimulation
ACL 2	Unable to imitate/complete 'running stitch' Postural Actions/Gross Body Movement-->MAX ASSIST Motor Actions: Approximate imitations, Pacing, bending, stretches Activities: gross motor games, dance Attention Span: Minutes
ACL 3	Imitates 3 'running stitches' Repetitive Actions-->MOD ASSIST Motor Actions: manipulation of familiar objects, react spontaneously to tactile stimulation Attention: 30 minutes; no written directions;increased distractability Activities: performs familiar ADL's (face washing, etc)
ACL 4	imitates 3 'whip stitches' Goal Directed/Familiar Activities-->MIN ASSIST Sensory Responds to Visual Stimuli Activities: Visual cues to complete tasks, matching, several step-tasks, simple crafts (2-3 steps); NO NEW LEARNING/GENERALIZATION Attention Span: Hours

ACL 5	imitates 'simple cordovan stitch' using pvert trial and error X 3 stitches Independent learning/Exploratory --> self control/inclusive reasoning Alters actions with overt trial and error; poor organization, planning, and socialization Activities: Concrete tasks; NEW LEARNING AND GENERALIZATION Attention Span: Weeks
ACL 6	imitates 'single cordovan stitch' X 3 with overt trial and error Planned Action--> INDEPENDENT/Conceptual Considers consequense of actions Follows multistep verbal/written cues ABSENCE OF COG DISABILITY

Age-related macular degeneration (ARMD or AMD)	1. Dry: drusen deposits form in the retina, increasing in number for form scotomas in macula, 2. Wet: abnormal vessel growth under the retina; the vessels leak fluid, causing damage to cells of macula.
Astigmatism	A condition in which the cornea is oval instead of round. Light rays converge at more than one point of focus
Diabetic retinopathy	Bleeding from small blood vessels in retina can lead to serious vision loss. One can develop: scotomas, decreased contrast sensitivity, dec'd color discrimination, dec'd night vision & fluctuations in vision.
Fixation	The process of locating and focusing on an object on the fovea; foundation of oculomotor control
Fovea	Center 10* of visual field; responsible for identifying details.

Visual acuity	The ability to recognize small details of the object; allows for speed and accuracy in processing what is seen; also aids in decision making.
Glaucoma	1. Acute narrow angle glaucoma (closed angle glaucoma): acute episode a. Severe redness, pain in eye, headaches, nausea. 2. Chronic open angle glaucoma (COAG): chronic episode a. Most common type, b. Decreased visual acuity and peripheral fields; light sensitivity in some cases, no pain
Hyperopia	Farsightedness; difficulty seeing close objects when light rays are focused on a point behind the retina.
Legal blindness	1. A visual acuity of 20/200 or less (in the better eye with the best optical correction), 2. A visual field of 20* or less in the best eye.
Macula	Area of the retina that is the area of best vision.

Myopia	Nearsightedness; the condition in which parallel rays of light are brought into focus in front of the retina, rather than on it
Normal limits of visual field	Superior 60**; inferior 75**; nasal side 60**; temporal side 100**.
Presbyopia	Age-related loss of accommodation.
Retina	Multilayer, sensory structure for the eye that contains rods and cones; initiates impulses to visual cortex via the optic nerve.
Saccadic eye movement	Quick eye movements that change the fixation from one point to another and allow us to redirect our line of sight.

Smooth pursuits/tracking	Those eye movements that maintain continued fixation on a moving target.
Esophoria	Tendency for the eye to turn inward when both eyes are fixating on ab object; controlled by fusion.
Esotropia	Inward deviation of the eye when the other is focusing on an object.
Exophoria	Tendency for the eye to turn outward when both eyes are fixating on ab object; conrolled by fusion.
Exotropia	Outward turning of the eye when the other is focusing on an object.

Extinction	Lack of awareness of one object when objects are presented in both sides of the body at a time, even though they are recognized when presented individually.
Generalization	The ability to apply learned compensatory strategies to new environments or situations; occurs with intact executive function and short-term memory.
Hyperphoria	Tendency for the eye to turn upward when both eyes are fixating on ab object; controlled by fusion.
Hypokinesia	Delayed movement of limb.
Hypometria	Decreased amplitude of movement.

Hypotropia	Downward turning of the eye when the other is focusing on an object.
Impersistence	Difficulty sustaining movement of posture.
Limb akinesia	Absence of ability to move limb.
Motor preservation	Difficulty ending movement.
Accommodation	Ability of the eye to adjust focus of vision at different distances.

Convergence	Ability to maintain focus as an object moves towards you; eyes move medially toward nose.
Divergence	Ability to maintain focus as an object moves away from you; eyes move laterally away from nose.
Diplopia	Double vision; occurs when the fovea of both eyes are not aligned on the same target, so the brain is not able to fuse the image.
Optic nerve	Carries the picture to the brain for interpretation.
Cranial nerves impacting vision	1. Optic nerve- II 2. Oculomotor nerve- III 3. Trochlear nerve- IV 4. Trigeminal nerve- V 5. Abducens nerve- VI

Visual perceptual hierarchy	1. Foundational skills: a. Oculomotor control b. Visual field c. Visual acuity 2. Intermediate-level skills: a. Attention b. Scanning or visual search c. Pattern recognition 3. Advanced-level skills: a. Visual memory b. Visuo-cognition.
Cataracts	Cloudiness of the lens of the eye; decreased acuity; progressively blurred vision; both central and peripheral; glare sensitivity; near vision may be better than distance vision.
Hypophoria	Tendency for the eye to turn downward when both eyes are fixating on ab object; controlled by fusion.
Hypertropia	Upward turning of the eye when the other eye is focusing on an object.
Snellen chart	An assessment of visual acuity; measured by the ratio of the size of a letter a client can read over the distance their eyes are from the chart.

Peripheral visual field	All of the field except the fovea (center); responsible for identification of shape and form and movement in the environment; aids mobility.
Confrontation testing	A gross assessment of visual field; therapist brings in targets from different areas in the field & client indicates when targets are seen and their location.
Central field assessments	1. Damato 30-Point Campimeter: Portable test card that measures the central 30* of visual field; part of the Brain Injury Visual Assessment Battery for Adults (biVABA), 2. Pepper Visual Skills for Reading Test (VSRT): Functional test that indicates scotomas and their affects on function.
Contrast sensitivity assessments	1. Vistech contrast sensitivity chart (not portable), 2. Lea charts (portable, inexpensive), 3. Clinical observation list in biVABA
Saccadic eye movements	1. biVABA, 2. VSRT, 3. Hold two different targets 16 inches from clients face and approx 8 inches apart; ask client to look from one to the other when verbally cued; repeat 10 fixations (5 cycles).

Divergence assessment	Place target near clients bridge of nose; slowly move target away from nose; observe eye movements; client indicates if/when two targets are seen.
Convergence assessment	Place target 16 inches away from clients bridge of nose; slowly move target towards nose; observe eye movements; client indicates if/when two targets are seen.
Visual attention assessments	1. Cancellation tests 2. biVABA 3. Figure and shape copying tests, line bisection test
Apraxia (motor)	Inability to carry out a movement even though the sensory system, muscles, and coordination are intact. INTERVENTION: (same as for ideomotor apraxia) a. Utilize general verbal cues as opposed to specific b. Decrease manipulation demands c. Provide hand over hand tactile-kinesthetic input d. Utilize visual cues
Ideational apraxia	Difficulty with sequencing steps within a task. INTERVENTIONS: a. Provide step by step instructions b. Use hand over hand guiding techniques c. Provide opportunities for motor planning & motor execution.

Ideomotor apraxia	Production error; can use tools but appears awkward or clumsy. INTERVENTION: (same as for apraxia (motor)) a. Utilize general verbal cues as opposed to specific b. Decrease manipulation demands c. Provide hand over hand tactile-kinesthetic input d. Utilize visual cues
Agnosia	Impairment in the ability to recognize and identify objects using only visual means; caused by lesions to the right occipital lobe
Color agnosia	Inability to recognize or remember specific colors for common objects.
Color anomia	Inability to name the specific color of objects.
Object agnosia	Inability to recognize objects using only vision.

Metamorphopsia	Visual distortion of objects although they might be recognizable to the client.
Prosopagnosia (facial agnosia)	Inability to recognize a known face or individual.
Simultanagnosia	Inability to recognize and interpret an entire visual array (more than one thing) at a time; usually due to damage to the right hemisphere.
Visual spatial perception (AKA visual discrimination)	The ability to distinguish the space around one's body, objects in relation to the body and environment, and the relationship between two objects in the environment.
Figure ground	Ability to recognize the foreground from the background based on differences in color, luminance, depth, texture, or motion.

Form constancy or discrimination	The ability to distinguish a form, shape, or object despite its location, position, color or size.
Spacial relations (position in space)	Ability to perceive the position of one's self in relations to objects in the environment.
Depth perception	The ability to judge distances and depth.
Stereopsis	The ability to see things in three dimensions; lack of this can affect depth perception and makes the environment appear flat.
Topographical orientation	The ability to navigate from one place to the next; requires ability to determine current location, goal locations, and problem solving to implement an action.

Stereognosis	Ability to identify everyday objects using their tactile properties and no vision.
Graphesthesia	Ability to identify forms, numbers, letters written on hand.
Autotopagnosia	Inability to identify body parts on self or someone else or the relationship between parts.
Finger agnosia	Inability to recognize which finger was touched or is being used.
Anosognosia	Lack of recognition or awareness of one's deficits.

Right/left discrimination	Ability to identify, discriminate, and understand the concept of right and left; can be affected by short-term memory, aphasia. INTERVENTION: a. Utilize activities that challenge underlying spatial skills. b. Utilize tasks that require discrimination of right/left.
Metacognition	The ability to choose and use specific mental skills to complete a task.
Executive function	Higher level cognition, higher order thinking abilities; involves decision making, planning, sequencing, and executing. INTERVENTION: a. Use external cues (eg. written directions, daily planners). b. Grade tasks that are increasingly complex in terms of # of steps required.
Dyscalculia	Inability to solve a simple problem; includes dyslexia and dysgraphia.
Occipital lobe	Contains visual cortex; scanning; identification of objects; awareness, and discrimination.

Frontal lobe	Planning, problem solving, organizing, attention, appropriate behavior, and initiation of movement.
Parietal and temporal lobes	Right parietal: visual spatial relations, Left parietal: understanding spoken and written language. Right temporal: visual discrimination/recognition and memory, Left temporal: verbal memory.
Thalamus	Eye movement; integration of visual and cognitive information.
Cerebellum	Eye control and coordination.
Brainstem	Has the cranial nerves running through it; protective eye responses.

Hemi-inattention	Decreased search to left field; right hemisphere deficit. INTERVENTIONS: a. Provide bilateral activities b. Guide the affected side through the activity c. Increase sensory stimulatioin to the affected side.
Visual inattention	Both visual field loss and hemi-inattention; may be referred to as visual neglect; right hemisphere deficit.
Left hemisphere deficit	Focus is on details; difficulty identifying objects; apraxia is more common vs. rt. hemisphere deficit.
Right hemisphere deficit	Focus is on whole; visual spatial perception disorders; hemi-inattention; visual inattention.
Allen Cognitive Level test (ACL-90)	Format: Task analysis of a standardized visual-motor task. Purpose: is a brief screening test to estimate the client's cognitive functioning & capacity to learn & to guide treatment goal setting. Subject is scored on the cognitive level (1 to 6) & receives a score between 3.0 - 5.8 according to completion of stitches & method described by author. Population: Adults w/psychiatric illness, cognitive impairment following TBI, dementia.

Allen Cognitive Level 6	"Planned action" Scoring: Able to imitate single cordovan stitch using covert (mental) trial & error absence of disability. Able to plan ahead to avoid mistakes.
Allen Cognitive Level 5	"Exploratory actions" Scoring: Able to imitate a single cordovan stitch using overt (pysical) trial & error; 3 stitiches. New learning occurs. May be typical level of function for 20% of population.
Allen Cognitive Level 4	"Goal directed actions" Scoring: Able to imitate whip stitch; 3 stitches. Ablility to carry out simple tasks to completion. Relies heavily on visual cues. May be able to perform established routines but cannot cope w/unexpected events.
Allen Cognitive Level 3	"Manual action" Scoring: Able to imitate running stitch; 3 stitches. Uses hands to manipulate objects. May be able to perform a limited # of tasks w long-term repetitive training.
Allen Cognitive Level 2	"Postural reaction" Scoring: Unable to imitate running stitch Movement is associated with comfort. Some awareness of large objects in environment may assist caregiver with simple tasks.

Allen Cognitive Level 1	"Automatic action" Scoring: Automatic motor responses & changes in ANS. Minimal conscious response to external environment.
Erhardt Developmental Vision Assessment (EDVA) & Short Screening Form (EDVA-S)	This test is designed to evaluate visuomotor development and identify delays, gaps in skill sequences, and inappropriate patterns.
Brain Injury Visual Assessment Battery for Adults (biVABA)	This battery identifies functional limitations resulting from visual impairment. The series of eye and visual tests includes papillary response, oculomotor performance, eye dominance, visual attention, visual search, acuity, reading acuity, contrast sensitivity, and visual fields.
Drivers Vision Screener	This single machine tests several visual skills, including acuity, color perception, depth, phorias, horizontal peripheral fields, and night vision.
Lea Test System	The cards measure static visual acuity or contrast sensitivity using numbers or letters as targets to avoid issues of literacy or language barriers.

Visual Functioning Assessment Tool	This battery assesses the student's visual functioning in educational settings; It yields relative strengths and weaknesses as a baseline for the individualized education plan.
Anomia	Loss of ability to name objects or retrieve names of people.
Brocha's aphasia	Loss of expressive language indicated by a loss of speech production. INTERVENTION: a. Decrease external auditory stimuli b. Give the individual increased response time. c. Use visual cues & gestures d. Use concise sentences e. Investigate the use of augmentative communication devices.
Wernicke's aphasia	A deficit in auditory comprehension that affects semantic speech performance, manifested in paraphasia or nonsensical syllables. INTERVENTION: a. Decrease external auditory stimuli b. Give the individual increased response time. c. Use visual cues & gestures d. Use concise sentences e. Investigate the use of augmentative communication devices.
Global aphasia	The symptoms are those of severe Brocha's aphasia and Wernicke's aphasia combined. An almost total reduction of all aspects of spoken and written language in expression and comprehension.

Perseveration	The continuation or repetition of a motor act or task. INTERVENTION: a. Bring perseveration to a conscious level & train the person to inhibit the behavior. b. Redirect attention c. Engage the individual in tasks that require repetitive action.
Acalculia	The acquired inability to perform calculations.
Alexia	The acquired inability to read
Agraphia	The acquired inability to write.
Rivermead Perceptual Assessment Battery (RPAB)	Tasks are designed to assess visual-perceptual dysfunction after a stroke or head injury; Utilizes deficit-specific tasks in isolation from ADL tasks.

Mini-mental state examination (MMSE)	Brief 30-point questionnaire test that is used to screen for cognitive impairment; commonly used to screen for dementia.
Lowenstein Occupational Therapy Cognitive Assessment (LOTCA)	Utilized for persons who have experienced a stroke, TBI, or tumor. Measures basic cognitive functions that are prerequisite for managing everyday tasks. Consists of 20 subtests in 5 areas: orientation, visual, spatial perception, visualmotor organization, thinking operations.
Cognistat Neurobehavioral Cognitive Status Examination	Usually takes less than 45 min; Test explores, quantifies, and describes performance in central areas of brain-behavior relations: Level of consciousness, orientation, attention, language, constructional ability, memory, calculations, and reasoning.

Total Hip Arthroplasty	Total hip replacement (THA) - Types: 1. Total hip joint implant: replaces acetabulum and femoral head. 2. Austin Moore: partial hip replacement; replaces femoral head. - Surgical procedures 1. Cemented or uncemented 2. Anterolateral or posterolateral (more common).
Avascular necrosis	Death of bone cells due to poor blood supply.
Minimally invasive technique	- Surgical technique used for hip replacement. - Two 2-inch incisions are needed and - No detachment of muscles is required.
Open reduction and internal fixation	ORIF, surgical alignment of fractured bones using screws, pins, wires, or nails to maintain bone alignment.
Osteoporosis	- A common bone disease resulting in decreased bone density - Common sites: vertebral bodies, neck of the femur, humerus, and distal end of radius

Above-knee/Transfemoral amputation	- AKA, amputation above knee at any level on the thigh. - elevate for first 24 hours on pillow - position prone daily to provide for hip extension.
Below-knee/Transtibial amputation	- BKA, amputation below knee at any level on the calf. (most common) - BKA is preferred to an AKA due to the importance of preserving the knee joint, and energy requirements for walking. - elevate foot of bed for first 24 hours - position prone daily to provide for hip ext.
Phantom limb	- Perceived sensation following amputation of a limb that the limb still exists. - occurs in 7 out of 10 patients
Phantom sensation	Sensations of the limb that may include: - cramping, squeezing, relaxed, numb, tingling, painful, moving, stuck, shooting, burning, cole, hot, or achy - different from "phantom limb" in that these are "detailed" sensations
Residual limb	Remaining part of limb following surgery. - maintains good skin coverage and vascularization

Crepitis	Audible or palpable crunching or popping in joints. Caused by irregularity of opposing cartilage surfaces.
Gelling	Morning stiffness (less than 30 minutes) and stiffness after periods of inactivity.
Joint laxity	Instability of individual joints in medial/lateral and anterior/posterior directions.
Nodes	Bony enlargements indicative of cartilage damage from osteoarthritis.
Nodules	Soft tissue masses. - commonly found over the extensor surface of the proximal ulna or at the olecranon.

Subluxation	Any degree of malalignment where articular structures are only in partial contact. Characterized by volar or dorsal displacement of joints.
Tenosynovitis	Inflammation of the tendon sheath
Synovitis	Inflammation of the synovial membrane that lines the joint capsule of diarthrodial joints.
Anemia	Reduction below normal of the number of erythrocytes, quantity of hemoglobin, or the volume of packed red cells in the blood - a symptom of various diseases and disorders
Ankylosis	Abnormal condition of stiffness. - usu. referring to a joint, such as the result of chronic RA

Apophysis	Any small projection, process, or outgrowth, usually on a bone without an independent center of ossification. - Examples: the zygomatic apophysis of the temporal bone and the basilar apophysis of the occipital bone.
Rheumatoid Arthritis (RA): Boutonniere deformity	- Flexion of PIP, and hyperextension of DIP - DIP joints are forced into hyperextension - Splinting: silver rings or dynamic PIP extension splint
Diarthrosis	A functional classification term for the freely movable synovial joints including: - gliding, hinge, pivot, condyloid, saddle, and ball-and-socket joints
Pannus	An abnormal tissue that clings to and erodes articular cartilages - Common with RA
Rheumatoid factor	(RF or RhF) is an autoantibody (antibody directed against an organism's own tissues). - a substance often found with RA

Sjogren syndrome	Systemic autoimmune disease in which immune cells attack and destroy the exocrine glands that produce tears and saliva. - more common in older women - associated with RA
Rheumatoid Arthritis (RA): Swan neck deformity	- Hyperextension of PIP joint & flexion of DIP joint. - Splinting: silver rings or dynamic PIP ext. splint.
Synovial	Pertaining to, consisting of, or secreting synovia, the lubricating fluid of the joints, bursae, and tendon sheaths.
Acute coronary syndrome	S/S: plaque buildup or formation of a thrombus, or spasm w/in a coronary artery. - causes a reduction or loss of blood flow to myocardial tissue - includes unstable angina and other pathological events leading to MI.
Angina	Chest pain due to lack of blood flow to heart myo - S/S include: pain, dyspnea, pallor, sweating, palpitations & tachycardia, dizziness & faintness, hypertension & digestive disturbances.

