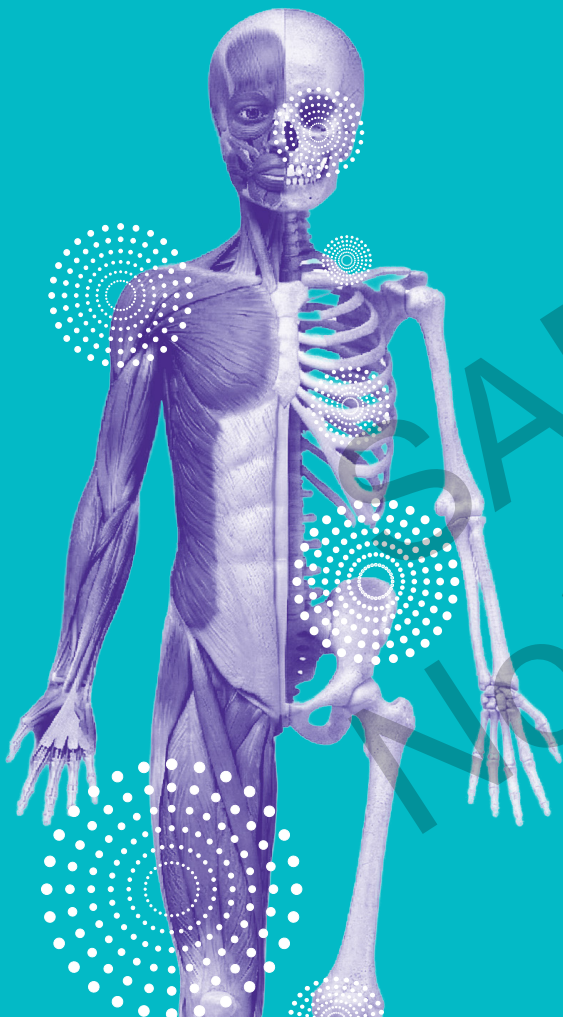


*Pocket
Guide*

Pediatric Nutrition Focused Physical Exam

SECOND EDITION

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Editor | Beth Mordarski, RDN, LD



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Pediatric NFPE Pocket Guide Introduction

The Nutrition Focused Physical Exam (NFPE) is a systematic, head-to-toe assessment used to identify physical signs of nutritional status, nutrient deficiencies and excesses, growth concerns, and functional impairments. In the pediatric population, NFPE is an essential component of a comprehensive nutrition assessment, complementing anthropometric measurements, dietary intake history, laboratory data, medical history, and developmental evaluation.

This pocket guide was developed as a practical, quick-reference resource for registered dietitian nutritionists (RDNs) performing NFPE in infants, children, and adolescents. Its purpose is to support consistent, efficient, and evidence-based assessments across clinical settings. The guide highlights key physical findings associated with pediatric malnutrition, including muscle and fat losses, micronutrient deficiencies, fluid status alterations, and functional measures. It also provides age-appropriate assessment considerations and documentation tips to enhance clinical decision-making.

Best practice for early recognition of pediatric malnutrition begins with routine screening using a validated nutrition screening tool. Infants, children, and adolescents identified as being at risk should then receive a comprehensive nutrition assessment using a validated nutrition assessment and diagnostic tool to accurately diagnose the presence and severity of malnutrition to guide appropriate intervention.

Nutrition Risk Screening Tool: STRONGkids

STRONGkids (Screening Tool for Risk on Nutritional Status and Growth) is a validated pediatric nutrition screening tool designed to identify children who are at risk for malnutrition and impaired growth. STRONGkids can be completed by any trained health care professional and provides a quick, simple, and reliable method for assessing nutritional risk through evaluation of underlying disease or major surgery risk, subjective clinical assessment, nutritional intake and losses, and recent weight loss or poor weight gain. By utilizing a validated nutrition screen, such as STRONGkids, those patients identified at nutritional risk can be referred to the RDN in a timely manner for a complete nutrition assessment.

