

# Nutrition Focused Physical Exam (NFPE)

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# Course Objectives

- ▶ Discuss the importance of developing a competency process to deem clinicians competent to practice an NFPE.
- ▶ Review the A.S.P.EN/A.N.D Clinical Criteria used to identify malnutrition
- ▶ Understand how to assess muscle and fat sites for signs of wasting

# Course Overview

Pre-Reading

- Each participant will read 4 Articles:

Initial Competency

- Review curriculum utilizing power point presentation
- Break Out Sessions (Fat, Muscle and Edema Assessment)
- Using the 3 case studies, complete a physical assessment simulation in order to determine if malnutrition diagnosis is appropriate
- Perform Head to Toe Exam based on A.S.P.E.N/Academy guidelines, and meet competency

1-3 Months &  
Annual competency

- Each Dietitian will complete 2 Physical Assessments identifying patients with Malnutrition. Validation will be completed by Subject Matter Experts

# Subject Matter Expert

- ▶ The following has been completed by the subject matter expert:
  - ▶ Independent contractor for The Academy of Nutrition and Dietetics as a trainer to provide malnutrition workshops to dietitians across the nation.
  - ▶ Attended a 2 day seminar, title “The Nutrition Focused Physical Examination” at Rutgers School of Health Related Professions. Competencies acquired were validated by a medical professional, upon completion of this seminar.
  - ▶ Attended a 1 day seminar, titled “Diagnosing Malnutrition: Understanding the Role of Muscle and Fat Loss” at Novant Health Presbyterian Medical Center. Competencies acquired were validated by a medical professional, upon completion of this seminar.
  - ▶ Completed an online education program, titled “Patient Simulation: Putting Malnutrition Screening, Assessment, Diagnosis, and Intervention into Practice”. 1 hour of continuing education was obtained, upon completion of this program.
  - ▶ Completed multiple peer reviewed nutrition focused physical exams



# Malnutrition Documentation (Dietitian Note)

## Nutrition Recommendations for Provider:

1. Continue diabetic 2400 calorie diet
2. RDN modified Ensure Complete to chocolate flavor TID with meals, per pt preference and so as to send on trays (350 kcals, 13g protein per shake)
3. If pt unable to sustain adequate PO intake (which is anticipated), recommend Vital 1.5 @ 20ml/hr, increasing 10ml q6h toward goal rate of 55ml/hr to provide pt with 1980 kcals, 89g protein, 1003 ml free water, 132% RDIs. Recommend water flushes minimum of 50ml q6h. Continue concurrent PO diet with TFs to meet nutritional needs.
4. Pt meets criteria for severe protein-calorie malnutrition in the setting of chronic illness based on wt loss (11.2% wt loss x3 months) and energy intake (RDN estimating pt meeting less than/equal to 75% of energy needs for greater than/equal to 1 month)

## Recommended Malnutrition Diagnosis:

Severe Protein Calorie Malnutrition

## Nutrition Recommendations for Provider:

1. If/when TFs are initiated, recommend Jevity 1.5 @ 20ml/hr, increasing 10ml q6h toward goal of 35ml/hr to provide pt with 1260 kcals, 54g protein, 638ml free water, 84% RDIs. Recommend water flushes of 100ml q4h if IVFs are d/c'd.
2. Continue AHA step 1 cardiac diet, encourage intake
3. Pt meets criteria for severe protein-calorie malnutrition in the setting of chronic illness based on energy intake (estimating pt has been meeting less than/equal to 75% of estimated energy requirements for greater than/equal to 1 month), severe muscle wasting (areas including temporal region, clavicle region, clavicle/acromion region, scapular region), and mild/moderate muscle wasting (areas including anterior thigh region, patellar region, posterior calf region)

## Recommended Malnutrition Diagnosis:

Severe Protein Calorie Malnutrition

# Scope of Practice in Nutrition Care for RDNs

- The RDN can conduct a nutrition focused physical examination
- “Nutrition-focused physical findings assessment (often referred to as clinical assessment): Assessed findings from evaluation of body systems, muscle and subcutaneous fat wasting, oral health, hair, skin and nails, signs of edema, suck/swallow/breath ability, appetite and affect.”
- Differentiate normal vs non-normal findings
- Assess and intervene in findings that are relevant to the patient’s care
- Refer and collaborate with the medical/Interdisciplinary team

# Malnutrition Prevalence

- ▶ 1/3 hospitalized patients are malnourished upon admission
- ▶ A major contributor to increased morbidity and mortality, decreased quality of life, increased length of stay, and readmissions
- ▶ Nutrition interventions are low risk and cost effective