Atherogenic	The ability to initiate or accelerate atherogenesis. - deposition of atheromas, lipids, and calcium in arteries
Atrial fibrillation (A fib)	Normal rhythmic contractions of the atria are replaced by rapid irregular atrial rhythm of the heart myo wall. - S/S: palpitations, occasional weakness and presyncope. - Can lead to a CVA.
Ischemic heart disease	- One or more of the coronary arteries is narrowed or obstructed - interfering with normal blood flow to the heart
Myocardial infarction	MI - prolonged (angina) ischemia, injury, and death of an area of the myocardium. - occlusion of one or more of coronary arteries. - necrosis of heart tissue - S/S: severe substernal pain of more than 20 minutes, may radiate to neck, jaw, arm, epigastric area; SOB, fatigue, nausea/vomiting.
Congestive heart failure	CHF - The heart is unable to maintain adequate circulation of the blood to meet the metabolic needs of the body. - S/S: increased weight over several days, - inability to sleep - persistent dry, hacking cough, SOB - swelling in ankles or feet - fatigue

Dypsnea	Labored breathing occurs and gets progressively worse
Oxygen transport	The delivery of fully oxygenated blood to peripheral tissues >> the cellular uptake of oxygen >> the utilization of oxygen from the blood >> and the return of partially desaturated blood to the lungs.
Pneumonia	An inflammation of lung tissue, wherer the alveoli in the affected areas fill w/fluid. - caused by bacteria, viruses, aspiration, or immobility.
Spirometry	A measurement of breathing (or lung volumes)
Hip Fractures & Hip Replacements WBing RESTRICTIONS 6-8 weeks post op.	NWB (0%) - walker/crutches TTWB (touch down or toe touch, 10-15%) - walker/crutches PWB (partial, 30%) - walker/crutches 50% WB - cane WBAT - pt. judges amount of weight placed on affected leg, w/o causing too much pain FWB (75-100%) - cane/no device

Hip Fractures & Hip Replacements: PRECAUTIONS & CONTRAINDICATIONS	Posterolateral approach: - no hip flexion > 90 degrees - no internal rotation - no ADDuction (no crossing legs/feet) Anterolateral approach 6-12 weeks: - no hip extension - no external rotation - no ADDuction
Hip Fractures & Hip Replacements: INTERVENTION/Tx AREAS	1. Client education (fall prevention, home modification, safe transfers, transportation) 2. Bed mobility & bedside ADL 3. UE strengthening 4. Functional ambulation & transfers with appropriate WBing status & approp. ambulation device (determined by pt's WBing status) 5. Use of AD 6. Practice role activities using proper WBing status and ambulatory device 7. Caregiver training - educate precautions, transfers
Hip Fractures & Hip Replacements: PROCEDURES FOR PRACTICE	List of Problem & Adaptations 1. Bathe feet: longhandled bath sponge 2. Tub: non-skid bath mat, grab bar, tub bench 3. Don/doff shoes: long-handled shoe horn, elastic laces 4. Don/doff socks: sock aide 5. Don pants: reacher or dressing stick 6. Transfers: raised toilet seat, increase height of chair & bed 7. Sitting: wedge cushion w/thick end of wedge at back of chair 8. Open/close cabinet: relocate frequently used items to eliminate need to bend, reacher
Low Back Pain: Pathology	1. Scoliosis (lateral curvature of spine) 2. Kyphosis (outward curvation of spine/ hunch back) 3. Sciatica (nerve is entrapped by disc herniation) 4. Spinal Stenosis (narrowing of the intervertebral foramen; the space where the nerve exits or enters the spine) 5. Facet Joint Pain (inflammation or joint changes of spinal joints) 6. Spondylolysis (stress fracture of the dorsal to the transverse process) 7. Spondylolisthesis (slippage of one vertebra on another) 8. Herniated Nucleus Pulposus (stress may tare fibers of the disc, results in outward bulge of enclosed nucleus pulposus, bulge may press on spinal nerves and cause various symptoms including nerve entrapment)
Low Back Pain: INTERVENTION/Tx AREAS	1. Client Education 2. Back Stabilization & Neutral Spine - position for LB back before activities, monitor & cue pt. Teach positions/lifts to use throughout tx, the Squat, Diagonal Lift, Golfers Lift 3. Body Mechanics 4. Adaptive Equipment - Long handled sponges/brushes/shoe horns, reachers, sock aides, raised toilet seats, hand-held shower sprayers, and footstools. 5. Ergonomics 6. Energy Conservation 7. Stress Reduction, coping techniques

Low Back Pain: INTERVENTION/Tx AREAS - ADL	1. Bathing - shower not bath, keep items w/in easy reach, long handled brushes/sponges, hand-held shower hose, bath mat, shower chair. 2. Dressing - sit while dressing, keep back straight or lie flat on bed, avoid bending forward, slip on shoes as alternate, thread belt on pants before donning pants, AD. 3. Functional Mobility - logroll,, maintain straight back and neutral spine, tighten abdominal myos to support back. 4. Personal Hygiene - at sink, place a foot inside the base cabinet. 5. Sexual Activity - positions that place the low back in neutral, passive position, pillow under upper back or buttocks to decrease arching of back, warm shower or bath before may relax myos & decrease pain. 6. Sleep - firm supportive mattress, pillow should support neck and head w/o neck flexion, sidelying place pillow btw. knees to decrease twisting. 7. Toileting - reach btw. legs, no twisting.
Low Back Pain: INTERVENTION/Tx AREAS - IADL	1. Childcare - elevated changing table/surface for dressing, bathe in sink or elevated surface, drop down rails on crib, bend at hips & keep back straight. 2. Computer Use - monitor eye level, proper seat height with feet flat on ground, wrist in neutral, forearms parallel with the floor, elbows 90* 3. Driving - sit on seat & turn body to get in/out, knees no higher than hips, rolled towel for lumbar support, cruise control. 4. Home Establishment & Management - golfer reach for washer, squat for dryer. 5. Shopping - squat, use shelf as support to stand, golfers reach to unload. 6. Work - work station assess. & mod., proper lift techniques/equipment, pacing 7. Leisure - pull suit case, fanny pack, back pack, raised garden beds, carts
Amputations: Classification System	* Transhumeral (short above-elbow amputation (short AE)) * Transhumeral (stander AE) * Transradial (radius ulna (BE)) * Transfemoral (above knee (AK)) * Transtibial (BK) * Syme's ankle (complete tarsal) disarticulation
Amputations: PRECAUTIONS & CONTRAINDICATIONS	Joint complications: decrease ROM Skin complications: * Preprosthetic phase - delayed healing, extensive skin grafts, reduction of edema * Prosthetic Phase - decubitus ulcers, infected sebaceous cysts, allergic reactions * Postprosthetic Phase - skin breakdown, scar adhesions * Sensory complications: pain, body scheme/image * Psychological Complications: severe depression, suicidal impulses
Amputations: INTERVENTION/Tx AREAS	1. Improve body image, self-image, psychosocial adjustment 2. Promote I fxn during ADLs and IADLs 3. Promote wound healing 4. Improve desensitization of the limb 5. Pain management 6. Residual limb shaping & shrinking 7. Promote proper skin hygiene 8. Promote care of insensate skin 9. Maintain & restore passive & active ROM 10. Maintain & restore UE strength & end. 11. Improve understanding of prosthetic components

Amputations: INTERVENTION - Pre-prosthetic phase	1. Provide emotional support 2. Instruct in limb hygiene & expedite wound healing 3. Maximize limb shrinkage with limb shaping: -Elastic bandage -Elastic shrinker -Removable rigid dressing -Immediate post-operative prosthesis -Early post-operative prosthesis 4. Desensitize the Residual limb (bear weight, massage, tapping/rubbing, wrapping) 5. Maintain or decrease ROM & Strength of the limb 6. Facilitate I in daily living activities (unilateral vs bilateral)
Osteoarthritis (OA): Diagnostic Criteria	Hand pain, aching, stiffness of 3-4 of the following are required for a classification of OA of the hand; 1. Hard tissue enlargement of 2+ of 10 selected jts 2. Hard tissue enlargement of 2+ distal IP jts 3. Fewer than 3 swollen metacarpal joints 4. Deformity of at least 1 of 10 selected joints - History and physical exam - Radiographic information (presence of osteophytes, assymetical jt space narrowing, subchondral bone sclerosis)
Osteoarthritis (OA): PRECAUTIONS & CONTRAINDICATIONS	1. Osteophytes, erosions, jt narrowing, other skeletal problems 2. Pain, fatigue 3. Inflamed or unstable joints 4. Perform resistive activity or ex. w/caution 5. Possible sensory impairments 6. Fragile skin 2* disease or Rx side effects
Rheumatoid Arthritis (RA): PRECAUTIONS & CONTRAINDICATIONS	1. Potential intolerance of thermal modal. 2. Respect pain 3. <> fatigue 4. <> placing stress on inflamed/unstable jts 5. Use resistive exercise/activity w/caution 6. Be aware of sensory impairments 7. Be cautious with fragile skin 8. Inflammation can be exacerbated with heat 9. Cold modalities are contraindicated for pts w/ Raynauds phenomen
OA and RA Principles of Joint Protection	-Respect pain as a signal to stop the activity. -Reduce the force. -Maintain muscle strength and joint ROM. -Use each joint in its most stable anatomical and functional plane. -Avoid positions of deformity & forces in their direction. -Use the largest, strongest joints avail. for the job. -Ensure correct patterns of movement. -Avoid staying in one position for long periods. -Avoid starting an activity that cannot be stopped immediately if it proves to be beyond capability. -Balance rest and activity.

OA and RA: Home Environmental Modifications	- Remove doors of cabinets or attach loops to door handles - Lower the height of above counter cupboards - Use swivel or pull-out shelves - Replace standard oven with a microwave oven on a surface that accommodates available reach - Replace doorknobs with long lever handles - Replace faucet handles with long lever handles - Use remote control devices to automate on/off switching of common electrical devices - Lower closet rods if reach is limited
OA and RA: Common Assistive Devices	* Dressing: dressing stick, shoe horn, sock aid, button hook, zipper pull, elastic shoe laces * Bathing: hand held shower hose, bath bench, grab bars, long handled sponge * Toileting: Raised toilet seat, grab bars * Hygiene and grooming: built up or extended handle toothbrush, suction denture brush, extended handle hair brush/comb, suction nail brush, mounted nail clipper * Feeding: Built up or extended handle utensil, light weight T-handle mug * Meal Prep: Electric can/jar opener, adapted cutting board, built up handle utensils, ergonomic right-angled knives, rolling utility cart, reacher, spring lever scissors, electric chopper, high kitchen stool, stool on rollers * Home Maintenance: long handled dust pan, bucket on rollers * Work and School: Luggage cart, rolling cart, backpack, fanny pack, computer forearm-wrist rest, adapted key holder, built up handle for writing, telephone head set, adapted hand tools, electric stapler and pencil sharpener * Leisure: adapted gardening tools, rolling stool for gardening, card holder, reading rack, knob turner
Fibromyalgia INTERVENTION/Tx AREAS	1. Self Management Approaches 2. Patient Education - fatigue management, energy conservation, body mechanics, pacing 3. Lifestyle Changes 4. Basic Sleep hygiene measures: a. Develop a regular sleep-wakefulness schedule b. develop a relaxing routine b4 bed time c. reduce the irritation of noises inside outside the room and/or use ear plugs/white noise machines d. spend some quite time by ones self 5. Fatigue Management 6. Cognitive Dysfunction - memory aids, use PDA for schedules and alarms, lists 7. Pain & Stress management
Cardiopulmonary Conditions PRECAUTIONS & CONTRAINDICATIONS	1. **Exercise intolerance** 2. Chest pain or pain referred to teeth, jaw, ear, or mouth 3. Excessive fatigue, SOB 4. Lightheadedness or dizziness 5. Nausea or vomiting 6. Unusual weight gain of 3-5lbs in 1-3days
Pulmonary Rehabilitation	1. ADL Evaluation and Training - limitations 2 **dyspnea, myo wasting 2** disuse, O2 during activity prn, monitor vitals 2. Breathing Techniques 3. UE strengthening - use free weights, therapy band, arm ergometer. 4. Work Simplification and Energy Conservation - * bathing w/vent fan OR leaving the door open to decrease humidity. * shower chair and thick terry robe to decrease energy expenditure. * use of AD to conserve energy * schedule activities that require more energy after use of inhaler. * adapt previous activities to fit current health. 5. Stress Management

Pulmonary Rehabilitation: Breathing Techniques	1. Pursed Lip Breathing: * Breathe in through your nose * With your lips pursed > exhale air slowly * Exhale twice as long as inhaling, if possible 2. Diaphragmatic Breathing: * Sit in relaxed position (elevate feet preferably) * Place hand on your abdomen > as you inhale through your nose, try to feel stomach > push out at your lungs fill with oxygen * Next, feel your stomach go down as you slowly breathe out through pursed lips. * Stop the diaphragmatic breathing if you become lightheaded or fatigued
Respiratory Diseases: PRECAUTIONS & CONTRAINDICATIONS	Oxygen saturation below 90% Altered breathing patterns SOB Perspiration Anxiety Cough Cyanosis (bluish discoloration of skin 2* decreased circulation, decreased O2 in blood)
OA & RA INTERVENTION/Tx AREAS	1. Splinting: a. Resting hand splints in the acute stage b. Wrist splint only if arthritis specific to wrist c. Ulnar drift splint to prevent deformity d. Silver ring splints to prevent boutonniere & swan neck deformities e. Dynamic MCP extension splint w/radial pull for post-operative MCP arthroplasties f. Hand base thumb splint for CMC arthritis 2. Incorporate joint protection & energy conservation during ADL & functional activities. 4. ROM: focus on AROM - should be pain free 5. Heat modalities a. Hot packs before exercise b. Paraffin recommended for the hands 6. Strengthening: a. Avoid during inflammatory stage b. Avoid deformity positions 7. AE to prevent deformity, decrease stress on small joints, & extend reach
SPLINTS for: Nerve Injuries	1. Brachial plexus injury: flail arm splint 2. Radial nerve palsy: dynamic wrist, finger, & thumb extension splint 3. Median nerve injury: opponens splint, C-Bar or thumb post splint 4. Ulnar nerve injury: dynamic/static spling to position MPs in flexion 5. Combined median ulnar: figure-of-eight or dynamic MCP flexion splint 6. Carpal tunnel syndrome: wrist splint positioned 0-15* extension
SPLINTS for: Nervous system Injuries	1. Spinal cord (C6-C7): tenodesis splint 2. Flaccidity: resting splint 3. Spasticity: spasticity splint or cone splint 4. Muscle weakness (ALS, SCI, Guillain-Barre): balanced forearm orthosis (BFO), deltoid sling/suspension sling

SPLINTS for: OA & RA Conditions	Arthritis: functional splint or safe (resting) splint, depending on stage 1. DeQuervains: thumb splint, includes wrist, IP joint free 2. Skier's thumb: (UCL) hand based thumb splint 3. CMC arthritis: hand based thumb splint 4. Ulnar drift: ulnar drift splint 5. Boutonniere & swan neck deformities: silver ring splint 6. CMC arthritis: hand based thumb splint 7. Post-operative MCP arthroplasties: dynamic MCP extension splint w/radial pull
SPLINTS for: Flexor Tendon Injury	Kleinert or Duran dorsal protection splint
Splinting Positions	1. Functional position: a. Wrist 20-30* extension b. MCPs 45* flexion c. IPs 20-30* flexion d. Thumb ABDucted 2. Safe (resting) position: a. Wrist 0-20* extension b. MCPs 70-90* flexion c. IPs in extension d. Thumb ABDucted and extended
Deformity Positions AVOID the following positions:	1. Wrist flexion 2. MCP hyperextension 3. IP joints flexed 4. Thumb ADDuction

which shoulder dysfunction is being described...loss of AROM & PROM in shoulder particularly ext rotation and to a lesser degree, abduction and internal rot?	adhesive capsulitis
what shoulder condition is being described...painful arc of motion between 80-100 degrees elevation or at end range of active elevation?	subacromial impingement
what shoulder condition is being described...painful AROM or resistive rotator cuff muscle use?	rotator cuff tendinitis
what shoulder condition is being described...significant substitution of scapula with attempted arm elevation?	rotator cuff tear
which test is being described and which condition would you use this test...examiner passively overpressures the client's arm into end-range elevation. This movement causes a jamming of the greater tuberosity against the anterior inferior acromial surface. If test is positive client expresses pain.	Impingement Test--subacromial impingement

which shoulder test is being described and what condition would you use this test...passively abduct the client's arm to 90 degrees with the palm down. Ask client to lower the arm. If they experience pain or are unable to lower smoothly with good motor control then this is considered a positive test result.	Drop arm test--rotator cuff tear
describe Adson Maneuver and what condition a positive test would suggest?	palpate the radial pulse on the testing arm. Client rotates head toward testing arm, extends the head and holds a deep breath while the arm is being laterally rotated and extended. Positive sign is the disappearance or slowing of pulse rate. Thoracic outlet syndrome
describe Roos test and what condition a positive sign would suggest?	Client abducts both arms to 90 degrees, shoulder external rotation, and elbow flexion to 90 degrees for 3 min while slowly alternating between an open hand and a clenched fist. Positive sign is inability to maintain position for full time or symptoms arise before the end of 3 mins. Thoracic Outlet Syndrome
describe Tinel's Sign and most common condition a positive test is linked to	gently tapping along the course of a peripheral nerve, starting distally and moving proximally to elicit a tingling sensation in fingertip. Point where tingling is noted indicates the approximate location of nerve compression. Carpal Tunnel Syndrome
Describe Phalen's Test and reverse Phalen's Test	pressing back of hands together with fully flexing wrists, reverse is palms pressing together with fully extended wrists for 1 min.

