

Incorporating Nutrition Focused Physical Exam into the Physical Assessment of Infants

Daily physical examination is an important part of the day-to-day, routine care of infants. Nutrition is a vital component of infant growth and development, and the incorporation of a nutrition focused physical examination into the daily assessment of infants is critical for the evaluation, diagnosis, and management of nutrition-related deficiencies and it improves overall care.¹ This practice tool aims to provide the non-dietitian clinician with information regarding nutrition related physical findings that serve as clinical measures of nutrition status that can be used in addition to anthropometrics (e.g., weight, length, BMI, head and mid-upper arm circumference), z-scores, growth charts and percentiles.²⁻⁴



General Inspection

		Normal	Mild-Moderate Malnutrition	Severe Malnutrition
Head and Face (Fat and Muscle)	Orbital Region (orbital fat pads)	Slightly bulging	Slightly dark circles, somewhat hollow	Dark circles, hollow appearance, loose saggy skin
	Buccal Region (buccal fat pads)	Full, round cheeks	Flat cheeks, minimal bounce	Hollow, sunken cheeks
	Temporal Region (temporalis muscle)	Well-defined muscle, flat	Slight depression	Deep hollowing/scooping
Upper Body (Fat and Muscle)	Upper Arm Region (area under the triceps muscle)	Arms full and round, ample fat tissue	Some depth to pinch, not ample	Very little space between fingers
	Clavicle Bone Region (pectoralis major, trapezius)	May be visible, not prominent	Some protrusion	Protrudes and shows prominence
	Acromion Bone Region (deltoid muscle)	Rounded curves at arms, shoulders, and neck	Slightly protruded, shoulders not square	Shoulder-to-arm joints squared, bones prominent
Upper Back (Muscle)	Scapular Bone and Spine Regions (trapezius, infraspinatus, supraspinatus, latissimus dorsi, and spine)	Bone not prominent; no depressions	Mild depression around scapula; spine or bones may show slightly	Prominent visible scapula; spine depression is significant
Ribs/Midaxillary Line (Fat)	Thoracic and Lumbar Region (ribs, lower back, midaxillary line at iliac crest)	Chest is full and round with ribs not evident Minimal ability to visualize the iliac crest	Ribs are apparent with slightly visible depressions between them Iliac crest is slightly visible	Progressive prominence of ribs with loss of intercostal tissue Iliac crest is very visible
Lower Extremities (Muscle)	Anterior Thigh Region (quadriceps)	Well rounded, no depressions	Slight depressions	Significant depressions
	Patellar Region (quadriceps)	Muscle protrudes, kneecap is not prominent	Kneecap is more prominent	Kneecap is prominent, little sign of muscle around knee
	Posterior Calf Region (gastrocnemius)	Well-developed bulb of muscle	Less developed bulb of muscle	Thin, little to no muscle development

Adapted from DeTallo C, Freeman H, Klein B, Bewley S, Miller M. *Nutrition-Focused Physical Exam of Infants, Children, and Adolescents*. American Society for Parenteral and Enteral Nutrition, 2019.²

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Findings for Head, Eyes, Mouth, Skin, and Nails

Area	Normal Findings	Abnormal Findings	Related Nutrition Deficiencies
Hair	Smooth and symmetrical	Poor quality	Zinc, essential fatty acid, biotin, protein-calorie
		Alopecia	Protein, zinc, biotin, essential fatty acid, selenium
Eyes	Bright, shiny, clear, pink moist membranes	Dull, dry membranes with Bitot spots	Vitamin A
		Burning itching with photophobia	Riboflavin
Lips/Mouth	Pink, free of lesions	Dry, swollen	Vitamins B ₆ and B ₁₂ , folate, riboflavin, niacin
		Dry mucous membranes	Dehydration
		Dry mouth	Zinc
Tongue	Moist pink with slightly rough texture	Magenta and edematous	Riboflavin, niacin, folate, Vitamins B ₆ and B ₁₂ , Fe
		Enlarged in congenital anomalies	May lead to feeding issues
		Candidiasis lesions or thrush	Vitamin C, Fe
Gums	Pink without lesions	Bleeding and inflamed	Vitamin C
Teeth	Normal eruption (usually begins at 4–12 months of age)	Delayed eruption	Severe malnutrition
		Dental caries	Vitamin D
Skin	Uniform color without rashes, tears, or flaking Cool to touch	Pallor	Fe, folate, Vitamin B ₁₂
		Dry, scaly	Vitamin A, essential fatty acid
		Dermatitis	Essential fatty acid, zinc, niacin, riboflavin, tryptophan
Nails	Symmetrical and smooth	Transverse lines	Protein
		Flaky	Magnesium
		Poorly blanched	Vitamin A, Vitamin C

Fe: Iron From Green Corkins K, Teague EE. Pediatric nutrition assessment: anthropometrics to zinc. *Nutr Clin Pract.* 2017;32(1):40–51.⁵

References:

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- DeTallo C, Freeman H, Klein B, Bewley S, Miller M. *Nutrition-Focused Physical Exam of Infants, Children, and Adolescents.* American Society for Parenteral and Enteral Nutrition, 2019. (This publication contains many visual depictions of the above findings.)
- Becker P, Nieman Carney L, Corkins MR, et al. Consensus Statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition indicators recommended for the identification and documentation of pediatric malnutrition (undernutrition). *Nutr Clin Pract.* 2015;30(1):147-161.
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