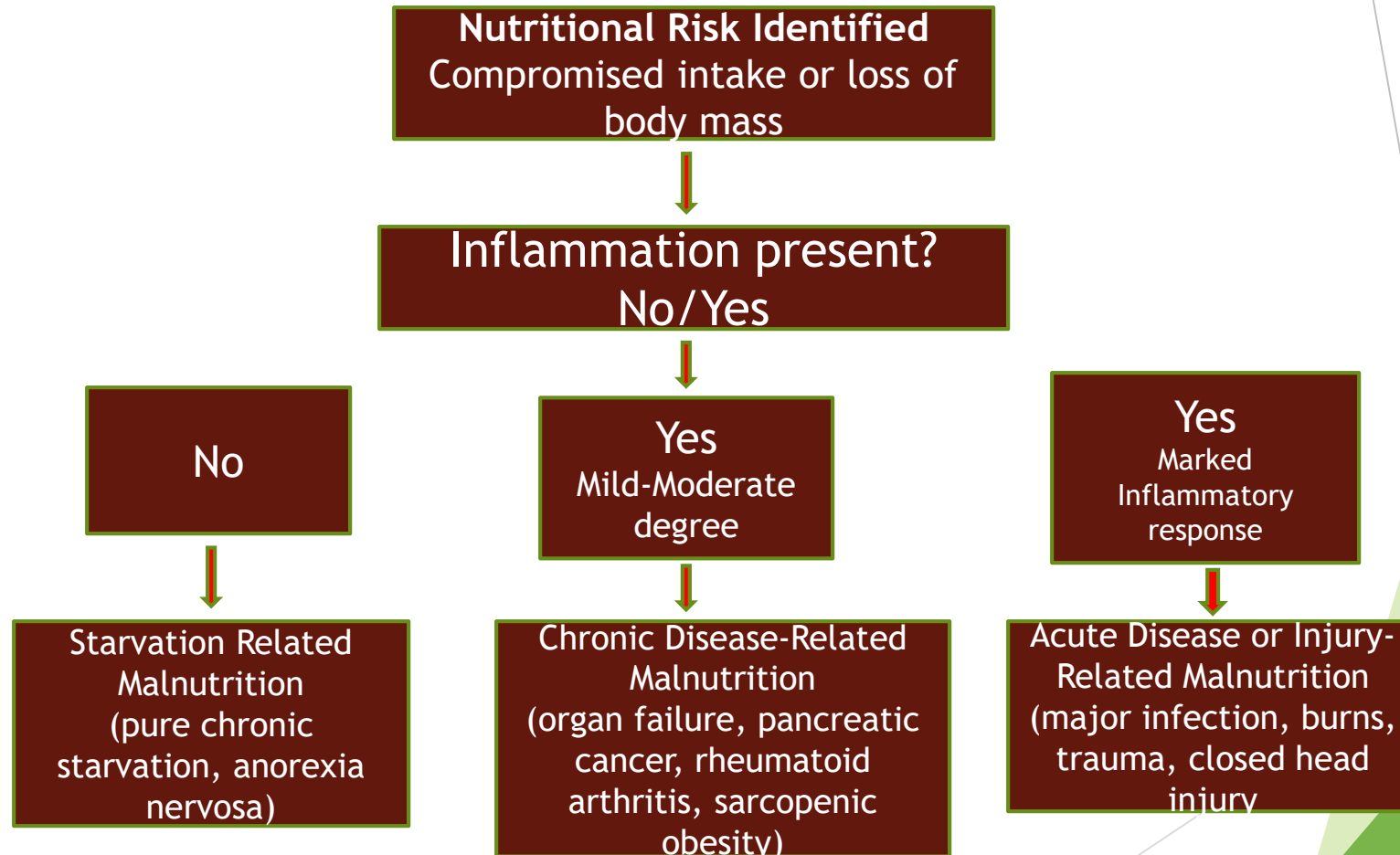
Tappenden et al. JPEN 2013



# Goal for Inter-professional Approach to Address Malnutrition

- ▶ Create a culture where nutrition is valued
- ▶ Include multiple disciplines in nutrition care
- ▶ Identify and diagnose all patients with malnutrition or those that are at risk for becoming malnourished
- ▶ Implement comprehensive nutrition interventions
- ▶ Develop discharge nutrition care and education plans

# Etiology-Based Malnutrition Definitions



# Malnutrition Etiologies

- ▶ Acute Illness/Injury
  - ▶ Severe inflammation
- ▶ Chronic Illness
  - ▶ Mild to moderate inflammation
  - ▶ **Occurring for 3 months or longer**
- ▶ Social/ Environmental Circumstances
  - ▶ Chronic starvation, NO inflammation

# Acute Illness/Injury with Severe Inflammation

- Inflammation is acute and of severe degree
  - Examples:
    - Major infection/sepsis
    - ARDS, burns, trauma
    - Closed head injury
    - Major surgery (any surgery that involves a major organ)

# Chronic Illness with Mild-Moderate Inflammation

- ▶ Inflammation is chronic and of mild-moderate degree
  - Examples:
    - ▶ Organ failure (kidney, liver, heart, lung, gut)
    - ▶ Cancer
    - ▶ Rheumatoid arthritis
    - ▶ CHD
    - ▶ Cystic fibrosis
    - ▶ Celiac disease
    - ▶ IBD
    - ▶ CVA
    - ▶ Chronic pancreatitis
    - ▶ DM