describe carpal compression test	pressure is placed over median nerve in the carpal tunnel for up to 30 sec looking for provocative signs
describe elbow flexion test and what condition would elicit a positive sign	client fully flexes the elbows with the wrists fully extended for a period of 3-5 mins. positive test is tingling along ulnar nerve area along forearm and hand. Screens for Cubital Tunnel Syndrome
describe Froment's Sign and Jeanne's Sign	have client grasp piece of paper between thumb and index finger. Paper is pulled from client and the tip of the thumb flexes because of absence of adductor pollicus--if the MP joint of the thumb also extends at the same time it is called Jeanne's Sign. Sign of Ulnar nerve Palsy
what is Wartenberg's Sign	client is unable to adduct the small finger when the hand is placed palm down on the table with the fingers passively abducted
describe quick way to assess radial nerve motor function	ask client to extend wrist and fingers

describe quick way to assess median nerve motor function	ask client to oppose the thumb to the fingers and flex the fingers
what is the direction sensory mapping of the volar surface of hand be done and how frequently should mapping be done during nerve regeneration?	should be done from proximal to distal and radial and ulnar to medial directions. should repeat monthly during nerve regeneration.
name and describe 2 objective tests of sympathetic function done with nerve function?	Wrinkle Test--immerse hand in water for 5 mins and note the presence or absence of skin wrinkling. denervated skin does not wrinkle Ninhydrin Test--evaluates sweating of the finger. absence of sweating has been correlated with the lack of discriminatory sensation
name some signs of sympathetic dysfunction seen in peripheral nerve conditions	smooth, shiny skin nail changes tapering of fingers (pencil-pointing)
normal 2 pt discrimination distance at the fingertip is...	6 mm or less

describe modified moberg pick-up test	9 or 10 small objects placed on a table then client is asked to pick them up and place in small container as quickly as possible with vision. client is timed. client repeats with other hand. Then whole test is repeated with vision occluded. client is asked to identify each item with and without vision.
why would you measure hand volume at different points during the day	to assess the effect of intervention and activities and rest vs activity, benefits of splinting on client's edema
when using a dynamometer or pinch gauge how many trials to you take to find the average	a mean of 3 trials for each hand should be noted
should a physical assessment be done before or after a functional assessment?	Before-so that the therapist can be aware of the physical dysfunction before so that the therapist can critically analyze how it impacts their functional impairment and understand the reasons they function the way they do.
describe intervention process postoperative nerve repair?	Immobilization (2-3 weeks): -position of minimal tension on repaired nerve Protective ROM (4-6 weeks): -protective stretching with active ROM -dynamic splinting to gradually reduce contractures and assist weak muscles -as motor function returns use of PNF techniques and NMES can help to strengthen

name 3 types of modality tests for nerve injuries/	-pain -heat/cold -touch pressure
name 2 functional tests used with nerve injuries	two-point discrimination Moberg Pick-Up Test
List 3 objective tests for nerve injuries?	-Wrinkle Test -Ninhydrin Test -Nerve-conduction Test
describe sensory distribution of Median Nerve?	-Volar surface of the thumb, index, middle, and radial half of the ring finger -Dorsal surface of the index, middle, and radial half of the ring finger distal to the PIP joint
describe sensory distribution of Ulnar Nerve?	-Dorsal and volar surface of the small finger -Dorsal and volar surface of the ulnar half of the ring finger

Describe sensory distribution of Radial Nerve?	-Posterior upper arm and forearm -Dorsum of the thumb, index, middle, radial half of the ring finger to the PIP joints
list 3 primary tx's of hand or wrist fractures?	-closed reduction (nonoperative) -ORIF (operative) -External Fixation (cast or splint may be used to maintain immobilization)
list clinical signs of a high level median nerve injuries?	-Ulnar flexion of wrist -loss of palmar abduction and opposition -loss of pronation -sensory loss
clinical signs of low level (wrist) median nerve injury?	-loss of thenar eminence -loss of palmar abduction -loss of opposition -sensory loss
difference between anterior interosseous nerve injury and a median nerve injury?	-sensory loss does not occur -loss of flexion to thumb, index and middle fingers--pinch is impacted -pronation is not impacted

clinical signs of low ulnar nerve injury at wrist level?	-clawing of the ring and small fingers -loss of hypothenar muscles -loss of intrinsic muscles -greader IP flexion deformity
clinical signs of high ulnar nerve injury at or proximal to the elbow?	-clawing of the ring and small finger -wrist positioned in radial extension- -MAIN DIFFERENCE -slight IP joint flexion deformity -loss of hypothenar muscles -loss of intrinsic muscles
what is one of the main functions of splinting for a ulnar nerve injury?	-to prevent hyperextension of the MCP's of the ring and small finger by using an extension block splint. Places the ring and little finger in slight flexion at the MCP's.
clinical signs of high (above supinator) radial nerve injury?	-pronation of forearm -wrist flexion -thumb in palmar abduction -Incomplete MP joint extension -loss of sensation in radial nerve distribution in forearm and hand
clinical signs of posterior interosseous nereve syndrome or radial nerve compression?	-radial wrist extension -loss of finger and thumb extension -NORMAL SENSATION

clinical signs of low radial nerve lesion (posterior interosseous palsy)	-incomplete MP joint extension of fingers and thumb -radial wrist extension -distal sensory loss
describe the dynamic extension splint/dorsal forearm-based splint used with radial nerve injuries--	-wrist extension -MCP joint extension -Thumb extension -and the dynamic part protects extensors from being overstretched while allowing active use of the hand with functional activities.
which test was designed to measure one's ability to perform general arm and hand activities used in daily living. Developed from assumption that complex UE movements used to perform ordinary ADL's can be reduced to specific grasp patterns of hand, supination & pronation of forearm, flexion & extension of elbow, and elevation of arm.	The Quantitative Test of Upper Extremity Function
what are the 6 subtests of the Quantitative Test of Upper Extremity Function?	-grasping & lifting 4 blocks of different sizes -grasping & lifting 2 pipes of graduated sizes (cylindrical grip) -grasping and placing a ball (spherical grasp) -pick up and place marbles of different sizes to test fingertip prehension or pinch -putting washer over a nail & putting an iron on a shelf to test placing -pouring water from pitcher to glass and glass to glass
Name 4 more tests of hand dexterity in addition to the Quantitative Test of Upper Extremity Function?	-Crawford Small Parts Dexterity Test -Bennett Hand Tool Dexterity Test -Purdue Pegboard Test -Minnesota Manual Dexterity Test

what 2 things should be done after a cast or brace is removed after a fracture?	-establish baseline ROM -measure for edema and begin management
Give 2 reasons why a splint might be indicated post immobilization period for a fracture?	-to correct abnormal joint changes resulting from immobilization -to protect the finger from additional trauma to fracture site
most common wrist injury	Colles fracture of the distal radius
what is the 2nd most injured bone in the wrist?	scaphoid-often fractured when wrist is dorsiflexed at time of injury. often requires extended immobilization
Trauma to the lunate bone of wrist may result in avascular necrosis of the lunate--what disease is this?	Kienbock's Disease and can be treated with a bone graft, removal of the proximal carpal row, or partial wrist fusion.

name & describe the 3 categories of nerve injuries	Neuropraxia: -bruising contusion of nerve without wallerian degeneration. nerve recovers function without intervention within a few days or weeks Axonotmesis: -nerve fibers distal to site of injury degenerate but internal structure of nerve remains intact. no surgical intervention needed. typically 6 mons recovery Neurotmesis: -complete laceration of both nerve and fibrous tissues. Surgery required
at what point after a nerve repair might a surgeon consider a tendon transfer	-1 year if a motor nerve has not reinnervated its muscle
where is zone 2 or no man's land? why is this the most difficult area to treat?	between the distal palmar crease and the insertion of the flexor digitorum superficialis -tendons lie in their sheaths in this area beneath the fibrous pulley system and any scarring causes adhesions
describe the Kleinert technique for treating flexor tendon repairs in zone two-present timeline	Rubber Band Traction Technique: Part I-wear 24 hrs daily for 3 weeks -Post surgery, rubber bands attached to nails of involved fingers attached to a safety pin on palm and attached to distal strap of splint. PIP joints with rubber bands will be positioned in 40-60 degrees of flexion without tension on the rubber bands. Person should be able to actively extend PIP joints fully to prevent contractures -Dorsal blocking splint is made to maintain MCP joints in 60 degrees of flexion. -Pt should actively extend the fingers several times a day in splint allowing rubber bands to pull the fingers into flexion--this should allow the tendons to move through the tendon sheath and pulley system to minimize scar adhesions Part II-Dorsal Blocking Splint removed at 3 weeks Part III-Rubber band(s) is attached to a wristband which is worn for an additional 1-5 weeks
what is the primary disadvantage of using the Kleinert Technique for flexor tendon repair?	Contractures of the PIP joint frequently occur as a result of excessive tension on the rubber band or incomplete PIP extension within the splint

how might flexor tendon injuries be treated with people who have multiple injuries, fracture/nerve or tendon injuries?	Complete immobilization for roughly 3-4 weeks
what resides in zone IV & V	IV=Carpal Tunnel V=forearm
What resides in zone I & III	I=insertion of flexor digitorum profundus to insertion of flexor digitorum superficialis III=A1 Pulley to the distal edge of the carpal tunnel
describe the Duran Method or controlled passive motion approach in treating flexor tendon repair?	-dorsal blocking splint is worn-keeping wrist flexed and MCP at 70 degrees flexion. -day 3 post surgery, client instructed on a 2x's a day regime of passive flexion and extension of 6 to 8 motions for each tendon. -4.5 weeks dorsal splint removed and rubber band traction is attached to a wristband. active extension & passive flexion performed for an additional week and then gradually progresses.
when are tendon gliding exercises introduced to flexor tendon repairs? when can passive extension be introduced?	postacute phase once splints are discontinued -6 weeks postop safe to do passive extension

what can be done at 8 weeks post flexor tendon repair?	resistive exercise can begin
in hand injuries where is pitting edema most likely found on the hand and why?	dorsal surface, where venous and lymphatic systems provide return of fluid to heart.
describe procedure for using a contrast bath for edema maintenance post hand injury?	--cold (66 degrees) tub and warm (96 degrees) tub should be placed as high as possible to provide elevation of the extremity. --start with cool bath 1 min then warm 1 min for a total of 20 min. --place a sponge in each bath and gently squeeze sponge --always start and end with cool
symptoms of carpal tunnel syndrome?	-parathesia over thumb and 2 &1/2 fingers -burning pain -decreased thumb opposition/abduction -awakened at night -clumsiness -sensory loss
list some tx options for carpal tunnel syndrome during acute phase	-rest -modify activity for wrist posture, vibration and decrease repetition -NSAID's -local steroid injection -tendon-gliding exercises -wrist neutral splint at night and during strenuous activity

if you have aching or sharp pain along the proximal and medial forearm along with decreased sensation in the dorsal and palmar surface of the small finger and ulnar half of ring finger, what might you have?	cubital tunnel syndrome, compression of ulnar nerve between medial epicondyle and olecranon
what provocative tests could you do if you suspect cubital tunnel syndrome?	Tinel elbow flexion test with wrist neutral wartenberg sign froment sign
how to splint cubital tunnel syndrome	elbow flexed at ~ 30-45 degrees wrist neutral wear at night up to 3 months use of elbow pads or soft splints during day
name 6 cumulative trauma disorders	--carpal tunnel syndrome --medial epicondylitis --lateral epicondylitis --trigger finger --cubital tunnel syndrome --de Quervain Disease
signs & symptoms of lateral epicondylitis (tennis elbow)	-pain tenderness extensor wad and lateral epicondyle, pain might radiate into ring and little fingers -redness and warm -inflammation

what muscle most likely has tears and contributes to lateral epicondylitis	extensor carpi radialis brevis
how might you diagnose lateral epicondylitis	--look for pain with resistive wrist extension and passive wrist flexion, however no pain with resistive wrist flexion or with elbow flexion or extension -tinel test of radial nerve
what type of splint would be best for lateral epiocondylitis?	wrist cock-up splint (wrist 0-30 degrees extension)
primary muscle involved with medial epicondylitis (golfers elbow)	-Flexor carpi radialis
what areas would be painful with medial epicondylitis	flexor wad and medial epicondyle

how would you test for medial epicondylitis	resist wrist flexion and look for pain pain with passive wrist extension
what king of splint should be used with medial epicondylitis	neutral wrist splint
what 2 muscles are involved in de Quervain's	abductor pollicus longus extensor pollicus brevis
whats the pain pattern associated with de Quervain's	pain over radial styloid which may travel distal or proximal. pain with thumb flexion and ulnar deviation. pain with gripping
what provocative test should you do for de Quervain's	Finkelstein's Test

what type of splint would work best for de Quervain's?	forearm based thumb spica
what is this describing...catching or snapping during active flexion or extension of finger? why is this occurring?	Trigger Finger -flexor tendon nodules proximal to A1 pulley are struggling to pass through resulting in pain and decreased ROM -due to inflammation of flexor tendon or stenosis of pulley sheath
describe some functional problems associated with median nerve injury	--safety issues due to sensation loss to volar surface of hand--as a result people will use their hand less and are less aware of their hand. --grip greatly impacted --need to learn to use vision when using hand
describe some functional problems associated with radial nerve injuries	--ineffective grip due to tendency for wrist to be flexed --loss of tenodesis action of hand --more prone to wrist flexion contracture
describe some functional problems associated with ulnar nerve injuries	--ineffective grip --inability to open hand to grasp large objects --inability to use pinch grip due to loss of thumb adduction control --sensory loss to ulnar side of hand

Behavioral Rehearsal	- specific learning activities that incorporate role-playing - used to teach new behaviors OR - to provide support to individuals in allowing them to explore multiple resources to problem solutions
Corrective Learning	- may be used to describe OT intervention - pt's. learn to recognize inappropriate behavior and replace it with more adaptive behavior. - often occurs in context of social skills and parenting experiences
Habit Maps (aka: frameworks of habits)	- these are behind habits are framework for: 1. perceiving familiar events and context 2. guides for habitual behavior
Maladaptive Behavior	- includes behavior excesses - can occur when an individual who is trying to act in an acceptable manner, does not recognize that his/her behavior is unacceptable.
Performance Deficit	- the person is able to perform the desired skill, but fails to do so in a situation that calls for it OR - fails to demonstrate the skill with the necessary consistency (intensity, duration, or frequency)

Psychotropic Medication	- antipsychotic medications - used in the treatment of schizophrenia and mania
Behavioral Excess	- a behavior is occurring at too great a frequency, intensity, and/or duration - behavior problems can result from these - not all behavioral excesses represent behavior to be eliminated, but may just need to be reduced - carefully avoid reinforcing it to reduce/eliminate it
Adaptive Behaviors	Enable the individual to: 1. satisfy personal needs 2. live according to his/her values 3. achieve independence 4. achieve pleasure 5. live in harmony with others in society
Behavior Contract	Sometimes performance goals and intervention strategies are written in form of contract. A verbal or written agreement between pt. and therapist (or another person) that defines the: - roles of each during therapy - behavioral goals, reinforcements, and their schedules - strategies used to enhance learning -and other related negotiations - if written, both therapist and pt. sign

Adaptive response	An appropriate action in which the individual responds successfully to some environmental demand. Adaptive responses require good sensory integration, and they also further the sensory integrative process.
Dexterity	Skill & speed in doing something w/your hands.
Equilibrium	A state of balance or equality between opposing forces.
Fine motor coordination	- involves small muscle groups - usually includes finger dexterity and/or skilled manipulation of objects with the hands
In-hand manipulation	- Shift - Translation (fingers to palm) - Translation (palm to fingers) - Rotation (may be simple or complex depending on object's orientation)

Nutritive sucking	- to obtain nutrition - initial continuous sucking burst, >> intermittent sucking bursts, bursts become shorter & pauses longer over course of feeding - rate of 1 suck per second Suck/Swallow ratio: - Young infant 1:1 - Older infant 2:1 or 3:1
Visual-motor integration	- Involves coordinating the interaction of information from the eyes and body movement. - Dependent upon: visual attention, visual memory, visual discrimination, kinesthesia, position in space, figure ground, form constancy,and spatial relations.
Inclusion	An approach to educating children with special needs in which they are included in regular classrooms, with "appropriate aids and services", as required by law
Individualized education program (IEP)	- A management tool required for every student covered by the provisions of the Individuals with Disabilities Education Act. - Must indicate a student's current level of performance, ST & LT instructional objectives, services to be provided, and criteria & schedules for evaluation of progress.
Individuals with Disabilities Education Act (IDEA)	- Federal law passed in 1990 and reauthorized in 1997 and 2004, which extends full education services and provisions to people with cognitive, emotional, or physical disabilities from birth until age 21 IDEA operates under six basic principles: 1. zero reject 2. nondiscriminatory identification and evaluation 3. free and appropriate public education 4. least restrictive environment 5. due process 6. parent and student participation in shared decision making with regard to educational planning.

Overresponsiveness	Disorder used interchangeably with hyperresponsivity
Sensory modulation	- Ability to maintain an alert and focused state. - Tendency to generate responses that are appropriately graded in relation to incoming sensory stimuli, rather than hyporesponsivity ---- hyperresponsivity.
Gravitational insecurity	Extreme fear and anxiety that one will fall when one's head position changes or when moving through space, resulting from poor vestibular and proprioceptive processing.
Intervention settings	1. Early intervention 2. Schol based 3. Hospital-based acute 4. Hospital-based outpatient
Fine motor grasp patterns	1. Hook 2. Power 3. Lateral pinch 4. Pad to pad, 2-point pinch 5. Tip pinch 6. Ulnar-palmar grasp 7. Radial-digital grasp 8. Spherical grasp 9. Cylindrical grasp 10. Disc grasp

Sensory diet	The multisensory experiences that one normally seeks on a daily basis to satisfy one's sensory appetite. A planned and scheduled activity program that an occupational therapist develops to help a person become more self-regulated.
Sensory Integration (aka Sensory processing)	The organization of sensory input for use. The "use" may be a perception of the body or the world, or an adaptive response, or a learning process, or the development of some neural function. Through sensory integration, the many parts of the nervous system work together so that a person can interact with the environment effectively and experience appropriate satisfaction.
Sensory Integrative Processing Disorder (SPD)	An irregularity or disorder in brain function that makes it difficult to integrate sensory input effectively. Sensory integrative dysfunction may be present in motor, learning, social/ emotional, speech/ language or attention disorders.
Sensory Integrative Processing Disorder (SPD) Sensory systems addressed	1. Tactile - Tactile modulation for tactile defensiveness, over-responsivity/under-responsivity and sensory seeking. - Tactile discrimination 2. Proprioception - Deficits in modulation demonstrated by over-responsivity/under-responsivity & sensory seeking - Discrimination deficits 3. Vestibular - Deficits include: over-responsivity/under-responsivity, hypersensitivity (aversion response), sensory seeking, & gravitational insecurity (fear response).
Sensory Integrative Processing Disorder (SPD) Interventions Tactile Modulation deficits	a. self-applied stimuli are more tolerable b. provide deep touch/firm pressure where child can see source of stimuli c. provide controlled sensory activities that simultaneously provide tactile and vestibular-prop info. d. begin with slow linear movements e. apply tactile stimulation in direction of hair growth f. follow tactile stimuli with joint compression g. monitor/adjust stimuli the influences modulation (eg. lighting, sound, etc.)