Malnutrition Assessment and Diagnostic Tool: Subjective Global Nutrition Assessment (SGNA)

The SGNA is a validated nutrition assessment and diagnostic tool designed specifically for the pediatric population to identify and diagnose malnutrition. SGNA provides a comprehensive evaluation of nutritional status through the assessment of weight and growth trends, dietary intake, gastrointestinal symptoms, functional capacity, metabolic demands associated with disease, and physical examination findings for muscle and fat loss. By combining clinical judgment with the multiple assessment domains available, the RDN can determine the presence and severity of malnutrition. SGNA is a valuable tool for assessing pediatric patients for malnutrition across a variety of clinical settings to support timely nutrition interventions and interdisciplinary care planning in order to help improve clinical outcomes.

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Images of Infants: NFPE Findings

Full Body

Helpful Tips

- Ensure the examination area is warm with good lighting.
- The infant should be in a calm state.
- Undress the area of the infant being assessed.
- Warm your hands prior to palpating the infant.



Well-nourished



Undernourished

Physical Exam: Descriptions of NFPE Findings

Helpful Tip

- Assess each area bilaterally and as many areas that are available to examine. Document limitation if unable to assess an area.

EXAM AREAS	TIPS	SEVERE LOSS	MILD-MODERATE LOSS	WELL-NOURISHED
SUBCUTANEOUS FAT				
Orbital region (orbital fat pads)	View patient when standing in front of them; palpate the area around the eye over the orbital bone. Note: Fluid retention may mask loss; dehydration may falsely appear as loss.	Hollow look, depressions, dark circles, loose skin. Significant decrease in bounce back of fat pads.	Slightly dark circles, somewhat hollow look. Some decrease in bounce back of fat pads.	Slightly bulged fat pads, ample bounce back.
Cheek region (buccal fat pads)	View patient when standing directly in front of them; palpate between the cheekbone and jawbone.	Hollow, sunken, narrow cheeks; prominence of bony structure. Minimal to no bounce back of fat pads.	Slight depression, somewhat sunken appearance, flat cheeks. Decrease in bounce back of fat pads.	Full, round, filled-out cheeks. Ample bounce back of fat pads.
Upper arm region (area below triceps)	Arm bent at 90°, roll down mid-arm to assess fat between fingers; ensure muscle is not present in grasp. Ask patient to flex.	Fingers touch with minimal fat; very little space between.	Some fat in grasp between fingers, but not ample.	Ample fat between fingers.
Thoracic and lumbar region (ribs, lower back, midaxillary line)	View patient from back/side with arms raised out directly in front of them. Grasp gently down the midaxillary line to assess for the fat overlay of the ribs and at the iliac crest.	Depression between the ribs very apparent, minimal to no fat can be grasped. Iliac crest very prominent.	Ribs apparent, depressions between ribs less pronounced, minimal fat in grasp. Iliac crest somewhat prominent.	Chest is full, ribs do not show, ample fat in grasp. Slight to no protrusion of the iliac crest.
MUSCLE				
Temple region (temporalis muscle)	View patient when standing in front of them. Ask the patient to bite down or open and close mouth, while using the pads of your index and middle fingers to palpate the muscle.	Hollowing, scooping, depression with little to no muscle tone/resistance.	Slight depression with decrease in muscle tone/resistance.	Can see/feel well-defined muscle.

Upper Arm Region (Area Below Triceps)

Helpful Tips

- Arm bent at 90 degrees.
- Grasp arm midway between armpit and elbow. While maintaining connectivity, roll down to below the triceps muscle.
- Ask patient to flex to ensure no muscle included in grasp. If you feel muscle in your grasp, then adjust down until muscle is not felt in grasp. If patient is unable to flex, you can assist the patient by straightening and bending the arm.
- Assess the feel and space of fat between fingers.
- Note: in athletic individuals, may not have subcutaneous fat to grasp in this area (normal).



Front view



Back view

Well-nourished



Mild

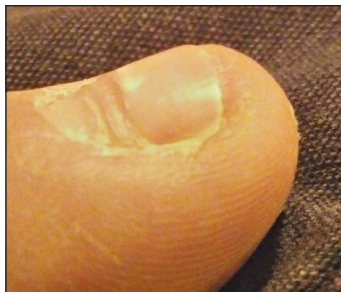
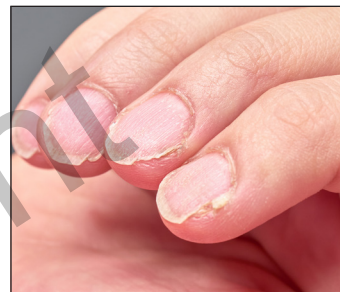
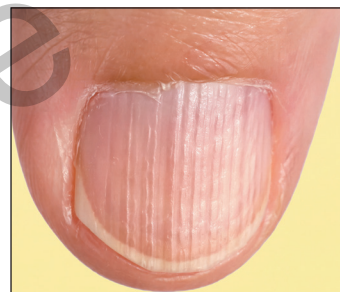
Developmental Milestones

From birth to 5 years, a child should reach milestones in how they play, learn, speak, act, and move. Developmental milestones are things most children (75% or more) can do by a certain age. Delay or regression of developmental milestones can be related to malnutrition; if a concern is identified, a health care professional should perform a complete nutrition assessment.