# Social or Environmental Circumstances

## NO inflammation

- Chronic starvation without inflammation
  - Examples:
    - Depression (currently a questionable dx for this category)
    - Economic hardship
    - Cognitive or emotional impairment
    - Inability or lack of desire to manage self-care
    - Physical conditions: ingestion of foreign bodies
    - Anorexia nervosa
    - Poor oral/dental conditions

## Severe Malnutrition : Must have at least 2 categories

<b>ICD-10: E44</b> <b>Severe, Protein-Calorie Malnutrition</b>	<b>Severe Malnutrition in the context of Acute Illness/Injury</b>	<b>Severe Malnutrition in the context of Chronic Illness</b>	<b>Severe Malnutrition in the context of Social/Behavioral/Environmental Circumstances</b>
<b>Weight Loss</b>	Weight Loss >2% in 1 week >5% in 1 month >7.5% in 3 months	Weight Loss >5% in 1 month >7.5% in 3 months >10% in 6 months >20% in 12 months	Weight Loss >5% in 1 month >7.5% in 3 months >10% in 6 months >20% in 12 months
<b>Intake</b>	Energy Intake ≤50% energy intake compared to estimated energy needs for ≥ 5 days	Energy Intake ≤75% energy intake compared to estimated energy needs for ≥1 month	Energy Intake ≤50% energy intake compared to estimated energy needs for ≥1 month
<b>Body Fat</b>	Body Fat Moderate depletion	Body Fat Severe depletion	Body Fat Severe depletion
<b>Muscle Mass</b>	Muscle Mass Moderate depletion	Muscle Mass Severe depletion	Muscle Mass Severe depletion
<b>Fluid Accumulation</b>	Fluid Accumulation Moderate to Severe	Fluid Accumulation Severe	Fluid Accumulation Severe
<b>Grip Strength</b>	Reduced Grip Strength for age and gender or Regressed Functional Status	Reduced Grip Strength for age and gender or Regressed Functional Status	Reduced Grip Strength for age and gender or Regressed Functional Status

## Moderate Malnutrition - Must have at least 2 categories

<b>ICD-10: E43</b> <b>Malnutrition of Moderate Degree</b>	<b>Moderate Malnutrition in the context of Acute Illness/Injury</b>	<b>Moderate Malnutrition in the context of Chronic Illness</b>	<b>Moderate Malnutrition in the context of Social/Environmental Circumstances</b>
<b>Weight Loss</b>	Weight Loss 1-2% in 1 week 5% in 1 month 7.5% in 3 months	Weight Loss 5% in 1 month 7.5% in 3 months 10% in 6 months 20% in 12 months	Weight Loss 5% in 1 month 7.5% in 3 months 10% in 6 months 20% in 12 months
<b>Intake</b>	Energy Intake <75% energy intake compared to estimated energy needs for >7days	Energy Intake <75% energy intake compared to estimated energy needs for ≥1 month	Energy Intake <75% energy intake compared to estimated energy needs for ≥3 months
<b>Body Fat</b>	Body Fat Mild depletion	Body Fat Mild depletion	Body Fat Mild depletion
<b>Muscle Fat</b>	Muscle Mass Mild depletion	Muscle Mass Mild depletion	Muscle Mass Mild depletion
<b>Fluid Accumulation</b>	Fluid Accumulation Mild	Fluid Accumulation Mild	Fluid Accumulation Mild
<b>Grip Strength</b>	Reduced Grip Strength Not applicable	Reduced Grip Strength Not applicable	Reduced Grip Strength Not applicable



# Albumin/Prealbumin

- ▶ Albumin/prealbumin:
  - ▶ Not good indicators of nutritional status!
- ▶ *“[Albumin and prealbumin], although probable indicators of inflammation, do not specifically indicate malnutrition and do not typically respond to feeding interventions in the setting of active inflammatory response. Thus, the relevance of laboratory tests of acute phase protein levels, as indicators of malnutrition, is limited”.*
- ▶ *“Serum proteins such as serum albumin and prealbumin are not included as defining characteristics of malnutrition because recent evidence analysis shows that serum levels of these proteins do not change in response to changes in nutrient intake”.*

# Severity of Malnutrition

- **“Mild Malnutrition”**

Evidence is lacking to be able to distinguish between mild and moderate malnutrition in the clinical setting, therefore there is no standard definition of mild malnutrition

# Be familiar with you patient's anatomy!

- ▶ Prior to performing an NFPE on your patient, it is important to be familiar with their general anatomy, line placements, ostomies, etc..
  - ▶ Does the patient have a PICC?
  - ▶ Male versus female
  - ▶ Age
  - ▶ Are there any ostomies or lines that would inhibit you from taking their gown or blankets off?
  - ▶ Is the patient stable to reposition?
  - ▶ Is there any prior injury, surgery, or non-nutrition related issue, that would cause your patient to have an abnormal presentation of an area on their body (i.e. amputations, arthritis, previous surgery, cupital tunnel and carpal tunnel syndrome, paralysis, etc...)