Sensory Integrative Processing Disorder (SPD) Interventions Tactile Discrimination deficits	a. provide deep touch pressure to the hands + body. b. usu. provided along with tx for deficits in motor planning. c. graded activities via a mixture of textures & items.
Sensory processing disorder Interventions Proprioceptive Modulation deficits	a. over-responsivity/under-responsivity and sensory seeking b. provide firm touch, pressure, joint compression or traction c. provide activities in various body positions combining vestibular proprioceptive info. d. provide slow linear mvmt., resistance, & deep pressure e. use adaptive techniques (eg weighted vest)
Sensory Integrative Processing Disorder (SPD) Interventions Proprioceptive Discrimination deficits	a. provide same tx as for prop. modulation b. provide activities requiring child to demonstrate ability to grade the force or efforts of mvmt.
Sensory Integrative Processing Disorder (SPD) Interventions Vestibular Modulation deficits	a. grade for type & rate of mvmt. & for amount of resistance. Observe precautions! b. introduce linear mvmt. with touch pressure in prone & provide resistance to active mvmts., especially for gravitational insecurity. c. use linear vestibular stimuli stimuli to increase awareness of spatial orientation. d. provide rapid rotary & angular mvmts. with frequent starts/stops & acceleration/deceleration to increase ability to distinguish the pace of mvmt. (semicircular canals).
Pediatric Pulmonary Disorders Cystic Fibrosis (CF)	a. Genetically inherited autosomal recessive trait, gene mutation. b. Both parents must be carriers. neighter parent will have the disease. c. Life expectancy up to 26 years.

Pediatric Pulmonary Disorders Cystic Fibrosis (CF) S/S	1. Chronic, progressive lung disease (abnormal mucus) 2. Salt concentration in the sweat. 3. Decreased release of certain enzymes by the pancreas. 4. Failure to grow properly.
Pediatric Pulmonary Disorders Cystic Fibrosis (CF) INTERVENTION	1. Energy conservation 2. Environmental adaptations to enhance performance 3. Positioning to promote postural drainage 4. NDT to improve endurance & postural stability. 5. Facilitation of fine, gross, visual motor, cognitive, & psychosocial development 6. Parent education 7. Observe medical precautions (respiratory cardiac contraindications).
Pediatric Pulmonary Disorders Respiratory Distress Syndrome (RDS)	a. premature birth c. insufficient production of surfactant to keep alveoli (air pockets of the lungs) open
Pediatric Pulmonary Disorders Respiratory Distress Syndrome (RDS) S/S	1. Lungs collapse after each breath 2. x-ray of lungs reveals "ground glass" appearance
Pediatric Pulmonary Disorders Respiratory Distress Syndrome (RDS) INTERVENTION	1. Monitor development 2. Facilitate sensori-motor & cognitive development 3. Address psychosocial issues 4. Parent education - handling, positioning, energy conservation 5. Adapt environment prn 6. Observe medical precautions

Pediatric Pulmonary Disorders Bronchopulmonary Dysplasia (BPD)	a. respiratory disorder usu. result of baro-trauma: high inflating pressures, infection, meconium aspiration, asphyxia b. a complication of prematurity c. walls of lungs thicken, making the exchange of O2 & carbon dioxide more difficult d. mucous lining of the lung is reduced along with the airway diameter
Pediatric Pulmonary Disorders Bronchopulmonary Dysplasia (BPD) INTERVENTION	1. facilitate sensori-motor & cognitive development 2. address psychosocial issues 3. adapt environment 4. parent education 5. parent advocacy related to acquiring necessary services & equipment 6. observe medical precautions
Muscular Dystrophies/Atrophies Major Types (8)	A group of degenerative disorders due to a hereditary disese process. Types: 1. Duchenne MD - the most common 2. Arthrogryposis multiplex congenita 3. Limb-girdle MD 4. Fascioscapulohumeral MD 5. Spinal MD 6. Congenital myasthenia gravis 7. Charcot-Marie-Tooth disease 8. Myopathies
Muscular Dystrophies/Atrophies Duchenne's MD S/S	- detected between 2-6 years old - is inherited, sex-linked and recessive occurring in males 1/3,500 births - individuals rarely survive beyond their early 20s* to respiratory problems, infections, and/or cardiovascular complications 1. enlargement of the muscles &/or forearm and thigh muscles giving an appearance the child is healthy 2. weakness of the proximal joints progresses to the point that the child has to crawl up his thighs w/his hands to stand 3. weakness occurs in all voluntary muscles, including the heart and diaphragm
Muscular Dystrophies/Atrophies S/S	1. low muscle tone & weakness 2. possible difficulty with oral motor feeding >> ng or gastrostomy tube 3. weakness contributes to deformities of the extremities & spine. 4. difficulty w/breathing may require tracheostomies or mechanical ventilators, and frequently results in death.

Neurological System Disorders GENERAL INTERVENTION GUIDELINES	1. positioning 2. postural control training 3. motor learning approaches 4. motor control retraining/relearning for functional integration of affected limbs 5. specific ADL training/retraining/adaptatioin 6. prescription of AD and technology 7. splinting for contracture prevention &/or enhancement of function (eg. tenodesis splint) 8. family education 9. visual skills training and/or adaptatioin 10. collaboration with educational team
Attention-deficit/hyperactivity disorder (ADHD)	Is a neurodevelopmental/mental health condition Diagnostic criteria: 1. Inattention/distractibility 2. Hyperactivity 3. Impulsivity
Pervasive developmental disorders (PDD)	One of the autism spectrum disorders A group of 5 disorders characterized by delays in development of multiple basic functions including socialization and communication: 1. PDD-NOS 2. Autism 3. Asperger syndrome 4. Rett syndrome 5. Childhood disintegrative disorder (CDD)
Developmental disabilities	A group of chronic conditions An impairment in physical cognitive, speech or language, psychological, or self-care areas Manifested during the dev. period (< 21 y.o.)
Neoplastic disorders	a. Leukemia b. Brain tumors c. Hodgkin disease d. Bone tumors

Cardiopulmonary dysfunctions	1. Congenital heart disease: chromosomal abnormalities; increased, decreased, or obstructed pulmonary blood flow 2. Dysrhythmias: bradydysrhythmia, tachydysrhythmia 3. Respiratory problems: respiratory distress syndrome, bronchopulmonary dysplasia (BPD), asthma, cystic fibrosis 4. Hematologic disorders: sickle cell anemia, hemophilia
Congenital heart disease	A group of inherited muscle disorders associated with mitochondrial dysfunction.
Musculoskeletal disorders	1. Congenital anomalies: osteogenesis imperfecta, marfan syndrome, achondroplasia, multiplex congenital; congenital clubfoot, club hand, hip dislocation 2. Limb deficiencies: polydactyly, syndactyly, bradydactyly, microdactyly 3. Juvenile rheumatoid arthritis (JRA): pauciarticular, polyarticular, systemic 4. Soft tissue injuries: contusions, crush injuries, dislocation, sprain 5. Fractures 6. Curvature of the spine: lordosis, kyphosis, scoliosis
Neuromuscular disorders	1. Cerebral palsy 2. Epilepsy 3. Seizure disorders: general, partial, mixed seizure disorder 4. Muscular dystrophies: limb-girdle, facioscapulohumeral, congenital, Duchenne 5. Neural tube defects: encephalocele, anencephaly, spina bifida 6. Hydrocephalus 7. Peripheral nerve injuries: brachial plexus lesions (Erb-Duchenne palsy, Klumpke palsy), traumatic injury of peripheral nerves
Developmental disabilities Types (9)	1. Mental retardation 2. PDD 3. ADHD 4. Learning disabilities 5. Tourette syndrome 6. Genetic & chromosomal abnormalities 7. Inborn errors of metabolism 8. Developmental coordination disorder 9. Sensory integrative processing disorder

Infectious conditions - maternal	a. Syphilis b. Toxoplasmosis c. Rubella d. Cytomegalovirus e. Herpes
Hearing loss	Conductive Sensorineural
Mental disorders commonly affecting children & adolescents	1. Mood disorders 2. Anxiety disorders 3. Obsessive-compulsive disorder 4. ADHD 5. PDD
Cystic fibrosis	An autosomal recessively inherited disorder of the secretory glands leading to malabsorption & lung disease.
Hemophilia	- A rare bleeding disorder in which the blood does'nt clot normally. - Usually inherited - Bleeding can damage organs and tissues and may become life threatening

Sickle cell anemia	- Most common form of sickle cell disease - Serious disorder; blood cells are crescent-shaped - Block blood flow in the blood vessels of the limbs and organs. - Blocked blood flow can cause pain, serious infections, and organ damage.
Osteogenesis imperfecta	A genetic disorder characterized by bones that break easily, often from little or no apparent cause.
Limb deficiencies	1. polydactyly 2. syndactyly 3. bradydactyly 4. microdactyly
Juvenile rheumatoid arthritis (JRA)	1. pauciarticular 2. polyarticular 3. systemic
Cerebral palsy	- A developmental disorder of mvmt. & posture due to a nonprogressive defect of the immature brain. - May have associated nonmotor impairments: sensation, cognition, communication, and behavior, seizures

Epilepsy	A brain disorder in which a person has repeated seizures (convulsions) over time. Epilepsy occurs when permanent changes in brain tissue cause the brain to be too excitable or jumpy. The brain sends out abnormal signals. This results in repeated, unpredictable seizures.
Seizure disorders	Seizures are episodes of disturbed brain activity that cause changes in attention or behavior. Types: general, partial, mixed seizure disorder
Muscular dystrophies	Muscular dystrophy is a group of inherited disorders that involve muscle weakness & loss of muscle tissue, which get worse over time. - Typically inherited - No known cure - Types: limb-girdle, facioscapulohumeral, congenital, Duchenne
Neural Tube Defects Types (3)	A group of malformations of the SC, brain, and vertebrae. Three major types: 1. SPINA BIFIDA: most common type. Is a split of the vertebral arches 2. ENCEPHALOCELE: a malformation of the skull that allows a portion of the brain to protrude. Use. have intellectural disability, hydrocephalus, spastic legs/seizures. 3. ANENCEPHALY: more severe, where no neural development occurs above the brainstem. 50% of fetuses are spontaneously aborted.
Peripheral Nerve Injuries	Erb-Duchenne palsy: is a paralysis of the arm caused by injury to the upper group of the arm's main nerves, specifically the upper trunk C5-C6 is severed. Depending on severity, it may resolve on its own, require rehab, or surgery. Klumpke palsy: is a form of paralysis of the muscles of the forearm & hand, resulting from a brachial plexus injury of the (C8) and (T1) nerves

Sensory Integration (SI) (aka sensory processing)	- refers to the way the nervous system receives messages from the senses & turns them into appropriate motor and behavioral responses. - senses include: the 5 senses + proprioception and vestibular senses
Sensory Integration (SI) (aka sensory processing) Principles/assumptions	1. Plasticity (structural changes) of the CNS allows for modification of the CNS. 2. SI occurs in a developmental sequential manner. 3. Higher cortical processing functions are dependent on adequate processing & organization of sensory stimuli by lower brain centers. 4. Adequate modulation of sensory stimuli must occur for an adaptive response to occur. Note: stimuli can be either facilitory or inhibitory, and each sensory system influences other sensory systems. 5. Adaptive responses facilitate the integration of sensory stimuli. 6. Individuals seek out sensorimotor experiences that have an organizaing effect.
Sensory Integrative Processing Disorder (SPD) (formerly known as sensory integration dysfunction)	- a condition that exists when sensory signals don't get organized into appropriate responses. - a neurological "traffic jam" that prevents certain parts of the brain from receiving the information needed to interpret sensory information correctly. - difficult to process & act upon information received through the senses, >> challenges in performing countless everyday tasks. - motor clumsiness, behavioral problems, anxiety, depression, school failure, & other impacts may result if not treated effectively.
Sensory Integrative Processing Disorder (SPD) S/S	1. overly sensitive to touch, mvmt, sights, or sounds 2. under-reactive to sensory stimulation 3. activitiy level that is unusually high or low 4. coordination problems 5. delays in speech, language, motor skills, or academic achievement 6. poor organization of behavior 7. poor self-concept
Modulation	- The brain's regulation of its own activity. - Modulation involves facilitating some neural messages to maximize a response, and inhibiting other messages to reduce irrelevant activity.

Vestibular sense (the balance and movement sense)	- The sensory system that responds to the pull of gravity. - Provides information about the head's position in relation to the surface of the earth, and coordinating movements of the eyes, head, and body that affect equilibrium, muscle tone, vision, hearing, and emotional security. - Receptors are in the inner ear.
Peripheral Nerve Injuries Erb-Duchenne palsy S/S	Paralysis of the muscles of the shoulder and arm supplied by C5-C6 following upper brachial plexus injury. Appearance: Upper limb with adducted shoulder, medially rotated arm, extended elbow. Lateral aspect of the arm also loses sensation. Specific causes: difficult birth, fall or blow to the shoulder, heavy weight falling on the shoulder.
Peripheral Nerve Injuries Klumpke palsy S/S	A type of brachial plexus injury involving C8-T1: lower arm paralysis, involves intrinsic muscles of hand, flexors and extensors of wrist and fingers. Characteristics: hand paralyzed, grasp reflex absent. Common causes: forcefully pulled humerus, individual falling from a height and clutching an object to save themselves, forceful pull of the shoulder of infant during birth process.
Spina Bifida Classification (3)	1. Spina bifida occulta a. Occult spinal dysraphism (OSD) b. Spina bifida cystica 2. Spina bifida with meningocele 3. Spina bifida with myelomeningocele
Spina Bifida Spina bifida occulta + 2 subtypes	Spina bifida occulta: A bony malformation with separation of vertebral arches of 1+ vertebrae with no external manifestations. S/S: - Does not usu. result in any symptoms. - Occasionally slight instability and neuromyo impairments, eg. mild gait involvement & bowel or bladder problems. Subtypes: a. Occult spinal dysraphism (OSD): when external manifestations covering the site are present: - eg. red birthmark, patch of hair, a dermal sinus (opening in skin), a fatty benign tumor, or dimple. S/S: SC is spilt or being tied down and tethered; may lead to neuro damage & developmental abnormality as child grows. b. Spina bifida cystica: an exposed pouch.

Spina Bifida Spina bifida with meningocele	Protrusion of a sac thru spine, containing CSF and meninges; does not include the SC. S/S: - Usu. does not present w/symptoms impacting on fxn. as the SC itself is not entrapped. - Occasional slight instability and neuromyo impairments; eg. mild gait involvement & Bl or B problems.
Spina Bifida Spina bifida with a myelomeningocele	Protrusion of a sac thru the spine, containing CSF and meninges + SC or nerve roots. S/S: 1. Sensory & motor deficits below the level of lesion; may result in LE paralysis &/or deformities, & B & B incontinence. 2. Level of leisions impact leg movements 3. Lesions of S2-S4 results in B & B problems. a. A neurogenic bladder impacts on sensation to urinate & the control of the urinary sphincter. b. Incomples emptying of the bladder results; often leads to infections. c. A neurogenic bowel causes constipation & incontinence.
Spina Bifida Medical Management	a. During neonatal period precautions are takien to protect the sac from rupturing & from infection -- which may result in meningitis. All or part of sace may be removed 24-48 hours after birth. b. Shunt: ventriculoperitoneal or other type is indicated if hydrocephalus occur, where the CSF is not absorbed resulting in and increase of size of the ventricles & infant's head. 1. Brain damage* increased intracranial pressure can cause mental retardation. 2. Arnold-Chiari Syndrome* increased pressure, a portion of the cerebellum & medulla oblongata slip down thru the foramen magnum to the cervical SC. 3. Shunts can become blocked resulting in increased intro-cranial pressure - extreme head growth, vomiting, severe headache, seizures. 4. Shunts can become infected - vomiting, lethargy, fever, seizures. c. Urological management. d. Orthopedic mgmt for motor deficits e. Surgical intervention
Spina Bifida Interventions for Shunts	Issues with shunts can be lift threatening: 1. Immediate notification of S/S to the neurosurgeon is required. 2. Blocked shunts are revised by removing the blocked section & replacing it w/a catheter. 3. Infections are treated by withdrawing fluid thru or replacing the tubing. intravenous antibiotics are also administered. 4. Medications to reduce CFS production & intra-cranial pressure are sometimes used as an interim measure.
Sensory Integrative Processing Disorder (SPD) Categories (3)	1. Sensory modulation disorder (SMD) 2. Sensory-based motor disorder (SBMD) 3. Sensory discrimination disorder (SDD)

Sensory Integrative Processing Disorder (SPD) Sensory modulation disorder	a. Atypical response to sensory situations/experiences. b. Over or under responsiveness to sensory situations. excessive seeking or avoiding sensory situations/experiences.
Sensory Integrative Processing Disorder (SPD) Sensory-based motor disorder	a. deficits in proprioceptive and vestibular systems b. dyspraxia-difficulty planning movements, particularly those that are complex & new.
Sensory Integrative Processing Disorder (SPD) Sensory discrimination disorder	a. difficulty interpreting sensory information. b. persons with this disorder have difficulty perceiving "similarities and differences among stimuli c. may manifest itself with slow or awkward motor performance
Grasp patterns and reflexes	See TherapyEd: Human development and aging chapter for details.

Arena assessments	- a team of professionals evaluates child. - a transdisciplinary approach is used that allows child & caregiver to interact with only one professional throughout eval session
ADL for pediatrics	- ADL play a major role in a child's overall functional growth, confidence and independence. - skills include eating, feeding, toileting, bathing and grooming activities. Deficits in this area may be due to an underlying problem: - impaired Sensory Integration - diminished Fine Motor / UE Coordination - poor motor planning which impacts ability to sequence, time & grade motor activities.
Criterion-referenced measurement	- the assessment/score on test performance that is based on the type of behavior expected of a person w/a given score. - each criterion is established prior to the exam. Eg. a student may be shown 10 pictures for 2 minutes & then asked to recall as many as possible. The # of pictures recalled determines the score with, for eg., 3 pictures recalled as the average. - the measurement may be expressed in: including checklists, rating scales, grades, rubrics, & %age of accuracy.
Feeding evaluation	Assess the ability of the client to bring food or fluids to the mouth. A thorough feeding evaluation includes: - medical history & physical exam - neurodevelopmental assessment - oral-pharyngeal evaluation - feeding hx - mealtime observation - a nutritional analysis: 3-day record of intake
Handwriting components	1. Memory: Remembering & writing dictated letters & #s 2. Orientation: Facing letters & #s in the correct direction. 3. Placement: Putting letter & #s on the baseline 4. Size: How big or small a child chooses to write 5. Start: Where each letter or number begins 6. Sequence: Order & stroke direction of the letter or number parts. 7. Control: Neatness & proportion of letters & #s 8. Spacing: Amount of space btw. letters in words, & between words in sentences.

Developmental sequence	See charts
Battelle Developmental Inventory	Purpose: This inventory is designed to assess the achievement of specific early developmental skills and to identify developmental delays or disabilities. A screening version of the instrument is available. Population: Children birth through age 7; accommodations may be used for children with special needs.
Adolescent/Adult Sensory Profile	This self-questionnaire for individuals 11 years of age or older. Measures possible contributions of sensory processing to the person's daily performance patterns.
Ages & Stages Questionnaires	Screens children from birth to 5 years in communication, gross motor, fine motor, problem solving, and personal-social development.
Assessment of Motor & Process Skills (AMPS)	Measures the quality of a person's performance on goal-directed tasks of ADL and IADL.

Battelle Developmental Inventory (BDI)	Measures the development of children from birth to 8 years old. Domains assessed include personal-social, adaptive (self help), motor, communication, and cognition. A short version is available for screening.
Bayley Scales of Infant Development (second edition)	Measures the cognitive and motor development of infants from 1 to 42 months of age.
Bruininks-Oseretsky Test of Motor Proficiency	A measure of gross motor, upper limb, and fine motor proficiency in children 4.5 to 14.5 years old. A short form is available for brief screening.
Canadian Occupational Performance Measure	Helps identify the family's priorities for their child with special needs and assists in developing therapy goals with the child's primary caregivers.
Childhood Autism Rating Scale (CARS)	Identifies children over 2 years old who have mild, moderate, or severe autism & to distinguish those children from children w/developmental delay w/o autism.

