

Malnutrition...Sarcopenia...Dysphagia... Are you making the clinical connections?

Live Webinar: Thursday June 9, 2022 (2:00-3:00pm EDT)

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Description and Speaker:

Do you routinely screen for dysphagia in new clients with malnutrition and sarcopenia? Evolving research has demonstrated an association between sarcopenia and dysphagia. The prevalence of dysphagia is reported to be up to 50% of older patients. Research demonstrates that dysphagia is associated with malnutrition, sarcopenia, increased mortality, and increased healthcare costs. Advance your clinical practice to incorporate swallowing screening tools into your professional toolbox. Conducting swallow screens is one of the 2022 ASCEND competencies for Dietetic Interns.

Award winning dietitian, **Dr. Mary Litchford, PhD, RDN, LDN** will share how you can advance your clinical practice.

Objectives:

After completing this continuing education course, the learner should be able to:

1. Examine the relationships between malnutrition and sarcopenia in patients with dysphagia.
2. Discuss the synergistic relationship between nutrition interventions and exercise to promote muscle protein synthesis.
3. Discuss screening tools to identify risk assessment tools for dysphagia and swallow screening checklists.

Disclosure: Dr. Litchford discloses that she is a paid presenter on this topic for Abbott Labs and Nestle Nutrition, however, she certifies that no conflict of interest exists for this program.

Professional Approvals:

Becky Dorner & Associates has been a Continuing Professional Education Accredited Provider (NU004) with the Commission on Dietetic Registration since 2002.

This course is intended for: RDNs and NDTRs	CDR Activity Type and Number: Activity Type: 171 Live webinar/175 Recorded Webinar Activity number: 170163 Recorded Webinar: 170164
Course CPE Hours: 1	CDR Level: 2
Suggested CDR Performance Indicators: 4.1.2, 10.1, 10.1.3, 10.1.4	

Note: Numerous Other Performance Indicators May Apply.



Expiration Date for Recorded Webinar: May 31, 2024.

How to Complete a CPE Course:

<https://www.beckydorner.com/continuing-education/how-to-complete-cpe/>

Questions? Please contact us at info@beckydorner.com

Malnutrition...Sarcopenia...Dysphagia...Are you making the clinical connections?

• Malnutrition...Sarcopenia...Dysphagia... Are you making the clinical connections?

Mary Litchford PhD, RDN, LDN

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Malnutrition...Sarcopenia...Dysphagia... Are you making the clinical connections?

Objectives

- Examine the relationships between malnutrition and sarcopenia in patients with dysphagia.
- Discuss synergetic relationship between nutrition interventions and exercise to promote muscle protein synthesis.
- Discuss screening tools to identify risk assessment tools for dysphagia and swallow screening checklists.

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Nutrition & Health Are Closely Related

"Poor diet is an equal opportunity killer.

*Worldwide in 2017,
poor diet was linked to
11 million deaths."*

Dr. Ashkan Afshin

GBD 2017 Diet Collaborators. Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. 3 April 2019
Image from Dreamstime

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Malnutrition...Sarcopenia...Dysphagia...Are you making the clinical connections?

Global Health Nutrition

Poll 1 True or False

According to the Global Burden of Disease study, poor diet is responsible for more deaths globally than tobacco, high blood pressure and any other health risks.

- a. True
- b. False

GBD 2017 Diet Collaborators. Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. 2 April 2019. doi: 10.1016/S0140-6736(19)30041-8.

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Global Health Nutrition

Poll 2

According to the Global Burden of Disease study, what percentage of adult deaths worldwide are related to poor diet?

- a. 3-9%
- b. 10-14%
- c. 15-19%
- d. > 20%

GBD 2017 Diet Collaborators. Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. 2 April 2019. doi: 10.1016/S0140-6736(19)30041-8.

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Global Health Nutrition:

Good News & Bad News from the Global Burden of Disease Study

Good News...

- Healthier diets could save one in five lives every year.
- Diet is a modifiable risk factor!

Image from Dreamstime

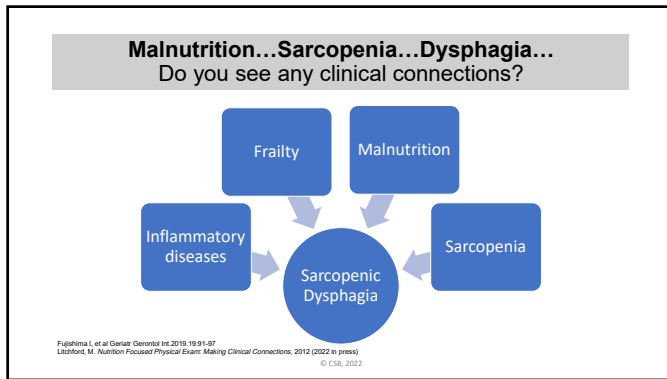
Bad News...