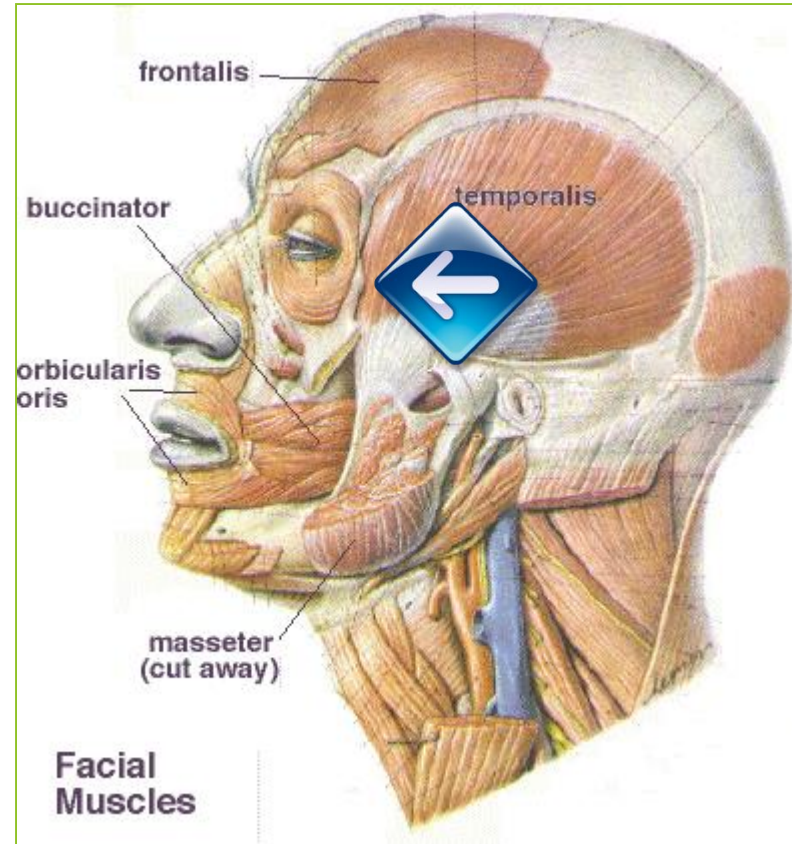
# BODY FAT

# Assessment: Body Fat Loss

## Orbital Region

Exam area	Tips	Severe Malnutrition	Mild - moderate malnutrition	Well - nourished
Orbital region - surrounding the eye	View patient when standing directly in front of them, touch above cheekbone	Hollow look, depressions, dark circles, loose skin	Slightly dark circles, somewhat hollow look	Slightly bulged fat pads. Fluid retention may mask loss

# Facial Muscles



# Orbital Region (Orbital fat pads)



Normal



Mild-  
Moderate



Severe

# Assessment: Body Fat Loss Upper Arm Area

Exam area	Tips	Severe malnutrition	Mild - moderate malnutrition	Well-nourished
Upper arm region - triceps/bicep	Arm bent, roll skin between fingers, do not include muscle in pinch	Very little space between folds, fingers touch	Some depth pinch, but not ample	Ample fat tissue obvious between folds of skin



# Triceps/Bicep Muscles



# Triceps



Normal



Mild-  
Moderate



Severe

# Assessment: Body Fat Loss (Thoracic and Lumbar Region)

Exam area	Tips	Severe malnutrition	Mild - moderate malnutrition	Well-nourished
Thoracic and lumbar region - ribs, lower back, midaxillary line	Have patient press hands hard against a solid object	Depression between the ribs very apparent. Iliac crest prominent	Ribs apparent, depressions between them less pronounced. Iliac crest somewhat prominent	Chest is full, ribs do not show. Slight to no protrusion of the iliac crest