Denver Developmental Screening Test (revised) (Denver-II)	A standardized screening tool for children 1 month to 6 years old who are at risk for developmental problems in the areas of personal-social, fine motor adaptive, language, and gross motor skills.
Developmental Test of Visual Motor Integration (fourth edition) (VMI-4)	Identifies visual-motor integration deficits in children ages 3 to 8 years (short form) and ages 3 to 18 (long form) that can lead to learning and behavior problems.
Developmental Test of Visual Perception (second edition) (DTVP-2)	A norm-referenced tool Measures the visual perception and visual-motor integration skills in children 4 to 10 years of age.
Developmental Test of Visual Perception - Adolescent and Adult	A battery of six sub-tests that measures different but interrelated visual-perceptual and visual-motor abilities in individuals 11 to 75 years of age.
Erhardt Development Prehension Assessment (revised)	Measures components of arm/hand development in children w/cerebral palsy or other neurodevelopmental disorders (all ages & cognitive levels).

Evaluation Tool of Children's Handwriting (ETCH)	Evaluates the manuscript and cursive handwriting skills of children in grades 1 through 6.
Functional Independence Measure for Children (WeeFIM)	Assesses the functional outcomes in children & adolescents with acquired or congenital disabilities. Developmental level of 6 months to 7 years in the areas of self-care, mobility, & cognition.
Gross Motor Function Measure(revised)(GMFM)	Evaluates change in gross motor function in children with cerebral palsy. The measure is appropriate for children whose motor skills are at or below those of a 5 y.o. child w/o any motor disability.
Hawaii Early Learning Profile (HELP)	Curriculum-based assessment Used with infants, toddlers, young children, and their families to identify developmental needs, determine intervention goals, and track children's progress.
Motor-Free Visual Perception Test (MVPT-3)	This is a norm-referenced test used for individuals 4 to 70 years of age to assess visual-perceptual abilities that do not required more involvement to make a response.

Peabody Developmental Motor Scales (2nd edition) (PDMS-2)	This is a norm-referenced measure of gross & fine motor skills used for children from birth through 5 years.
Pediatric Evaluation of Disability Inventory (PEDI)	This is a standardized tool used to measure functional abilities (e.g. self-care, mobility, and social function) in children 6 months up to 9 years old.
Quality of Upper Extremity Skills Test (QUEST)	Evaluates movement patterns and hand function in children with cerebral palsy from 8 months to 8 years old. The four domains measured include dissociated movements, grasp patterns, protective extension reactions, and weight-bearing ability.
School Assessment of Motor and Process Skills (School AMPS)	Used to measure the student's schoolwork and task performance in typical classroom settings during the student's typical school routines.
Sensory Profile	Caregiver questionnaire was designed to measure the frequency of behaviors related to sensory processing, modulation, and emotional responsivity to sensory input in children 2 to 12 years old.

Test of Visual-Motor Skills (revised) (TVMS-R)	Measures eye-hand coordination skills needed to copy geometric designs in children 3 to 13 years of age.
Test of Visual-Motor Skills-Upper Level (TVMS-UL)	Measures eye-hand coordination skills needed to copy geometric designs in individuals 12 to 40 years of age.
Test of Visual-Perceptual Skills (revised) (TVPS-R)	Assesses visual-perceptual skills (e.g., discrimination, memory, spatial relations, form consistency, sequential memory, figure-ground and closure) in children 4 to 13 years old.
Test of Visual-Perceptual Skills - Upper level (revised) (TVPS-R:UL)	Measures visual-perceptual skills in individuals 12 to 17 years old.
Sensory Integration and Praxis Tests (SIPT)	Norm-referenced test. Measures the SI processes that underlie learning and behavior in children ages 4-9. The 17 tests assess functioning in: -visual perception -somatosensory processing (touch & prop) -vestibular processing -eye-hand coordination -motor planning or praxis Formal trng. is required to administer test.

Learning disorder	A difficulty in learning to read, write, compute, or do school work that cannot be attributed to impaired sight or hearing, or to mental retardation.

Dupytren's Disease	-disease of the fascia of the palm and digits that results in flexion deformities of the involved digits. -etiology unknown -conservative treatment has not been successful -surgery is required (3 options: fasciotomy with Z plasty, aponeurotomy, McCash procedure <open palm>
OT intervention for Dupytren's Disease	1. wound care: dressing changes. Whirlpool if infection is suspected. 2. edema control: elevation above the heart 3. extension splint: initially at all times except to remove for ROM and bathing 4. A/PROM and progress to strengthening when wounds are healed 5. scar management (massage, scar pad, and compression garments. 6. functional tasks that emphasize flexion (gripping) and extension (release).
Skier's Thumb (Gamekeeper's Thumb)	-Rupture of the ulnar collateral ligament of the MCP joint of the thumb. -most common etiology is a fall while skiing with the thumb held in a skii pole.
OT intervention for Skier's Thumb	1. Conservatuve treatment including a thumb splint 4-6 weeks 2. AROM and pinch strengthening (at 6 weeks) 3. Focus on ADL that require opposition and pinch strength 4. post-operative, treatment includes thumb splint for 6 weeks, followed by AROM. PROM can begin at 8 weeks and strengthening at 10 weeks.
Complx Regional Pain Syndrome (CRPS)	-Type I formerly known as reflex sympathetic dystrophy (RSD) -Type II formerly known as causalgia -Vasomotor dysfunction as a result of an abnormal reflex -It can be localized to one specific area or spread to other parts of the extremity. -Etiology: may follow trauma or surgery, but actual cause is unknown. -symptoms include: severe pain, edema, discoloration, osteoporosis, sudomotor changes, and vasomotor instability.

OT intervention for CRPS	1. modalities to decrease pain 2. AROM to involved joints 3. ADL to encourage pain-free active use 4. Stress loading (weight bearing and joint distraction activities, including scrubbing and carrying activities) 5. splinting to prevent contractures and enable ability to engage in leisure/productive activities. 6. encourage self management
Interventions to AVOID with CRPS	PROM, passive stretching, joint mobilization, dynamic splinting, and casting.
Types of Fractures	1. intraarticular versus extraarticular 2. closed versus open 3. dorsal displacement versus volar displacement 4. midshaft versus neck versus base 5. complete versus incomplete 6. transverse versus spiral versus oblique. 7. comminuted.
Medical treatment for fractures	1. closed reduction: types of stabilization include short arm cast (SAC), long arm cast (LAC), splint, sling, or fracture base. 2. Open reduction internal fixation (ORIF), types include nails, screws, plates, or wire. 3. External fixation 4. Athrodesis: fusion 5. Athroplasty: joint replacement
Colles' fracture	fracture of the distal radius with dorsal displacement

Smith's fracture	fracture of the distal radius with volar displacement
carpal fractures	most common is scaphoid fracture (60% of carpal fractures). The proximal scaphoid has a poor blood supply and may become necrotic.
metacarpal fractures	classified according to location (head,neck, shaft, or base). a common complication is rotational deformities. A Boxer's fracture is a fracture of the 5th metacarpal (requires an ulnar gutter splint.
proximal phalanx fractures	most common with thumb and index. a common complication is loss of PIP A/PROM.
middle phalanx fractures	not commonly fractured

distal phalynx fracture	most common finger fracture. May result in mallet finger (which involves terminal extensor tendon).
elbow fracture	involvement of the radial head may result in limited forearm rotation
humerus fractures: nondisplaced vs. displaced	- etiology: fall onto an outstretched upper extremity - fractures of the greater tuberosity may result in rotator cuff injuries - humeral shaft fractures may cause injury to the radial nerve resulting in wrist drop
OT evaluation for UE fractures	-history should include mechanism of injury and fracture management. -results of special tests (x-ray, MRI, CT scans) -edema -pain -AROM- note: do not assess PROM or strength until ordered by a physician (exceptions are humerus fractures which often begin with PROM or AAROM). -sensation -roles, occupations, ADL and activities related to roles.
OT intervention for fractures during the immobilization phase of UE fractures:	stabilization and healing are the goals. 1. AROM of joints above and below the stabilized part 2. edema control: elevation, retrograde massage, and compression garments. 3. Light ADL and role activities with no resistance, progress as tolerated

OT intervention for fractures during the mobilization phase of UE fractures:	consolidation is the goal. 1. edema control: elevation, retrograde massage, contrast baths, and compression garments. 2. AROM
With humerus fractures, OT intervention during the mobilization phase consists of:	(a). Often begins with PROM or AAROM 1. light functional/purposeful activity 2. pain management: positioning and physical agent modalities 3. strengthening: begin with isometrics when approved by physician.
Cumulative Trauma Disorders (CTD)	-AKA repetitive strain injuries (RSI), overuse syndromes, and/ormusculoskeletal disorders. -risk factors: repetition, static position, awkward postures, forceful exertions, and vibration. -non-work risk factors: acute trauma, pregnancy, diabetes, arthritis, and wrist size/shape.
Most common types of CTD	DeQuervain's, lateral and medial epicondylitis, trigger finger, nerve compressions.
DeQuervain's	- Stenosing tenosynuvitis of the abductor pollicis longus (APL) and the extensor pollicis brevis (EPB). -pain and swelling over the radial styloid -positive finkelstein's test

Conservative treatment of DeQuervain's	-thumb spica splint -activity/work modification -ice massage over radial wrist -gentle AROM of wrist and thumb to prevent stiffness
Post operative treatment	-thumb spica splint and gentle AROM (0-2 weeks) -strengthening, ADL, and role activities (2-6 weeks) -unrestricted activity (6 weeks)
Lateral and medial epicondylitis	-degeneration of the tendon origin as a result of repetitive microtrauma
Lateral epicondylitis	AKA tennis elbow. Overuse of wrist extensors, especially the extensor carpi radialis brevis.
Medial epicondylitis	AKA golfer's elbow. overuse of wrist flexors.

conservative treatment of lateral and medial epicondylitis	-elbow strap, wrist splint -ice and deep friction massage -stretching -activity/work modification -as pain decreases, begin strengthening
Trigger finger	- Tenosynuvitis of the finger flexors: most commonly is the A1 Pulley. - Caused by repetition and the use of tools that are placed too far apart
Conservative treatment of trigger finger	-hand based trigger finger splint (MCP extended, IP joint is free) -scar massage -edema control -tendon gliding -activity/work modification: avoid repetitive gripping activities and using tools with handles too far apart.

Allen's Test	- Used to assess the arterial blood flow to the hand - Examiner applies pressure to the radial and ulnar arteries at the wrist and has the patient make a tight fist, opening and closing his/her hand 10x (the palm of the hand should appear white). The examiner then removes pressure form one artery. - A positive test occurs when it takes >5 seconds for color to return to the palm of the hand
Quick DASH	- Designed to evaluate disorders of the upper limbs and monitor change or function over time - 30-item self-report questionnaire - Can be used to assess any joint in the upper limbs
Proximal fracture	A metacarpal fracture
Boxer's fracture	fracture of the 4th or 5th metacarpal
Carpal fracture	Fracture to individual carpal bones

Keinbock's Disease	A condition where the blood supply to one of the small bones in the wrist, the lunate, is interrupted
Avulsion injuries	Occur when the tendon separates from the bone and its insertion and removes bone material with the tendon
Mallet finger	- Avulsion of the terminal tendon - Is splinted in full extension for 6 weeks
Boutonniere Deformity	- Disruption of the central slip of the extensor tendon characterized by PIP flexion and DIP hyperextension - The PIP is splinted in extension and isolated DIP flexion exercises are performed
Swan neck deformity	- Injury to the MCP, PIP, or DIP joints characterized by PIP hyperextension and DIP flexion - The PIP is splinted in slight flexion

Epiphyseal fracture	A fracture at on of the ends of a long bone in a growing child involving its growth plate
Fracture healing: Inflammation phase	- A phase of fracture healing - Provides the cellular activity needed for healing
Fracture healing: Repair phase	- A phase of fracture healing - Forms the callus for stabilization
Fracture healing: Remodeling phase	- A phase of fracture healing - Deposits bone
Colles fracture	- Complete fracture of the distal radius with dorsal displacement - Most common kind of wrist fracture

Smith's fracture	Complete fracture of the distal radius with palmar displacement
Bennet's fracture	Fracture of the 1st metacarpal base (the base of the thumb)
Median nerve injury	- Produces carpal tunnel-like symptoms, such as palmar numbness and numbness of the 1st digit to half of the 4th digit, with generalized weakness and pain - Causes ape hand deformity; sensory loss in the index, middle, and radial side of the ring finger, loss of pinch, thumb opposition, and index finger MCP and PIP flexion; and decreased pronation
Ape hand deformity	- Thumb is stuck in hyperextension and adduction with a flat thenar eminence - Unable to oppose or abduct thumb - Occurs when the median nerve injury is at the wrist
Hand of benediction	- Caused by median nerve injury at the elbow - When asked to make a fist, the patient is unable to flex thumb, index, or middle finger

Ulnar nerve injury	Results in ulnar claw deformity and numbness of the ulnar side of the hand and the 5th and half of the 4th digits, with generalized weakness of the ulnar side of the hand and pain
Radial head fracture: Type I	- Type of radial head fracture - Nondisplaced - Can be treated with a long arm spling
Radial head fracture: Type II	- Type of radial head fracture - Displaces with a single fragment - Is typically treated nonoperatively with immobilization for 2-3 weeks and early motion with medical clearance
Radial head fracture: Type III	- Type of radial head fracture - Comminuted - Is treated operatively, with immobilization and early motion within the first postoperative week as medically prescribed - Most appropriate treatment is fragment excision with a long arm cast for 3-4 weeks
Comminuted	Broken or crushed into small pieces

Complex Regional Pain Syndrome (CRPS)	Pain disproportionate to an injury that is either sympathetically maintained or independent of the sympathetic nervous system (previously known as reflex sympathetic dystrophy)
CRPS: Type I	- A type of Complex Regional Pain Syndrome - Develops after a noxious event
Noxious	Harmful, injurious, or detrimental to health
CRPS: Type II	- A type of Complex Regional Pain Syndrome - Develops after a nerve injury
Allodynia	Sensation misinterpreted as pain

Hyperalgia	Increased response to painful stimuli
Hyperpathia	Pain that continues after stimuli are removed
Stellate/Sympathetic block	- Treatment for CRPS - An injection of local anesthetic into the front of the neck or lumbar region of the back to block pain
Intrathecal analgesia	- Treatment for CRPS - Injection of pain medication into the spinal cord
Removal of neuroma	- Treatment for CRPS - Removal of a thickened nerve

Installation of spinal cord stimulator	- Treatment for CRPS - A small electrical pulse generator is implanted in the back to control pain
Installation of peripheral nerve stimulator	- Treatment for CRPS - Electrodes are places on the peripheral nerves to send electrical impulses to control pain
Cumulative trauma disorder (CTD)	- Trauma to soft tissue caused by repeated force - AKA: Overuse syndrome and Repetitive strain injury - Indicates the mechanism of the injury but is not a diagnosis
CTD: Grade I	- Cumulative trauma disorder classification, by severity - Pain after activity, resolves quickly
CTD: Grade II	- Cumulative trauma disorder classification, by severity - Pain during activity, resolves when activity is stopped

CTD: Grade III	- Cumulative trauma disorder classification, by severity - Pain persists after activity, affects work productivity, and involves objective weakness and sensory loss
CTD: Grade IV	- Cumulative trauma disorder classification, by severity - Use of extremity results in pain up to 75% of the time and work is limited
CTD: Grade V	- Cumulative trauma disorder classification, by severity - Unrelenting pain, unable to work
Duran protocol	- An early passive ROM program - The DIP and PIP joints can be passively extended if the other joints of the digit are flexed to initiate tendon glides
Kleinert protocol	Involves active extension of digits with passive flexion via traction, typically a rubberband

Early active motion protocol	Begins within days of surgery to prevent adhesions and promote tendon gliding and excursion
Immobilization protocol	- Is advisable only for patients who are unable to care for themselves or who do not have the cognitive capacity to ensure safety postoperatively - Is sometimes used with children to prevent rupture of the repair
Tendon glides	- A sequence of movements used to promote full tendon excursion and full ROM and prevent adhesions - The sequence of movements is fingers straight, MCP flexion, hook fist, then flat fist
Radial nerve injury	Injury to the radial nerve resulting in wrist drop and possible lack of finger and thumb extension
Radial tunnel syndrome	Entrapment of the radial nerve in an area extending from the radial head to the supinator muscle causing burning pain int he lateral forearm

Anterior interosseous syndrome	Compression to the anterior interosseous nerve resulting in a motor loss involving the flexor digitorum longus, flexor profundus to the index finger, and pronator quadratus
Pronator syndrome	Entrapment of the proximal median nerve between the heads of the pronator muscles causing deep pain in the proximal forearm with activity
Double crush syndrome	Occurs when a peripheral nerve is entrapped in more than one location causing intermittent diffuse arm pain and parathesias with specific postures
Parasthesia	A sensation of tingling, prickling, pricking, or burning of a person' skin with no apparent long-term physical effect
Carpal tunnel syndrome	- Caused by entrapment of the median nerve as it courses through the carpal tunnel - Sensory impairment involves numbness and tingling in the thumb, index, and middle fingers, especially at night - Motor impairment presents as diminished fine motor coordination and in advances cases, the adductor pollicis muscle may be atrophied

Tinel's sign	- For carpal tunnel syndrome: A tap on the median nerve at the wrist to elicit symptoms - For cubital tunnel syndrome: A tap over the cubital tunnel to elicit symptoms
Phalen's test	Holding the wrist in full flexion for 1 minute to elicit changes in sensation
Moberg pickup test	- A timed test involving picking up, holding, manipulaitng, and identifying small objects - It is used with children and cognitively impaired adults to test median nerve function
Pillar pain	Pain on either side of the surgical release after carpal tunnel surgery
Cubital tunnel syndrome	- Caused by proximal ulnar nerve compression at the elbow between the medial epicondyle and the olecranon process - May cause decreased sensation in the little finger and ulnar half of the ring finger, as well as decreased grip and pinch strength because of weak interossei, adductor pollicis, and flexor carpi ulnaris muscles

Froment's sign	Flexion of the IP of the thumb when a lateral pinch is attempted
Wartenberg's sign	The 5th finger held abducted from the 4th finger
Elbow flexion test	Involves holding the elbow in flexion for 5 minutes with the wrist neutral to elicit symptoms
de Quervain syndrome	- Caused by cumulative microtrauma resulting in tenosynovitis of the thumb muscle tendon unit, the abductor pollicis brevis, and the tendons in the first dorsal compartment of the wrist - Symptoms include pain at the base of the thumb and extending into the lower arm
Finkelstein test	- Make a fist with the thumb places in the palm and then ulnarly deviate the wrist - The test is positive if pain is felt with this motion

