

CLINICAL GUIDE FOR STUDENTS AND EMERGING PROFESSIONALS

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PHYSICAL, OCCUPATIONAL, & SPEECH THERAPY. FOX REHABILITATES LIVES.

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INTRODUCTION TO PHYSICAL THERAPY

WHO PHYSICAL THERAPISTS ARE

Physical therapists (PTs) are licensed health care professionals who diagnose and manage movement dysfunction and enhance physical and functional status in all age populations. They examine individuals with impairments, functional limitations, or disabilities (including pain, limited arm/leg movement, balance disturbances, weakness, ambulation problems, etc.). They then develop individualized plans of care to promote and maintain optimal function and quality of life. PTs also implement services to reduce risk and prevent the onset and progression of impairments and functional limitations that may result from injury, disease, disorders, and other health conditions.

WHAT PHYSICAL THERAPISTS DO

PTs provide care to people of all ages who have functional problems resulting from back or neck injuries, sprains/strains and fractures, arthritis, amputations, stroke, etc. The care PTs give to their patients includes therapeutic exercise, functional training, manual therapy techniques, fitting for adaptive devices and equipment.

SIGNS OF FUNCTIONAL DECLINE

(Common situations where physical therapy at home may be indicated and beneficial):

- Weakness due to a recent or chronic illness
- Excessive fatigue and difficulty completing previously simple tasks
- Difficulty walking, getting out of a chair, car, bed, or toilet
- Frequent falls or loss of balance, fear of falling
- Joint and muscle pain with stiffness and immobility
- Need for establishment of safe exercise program
- Recent hospitalization or surgery
- Fitting for a wheelchair or other assistive device
- Chronic diseases that affect function, cognition, and/or mobility (Parkinson's, Alzheimer's/dementia, etc.)
- Recent fall while trying to stand from patient's living room chair
- Medication change that improved arousal levels which had previously hindered therapy intervention
- Hospitalization for COPD exacerbation with new use of supplemental oxygen while walking
- Change in weight-bearing status allowing for progression from standard walker to a WBQC
- Patient demonstrates improved LE strength after three months of completing HEP with caregiver and is now appropriate for gait training

INTRODUCTION TO OCCUPATIONAL THERAPY

WHO OCCUPATIONAL THERAPISTS ARE

Occupational therapy is skilled treatment by licensed professionals that help individuals achieve independence in all facets of their lives. Occupational therapists give people the skills for living life to its fullest. An occupational therapy education includes the study of human growth and development with specific emphasis on the social, emotional, and physiological effects of illness and injury. OTs also implement services that prevent the onset and progression of impairments and functional limitations that may result from injury, disease, disorders, and other health conditions.

WHAT OCCUPATIONAL THERAPISTS DO

OTs provide care to people of all ages who are unable to engage in meaningful functional activities as a result of injury or health condition. OTs examine an individual's ability to perform functional tasks and, based upon the findings, provide interventions to address areas of difficulty or impairment. This may include adapting the environment, implementing a home exercise program, or educating on strategies to simplify performing a functional task. For example, an OT may recommend equipment in the bathroom to allow a patient who frequently falls to shower safely. Additional treatments an OT may provide include training on body mechanics and joint protection, orthotics, and techniques to address visual or cognitive impairments. The overarching goal of OT treatment is to promote a person's ability to perform functional tasks with the highest level of safety and independence possible.

SIGNS OF FUNCTIONAL DECLINE

(Common situations where occupational therapy at home may be indicated and beneficial):

- Weakness due to a recent or chronic illness
- Excessive fatigue and difficulty completing previously simple tasks, bathing, dressing, grooming, toileting, or feeding
- Difficulty getting in/out of a chair, bed, or shower
- Frequent falls or loss of balance, fear of falling
- Joint and muscle pain while completing functional tasks
- Difficulty bathing, grooming, or toileting
- Need for establishment of a safe exercise program
- Recent hospitalization or surgery
- Fitting for wheelchair or other assistive device, including upper extremity orthtic
- Chronic diseases that affect function, cognition, and mobility (Parkinson's, Alzheimer's/dementia, etc.)
- Resident moved into SLC two weeks ago due to exacerbation of dementia resulting in a decrease in ability to follow two-step commands creating increased difficulty with completion of everyday tasks (could be a variety of tasks from dressing to walker safety)
- Change in low back pain impairing ability to stand and prepare dinner
- Disheveled appearance such as uncombed hair or improperly buttoned clothing
- Decreased participation in previously meaningful activities such as cooking, baking, or gardening