# Thoracic/Lumbar Region and Midaxillary Line



# Thoracic/Lumbar Region and Midaxillary Line



Normal

Mild-  
Moderate

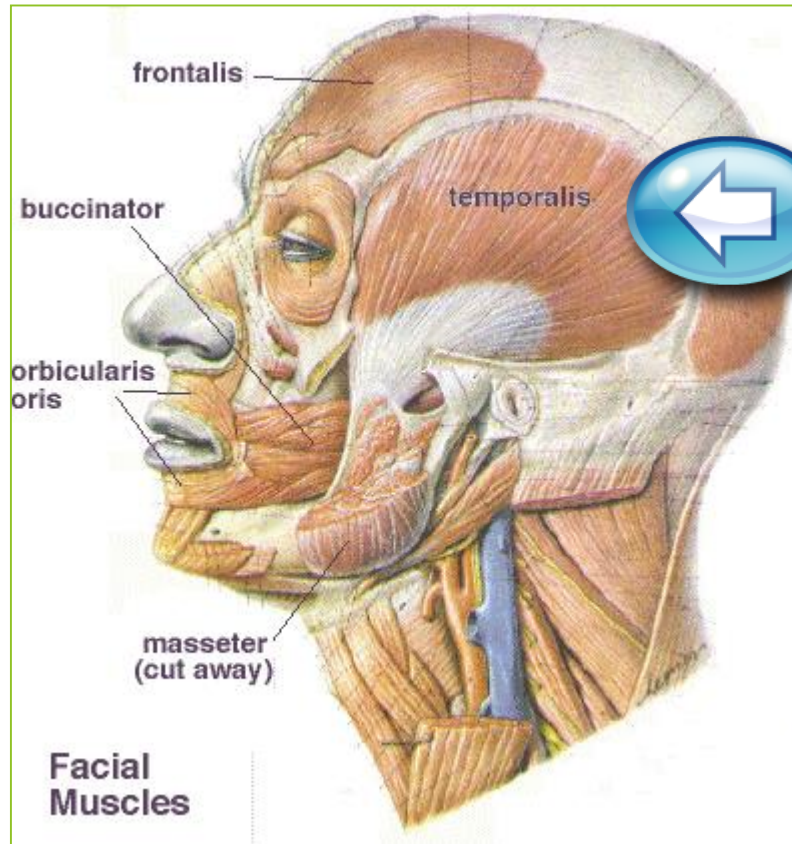
Severe

# MUSCLE

# Assessment: Muscle Loss Temple Region

Exam area	Tips	Severe malnutrition	Mild - moderate malnutrition	Well-nourished
Temple region/ Temporalis muscle	View patient when standing directly in front of them, ask them to turn head side to side	Hollowing, scooping, depression	Slight depression	Can see/feel well-defined muscle

# Temple region/ Temporalis muscle





# Temporal Region



Normal



Mild-  
Moderate

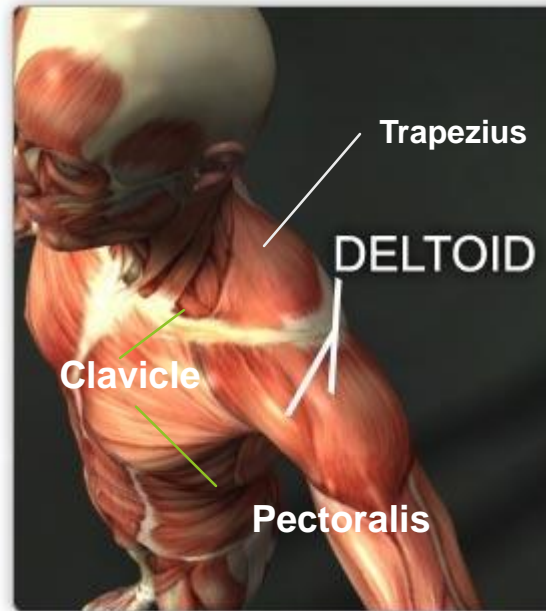


Severe

# Assessment: Muscle Loss (Clavicle Bone Region)

Exam area	Tips	Severe malnutrition	Mild - moderate malnutrition	Well-nourished
Clavicle bone region - Pectoralis major, deltoid, trapezius muscles	Look for prominent bone. Make sure patient is not hunched forward	Protruding, prominent bone	Visible in male, some protrusion in female	Not visible in male, visible but not prominent in female

# Clavicle bone region, Pectoralis Major, Deltoid, Trapezius Muscles



# Clavicle Region

**NORMAL**



**MILD-  
MODERATE**



**SEVERE**



# Assessment: Muscle Loss (Acromion Bone Region-Deltoid Muscle)

Exam Area	Tips	Severe Malnutrition	Mild-Moderate Malnutrition	Well Nourished
Clavicle & Acromion bone region - Deltoid muscle	Patient arms at side; observe shape	Shoulder to arm joint shape looks square. Acromion protrusion very prominent	Acromion process may slightly protrude	Rounded, curves at arm, shoulder, neck