- Poor diets were responsible for 10.9 million deaths annually
- Diet related illness represents about 16% of disability-adjusted life years
 - Cardiovascular disease
 - Diabetes
 - Cancers
- Poor diet is an equal opportunity killer.
 - High sodium intake
 - Low intake whole grains, fruits & vegetables
- No region of the world meets the recommendations for whole grains, fruits and vegetables.

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New NFPE-Related Competencies for Dietetic Interns
Starting 6/1/2022

Domain 3. Clinical and Client Services:

CRDN 3.2 Conduct nutrition focused physical exams.(unchanged)

CRDN 3.3 Perform routine health screening assessments including measuring blood pressure, conducting waived point-of-care laboratory testing (i.e. blood glucose or cholesterol), initiating pharmacotherapy plans (i.e. insulin management), & administering vaccine injections (flu shots).

CRDN 3.4 Provide instruction for self-monitoring blood glucose, insulin administration and adjusting diabetes medication.

CRDN 3.5 Insert nasogastric or nasoenteric feeding tubes.

CRDN 3.6 Initiate and conduct bedside swallow screenings.

<https://www.eatrightpro.org/-/media/eatrightpro-files/acend/accreditation-standards/secdraft-2022standardsinotrack-4142021.pdf?la=en&hash=C3E2C4DE0DB90DE4DB8C4D0B5E4E7153CB0C62C6A>
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How do your Colleagues Define Frailty?

- An illness or a syndrome that combines natural aging + poly-morbidities + loss of fitness and reserves
- Commonly reported symptoms
 - weakness and fatigue
 - medical complexity
 - reduced tolerance to medical and surgical interventions
- No 'gold standard' to identify frailty
- Prevalence: Pre-frailty
 - 28-44% in adults 65 yr and older
- Prevalence: Frailty
 - 4-16% in community-dwelling men and women 65 years and older (> 40% had cancer)
 - US 24% adults 90 yr or older are frail
 - US 39.5% adults 95 yr or older are frail

Fried, J Gerontol A Biol Sci Med Sci 2003; 58:M146.
Kelly, J. JAGS. 2009;57:1532.
Cawthon, P. JAGS 2007;55:1216.
Lee, S. JAGS 2016 Nov 04(11):2257-62.
© CSH, 2022 Image from Dreamstime

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FRAIL Scale Screening Tool

Criterion	Questions
F.....fatigue	How much time during the last 4 weeks did you feel tired? (all of the time, or most of the time = 1 point)
R.....resistance	Do you have any difficulty walking up 10 steps alone without resting and without aids? (yes = 1 point)
A.....ambulation	Do you have any difficulty walking 100 meters alone without aids? (yes = 1 point)
I.....Illness	How many illness do you have? (5 or more = 1 point)
L.....loss of weight	Have you lost > 5% your weight in 6-12 months (yes = 1 point)

Robust = 0 points
 Prefrail = 1- 2 points
 Frail = 3-5 points

Rockwood, K. Clinics in Geriatric Medicine 27.1 (2011): 17-26.

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Hopkins Frailty Assessment

Criterion	Description
Shrinking	Compare weight today to 12 months ago. Unintended weight loss > 4.5 kg meets criteria
Exhaustion	Ask questions- How often in the last week did you feel exhausted? Did you feel like everything you did was an effort? Yes on 3+ days meets criteria
Physical activity	Minnesota Leisure Time Activity men expend < 1602 kj(383 Kcal)/wk, women < 1130 kj (270 Kcal)/wk meet criteria
Walking speed	Timed walk 4.5 meters

<https://www.johnshopkinsolutions.com/solution/frailty/>

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ACC Frailty Assessment: 9 Point Scale

1. **Very Fit**- robust, active, energetic, motivated.; exercise regularly
2. **Well**- no active disease symptoms, but not as fit as category 1; exercise occasionally, seasonally
3. **Managing Well**- well controlled medical conditions, no regular exercise beyond routine walking
4. **Vulnerable**- not dependent on other, but symptoms limit activities, c/o being tired all day
5. **Mildly frail**- more evident slowing, needs help with transportation, finances, heavy housework, meds. Slowly losing ability to shop, cook, walk alone, keep house
6. **Moderately Frail**- needs help with all outside and inside activities, may have difficulty with stairs, bathing, dressing
7. **Severely frail**- completely dependent on others for personal care, but health is stable
8. **Very severely frail**- completely dependent on others, could not recover from minor illness
9. **Terminally ill**- life expectancy < 6 months

Church S, BMC Geriatr. 2020 Oct 7;20(1):393.