INTRODUCTION TO SPEECH-LANGUAGE PATHOLOGY

WHO SPEECH-LANGUAGE PATHOLOGISTS ARE

Speech-Language Pathologists (SLPs) are licensed professionals who help individuals achieve independence in functional communication and swallowing abilities. SLPs give patients the skills to achieve optimal communication that is vital for social interaction, expressing wants and needs, and exchange of information. SLPs also help people achieve the safest, least restrictive diet. SLPs implement services that prevent the onset and progression of speech, language, cognitive-communication and swallowing impairments that my result from injury, disease, disorders, and other conditions.

WHAT SPEECH-LANGUAGE PATHOLOGISTS DO

SLPs provide treatment to people of all ages who have functional difficulties resulting from, for example, stroke, Parkinson's disease, head and neck cancer, Multiple Sclerosis, etc. SLPs examine these disorders and their effects to identify and characterize a patient's impairments. They can then determine the intervention necessary to rehabilitate their patient back to their prior level of functioning and establish a plan of care. This may include oropharyngeal exercise to strengthen the musculature involved in swallowing, cognitive activities to increase safety awareness, or restoring naming skills necessary for conversational speech by labeling items in a patient's environment. Additional treatments that an SLP may provide include therapeutic texture analysis for safe diet management, implementation of a memory book, alternative/augmentative communication system training, and voice production/modification instruction.

SIGNS OF FUNCTIONAL DECLINE

(Common situations where speech-language pathology at home is indicated and beneficial):

- Difficulty chewing and/or swallowing (evidenced by coughing sneezing, burping, vomiting, runny nose, watery eyes during eating and/or drinking)
- Significant weight loss or loss of appetite
- Difficulty "finding the right words" during conversation
- Decreased communication
- Difficulty initiating speech
- Increased confusion or decreased memory
- Hoarse/harsh vocal quality or significantly low/high volume
- Difficulty handling personal affairs (e.g. finances, housekeeping, grooming)
- Difficulty following directions
- Recent hospitalization or surgery
- Chronic diseases that affect function and cognition
- Caregiver report of decreased vocal volume as a progression of Parkinson's disease
- CVA/CVA late effects resulting in decreased ability to tell caregiver when in pain while in a wheelchair

CLINICAL DECISION MAKING FOR VITAL SIGN MONITORING

Minimum expectations for all in-person patient visits are blood pressure, manual pulse rates, and pulse oximetry at baseline and with highest intensity activity/exercise. PRN during interventions.

PULSE

- Utilize Karvonen Method to determine appropriate training heart rate if able and appropriate
- Exercise or physical activity should not be initiated when
  - Resting HR >100bpm or <50bpm
- Exercise or physical activity should be discontinued when
  - Sudden drop >10 bpm, exceeds HRmax, or PVCs > = 3 in a row or > = 6 within one minute

BLOOD PRESSURE

- Exercise or physical activity should not be initiated when
  - Resting SBP >200 mmHg or <90mmHg or resting DBP >110mmHg
- Exercise or physical activity should be discontinued when
  - SBP is >250mmHg, <90mmHg or drop of >10mmHg with activity
  - DBP is >115mmH with activity

PULSE OXIMETRY

- Exercise or physical activity should not be initiated when
  - Resting oxygen saturation is <90% unless cleared by the physician
- Exercise or physical activity should be discontinued when
  - Oxygen saturation becomes <90% with activity unless cleared by the physician

RESPIRATORY RATE

- Assess respiratory rate PRN per patient presentation

CLINICAL DECISION MAKING FOR VITAL SIGN MONITORING

PAIN

- Assess pain to determine the impact pain has on patient's quality of life
- Address pain during treatment session and its effect on functional activities
- Utilize objective measures to document patient's pain responses