Claw deformity	- Distal ulnar nerve compression or lesion at the wrist - Results in deformity in which the MCPs hyperextend and the IPs of the ring and little finger flex, hand arches are flattened, and pinch strength is lost
Jeanne's sign	Hyperextension of the thumb MCP
Digital stenosing tenosynovitis	- More commonly known as trigger finger - Occurs with sheath inflammation or nodules near the A1 pulley - Treated by splinting the MCP at 0 degrees for 3-6 weeks OR surgically releasing the A1 pulley
Protective reeducation	Educates clients to visually compensate for sensory loss and to avoid working with machinery and temperatures below 60 degrees
Discrimination reeducation	Uses motivation and repetition in a vision-tactile matching process in which clients identify objects with and without vision

Desensitization	A process of applying different textures and tactile stimulation to reeducate the nervous system so clients can tolerate the sensations during functional use of the upper extremity
Cryotherapy	- Cools tissue to 1-2 cm depth - Includes ice massage, ice, towels, cold packs, cold water immersion baths, cool whirl pools, cold compression units, and vapocoolant sprays
Thermotherapy	- Heats tissue to 1-2 cm depth - Includes warm whirlpools, fluidotherapy, hot packs, contrast baths, and paraffin baths
Ultrasound	- Heats tissue to 1-5 cm depth - Has thermal and nonthermal effects
Phonophoresis	The use of ultrasound to promote absorption of topically applied medication to accelerate tissue repair and decrease inflammation

Electrical stimulation	Includes Neuromuscular Electrical Stimulation (NMES), Transcutaneous Electrical Nerve Stimulation (TENS), and iontophoresis
Low-level laser and light therapy	Includes light emitting diodes, super luminous diodes, and low-level laser diodes
Resting hand splint	- Wrist at 20-30 degrees of extension - Thumb at 45 degree palmar abduction - MCPs at 35-45 degrees flexion - PIPs and DIPs in slight flexion
Antideformity resting hand splint	- Used often for burns - Intrinsic plus position - Wrist at 30-40 degrees extension - Thumb at 45 degrees palmar abduction - MCPs at 70-90 degrees flexion - PIPs and DIPs in full extension
Ball or cone antispacticity splints	Are ulnar or volar based and provide thumb palmar or radial abduction, and hard surface in contact with finger flexors, and serial casting for the wrist, elbow, knee or ankle to decrease soft tissue contractures

Wrist cock-up splints	- Dorsal or volar wrist immobilization - Maintains hand arches, full thumb movement, and full MP flexion
Thumb spica splints	- Volar thumb or radial gutter thumb immobilization - Are used on the long or short opponens to provide CMC immobilization
Anti-foot drop splints	Maintain 90 degrees ankle dorsiflexion
Dynamic splints	- Having moving parts - Are designed to correct contractures, increase passive motion, protect recent surgery, or substitute fr lost active motion
Pressure ulcer severity: Stage 1	- A classification of ulcer severity - Intact skin with non-blanchable redness of a localized area, usually over a bony prominence - Darkly pigmented skin may no have visible blanching, it's color may differ from the surrounding area - The area may be painful, firm, soft, warmer, or cooler compared to adjacent tissue

Pressure ulcer severity: Stage 2	- A classification of ulcer severity - Partial thickness loss of dermis presenting as a shallow open ulcer with a red/pink wound bed, without slough - May also present as an intact or open/ruptures serum filled blister
Slough	A layer or mass of dead tissue separated from living tissue
Pressure ulcer severity: Stage 3	- A classification of ulcer severity - Full thickness skin loss - Subcutaneous fat may be visible but bone, tendon, or muscle are not exposed - Slough may be present, but does not obscure the depth of tissue loss - May include undermining/tunneling
Pressure ulcer severity: Stage 4	- A classification of ulcer severity - Full thickness skin loss with exposed bone, tendon, or muscle - Slough or eschar may be present on some parts of the wound bed - Often include undermining and tunneling
Primary wound closure	Wound is closed with sutures

Secondary wound closure	Wound is left open and allowed to close on its own
Delayed wound closure	Wound is cleaned, debrided, and observed 4-5 days before suturing it closed
Wound healing: Inflammatory Phase	- A phase of wound healing - Includes clotting and vasoconstriction, white blood cell migration, and release of histamines and prostaglandins that cause vasodilation and increased tissue permeability - Acute phase lasts 24-48 hours to 7 days - Subacute phase lasts 7-14 days - Local signs include redness, swelling, heat, and pain
Wound healing: Proliferative phase	- A phase of wound healing - Epithelialization resurfaces the wound, tissue granulation forms new collagen and blood vessels, and myofibroblasts connect to the wound margins - Wound contraction lasts 5 days to 2-3 weeks
Wound healing: Remodeling phase	- A phase of wound healing - Scar tissue first consists of randomly arranged collagen fibers, and as the scar matures, the collagen is broken down and remodeled. The scar is then more elastic, smoother, and stronger. - This phase lasts 2 weeks to 1-2 years

Level 1	No Response: Total Assist - no observable change in behavior when presented with stimuli
Level 2	Generalized Response: Total Assist - responds to stimuli by physiological change, gross movement, or non-purposeful vocalization - responses may be delayed
Level 3	Localized Response: Total Assist - inconsistent response to simple commands - responses directly related to type of stimuli - may respond to particular people (friends, family)
Level 4	Confused/Agitated: Max Assist - unable to cooperate with treatment efforts - responses/actions may be inappropriate or disproportionate
Level 5	Confused/Inappropriate Non-Agitated: Max Assist - not oriented to person/place/time - unable to learn new information, but may be able to perform previously learned actions if structured and cued - responds to simple commands consistently

Level 6	Confused/Appropriate: Mod Assist - inconsistent orientation to person/place/time - attends to familiar tasks in non -distracting environment for 30 minutes - basic problem solving for tasks - supervised for very familiar tasks (ie. self-care) - unaware of ability limitations or safety risks - responds to simple commands consistently
Level 7	Automatic/Appropriate: Min Assist for ADLs - consistent orientation to person/place, mod assist for time - attends to familiar tasks in distracting environment 30 minutes - some carry over of new learning - aware of task performance, requires min assist to modify plan - largely unaware of ability limitations or safety risks - lacks awareness for others needs/feelings - oppositional/uncooperative - unable to recognize if socially inappropriate
Level 8	Purposeful/Appropriate: Stand-by Assist - consistently orients to person/place/time - independently completes familiar task in distracting environment for 1 hour - stand-by assist for use of memory aides/devices - completes familiar ADLs/some IADLs with stand-by assist, requires min assist to modify plan - aware of impairments/disability when interfering with task - awareness of others needs/feeling with min assist - irritable/low frustration tolerance/depressed - able to recognize if socially inappropriate, min assist to correct
Level 9	Purposeful/Appropriate: Stand-by Assist on request - independently manages multiple tasks for at least 2 hours - independently uses memory aides/devices - independent with ADLs, most IADLs - accurately estimates ability - acknowledges needs/feelings of others - low frustration tolerance, depression, irritability may continue - socially appropriate with stand-by assist
Level 10	Purposeful/Appropriate: Modified Independent - able to complete multiple tasks but may require breaks - able to implement own memory aides/devices - independent with ADLs and IADLs, may require extra time - acknowledges needs/feelings of others, responds appropriate - periodic depression, irritability and frustration in stress periods - socially appropriate while consistently independentl

Stage 1	No disability is noted
Stage 2	Person complains of forgetting typical age-related information ie. location of keys, wallet, etc.
Stage 3	Beginning signs of impairment emerging Strengths: 1) Independent in IADL 2) Recognizes challenges to avoid to minimize impact of deficits 3) Can compensate as an adaptive mechanism Weakness: 1) Forgets important information (a first) 2) Difficulty with complex tasks 3) Difficulty negotiating new locations/directions
Stage 4	Deficits notable in IADLs Strengths: 1) Performs simple, repetitive ADLs independently 2) Can live at home with support 3) Can follow simple verbal/demonstrated instructions Weakness: 1) Increasingly forgetful 2) Unable to follow/sequence written cues 3) Unable to perform familiar but challenging tasks 4) Challenged by word-finding 5) Requires assistance at home
Stage 5	Cannot function independently Strengths: 1) Performs ADLs (and some IADLs) with cues/assistance 2) Responds to encouragement Weakness: 1) Poor judgement 2) Difficulty with decision making 3) Forgets to maintain hygeine 4) Unable to safely drive

Stage 6	Cannot perform ADLs without cues Strengths: 1) Performs components of familiar tasks 2) Follows demonstrations/hand-over-hand cueing Weakness: 1) Significant deficits following 2-step directions 2) Cannot sequence steps of ADL tasks 3) Cannot speak full sentences 4) Incontinent of bowel/bladder
Stage 7	May be in vegetative state. Likely bedbound and unable to respond verbally/non-verbally

Tinel's	percussion over site of possible entrapment + = parasthesia's produced
Phalen/Reverse Phalen	wrist in max flexion/ext = + produces parasthesias
Allen's test	for arterial patency palpate radial and ulnar arteries at the wrist/ occlude- pt. flex/ext digits to blanching, open hand- compare hands to each other normal = 3-5 seconds to return to normal
CMC grind test	approximate CMC jt and rotate on the scaphoid + = increased pain= CMC arthritis
Finklestein's test	flex thumb across palm and bend fingers over top- pt then ulnarly deviates wrist + = pain in thumb extensors

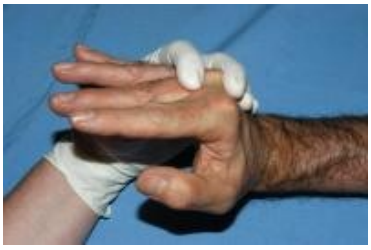
Froments sign	 pt pinches paper with key pinch + = exaggerated IPJ which suggests FPL substitution + = weakness of AP (ULNAR) and FPB (ulnar & median)
Jeanne's sign	 pt pinches paper with key pinch + = extreme hyperextension of MPJ + = weakness of adductor pollicis (AP) (ULNAR INNERV)
Wartenberg's sign	pt adducts small finger from an abducted position towards the ring finger + = unable to adduct tests ULNAR nerve function (specifically 3rd palmar interosseous muscle -PAD)
Radial nerve test	apply manual resistance to extended middle finger, with elbow extended and neutral wrist + = aching pain be sure to R/O lateral epicondylitis
Radial nerve test for Radial tunnel syndrome	with elbow in extension, manually resist supination + = pain 4 cm distal to lat. epic. indicating compression of PIN branch of radial nerve (probably b/t 2 heads of supinator muscle)

Tennis elbow test for lateral epicondylitis	with elbow in extension, resist middle finger extension + = pain at origin of extensor muscles at lat. epic. (some say elbow can be in flexion with this test)
Cozen's test	 put hand on pt's lat. epic.- position patient with arm in pronation & elbow flexed (or extended?) with a fist: pt then asked to extend wrist while radially deviating as the movement is manually resisted + = sudden and severe pain at the lat. epic. *******check mackin p.1274-1276
Medial epicondyle test	pt flexes elbow and forearm is neutral: therapist manually resists wrist flexion and FA pronation + = pain at the medial epicondyle
Scaphoid shift test/Watson's test	sit in arm wrestle position- grasp wrist from radial side, putting thumb on palmar aspect of scaphoid & wrap fingers around radius- use other hand to hold over pt's metacarpals- begin in UD and slight ext. and move wrist radially and into slight flex. holding pressure over the scaphoid + = 'clunk' with release of therapist's fingers or patient has pain += scaphoid ligamentous instability
Ballottement test	stabilize lunate (palmar and dorsal) with my thumb and index fingers- with my other hand try to move the triquetrum and pisiform dorsally & then palmarly + = patient has pain, laxity or crepitis + = Luno-triquetral instability

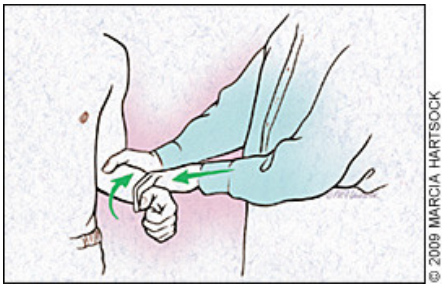
Piano key test	stabilize radius with one hand- with 2nd hand press volarly on ulna and then dorsally- test in BOTH pronation and supination, compare to other side + = "spring back" reaction of the ulna + = DRUJ instability
Oblique retinacular ligament test	stabilize digit w/one hand while passively flexing DIPJ with PIPJ in extension- then retest DIPJ flexion with the PIPJ in flexion + = DIPJ greater flexion with PIPJ flexed (if same limitation in both, then pt has jt contracture)
Chair test	patient is asked to lift a chair with the shoulder adducted, the elbow extended, and the wrist pronated + = pain at lateral epicondyle suggesting tennis elbow
Mills test	 test for lateral epicondylitis extend elbow, flex wrist while palpating lateral epicondyle += pain at lat. epic.
Valgus stress test	tests integrity of Medial Collateral Ligament aka (Ulnar Collateral Ligament) tests Lateral Collateral Ligament (Radial Ligament) Elbow flexed 20-30 degrees- examiners hand at proximal wrist and on medial epicondyle- apply an abduction or valgus force at the distal forearm to test medial ligament stability

Varus stress test	tests Lateral Collateral Ligament (Radial Ligament) Elbow flexed 20-30 degrees Patients arm is stabilized with one of the examiners hands at the medial distal humerus (elbow), and the other hand is placed above the patients lateral distal radius (wrist). An adduction or varus force is applied at the distal forearm by the examiner to test the radial collateral ligament.
Hitch-hikers test	resist thumb extension at the MPJ of thumb -tests for DeQuervain's syndrome, specifically EPB
Duchenne's sign	 clawing of ring and little finger from ULNAR NERVE compression
Sunderland's sign	inability to rotate, oppose or supinate the little finger towards the thumb- ulnar nerve problem
Bunnell's sign	thumb unable to pinch against the index finger to make a full circle- ULNAR NERVE problem

Egawa's sign	inability of flexed middle finger to abduct radially and ulnarly and to rotate at the MPJ-ULNAR NERVE problem at interossei
Mannerfelt's sign	 hyperflexion sign: thumb IPJ is flexed and the MPJ slightly hyperextended, thumb supinated index finger- w/pinching displays PIP flexion and DIP hyperextension- ulnar nerve
Hook test	- patient actively supinates the flexed elbow; - intact hook test permits the examiner to hook his or her index finger under the intact biceps tendon from the lateral side; - w/ an abnormal hook test (distal avulsion), there is no cord-like structure to palpate or hook; tests for distal biceps tendon rupture
Catch up clunk test	Tests for midcarpal instability active RD to UD of wrist and back + test= clunk and pain just beyond neutral as wrist moves into ulnar deviation Pretty much same as Watson's shift test
TFCC test	Tests central TFCC- area of weightbearing w/poor bld Examiner moves pt. into UD and moves proximal carpal row dorsal to volar w/gentle compression over TFCC

Bouvier test	 Tests if PIPJ and extensor mechanism is working Place MP in slight flexion and see if IP's extend- if so EDC and sagittal bands are working Can use MP blocking splint to increase function
Allen test	tests radial and ulnar artery patency (per Rehab of hand, the norm is 3-5 seconds) Norm= 7 seconds for color to return Occlude each artery for 30 seconds by elevating and fisting: Still elevated, the hand is then opened. It should appear blanched (pallor can be observed at the finger nails). Ulnar pressure is released and the color should return in 7 seconds.
Spurling's test	aka Foraminal compression test for radiculopathy -extend the neck, rotate the head and then apply downward pressure + if pain radiates to opposite side of rotation side
Andre-Thomas sign:	Wrist falls into volar flexion during middle finger extension- ULNAR NERVE
Masse sign:	Flattening of the metacarpal arch- ULNAR NERVE

"Cross - fingers test" :	unable to cross index over middle or vice versa ULNAR NERVE
Pitres-Testut sign:	Inability to abduct the middle finger either radially or ulnarly with the hand flat on a surface -ULNAR
Handshake test:	****tennis elbow test- mackin p.1274-1276
Dumbbell test:	****tennis elbow test-mackin p.1274-1276
Berger test:	patient has swelling at volar wrist thus indicating a flexor synovitis - a "compulsive gripper" -may be seen with carpal tunnel

Superficial branch of radial nerve compression test position:	elbow in extension, forearm hyperpronated, wrist in ulnar flexion x 1 minute- + = numbness and tingling on dorsal radial aspect of hand
Superficial branch of radial nerve emerges where in the forearm?	between the tendons of BR and ECRL
Yergason test:	 determines whether head of biceps is stable in the bicipital groove- pt fully flexes elbow while examiner grasps elbow and wrist- pt resists motion while examiner simultaneously extends elbow and externally rotates the
GRIT test:	measure of grip strength in full supination, full pronation and neutral FA positions- calculate values as ratio of supination/pronation. If pt has GRIT value >1.0 on involved side & <1 on uninvolved side, the potential for disk tear is high
TFCC load test:	indicates either a peripheral or central lesion- axial load put thru pronated and ulnarly deviated wrist (rotation sometimes mentioned) test+ = pain

Articular disk shear test:	assess central lesions of TFCC- elbow on table, FA in neutral- stabilize radius w/1 hand while place thumb of other hand dorsally over distal ulna and other finger on pisotriquetral complex volarly- squeeze fingers causing dorsal glide of pisotriquetral on ulnar head and shearing of central disk
"Squeeze" test for DRUJ instability:	squeeze radius and ulna together and passively rotate forearm- no pain seen with TFCC tears
Shoulder Dislocation Tests	Anterior Apprehension Sign, Posterior Apprehension Sign
Bicep Tendon Pathology	Ludington's test, Speed's test, Yergason's test
Rotator Cuff Pathology/Impingement	Drop arm test, Hawkins-Kennedy impingement test, Neer impingement test, Supraspinatus test

Thoracic Outlet Syndrome	Adson's Test, Allen test, Costoclavicular syndrome test, Roos test, Wright (hyperabduction) test
Glenoid Labrum Pathology	Clunk Test
Anterior Apprehension Sign for Shoulder	pt in supine with shoulder ABD 90 deg & elbow flexed 90 deg. PT places one hand on the elbow for stabilization and other on the wrist. PT slowly ER the shoulder. (+) a look of apprehension or facial grimace prior to reaching the end point. Identifies (past hx of) anterior shoulder dislocation. AKA: Crank Test.
Posterior Apprehension Sign for Shoulder	pt in supine with shoulder ABD 90 deg (in scapular plane) with scapula stabilized by the table with elbow flexed 90 deg. PT places one hand on the elbow and the other at the wrist. PT applies a posterior force through the shoulder via force on the elbow while simultaneously moving shoulder into IR and horizontal ADD. (+) a look of apprehension or facial grimace prior to reaching the end point. Identifies (past hx of) posterior shoulder dislocation. AKA: Stress Test
Ludington's test	pt in sitting. PT instructs pt to clasp both hands behind the head with the fingers interlocked f/b alternately contracted and relax the biceps muscles. (+) absence of movement in the biceps tendon. Indicates of a rupture of the long head of the biceps.