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Malnutrition...Sarcopenia...Dysphagia...Are you making the clinical connections?

How do your Colleagues Define Undernutrition/Malnutrition?

- Lack of adequate nutrition resulting from:
 - not enough food
 - unbalanced diet
 - impaired nutrient absorption/digestion
 - excreting nutrients more rapidly than it is possible to replace them
- May be due to acute illness, chronic illness or environmental factors.
- Malnutrition results in macro and micronutrient deficiencies.
- Nutrient deficiencies impair normal body processes.

Litchford, M. *Nutrition Focused Physical Exam: Making Clinical Connections*, 2012 (2022 in press)

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Do Your Colleagues Know Who is at Risk for Malnutrition/Nutrient Deficiencies?

Population at Greatest Risk

- Older adults 65 yr+
- Poorly managed chronic conditions
- Individuals with mobility impairments

Characteristics Associated with Under & Malnutrition

- Poor cognitive status
- Worsening functional status
- Inflammatory conditions with abnormal lab test results (i.e. low levels of negative acute phase reactants: albumin, transferrin)
- Malnourished were at greater risk of developing major medical complication (eg, dementia, pressure injuries, bone fracture, hospital admission, longer hospital stays, death)

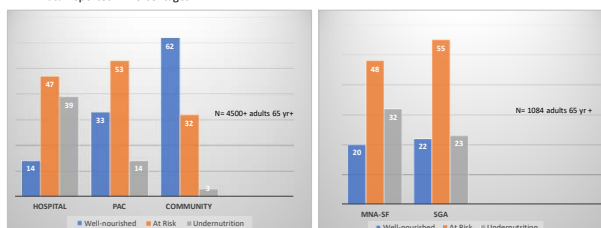
Gratagliano, *Eur Geriatr Med*. 2017;8:273-274.
O'Shea K, et al. *J Nutr Health Aging*. 2017;21(7):820-826.
Kaiser MJ, et al. *J Am Geriatr Soc*. 2010;58(9):1734-1738.
Cifuentes S, et al. *Nutr Hosp*. 2020 Apr 16;37(2):260-266

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Prevalence of Undernutrition in Europe: 2010 vs 2018

Data Reported in Percentages



Kaiser MJ, et al. *J Am Geriatr Soc*. 2010;58(9):1734-1738.

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Cifuentes S, et al. *Nutr Hosp*. 2020 Apr 16;37(2):260-266

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Prevalence of Undernutrition in USA

US hospital study-

- Large multi-institutional database- 6 million inpatient hospitalization 2014-2015:
 - 5% malnutrition diagnosis
 - 0.9% severe malnutrition diagnosis
- Overlooking a malnutrition diagnosis seems to be a widespread concern

nutritionDay in the US Survey 2009-2015

- ~33% non-intensive care unit (ICU) acute care patients at risk of malnutrition

Tobert CM, et al. *J Acad Nutr Diet*. 2018;118(1):125-131.
Sauer A, et al. *JPEN* 2019;43(7):918-926.

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Is Malnutrition a Major Risk Factor for Sarcopenia

- How does malnutrition affect food intake & swallowing?
 - Inflammation leads to muscle mass loss
 - More muscle mass reserves are used for energy and reserves are depleted
 - Over 30 muscles are involved in swallowing
- Malnutrition results in:
 - more fatigue
 - frailty
 - low physical activity
 - loss of muscle mass and function
 - ↓ strength in muscles of mastication & tongue pressure

Litchford, M. *Nutrition-Focused Physical Exam: Making Clinical Connections*, 2012 (2022 in press)
Fujishima I. *Geriatr Gerontol Int* 2019;19:91-97

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Selected Sarcopenia Screening Tools