BLOOD GLUCOSE

- If patient has PMH of DM, ask patient about their glucose levels. If patient unsure, ask them to take their blood glucose prior to exercise to ensure exercise induced hypoglycemia does not occur.
- If low/high, act accordingly
  - **Low:**
    - √ Eat 15 grams of carbohydrate
    - √ Test BG 15 minutes later
  - **Patient's BG is <100 but not <70 mg/dL:**
    - √ Still give 15 grams of carbohydrate to prevent hypoglycemia during physical activity
  - **High:**
    - √ Between 90-300 mg/dL:
      - Exercise patient and monitor after session
    - √ >300 mg/dL:
      - Consult patient's physician or nurse at ALF/AMDC

CLINICAL DECISION MAKING FOR VITAL SIGN MONITORING

NORMATIVE VALUES FOR THE OLDER ADULT

TEMPERATURE

Fahrenheit (F°)	96.5-97.5
Celsius (C°)	35.9-36.3

PULSE RATE

Pulse (beats/minute)	60-90

HYPERTENSION CLASSIFICATION

BP CLASSIFICATION	SBP MMHG	DBP MMHG
Normal	<120	<80
Pre-hypertension	120-139	80-89
Stage 1 Hypertension	140-159	90-99
Stage 2 Hypertension	≥160	≥100

RESPIRATORY RATE

Respiratory rate	15-22 breaths/minute

OBJECTIVE DOCUMENTATION OF PULSE STRENGTH/QUALITY

GRADE	PULSE	DESCRIPTION
0	Absent	No perceptible pulse even with maximal pressure
1+	Thready	Barely perceptible; easily obliterated with slight pressure; fades in and out
2+	Weak	Difficult to palpate; slightly stronger than thready; can be obliterated with light pressure
3+	Normal	Easy to palpate; requires moderate pressure to obliterate
4+	Bounding	Very strong; hyperactive; is not obliterated with moderate pressure

QUICK REFERENCE GUIDE: VITAL SIGNS

NORMATIVE VALUES FOR THE OLDER ADULT

BLOOD GLUCOSE DIAGNOSTIC CRITERIA

	FASTING (MG/DL)	RANDOM OR AFTER A MEAL (MG/ DL)
DIABETES	>126	>200
PRE-DIABETES	100-125	140-199
NORMAL	70-99	<140

RATING OF PERCEIVED EXERTION SCALE

SCALE	PERCEIVED SOB
0	Nothing at all
0.5	Very, very slight (just noticeable)
1	Very slight
2	Slight
3	Moderate
4	Somewhat severe
5	Severe
6	
7	Very severe
8	
9	Very, very severe (almost maximal)
10	Maximal

QUICK REFERENCE GUIDE: VITAL SIGNS

NORMAL VITAL SIGN RESPONSE TO PHYSICAL ACTIVITY:

MEASURING ORTHOSTATIC HYPOTENSION	
1. Have the patient lie down for 5 minutes	*2. Measure BP and pulse rate*
2. Measure BP and pulse rate	*4. Repeat BP and pulse rate measurements after standing 1 and 3 minutes*
**A drop in SBP of ≥ 20 mmHg or DBP ≥ 10mmHg, or experiencing lightheadedness or dizziness is considered abnormal*	

HEART RATE

- HR will increase linearly with intensity of workload
- If HR is not blunted
- 10 ± 2 bpm per MET of physical activity

RESPIRATORY RATE

- ↑ RR associated with ↑ workload
- An ↑ in RR >10 respirations/minute must be monitored carefully

BLOOD PRESSURE

- Progressive increase in SBP, about 10 ± 2 mmHg per MET of activity

PULSE OXIMETRY

- Normative values: 96-100%

TRAINING ZONE

- Karvonen's Formula (elderly intensity):
  - {[(220-age) – HRrest] x 40-70%} + HRrest
    - √ Maximum Heart Rate = 220-age
    - √ Training zone should be a heart rate range

METABOLIC EQUIVALENTS (MET)