Speed's test	 pt in sitting or standing with elbow in full extension and forearm supinated. PT places one hand over the bicipital groove and other hand on volar surface of forearm. pt instructed to resist shoulder flexion. (+) pain or tenderness in bicipital groove. Identifies bicipital tendonitis/tendonosis. AKA: Biceps Straight Arm Test
Yergason's test	pt in sitting with shoulder in neutral/stabilized against trunk, elbow flexed 90 deg and forearm pronated. PT places one hand on patient's forearm and other over bicipital groove. pt instructed to actively supinate and laterally rotate against resistance. (+) tendon of biceps long head will "pop out" of groove, (+) pain or tenderness in bicipital groove. Identifies bicipital tendonitis and integrity of transverse ligament.
Drop arm test	pt in sitting with shoulder passively ABD 120 deg. PT guards pt's arm from falling in case it gives way. pt instructed to SLOWLY bring arm down to side. (+) pt unable to lower arm slowly back down to side, (+) presence of severe pain. Identifies tear and/or full rupture of rotator cuff.
Hawkins-Kennedy impingement test	pt in sitting or standing. PT flexes the patient's shoulder to 90 degrees and forcibly IR the shoulder. (+) pain. Indicates shoulder impingement involving the supraspinatus tendon.
Neer impingement test	pt in sitting or standing-pt places affected side hand on opposite shldr. PT positions one hand on the posterior aspect of the patient's scapula and the other hand stabilizing the elbow. PT passively IR the shoulder into full shoulder ABD. (+) facial grimace or pain. Indicates shoulder impingement involving the supraspinatus tendon and long head of the biceps.

Supraspinatus test	STEP 1: pt in sitting w/ shoulder ABD 90 deg & no rotation (thumbs up) and elbow fully extended. pt instructed to resist shoulder ABD as PT is giving force to distal forearm. STEP 2: pt in sitting w/ shoulder in "empty can" position (thumbs down). pt instructed to resist shoulder ABD as PT is giving force to distal forearm. (+) weakness while in "empty can" or pain in supraspinatus. Identifies tear &/or impingement of supraspinatus tendon or suprascapular nerve involvement.
Adson's Test	pt in sitting or standing. PT monitors the radial pulse. pt instructed to rotate the head towards the test shoulder then extends head- and arm is extended and ER as patient takes a deep breath. (+) absent or diminished radial pulse. Indicates thoracic outlet pathology.
Allen Test for Shoulder	pt in sitting or standing with the test arm resting at side. PT monitors the radial pulse while placing the arm in 90 deg of ABD, ER, and elbow flexion. pt instructed to rotate the head away from the test shoulder. (+) absent or diminished pulse. Identifies throacic outlet syndrome. AKA: Modified Wright Test
Costoclavicular syndrome test	pt in sitting. PT monitors the patient's radial pulse and instructs pt to assume a military posture. PT draws the pt's shoulder down (w/ elbow fully extended) and back into shoulder extension. (+) absent or diminished radial pulse. Identifies thoracic outlet syndrome (costoclavicular syndrome) caused by compression of the subclavian artery b/w the first rib and the clavicle.
Wright (hyperabduction) test	pt in sitting or supine. PT monitors radial pulse while moving pt's arm into max shoulder ABD and ER. pt may accentuate symptoms by taking a deep breath and actively rotating the head opposite to side being tested. (+) absent or diminished radial pulse. Detects compression in the costoclavicular space (associated with thoracic outlet pathology).

Clunk Test	pt in supine. PT places one hand on the posterior aspect of the pt's humeral head and other hand stabilizes the humerus proximal to the elbow. PT passively fully ABD and ER the arm f/b applying an anterior directed force to the humerus. (+) audible "clunk" or grinding while performing test. Identifies a glenoid labrum tear.
Costoclavicular syndrome	pt typically c/o thoracic outlet sx while wearing a backpack or heavy coat.
Acromioclavicular Shear Test	pt in sitting w/ arms resting @ side. PT clasps hands and places heel of 1 hand on spine of scapula and heel of other on clavicle. PT squeezes hands together causing compression of AC joint. (+) reproduces pain in AC joint. Identifies dysfunction of AC joint (ie. arthritis, seperation, etc)
Roos Test	pt in sitting or standing. PT moves pts shoulder into ABD 90 deg, full ER, & elbow flexion 90 deg. pt instructed to open and close the hands slowly for 3 minutes. (+) pt unable to keep arms in starting position for 3 min, suffers ischemic pain, heaviness or profound weakness of the arm, numbness & tingling of the hand. (-) if only minor fatigue and distress. Indicates thoracic outlet pathology.
Halstead maneuver:	locate radial pulse, then apply downward traction on arm while pt. hyperextends neck and rotates to opposite side += diminished or absent pulse Indicates thoracic outlet pathology

Allen's test	for arterial patency palpate radial and ulnar arteries at the wrist/ occlude- pt. flex/ext digits to blanching, open hand- compare hands to each other normal = 3-5 seconds to return to normal 7 seconds = abnormal?
Froments sign	pt pinches paper with key pinch + = exaggerated IPJ which suggests FPL substitution + = weakness of AP (ULNAR) and FPB (ulnar & median)
Jeanne's sign	pt pinches paper with key pinch + = extreme hyperextension of MPJ + = weakness of adductor pollicis (AP) (ULNAR INNERV)
Radial nerve test for Radial tunnel syndrome	with elbow in extension, wrist in flexion then patient manually resists supination and elbow flexion + = pain 4 cm distal to lat. epic. indicating compression of PIN branch of radial nerve (probably b/t 2 heads of supinator muscle)
Cozen's test aka tennis elbow test	put hand on pt's lat. epic.- position patient with arm in pronation & elbow in slight flexion with them making a fist: pt then asked to extend wrist while radially deviating as the movement is manually resisted + = sudden and severe pain at the lat. epic. per Macklin

Mills test	test for lateral epicondylitis extend elbow, flex wrist while palpating lateral epicondyle- no patient movement += pain at lat. epic.
Valgus stress test	tests integrity of Medial Collateral Ligament aka (Ulnar Collateral Ligament) Elbow flexed 20-30 degrees- examiners hand at proximal wrist and on medial epicondyle- apply an abduction or valgus force at the distal forearm to test medial ligament stability
Varus stress test	tests Lateral Collateral Ligament (Radial coll. Ligament, specifically the lateral ulnar collateral ligament) Elbow flexed 20-30 degrees Patients arm is stabilized with one of the examiners hands at the medial distal humerus (elbow), and the other hand is placed above the patients lateral distal radius (wrist). An adduction or varus force is applied at the distal forearm by the examiner to test the radial collateral ligament.
Hitch-hikers test	resist thumb extension at the MPJ of thumb -tests for DeQuervain's syndrome, specifically EPB :)
Duchenne's sign	clawing of ring and little finger from ULNAR NERVE compression

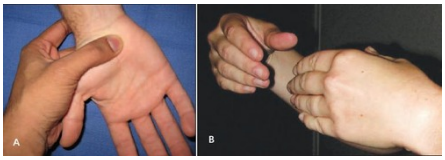
Mannerfelt's sign	hyperflexion sign: thumb IPJ is flexed and the MPJ slightly hyperextended, thumb supinated index finger- w/pinching displays PIP flexion and DIP hyperextension- ulnar nerve problem
Scaphoid shift test/Watson's test	sit in arm wrestle position- grasp wrist from radial side, putting thumb on palmar aspect of scaphoid & wrap fingers around radius- use other hand to hold over pt's metacarpals- begin in UD and slight ext. and move wrist radially and into slight flex. holding pressure over the scaphoid + = 'clunk' with release of therapist's fingers or patient has pain += scaphoid ligamentous instability awkward hand positions!!!! Ulnar deviation w/ext into Radial deviation w/wrist flex NORMAL HAND BIOMECHANICS= WRIST EXT W/RD AND WRIST FLEX W/UD= DART THROWER MOTION WATSON'S TEST= THE OPPOSITE OF THAT=AWKWARD
Bouvier test/maneuver	 Tests if PIPJ and extensor mechanism/EDC is working + TEST= MODIFICATION WORKS & DIGIT EXTENDS Place MP in slight flexion and see if can actively extend IP jts- if so, EDC and sagittal bands are working Can use MP blocking splint to increase function *picture above is positive sign- negative sign would be flexed MP jt and unable to extend(=lateral band prob?) - BY PLACING PROXIMAL JT IN FLEXION, ALLOWS MORE PULL THROUGH AT DISTAL JTS- IF UNABLE TO GET EXTENSION WITH PROXIMAL FLEXION, THEN THERE IS A PROBLEM
Allen test	tests radial and ulnar artery patency Norm= 3-5 seconds for color to return Occlude each artery for 30 seconds by elevating and fisting: Still elevated, the hand is then opened. It should appear blanched (pallor can be observed at the finger nails). Ulnar pressure is released and the color should return in 3-5 seconds. ASHT says 7 sec?
Pitres-Testut sign:	Inability to abduct the middle finger either radially or ulnarly with the hand flat on a surface OR unable to bring tips of extended fingers together into a cone= due to loss of ulnar adductor poll, interos. and hypothenars and clawing of rf/sf so cant make shape of cone

Handshake test:	Kraushaar/Nirschl- determines which pts have good outcomes- #1 shake hands with elbow extended and supinate against resistance #2 shake hands with elbow @ 90 and supinate against resistance If pain is less in flexed position, non-op mgmt should be more successful- if same then operation probably needed- FLEXED=GOOD- this is because its supposed to be less painful in flexed rather than extension.
Dumbbell test:	Solveborn- functional test to assess pain w/resisted wrist ext & supination- pick up 2kg (4-5#)dumbbell from tabletop using wrist extension, then supinate the FA- pain 0-4: 4=fainting 0=no pain
Berger test: more of a sign	patient has swelling at volar wrist thus indicating a flexor synovitis - a "compulsive gripper" -may be seen with carpal tunnel= AKA Lumbrical incursion test
Superficial branch of radial nerve emerges where in the forearm?	between the tendons of BR and ECRL- distal radial FA
Yergason test:	determines whether head of biceps is stable in the bicipital groove- pt fully flexes elbow while examiner grasps elbow and wrist- pt resists motion while examiner simultaneously extends elbow and externally rotates the arm

GRIT test:	measure of grip strength in full supination, full pronation and neutral FA positions- calculate values as ratio of supination/pronation. If pt has GRIT value >1.0 on involved side & <1 on uninvolved side, the potential for disk tear is high >1 indicates pathology
TFCC test for central tear	Tests central TFCC- area of weightbearing w/poor bld Examiner moves pt. into UD and moves proximal carpal row dorsal to volar w/gentle compression over TFCC
Articular disk shear test:	assess central lesions of TFCC- elbow on table, FA in neutral- stabilize radius w/1 hand while place thumb of other hand dorsally over distal ulna and other finger on pisotriquetral complex volarly- squeeze fingers causing dorsal glide of pisotriquetral on ulnar head and shearing of central disk NO DEVIATION NEEDED
Hueston's table top test	When there is 30 degrees of flexion deformity at the MCP joint, the patient is unable to place their palm flat against a hard surface, for example a table= (+)
McMurtry's test: aka compression test	Carpal tunnel compression test- apply pressure at the BASE OF THE PALM OVER THE MEDIAN NERVE AT THE PROXIMAL EDGE OF THE TRANSVERSE CARPAL LIGAMENT, just B4 it enters the canal. similar to Durkan's test

Murphy sign:	lunate dislocation - chronic wrist pain, patient's third metacarpal head is "sunken" and is the same height as the second and fourth metacarpal head while the patient is making a fist. Normally the knuckle formed by the head of the third metacarpal is more prominent and protrudes further distally as compared to the knuckles of the second and fourth metacarpal heads. If the knuckle of the third metacarpal head is level with the knuckles of the second and fourth metacarpal heads, the sign is positive and indicative of a lunate dislocation.
scapular "Flip" sign (+):	seen as lift/flip/isolated winging of medial border of scapula with ER of shoulder, NOT elevation, associated with spinal accessory nerve and trapezius weakness -identifies a patient with SANP= spinal accessory nerve palsy
Lumbrical provocation test:	LPT: hold hand as fist for 1 minute (to evaluate changes in paresthesia) - if positive then also has median nerve compression distal to carpal tunnel at the lumbrical level aka BERGER"S TEST
Pollock's sign:	due to loss of ulnar innervated FDP in high ulnar lesion, therefore CANNOT flex DIP of small finger
Bowler's thumb:	neuroma of ulnar digital nerve of thumb

Elson's test:	- for early boutonniere- only reliable test MPs in extension and PIP jt flexed over table edge and held by examiner- pt asked to extend PIP against resistance- any pressure felt over middle phalanx can be exerted ONLY by intact central slip and the DIP jt will NOT extend because a competent EDC/central slip will prevent lateral bands from acting distally -If complete central slip disruption, the DIP jt will go rigid OR extend due to effort of lateral bands
"Buehler elbow flexion test:	up to 3 min of elbow flex to 90 w/supination and extended wrist- += aching or parasthesias tests for cubital tunnel
CIND aka "catch up clunk" test	tests mid carpal instability of proximal row -the wrist moving from radial to ulnar deviation and back. Begin radial dev and go to ulnar deviation. A positive test will result in a dunk, jump, or thud and hurt at some point just beyond the neutral wrist position towards ulnar deviation where the unstable bone or segment of bones suddenly attains its normal position for a deviated hand. In a typical CIND, the proximal carpal row will flex as the hand is in radial deviation, but as the hand moves toward the midposition and into ulnar deviation, the proximal row remains flexed= abnormal, its supposed to extend as wrist UD. It is not until the extremes of ulnar deviation that the proximal row suddenly shifts into extension, thus causing the clunk. A positive test indicates instability, but not specifically whether it is at the midcarpal or radiocarpal joint or at both levels. A similar dunk may be heard in the presence of scaphoid or LT instability; therefore, carpal instability provocative maneuvers should also be performed to rule out these other lesions. Hunter book
Clamp sign:	indicates scaphoid fracture- when asked where the pain is the patient will clamp their hand around their wrist at the scaphoid bone area
ECU synergy test: for ECU tendonitis/tear	FA held in full supination, elbow flexed on table- pt resists thumb-index abduction recreating pain at ECU

Durkin's compression test: aka CCT or carpal compression test	 Dirken's median nerve compression test is the most sensitive physical test for detecting carpal tunnel syndrome. The examiner performs the test by applying direct pressure on the median nerve AT THE MIDDLE OF THE TRANSVERSE CARPAL TUNNEL WITH BOTH THUMBS FOR 30 SECONDS- typically done with a piece of equipment for standardized pressure. similar to McMurtry's test
Shoulder or Step sign:	 thumb sign seen in OA- radial prominence at base of thumb from dorsal subluxation of of thumb
Crank test: thumb	 similar to grind test (rotation) -axial loading then passive flex/ext of 1 MC at the CMC joint
Linscheid test:	performed in the CENTRAL DORSAL ZONE of the wrist to detect ligament injury and instability of the 2nd and 3rd CMC joints. The Linscheid test is performed to detect ligament injury and instability of the second and third CMC joints.[50] This test is performed by supporting the metacarpal shafts and pressing distally over the metacarpal heads in a palmar and dorsal direction. A positive test produces pain localized to the CMC joints.
AER test:	90/90 shldr/ER for several minutes- to produce traction on the brachial plexus and subclavian vessels as they are pulled under the coracoid process and pec minor muscle insertion - tests for superior thoracic outlet= 1st rib, manubrium of sternum, first 1 or 2 cervical ribs posteriorly= a bony boundary the plexus must pass- the troublemaker is the first rib if its elevated

EAST test:	aka elevated arm stress test aka ROOS test for TOS
O"Donaghue's maneuver:	a finding of AROM that is greater that PROM that raises the possibility of symptoms manification
Mankopf's test-	absence of increased HR of at least 5% upon palpation of reportedly painful area- sign of symptom magnification
BALLENTINE SIGN-	collapse of DIP of index and IP of thumb when attempting pinch= AIN neuropathy
VOLKMANN'S TEST= AKA VOLKMANS PASSIVE MUSCLE STRETCH TEST	TESTS FOR DIGITAL FLEXOR TENDON TIGHTNESS AND VOLKMAN'S ANGLE 1. HOLD DIGITS IN EXTENSION AND FLEX WRIST 2. EXTEND WRIST WITH FINGERS EXTENDED- IF NO FLEXOR TENDON TIGHTNESS, FULL EXTENSION OF THE WRIST IS POSSIBLE. WRIST EXT TO LESS THAN NEUTRAL (VOLKMAN'S ANGLE) GRADES SEVERITY OF MUSCLE CONTRACTURE VOLKMAN'S ANGLE= ANGLE FROM FULL WRIST FLEXION TO NEUTRAL WRIST -TEST USED WITH COMPARTMENT SYNDROME, SOMETIMES WITH SUPRACONDYLAR FX'S

Describe the position of deformity	wrist flexion, MCP hyperextension, IP flexion, thumb adduction
Describe the resting hand position	wrist 10-20 degrees extension, MCP 30-45 degrees flexion, IP 0-20 degrees flexion, thumb abducted
Describe the safe hand position	wrist 20-30 degrees extension, MCP 50-70 degrees flexion, IP in extension, thumb abducted and extended
Brachial plexus and erb palsy injury splint	flail arm splint for brachial plexus, elbow lock splint for erb palsy
radial nerve palsy splint	dynamic wrist, finger, and thumb extension splint

median nerve injury splint	opponens splint, c-bar or thumb post splint
ulnar nerve injury splint	dynamic/static splint to position MCP's in flexion
Combined ulnar and median injury splint	figure-of-eight or dynamic MCP flexion splint
spinal cord injury (C6-C7) splint	tenodesis splint
carpal tunnel syndrome splint	wrist in neutral, should be worn at night and during the day if performing repetitive activity

cubital tunnel syndrome splint	elbow in 30 degrees of flexion
DeQuervian's splint	thumb splint include wrist, IP joint free
Pronator Teres Syndrome splint	elbow splint at 90 degrees flexion with forearm in neutral
Guyon's Canal splint	wrist splint in neutral (ulnar n.)
median nerve laceration splint	dorsal protection splint with wrist in 30 degrees flexion for low lesion, elbow in 90 degrees flexion for high lesion

ulnar nerve laceration splint	MCP flexion block splint
radial nerve laceration splint	dynamic extension splint
dupuytren's disease splint	extension splint initially at all times
Describe Dupuytren's disease	fascia becomes thick and contracted, results in flexion deformities of the involved digits
Describe skiers (gamekeepers) thumb	rupture of UCL of the MCP joint of the thumb

Skiers (gamekeepers) thumb splint	hand based thumb splint for UCL tear
Describe DeQuervain's	stenosing tenosynovitis of the abductor pollicis longs (APL) and the extensor pollicis brevis (EPB)
Trigger finger splint	hand based, MCP extended, IP joint free
Describe Trigger finger	tenosynovitis of the finger flexors, most commonly the A1 pulley
Describe carpal tunnel syndrome	median nerve compression

Describe Pronator Teres Syndrome	median nerve compression between the two heads of the pronator teres
Describe Guyon's canal	ulnar nerve compression at the wrist
Describe lateral epicondylitis (tennis elbow)	overuse of wrist extensors, especially ECRB
Describe medial epicondylitis (golfers elbow)	overuse of wrist flexors
Describe radial nerve palsy	radial nerve compression

swan neck deformity	hyperextension of PIP joint and flexion of DIP joint
Describe Boutonniere deformity	flexion of PIP joint and hyperextension of DIP joint
CMC arthritis splint	hand based thumb splint for arthritis of the thumb
ulnar drift splint	ulnar gutter
flexor tendon injury splint	dorsal protection splint