Scale	Description	Reference
SARC-F	5 point screening tool- strength, walking, rising from chair, climbing stairs, fall history	Malmstrom TK, et al. <i>JCSM</i> . 2016 Mar;7(1):28-36 https://pubmed.ncbi.nlm.nih.gov/27066316/
SARC-CalF	SARC-F plus calf circumference	Bahat, G et al. <i>J Nutr Health Aging</i> 2018. 22, 1034-1038. https://doi.org/10.1007/s12603-018-1072-y
FRAIL Scale	Weighted 5 point scale- fatigue, ability to climb steps, ability to walk a given distance, history of illness, loss of weight	Woo, J et al. <i>JAGS</i> . 2012. 60(8). 1478-86
R-MAPP	MUST and SARC-F questionnaires to classify risk of malnutrition, sarcopenia and poor outcomes	Krzmaric Z, et al. <i>Clinical Nutrition</i> . 2020. DOI: https://doi.org/10.1016/j.clnu.2020.05.006

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SARC-CalF				
Component	Questions	Scoring		
Strength	How much difficulty do you have in lifting and carrying 10 lbs?	None = 0	Some = 1	A lot or unable = 2
Assistance in walking	How much difficulty do you have walking across a room?	None = 0	Some = 1	A lot, use of aids, or unable = 2
Rise from Chair	How much difficulty do you have transferring from a chair or bed?	None = 0	Some = 1	A lot or unable without help = 2
Climbing	How much difficulty do you have climbing a flight of 10 stairs?	None = 0	Some = 1	A lot or unable = 2
Falls	How many times have you fallen in the past year?	None = 0	1-3 falls = 1	> 4 falls = 2
Calf Circumference	none	< 33 cm females = 10 < 34 cm males = 10		

maximal score of the SARC-CalF is 20 points. A total score of ≥11 points indicates the risk of sarcopenia.
Krzysztofka-Siermaszko, R, et al. Clinical interventions in aging. 2020. 15, 583-594.
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NFPE: Lower Torso & Sarcopenia

Measuring Calf Circumference

- Participant can be standing or seated or lying down
- Calf exposed
- Legs relaxed
- Flat heeled shoes or no shoes
- Use non-stretchable, flexible measuring tape
- Find the largest girth of calf
- Measure the girth of right and left calf
- Widest girth varies from 4-6 inches from mid-point of patella


Litchford, M. Nutrition Focused Physical Exam: Making Clinical Connections, 2012 [2022 in press]
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Malnutrition & Sarcopenia Risk Assessment

Functional status impacts ability to eat

- R-MAPP Remote Consultation of Malnutrition in the Primary Practice
- Malnutrition risk
- Sarcopenia risk
- EAT-10 swallowing screening tool
- Decision & Action Plan
- Interventions
- www.rmapptool.com/en



Krzysztofka-Siermaszko, R, et al. Clinical Nutrition 2020. 39(7), 1983-1987
<https://www.nutritionathedepartment.com/health-management/gastro-intestinal/dysphagia-eat-10>
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Why Did My Client Lose Muscle Mass?

Nutrition & Psychosocial Etiologies

- Aging
- Depression, isolation, self-neglect
- Inactivity, immobilization
- Impaired cognition- forget to eat, afraid to eat
- Inadequate energy and protein intake
- Poor oral health and dentition

Medical Etiologies

- Inflammatory medical conditions
 - Injury, wounds
 - Surgery
 - COVID-19
 - CKD
- Inflammatory medical treatments
 - Oncology treatments
 - ICU care

Litchford, M. Nutrition Focused Physical Exam: Making Clinical Connections, 2012 (2022 in press)

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Etiology of Loss of Lean Muscle Mass

Age-Related Loss of Lean Muscle Mass

- Peak muscle mass achieved by 25 yr
- 8% loss LM per decade between 40-70 yr
- 15% loss LM per decade after 70 yr

Inactivity & Inflammation-Related

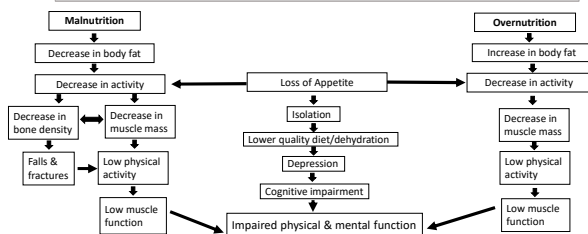
- Healthy Young Adults:
 - ✓ 28 days inactivity = 0.5 kg loss LM
- Healthy Elders
 - ✓ 10 days inactivity = 1 kg loss LM
- Elderly Inpatients
 - ✓ 3 day hospital stay= 1 kg loss LM