# Acromion Bone region-Deltoid Muscle

**Acromion process**



# Acromion Bone Region-Deltoid Muscle

**NORMAL**



**MILD-MODERATE**



**SEVERE**





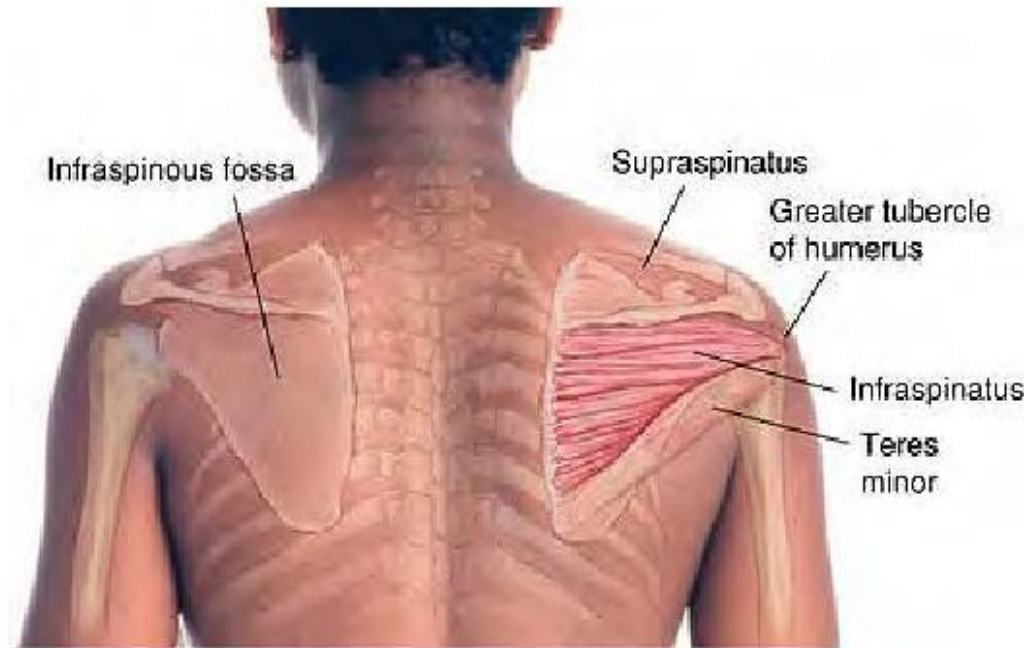
## Assessment: Muscle Loss

### Scapular Bone region, Trapezious, Supraspinatus, Infraspinatus muscles

Exam Area	Tips	Severe Malnutrition	Mild-Moderate Malnutrition	Well Nourished
Scapular bone region - Trapezius, supraspinatus infraspinatus muscles	Ask patient to extend hands straight out, push against solid object	Prominent, visible bones, depressions between ribs/scapula or shoulder/spine	Mild depression or bone may show slightly	Bones not prominent, no significant depressions



# Scapular Bone region, Trapezius, Supraspinatus, Infraspinatus Muscles



# Scapular Bone region, Trapezius, Supraspinatus, Infraspinatus Muscles



Normal



Mild-  
Moderate



Severe

## Assessment: Muscle Loss Dorsal Hand-Interosseous Muscle

Exam Area	Tips	Severe Malnutrition	Mild-Moderate Malnutrition	Well Nourished
Dorsal hand - Interosseous muscle	Look at thumb side of hand; look at pads of thumb when tip of forefinger touching tip of thumb	Depressed area between thumb and forefinger	Slightly depressed	Muscle bulges, could be flat in some well nourished individuals

# Dorsal Hand-Interosseous Muscle



# Assessing Dorsal Hand-Interosseous Muscle



# Assessing Dorsal Hand-Interosseous Muscle



Normal



Mild



Severe

# Assessment: Muscle Loss in the Lower Body-Quadriceps

Exam Area	Tips	Severe Malnutrition	Mild-Moderate Malnutrition	Well Nourished
Anterior thigh region - Quadriceps muscle	Ask patient to sit, prop up leg on low furniture. Grasp quads to differentiate amount of muscle tissue from fat tissue	Depression/line on thigh, obviously thin	Mild depression on inner thigh	Well rounded, well developed



# Quadriceps (Anterior Thigh)





# Assessment: Quadriceps



Normal



Mild-  
Moderate

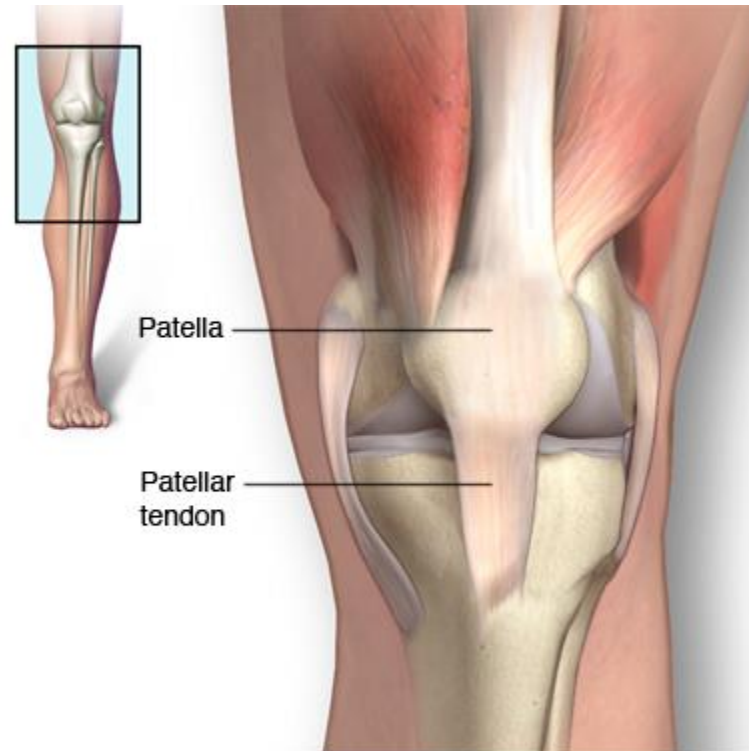


Severe

# Assessment: Muscle Loss in the Lower Body-Patellar Region

Exam Area	Tips	Severe Malnutrition	Mild-Moderate Malnutrition	Well Nourished
Patellar region - Quadriceps Muscle	Ask patient to sit with leg propped up, bent at knee	Bones prominent, little sign of muscle around knee	Knee cap less prominent, more rounded	Muscles protrude, bones not prominent