MET LEVEL	ACTIVITY
1.5 - 2	*Standing, desk work, playing cards, sewing/knitting*
2 - 3	*Ironing clothes, walking on level surface at slow pace*
3 - 4	*Cleaning windows, mopping floors, vacuuming, making beds*
4 - 5	*Scrubbing floors, raking, walking on uneven surface at standard pace*
5 - 6	*Gardening (digging, shoveling), ice or roller skating*
6 - 7	*Snow shoveling, manual lawn mowing, walking at very brisk pace*
7 - 8	*Jogging, basketball, carrying weight of 175lbs or higher*
8 - 9	*Running 5.5 miles/hour, playing handball or squash*
10	*Running 6 miles/hour, swimming at moderate/hard pace*

EFFECTS OF MEDICATIONS

MEDICATION	HEART RATE	BLOOD PRESSURE	EXERCISE CAPACITY
β-BLOCKERS (-OLOL)	↓* (R and E)	↓ (R and E)	↑ in patients with angina ↓ or ↔ in patients without angina
NITRATES	↑ (R) ↑ or ↔ (E)	↓ (R) ↓ or ↔ (E)	↑ in patients with angina — in patients without angina ↑ or ↔ in patients with CHF
DIURETICS	— (R and E)	— or ↓ (R and E)	↔, except possibly in patients with CHF
HYPOGLYCEMIC AGENTS INSULIN AND ORAL AGENTS	— (R and E)	— (R and E)	↔
BLOOD MODIFIERS (ANTICOAGULANTS AND ANTIPLATELETS)	— (R and E)	— (R and E)	↔
CARBIDOPA/LEVODOPA	↑ (R and E)	↓ (orthostatic hypotension)	
THYROID MEDICATIONS	↑ (R and E)	↑ (R and E)	↔, unless angina worsened

- β-blockers with ISA (intrinsic sympathomimetic activity) lower resting HR only slightly
- Abbreviations: R = rest, E = exercise, ↔ = no effect, ↑ = increase, ↓ = decrease

ADAPTED FROM

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MET LEVEL GRADED ACTIVITY

MET LEVEL	ACTIVITY
1.5 - 2	Standing, desk work, playing cards, sewing/knitting
2 - 3	Ironing clothes, walking on level surface at slow pace
3 - 4	Cleaning windows, mopping floors, vacuuming, making beds
4 - 5	Scrubbing floors, raking, walking on uneven surface at standard pace
5 - 6	Gardening (digging, shoveling), ice or roller skating
6 - 7	Snow shoveling, manual lawn mowing, walking at very brisk pace
7 - 8	Jogging, basketball, carrying weight of 175lbs or higher
8 - 9	Running 5.5 miles/hour, playing handball or squash
10	Running 6 miles/hour, swimming at moderate/hard pace

LAB VALUE REFERENCE GUIDE

TEST	NORMAL	DANGEROUS LEVELS
Hemoglobin (Hgb g/dL)	13.8-17.2 male, 12.0-16 female	8-10 worry; <8 don't get up; <7 don't exercise
Hematocrit (Hct %)	41-52 male, 35-46 female	<25 don't exercise; 25-30 light exercise; >30 add resistive exercise as tolerated*
White Blood Cell (WBC # x 10^3/uL)	4.5-11	↑ = bacterial, parasitic, allergic, Leukemia. >20,000, don't exercise; ↓ = viral, immune ↓ <4000, don't exercise
Platelets (# x 10^3 µL)	130-400	<5 strict bed rest; 5-20 AROM, in room walking, light ADLs; 20-50 light resist. training, walk, stat. bike; 50-130 mod. resistance training; >130 normal activity
Clotting time: INR	0.9-1.1 or 1.5-2.5	>4.5 check before rehab
Sodium (mmol/L)	135-145	↑ can cause brain, nervous system, swelling, coma. <125 & >150 = danger zone
Potassium (mmol/L)	3.5-5.0 Renal: 3.0-5.5	<3.2 & >5.1 renal: <2.8 & >6.2 = danger zones; abnormal can cause weakness, muscular irritability
Chloride (mmol/L)	95-108	↑ causes ↑ extracellular volume and HTN; if > 108 don't exercise
Calcium (mmol/L) (mg/dL)	2.15-2.50 8.6-10.0	<1.75 & >3.75 or <7 & > 12* abnormal causes tetany, arrhythmias, paralysis, coma, death
Magnesium (mmol/L) (mg/dL)	0.65-1.05 1.6-2.5	<0.5 & >2.05 mmol/L, can see hyperirritability muscle ↑ or ↓ , bradycardia, hypotension
Creatinine mg/dL	0.6-1.5 male, 0.5-1.0 female	>4.0 or change from baseline = danger zone
Blood Urea Nitrogen (BUN mg/dL)	5-20	Danger zone: >80 and not feeling well; high levels may have low endurance; CRF pts can tolerate higher levels
BUN/Creat. Ratio	10/1	15-20/1 dehydrated; 10-15/1 renal dialysis; renal disease same, but multiple ↑ (30/3)
Bilirubin (mg/dL)	0.1-1.0	>3
Plasma Glucose (mg/dL)	70-110	<60 poor ex tolerance and confusion; >300 risk of ketoacidosis
pH	7.35-7.45	<6.8 & >8.0
O_2 Saturation (%)	95-100	<90
Pa O_2 (mmHg)	80-100	60-80 mild hypoxemia; 40-60 mod.; <40 severe
$PaCO_2$ (mmHg)	35-45	<20 or >70*
HCO_{3-} (mEq/L)	22-26	<10 or >40