Kortbein, P., 2007; Paddon-Jones, 2004; Paddon-Jones, 2009

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Trajectory of Muscle Loss

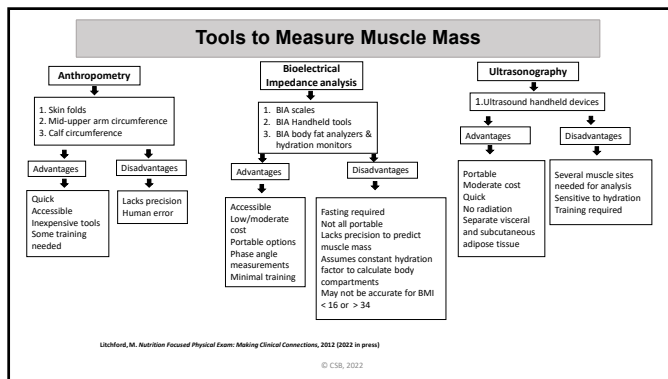


Litchford, M. Nutrition Focused Physical Exam: Making Clinical Connections, 2012 (2022 in press)

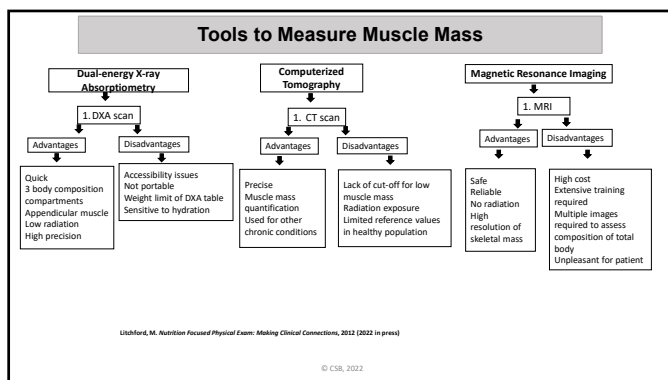
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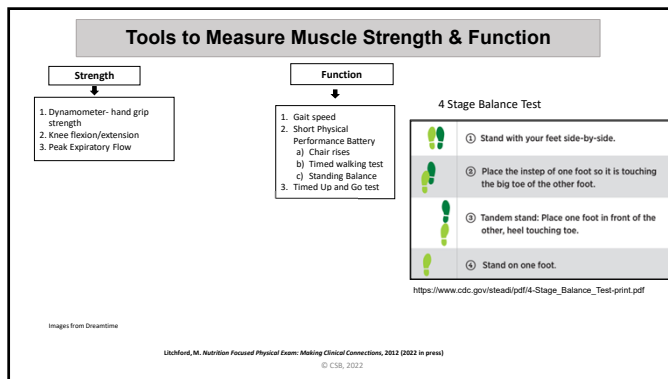
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Terminology Used in Muscle Assessment Research		
Terminology	Description	Technique
Fat-free mass	Sum of skeletal and non-skeletal muscle, organs, connective tissue and bone	DXA, ADP, BIA
Lean soft tissue or lean mass	Sum of all lean tissues includes protein, water, carbohydrates, non-fat lipids, soft tissue minerals (excludes bone and fat)	DXA
Skeletal muscle mass	The total mass of skeletal muscle	US, MRI, CT, D3-Cr
Appendicular skeletal mass	Lean soft tissue from arms and legs (except skin)	DXA
Muscle radiodensity or attenuation	Reflective of intermuscular adipose tissue or 'quality' of skeletal muscle; low muscle radiodensity/attenuation are reflective of higher amount of fat infiltration	CT, MRI
Sarcopenia	Low muscle mass in combination with low strength, muscular performance, or physical performance	All of above

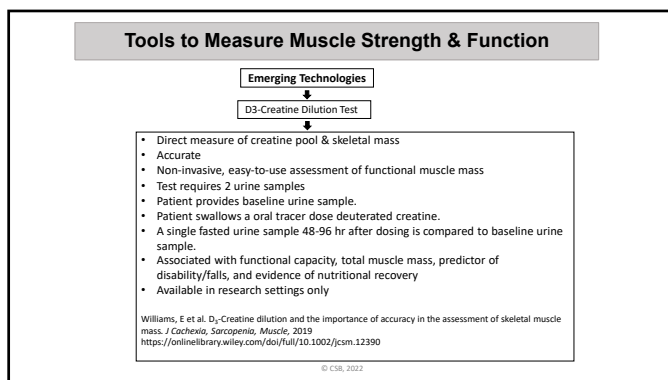
ADP: air displacement plethysmography; BIA: bioelectrical impedance analysis; CT: computerized tomography; DXA: dual X-ray absorptiometry; MRI: magnetic resonance imaging; US: ultrasound; D3-Cr: D₃-Creatine (D₃-Cr) dilution test (not currently available except for research studies)
Daou, N. et al. JAMA. 2019; 321(2):27.
© CSH, 2022