# Assessing for Muscle Loss-Patellar Region

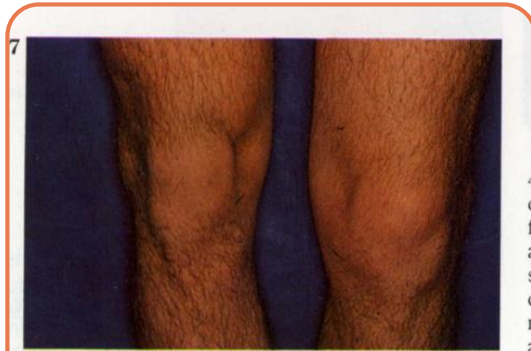


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# Assessment: Patellar Region



Normal



Mild-  
Moderate

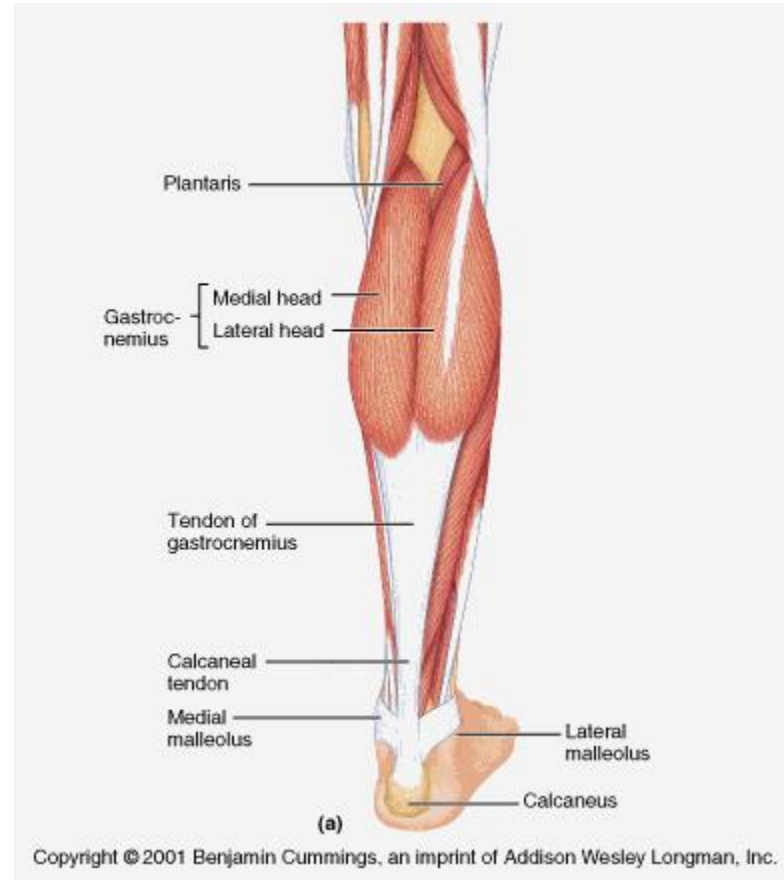


Severe

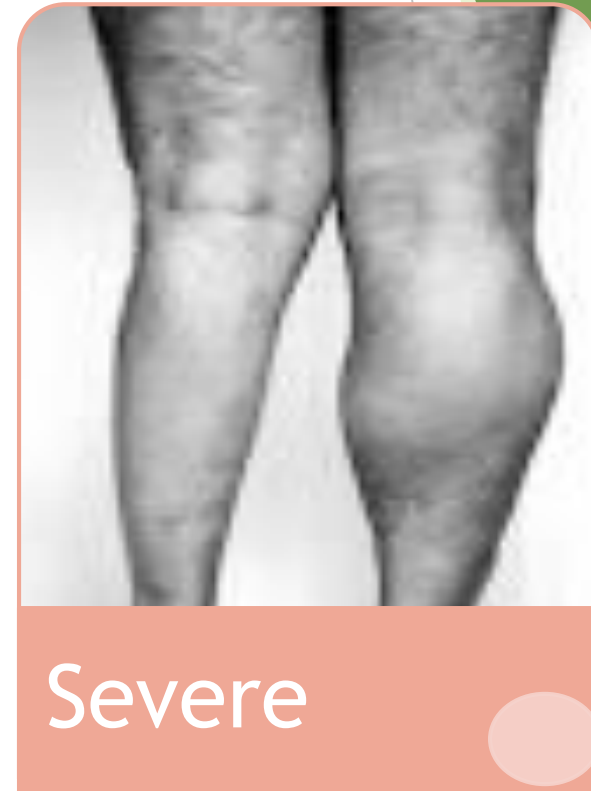
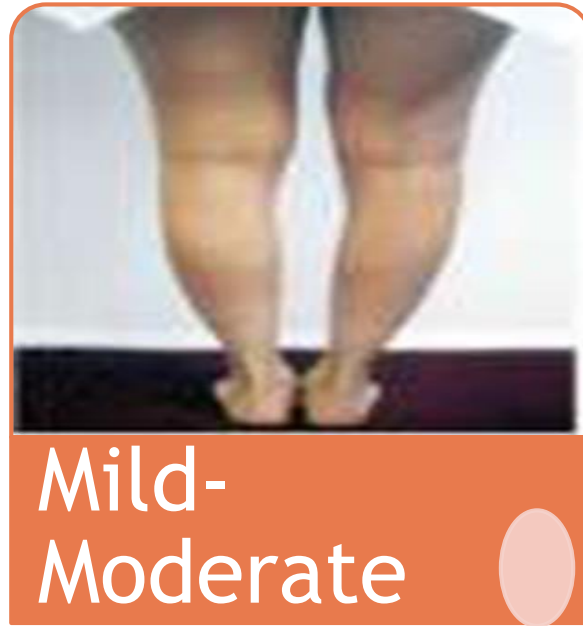
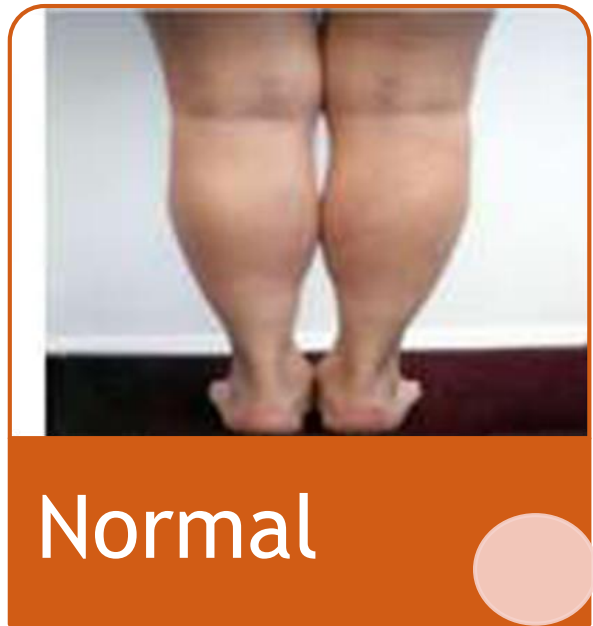
## Assessment: Muscle Loss in the Lower Body-Posterior Calf (Gastrocnemius)