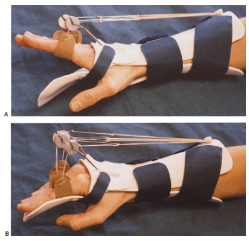
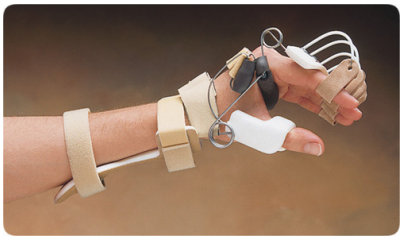
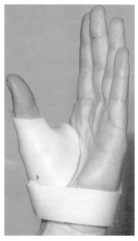
swan neck splint	silver rings or buttonhole splint; PIP splinted in slight flexion
Boutonniere splint	silver rings or PIP extension splint
Arthritis (acute) splint	resting hand splint for acute stage
Flaccidity splint	resting hand splint for lack of movement following injury
spasticity splint	spasticity splint or cone splint

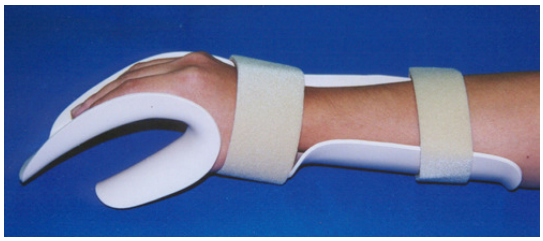
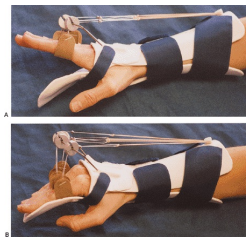
muscle weakness (ALS, SCI, GB)	balanced forearm orthosis (BFO), deltoid sling/suspension sling
Hand burns splint	wrist 15-30 degrees extension, MCP 50-70 degrees flexion, and IP in full extension
wrist cock up splint	wrist in 10-20 degrees of extension to prevent contracture, allows for digits to function
Describe use of resting hand splint	Used for people who need to have their wrist, digits, and thumb supported in a functional position for a prolonged period of time
Describe opponens splint	may be short or long, designed to support the thumb in a position of abduction and opposition, utilized during functional activities to compensate for weakness patterns

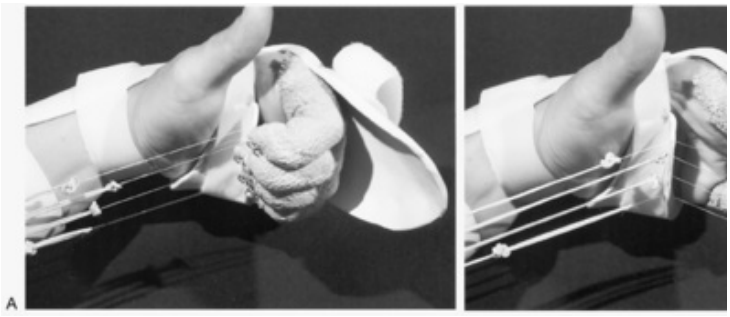
Kleinert protocol	passive flexion using rubber band traction and active extension to the hood of the splint
Duran protocol	passive flexion and extension of digit
Result of radial nerve injury	wrist drop
Result of median nerve laceration	flattening of thenar eminence (ape hand), clawing of index and middle fingers for low lesion, Benediction sign for a high lesion when asked to make a fist
Result of ulnar nerve laceration	claw hand, flattened metacarpal arch, + Froment's sign

Mallet finger and splint	flexion of DIP joint, splinted in full extension for 6 weeks

Ulnar Gutter Splint	 boxer's fracture (5th metacarpal)
Thumb Spica Splint	 DeQuervain's, RA, Skier's Thumb, CMC Arthritis
Resting Hand Splint	 RA, Crush injuries, burns, spasticity due to upper motor neuron lesions, flaccidity
Hand based finger splint for immobilizing MCP in extension with IP joint free	trigger finger
Cock-Up Splint	 carpal tunnel, radial nerve palsy, wrist extensor tendonitis, colles' fracture, RA, RSD,

Oval-8 Finger Splint	 boutonniere deformity, swan neck deformity, combined median/ulnar injury
dynamic PIP extension splint	 boutonniere deformity
flail arm splint	 brachial plexus injury (holds arm close to body)
Dynamic Wrist Finger Thumb Extension Splint	 Radial nerve palsy
Opponens Splint	 median nerve injury

C-Bar splint	 median nerve injury (prevents web space contractures with night wear)
thumb post splint	 median nerve injury
Dynamic/Static Splint with MPs in flexion	ulnar nerve injury
Dynamic MCP Flexion Splint	 combined median/ulnar nerve injury
Tenodesis Splint	 C6 to C7 SCI

Ulnar Drift Splint	 ulnar drift (common with RA)
Kleinert/Duran Dorsal Protection Splint	 flexor tendon injury
Cone Splint	 spasticity (also called spasticity splint)
forearm orthosis	mounts to wc, must have shoulder/trunk movement, ALS, SCI, Guillan Barrebalanced
Airplane Splint	 burns, especially axilla

Overhead Suspension Sling	 proximal weakness, muscle grades 1/5-3/5

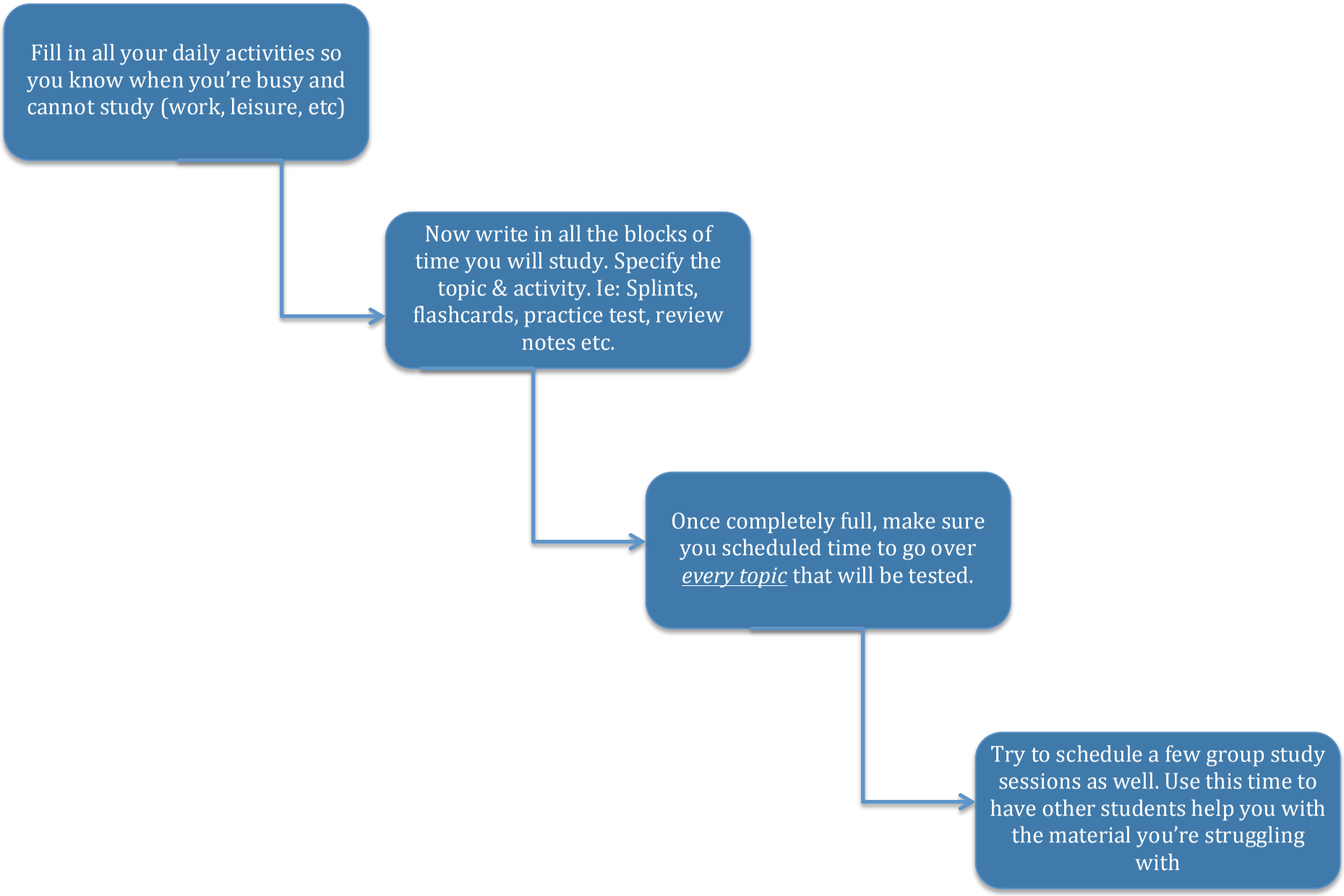
STUDY SCHEDULE

We recommend studying for at least 6 weeks prior to your testing date. However this will vary from person to person, some may need 8-10 weeks.

A good practice is spending 2 weeks on the study material and questions in this guide and taking note of any topics you feel weak in. Then fill out the 6 week calendar and focus your study time one your weakest topics.

During this 6 weeks we recommend using any of the AOTA, NBCOT, or TherapyEd NBCOT Exam prep courses.

Today is the best day to start preparing ☺


Fill in all your daily activities so you know when you're busy and cannot study (work, leisure, etc)
Now write in all the blocks of time you will study. Specify the topic & activity. Ie: Splints, flashcards, practice test, review notes etc.
Once completely full, make sure you scheduled time to go over every topic that will be tested.
Try to schedule a few group study sessions as well. Use this time to have other students help you with the material you're struggling with

WEEK 1

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8-9							
9-10							
10-11							
11-12							
12-1							
1-2							
2-3							
3-4							
4-5							
5-6							
6-7							
7-8							
8-9							
9-10							

WEEK 2

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8-9							
9-10							
10-11							
11-12							
12-1							
1-2							
2-3							
3-4							
4-5							
5-6							
6-7							
7-8							
8-9							
9-10							

WEEK 3

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8-9							
9-10							
10-11							
11-12							
12-1							
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2-3							
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7-8							
8-9							
9-10							

WEEK 4

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8-9							
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7-8							
8-9							
9-10							

WEEK 5

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8-9							
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10-11							
11-12							
12-1							
1-2							
2-3							
3-4							
4-5							
5-6							
6-7							
7-8							
8-9							
9-10							

WEEK 6

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8-9							
9-10							
10-11							
11-12							
12-1							
1-2							
2-3							
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7-8							
8-9							
9-10							

Exam FAQs

We've compiled the most frequently asked questions regarding the exam.

We answered the administrative questions and we then surveyed professionals to get answers from a group of students who passed the exam about the exam prep questions.

NBCOT Exam FAQs

Q: What is the cost of the exam?

A: The application fee is $500 online or $540 mailed in. There is also a $40 fee for score transfers plus a $45 confirmation fee.

Q: How long is the exam?

A: The time allotted is 4 hours

Q: What can/can't I bring into the testing room?

A: You **can** bring:
– Earplugs (not headphones)
– Medical devices (insulin pump, hearing aid, etc)

You **cannot** bring:
– Electronics
– Paper notebooks or books
– Head covering such as a hat or hood

Q: Where do I schedule my exam?

A: Submit an online application at nbcot.org or mail one in. Then send in your college transcript and fieldwork verification to NBCOT. You will then be issued an Authorization to Test (ATT) letter. At this point you may schedule your exam through Prometric at www.prometric.com choosing the closest testing center to your location.

Q: What happens if I fail?

A: Test takers must wait 45 days from the failed exam date before they may test again. There is a 15 day wait period after your last test before you may re-apply. You then restart the process of paying the fee and being issued an ATT letter. You may retake the test as many times as needed to pass.

Q: What are the pass rates for the NBCOT?

A: NBCOT OTR Exam = 78% / COTA Exam = 86%

Q: Will questions be asked one at a time?

A: Yes

Q: Are you able to mark questions and go back to them?

A: Yes, you can revisit questions and change your answers.

Q: After you answer a question, making your selection, are you able to go back and change your answer selection?

A: Yes, you can change your answers

Q: If you could give one piece of advice to a student preparing for the NBCOT, what would it be?

A: Read the question and all of the answer choices. You should usually be able to eliminate 2 of the 4 answers. Then reread the question and select from the remaining two answers.

Q: Describe your testing environment in detail.

A: Typical exam room with rows of computers set up in cubicles dividing them. You're able to wear headphones to cancel outside noise. You'll be in a room with folks taking a variety of exams such as the SAT and ACT. There are about 30 people in a test room.

Q: What items are students allowed to bring into the exam room?

A: Exam takers will be given blank paper and pen. You're not allowed to bring water but you are allowed to take bathroom breaks (although they use up your test time). You will be given access to a locker for bags, purses, sweatshirts etc., it will be right outside the exam room.

Q: How many questions does the exam have?

A: The OTR exam has 170 Multiple Choice questions and 3 clinical simulation questions. The COTA exam has 200 multiple choice questions.

Q: Can I take breaks?

A: Yes but they take up your time limit.

Q: Can I make notes during the exam?

A: The testing center will provide pencil and paper or a marker and dry erase board for you to take notes

Q: How do I obtain my test score?

A: NBCOT scores exams twice monthly. Wait about 1-3 days after your exam and you will be able to check online to see if you passed or failed, just visit this webpage. 4-6 weeks after you test date you will be mailed an official score report. In order to have the score report sent to your state licensing board, you must fill out an Official Score Transfer Request during the application process or right after you take the test.

Q: Is there a list of books or study material used to create the exam?

A: The NBCOT maintains a list of the top 10 textbooks used to create both the OTR and COTA exams. They create an in depth report every so often that lists the textbook names and how much of the exam was created from them as well as which parts of the exam were created from each book. You can find the most recent updated reports for both the OTR and COTA exam here.

Q: Which mnemonics or charts were most helpful when studying for the NBCOT?

A: Charts and handouts on topics like Moro, STNR, ATNR, and Babinski were extremely helpful. Also, charts of common splints were extremely helpful. Try creating a page for each splint with an image and description of it that includes the splint name and use. Also make sure to review Ranchos, Glasgow, MMT, Brunnstrum, Coma Scale, and ROM norms/scales.

Q: Do you have any tips for the multiple choice questions?

A: Practice your clinical reasoning skills. You need to be able to read a treatment scenario and choose the best option. Most of the time two of the multiple choice answers will clearly be wrong and you can immediately eliminate them. Then you are down to just two options.

Q: Is there a tutorial to show you how to take the exam?

A: You can watch a tutorial before your exam time begins that will teach you how to proceed with the exam.

Q: Do you have any other advice at all that may be helpful to students preparing for the NBCOT?

A: The best advice is to take practice exams repeatedly. Take one early just to gauge where you are. Then go back and repeatedly take practice tests focusing on the study areas that you get wrong. Also, don't forget to go over the basics, they are important and should be embedded in your memory to help with the many types of questions you will see. Make sure you know your norms, scales, common splints, reflexes, as well as diagnoses contraindications. Study alone, but also participate in study groups. Quiz each other and discuss why the right answer is right.

Exam Tips

We compiled the best tips we've heard from folks who passed the exam in regards to preparing for, studying for, and passing the exam.

Everything from study tips to dressing comfortable for the exam will be covered here.

NBCOT Exam Tips

PICK YOUR RESOURCES

As soon as possible you want to start gathering your study resources for the NBCOT exam. There are tons of paid and free options for study materials and you don't want to get bogged down with trying to study too many. Try a few of the free resources to get a feel for the study material and to see what is missing from them that you may need to purchase separately.

Once you have your resources chosen, you can lay out a schedule for exactly how you're going to go about studying. Such as how much time you will dedicate to each topic and question type.

SCHEDULE YOUR EXAM (RIGHT AFTER GRADUATION)

Scheduling your exam is really important. It creates a deadline which will help you to buckle down on your study schedule and get prepared. Also, the sooner you schedule it after graduation the more momentum you will have going in. The material you've learned will be fresh and you won't build up anxiety by waiting for a long period of time after graduation to sit for the exam.

CREATE A STUDY SCHEDULE (6 WEEKS MINIMUM)

As mentioned above, as soon as you have your study resources chosen, schedule the exam and create an attack plan for how you are going to consume all of the study resources you chose.

Everyone is different but we surveyed some professionals to see what they recommended for studying and everyone said at least 6-8 weeks of studying was necessary with at least 2 – 4 hours of studying per day. Of course these metrics will vary, but this should provide a good starting point.

TAKE PRACTICE TESTS

Good job, I know you are already working on this. Remember, you were ~~freaking out about the NBCOT exam~~ searching for NBCOT practice tests when you found this post.

Practice tests are an essential part of NBCOT exam prep as they provide insight into the test format, types of multiple choice questions, and example clinical simulation questions. After taking a few practice tests you will have developed a good pace for getting through the exam and you will have a good feel for the questioning which will increase your confidence.

ESSENTIAL TOPICS

We surveyed past test takers to see what topics appeared most often on the NBCOT exam. We put together this short list of the most common testing topics that you should definitely be well versed on before taking the NBCOT:

- Glascow Coma Scale
- Types of reflexes
- Ranchos Los Amigos scale
- Developmental milestones
- SCI levels (specifically know which motor function is available at each sci level)
- AOTA ethical standards (For example, you should be familiar with non-maleficence, beneficence, and social justice etc.)
- types of groups for mental health
- Medical conditions (most of the conditions you see in the study guides will be on the exam)

NIGHT BEFORE EXAM

Believe it or not, the night before your NBCOT exam is not best spent cramming. At this point, you should try to relax and spend your time preparing for exam day. The night before should be spent getting everything ready that you'll need the next day. Here is what you'll need on test day:

- 2 forms of ID
- ATT Letter
- Print out of your appointment confirmation
- Comfy outfit
- Healthy breakfast (eat carbs and protein for the best and most sustained energy)

Although some review the night before can be helpful, don't study too hard. At this point you really do know most of the information that you will be able to know before the exam. It is wise to spend some time reviewing what you know but studying new material or material you don't know this late will not help you.
You're time will be better spent doing something relaxing to rest your mind and relieve some stress so that you sleep well (try to get 8hrs) and go into the exam fresh. Take a walk, run a bubble bath, watch re-runs of your favorite funny show, call your sibling… whatever your cup of tea is, make a cup.

EXAM DAY TIPS

The best advice for exam day is pretty simple. Keep in mind that the clinical simulation questions will come first and then you will take the multiple choice section. Here are some helpful tips for exam day.

- Dress comfortable
- Eat a healthy breakfast
- Don't drink too much fluid before the exam (or you will waste time scanning in and out to go pee)
- Save time by using the 10 minute break in between clinical simulation and multipl choice to use the restroom
- Try spending about 1 minute on each multiple choice question, then you should have about 30 minutes to review your answers