*References: Advanced Rehabilitative strategies for the evaluation and treatment of the medically complex geriatric patient. Carole Lewis, Seminar, Summer 1998. *Goodman CC, Snyder TEK. Laboratory Tests and Values in: Goodman CC, Boissonnault, WG, Fuller KS, eds.. Pathology: Implications for the Physical Therapist, 2nd ed. 2003:1174-1197.*

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PACEMAKER PROTOCOL

An electronic device that is surgically placed in the body to regulate the heartbeats. A pacemaker delivers extra electrical impulses to the heart to make it beat faster.

PRECAUTIONS:

- Patients should not allow magnets near the pacemaker because it could disrupt the function
- Patient cannot get MRI or be near one because of the magnetic fields
- Patients should avoid any heavy blows to the area/skin where pacemaker is located
- Patients should avoid placing any electrical devices directly over pacemaker
- Patient cannot lift objects that are more than 10 lbs. for 4-6 weeks to avoid the leads of the pacemaker coming loose
- Patient must avoid vigorous activities/exercise for 4-6 weeks
- Patient should avoid lifting right UE past 90° to avoid the leads of the pacemakers coming loose

EMERGENCY SITUATIONS

CONDITION	SIGNS AND SYMPTOMS	ACTION
CEREBROVASCULAR ACCIDENT (CVA)	*Altered mental status and consciousness* *Headache* *Hypertension* *Difficulty Breathing* *Aphasia and/or dysarthria* *Unilateral weakness and/or sensory deficits* *Ataxia* *Vision deficits* *Dizziness and/or vertigo* *Vomiting* *Cyanosis*	*Call Emergency Medical System (911/EMS)* *Place patient in resting position* *Monitor vital signs and prepare to initiate CPR* *Remain with patient until further directed by EMS* *Notify physician*
DEEP VEIN THROMBOSIS (DVT)	*Pain and tenderness over clot site* *Erythema and warmth at clot site* *Unilateral extremity edema* *Positive Homan's sign*	*Place patient in resting position with extremity elevated to level of heart* *Notify physician immediately and monitor patient until further directed*
FRACTURES	*Inability to bear full weight on limb* *Out of place or misshapen limb or joint* *Swelling, bruising, or bleeding* *Intense pain* *Numbness and tingling* *Limited mobility of inability to move limb*	*Activate EMS* *Do not move in case of dislocation* *Apply ice* *Monitor vital signs and remain with patient until further directed by EMS* *Notify physician*
HYPERGLYCEMIA	*Blood glucose greater than 300 mg/dl* *Altered consciousness* *Abdominal pain* *Weakness, dizziness, syncope* *Blurred vision* *Thirst* *Weight loss* *Nausea/Vomiting* *Polyuria*	*Activate EMS if patient is unconscious* *Determine glucose level, if possible* *Notify physician*
PULMONARY EMBOLISM	*Shortness of breath* *Chest pain* *Cough* *Wheezing* *Leg swelling* *Clammy or bluish-colored skin* *Excessive sweating* *Rapid or irregular heartbeat* *Weak pulse* *Lightheadedness/fainting*	*Notify physician and monitor patient until further directed* *Monitor patient's vital signs*