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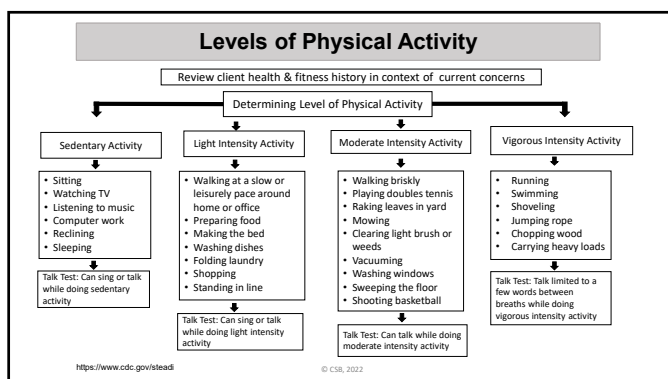
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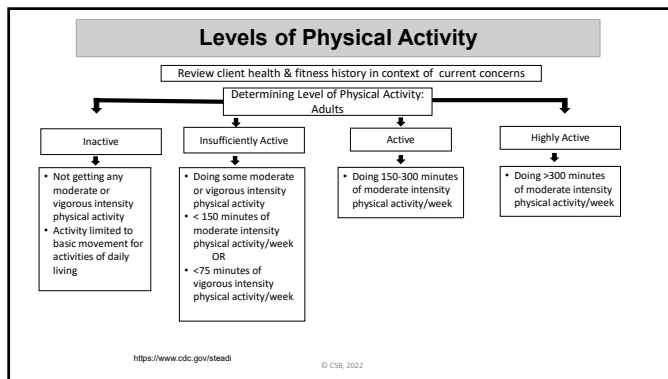


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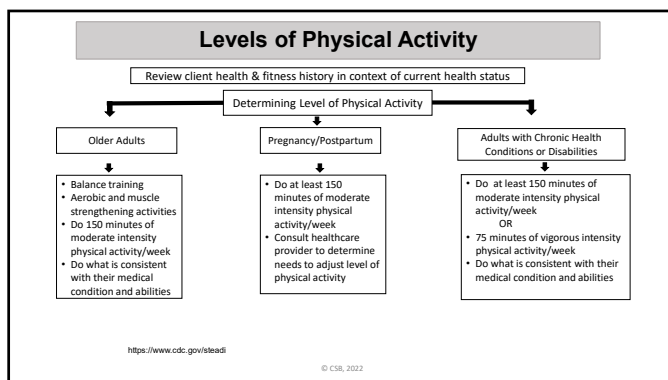


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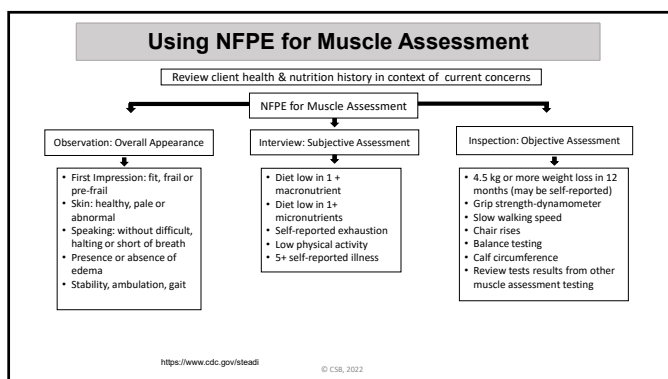
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Muscle Assessment: First Impression

Patient A

Patient B

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First Impressions: Client May Be Losing Muscle Mass

- Low Body Weight
- Poor Appetite, Chewing Issues
- Signs of Infections

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Nutrition Interventions Muscle Mass

Screen & Assess Nutrition Status

1. Malnutrition screening tools
2. Comprehensive nutrition assessment
3. Sarcopenia screening

1. Nutrition Care Process
2. Macro and micro nutrient needs
3. Medication impairing nutrient utilization
4. NFPE

Estimate Muscle Loss

1. BIA
2. DXA
3. Muscle function tests
 - Dynamometer- hand grip strength
 - Knee flexion/extension
 - Peak Expiratory Flow
4. Muscle strength tests
 - Gait speed
 - Short Physical Performance Battery
 - Chair rises
 - Timed walking test
 - Standing Balance
 - Timed Up and Go test