Exam Area	Tips	Severe Malnutrition	Mild-Moderate Malnutrition	Well Nourished
Posterior calf region - Gastrocnemius muscle	Grasp the calf muscle to determine amount of tissue	Thin, minimal to no muscle definition	Not well developed	Well developed bulb of muscle

# Posterior Calf (Gastrocnemius)



# Assessment: Posterior Calf (Gastrocnemius)



# EDEMA



# Considerations: Edema

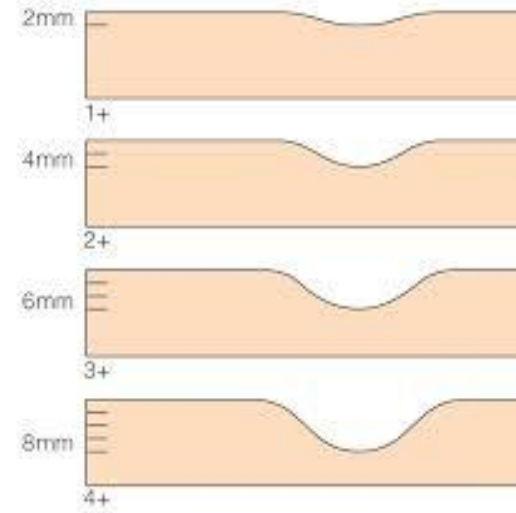
- ▶ Supportive criteria in the diagnosis of malnutrition
- ▶ Rarely a direct result of malnutrition
- ▶ Falsely elevates weight/masks weight loss
- ▶ Interferes with ability to assess muscle and fat wasting

# Assessment: Edema

Exam Area	Tips	Severe Malnutrition	Mild-Moderate Malnutrition	Well Nourished
View scrotum/vulva in activity restricted patient; ankles in mobile patient	Rule out other causes of edema, patient at dry weight	Deep to very deep pitting, depression lasts a to moderate time (31-60 seconds) extremity looks swollen (3-4+)	Mild to moderate pitting, slight swelling of the extremity, indentation subsides quickly (0-30 seconds), 1-2+	No sign of fluid accumulation

# Assessment: Edema

Method	Measurement and Rebound
+1	2 mm depression, barely detected, immediate rebound
+2	4 mm deep pit, a few seconds to rebound
+3	6 mm deep pit, 10 - 12 seconds to rebound
+4	8 mm very deep pit, > 20 seconds to rebound



# Edema: Legs, Ankles, Feet



# Edema: Scrotum, Vulva



# Hand Dynamometer



- The means are generated by the manufacture and come with the dynamometer.
- Reduced grip strength is defined as 2 standard deviations below the norm.
- Reduced handgrip strength is often times, one of the first things to decline with malnutrition and is usually detected before fat and muscle wasting is present.
- Important to work with therapist (OT/PT) to understand how to properly position your patients, as well as what patients are most applicable for using a hand dynamometer.

# Summary

- ▶ Identification of and timely, effective interventions for malnutrition are important due to the adverse outcomes associated with malnutrition.
- ▶ Nutrition-focused physical exam is an essential component of a nutrition assessment and assists with identifying malnutrition and other nutritional problems.

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