EMERGENCY SITUATIONS

CONDITION	SIGNS AND SYMPTOMS	ACTION
HYPOGLYCEMIA	*Blood glucose less than 50 mg/dl* *Altered consciousness and mental status* *Hypothermia* *Headache* *Tachycardia* *Hypoventilation* *Weakness and ataxia* *Seizures* *Hunger* *Paresthesia* *Visual disturbance* *Diaphoresis or clammy skin*	*Activate EMS if patient is unconscious* *Determine glucose level if possible* *Administer 2 tablespoons of granulated sugar dissolved in water or juice* *OR offer candy, sugar lumps, etc.* *Notify physician*
MYOCARDIAL INFARCTION (MI)	**MEN** *Altered mental status* *Chest pain with possible radiation to left arm and/or jaw* *Elevated body temperature* *Altered heart rate, blood pressure, and respiration* *Nausea and/or vomiting* *Diaphoresis* *Cool skin/cyanosis* **WOMEN** *Shortness of breath* *Weakness* *Unusual fatigue* *Nausea* *Dizziness* *Lower chest discomfort* *Upper abdominal pressure* *Back pain*	*Activate EMS* *Direct patient to take nitrates as prescribed dose, if available* *Assist patient to semi-reclined resting position* *Monitor vital signs and remain with patient until further directed by EMS* *Repeat sublingual nitrates after five minutes (if symptoms persist)* *Notify physician*
ORTHOSTATIC HYPOTENSION	*Greater than 10 mmHg drop in blood pressure with change of position* *Tachycardia* *Weakness, dizziness, syncope* *Vision dimming* *Diaphoresis*	*Assist patient to resting position with BLE elevated above the heart* *Monitor for stabilization of vital signs and prepare to activate EMS* *Notify physician*
SEIZURE	*Altered consciousness and mental status* *Tachycardia and hypertension* *Repeated jerking, tremors, and uncoordinated purposeless activity* *Localized numbness and tingling*	*Activate EMS* *Assist patient to safe position in side lying* *Protect airway (remove dentures, food, etc.)* *Clear surroundings* *Monitor vital signs and remain with patient until further directed by EMS* *Notify physician*
SUICIDAL IDEATION	*Patient statements expressing the desire to be dead* *Verbalized hopelessness and helplessness* *Depressive symptoms*	*Leave home immediately if you feel in danger* *Notify physician immediately* *Contact the county's adult protective services to report. They may follow up with a visit to t he patient*

CLINICAL SIGNS AND SYMPTOMS

CONDITION	SIGNS AND SYMPTOMS	ACTION
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)	*Constant coughing* *Shortness of breath while doing routine activities* *Wheezing* *Chest tightness* *Patient reports feelings of not being able to breathe or take a deep breath*	*Notify physician and monitor patient until further directed* *If patient utilizes supplemental oxygen, check to make sure that oxygen is titrated to correct level*
DIABETES MELLITUS (DM)	*Polyuria* *Polydipsia* *Polyphagia* *Blurred vision* *Diabetic ketoacidosis* *Deep breathing* *Nausea/vomiting* *Abdominal pain* *Altered state of consciousness* *Dehydration* *Weight loss* *Diabetic dermadromes (skin rashes)*	*Check to make sure patient has taken medication (oral/insulin)* *Notify physician and monitor patient until further directed*
HYPOTHYROID SYNDROME	*Being more sensitive to cold* *Constipation* *Depression* *Fatigue* *Paleness/dry skin* *Thin brittle nails/hair* *Weakness* *Unintentional weight gain* *Decreased taste/smell* *Puffy face, hands, and feet* *Slow speech* *Thickening of the skin/thinning of eyebrows*	*Check to make sure patient has taken medication* *Notify physical and monitor patient until further directed*
CONGESTIVE HEART FAILURE (CHF)	*BL pedal edema* *SOB* *Fatigue* *Orthopnea* *Weight gain*	*Notify physician and monitor patient until further directed*
PNEUMONIA	*Yellow, green, or odorous mucus* *Fever* *Elevated heart rate or breathing* *SOB* *Low oxygen saturation*	*Notify physician and monitor patient until further directed*

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