Interventions

1. Increase energy intake with quality protein, carbs and healthy fats rich in omega-3 fatty acids
2. Whey protein isolate or other leucine rich foods providing 30 g protein per each meal (2.5-3 g leucine), preferably 3 times/d
3. Provide high calorie high protein oral nutritional supplements
4. HMB fortified products may help
5. Assess vitamin D status and supplement if needed
6. Address other micronutrient deficiencies
7. Resistance exercise

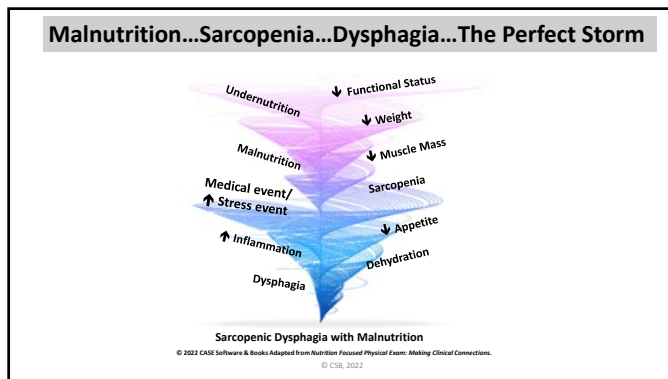
Monitor & Evaluate

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Stages of Swallowing

- Stage 1 Food formed in bolus in mouth
- Upper esophageal sphincter (UES) closed
- Stage 2 Soft palate blocks the nasal cavity as food moves toward the esophagus. UES opens and epiglottis blocks the larynx
- Stage 3 UES recloses

Images from Dreamstime
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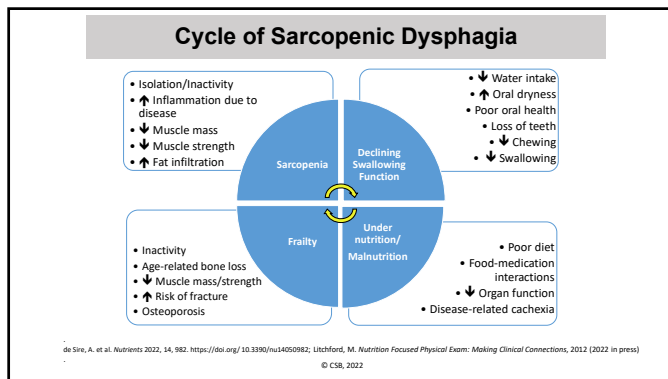
How do your Colleagues Identify Dysphagia?

- Decrease in water intake
- Coughing or gagging when swallowing
- Pain while swallowing
- Increased difficulty swallowing pills
- Inability to swallow
- Drooling
- Hoarseness
- Food regurgitation
- Frequent heartburn
- Increased reflux
- Weight loss
- A sensation of food getting stuck in the throat or chest or behind the sternum

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Use NFPE to Pre-Screening Swallow Eval

1. Work with speech & language pathologist(SLP) to create a pre-screening checklist and protocol to trigger SLP consult.
2. Add the EAT-10 screening tool to NFPE
3. Add the pre-screen for dysphagia indicators to NFPE. Note that clients must be able to sit in an upright position
4. Examples from NFPE:
 1. First Impressions:
 1. Consciousness level of client (alert, able to follow instructions etc)
 2. Understandable speech
 2. HEENT
 1. Observation of drooling
 2. Able to clench teeth, close lips
 3. Assess for gag reflex

Litchford, M. *Nutrition Focused Physical Exam: Making Clinical Connections*, 2022 (2022 in press)
<https://www.northwesternmedicine.com/health-management/gastro-intestinal/dysphagia/cvab-58>
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Eating Assessment Tool (EAT-10)

1. Eating Assessment Tool is validated tool to predict swallowing difficulties
2. 10 Questions related to degree of swallowing-related disability.
3. EAT-10 Tool is also used to monitor dysphagia efficacy.
4. Each question is weighted on a scale of 0-4 where 0= no problem and 4= severe problem. Maximum score = 40
5. Aggregate EAT-10 scores = to or > 2 is abnormal

<https://www.northwesternmedicine.com/health-management/gastro-intestinal/dysphagia/cvab-58>
 Belskiy VC et al. *Ann Otol Rhinol Laryngol*. 2008 Dec;117(12):919-24.
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Add Swallow Screen to NFPE

1. Work with speech & language pathologist(SLP) to demonstrate competence in doing swallow screen
2. Clients must be able to sit upright
3. Examples of swallow screen that SLP may propose
 1. Offer client 1 TBS plain water and evaluate response for choking, coughing, gurgly voice, drooling etc
 2. If the client can swallow 1 TBS plain water, offer a slightly larger volume of plain water (~ ¼ c)
 3. Evaluate response for choking, coughing, gurgly voice, drooling etc

ASHA.org, 2021; AARN.org, 2017;
Litchford, M. Nutrition Focused Physical Exam: Making Clinical Connections, 2012 (2022 in press)
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Nutrition Interventions Sarcopenic Dysphagia

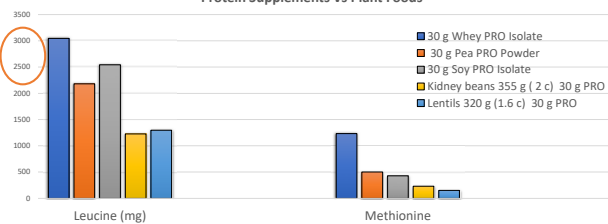
- Screen all patients for malnutrition using a validated screening tool.
- Screen all older patients for frailty and sarcopenia using a validated screening tool.
- Screen all malnourished and older patients with EAT-10 tool
- Screen or refer to SLP all patients who have indicators of a swallowing problem.
- Refer all patients at risk of or with malnutrition to a nutrition professional for individualized nutrition assessment. Use accepted criteria to define malnutrition (ASPEN or GLIM).
- Estimate energy requirements for each patient (indirect calorimetry preferred).
- Focus on food first. Provide 1.0-1.2 g high quality protein /kg body weight distributed at 25-30 g/meal.
- Encourage leucine-rich foods at every meal. Goal 2.5-3.0 g leucine/meal or snack.
- Fortify meals with modular protein products or offer oral nutritional supplements between meals.
- Provide supplemental micronutrients if deficiencies are suspected or confirmed.
- Provide food and beverage consistency appropriate for the patient.

Fujishima I, et al. *Geriatr Gerontol Int* 2019;19:91-97; Morley JE, et al. *J Am Med Dir Assoc*, 2010; 11(8): 391-396.; Yanai H. Nutrition for Sarcopenia. *J Clin Med Res*.2015;7(12):926-931. doi:10.14740/jocmr/2361w.; Litchford, M. Nutrition Focused Physical Exam: Making Clinical Connections, 2012 (2022 ed in press)
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Modular Protein Products vs Foods

Compare the 2 MOST Important Amino Acids in Muscle Synthesis
Protein Supplements Vs Plant Foods



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Malnutrition...Sarcopenia...Dysphagia...Are you making the clinical connections?

Clinical Pearls

- Malnutrition and micronutrient deficiencies are often overlooked or misdiagnosed.
- Etiology of malnutrition may be due to acute illness, chronic illness or environmental factors.
- Malnutrition can develop during hospitalization or during rehab.
- Malnutrition is modifiable.
- Sarcopenia and dysphagia are often concurrent with malnutrition.
- Work collaboratively with the medical team to identify and treat malnutrition and sarcopenic dysphagia.

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Malnutrition...Sarcopenia...Dysphagia...
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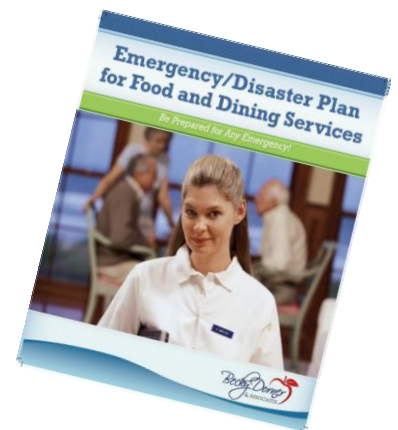
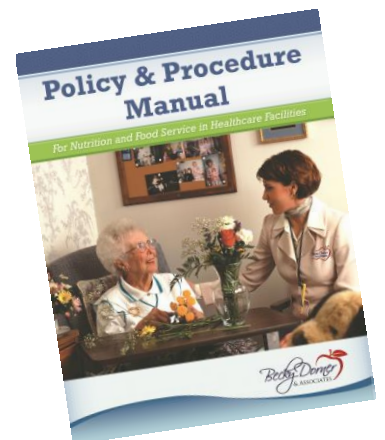
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