	MOVEMENT/PHYSICAL DEVELOPMENT	COGNITIVE	LANGUAGE/COMMUNICATION	SOCIAL/EMOTIONAL
2 months	Holds head up when on tummy Moves both arms and both legs Open hands briefly	Watches people as they move (tracking with eyes) Looks at toy for several seconds	Makes sounds other than crying Reacts to loud sounds	Calms down when spoken to or picked up Looks at your face Smiles when talked to or smiled at
4 months	Holds head steady without support Holds a toy when put in hand Brings hands to mouth When on tummy, pushes up onto elbows/forearms	If hungry, opens mouth when sees breast or bottle Looks at hands with interest	Makes sounds like "oooo," "aahh" (cooing) Makes sounds back when talked to Turns head toward the sound of your voice	Smiles on own to get your attention Starting to laugh/giggle Looks at you, moves, or makes sounds to get or keep your attention
6 months	Rolls from tummy to back Pushes up with straight arms when on tummy Leans on hands to support self when sitting	Puts things in mouth to explore them Reaches to grab a toy Closes lips to show doesn't want more food	Takes turns making sounds with you Blows "raspberries" (sticks tongue out and blows) Makes squealing noises	Knows familiar people Likes to look at self in a mirror Laughs

Micronutrient Exam: Clinical Interpretation of NFPE Findings

SIGNS/SYMPTOMS	POSSIBLE NUTRITION-RELATED CAUSES	ADDITIONAL CONSIDERATIONS
HAIR		
Hair loss (alopecia) <i>thinning/loss on head and progressing to body hair; patchy hair loss, baldness; brittle, dry, dull hair</i>	Deficiency: Biotin • Zinc • Essential fatty acid • Vitamin D* • Iron* Other: Protein (TE) Toxicity: Selenium • Vitamin A • Vitamin E	Possible non-nutrition-related causes: Autoimmune disease (eg, thyroid disease, type 1 diabetes, lupus, celiac disease, rheumatoid arthritis, vitiligo, lupus) • Asthma • Allergic rhinitis • Atopic dermatitis (eczema) • Chemotherapy • Stress of illness • Childbirth • Hormonal changes • Over-processing of hair • Psychological stress • Certain medications
Telogen effluvium (TE) <i>thinning hair on scalp, easily pluckable</i>		
Corkscrew and swan neck hairs	Deficiency: Vitamin C	
Depigmentation; premature graying	Deficiency: Copper* • Manganese* Other: Inadequate protein intake	Possible non-nutrition-related causes: Chemotherapy • Hereditary • Emotional or oxidative stress • Autoimmune diseases Additional information: Premature graying defined as graying of hair before age 20 in White individuals and before age 30 in Black individuals • For manganese, very limited evidence
Flag sign <i>alternating horizontal bands of dark and light color in hair, lack of melanin</i>	Other: Malnutrition [†]	
Lanugo <i>fine, downy hair</i>	Other: Malnutrition [†]	Additional information: Often seen in individuals with anorexia nervosa
Sparsely distributed, coarse hair	Toxicity: Vitamin A	
Kinky hair	N/A	Non-nutrition-related cause: Menkes disease due to <i>ATP7A</i> gene mutation that affects copper metabolism

Nail Findings**Beau lines****Muehrcke lines****Brittle nail syndrome
(onychoschizia)****Splinter hemorrhage****Mees lines****Brittle nail syndrome
(onychorrhexis)**

Laboratory Assays for Vitamin and Mineral Status

LAB ASSAY	LAB METHOD	INTERPRETATION OF LEVELS			COMMENTS
		NORMAL	DEFICIENCY	TOXICITY	
VITAMIN A					
Retinol	Serum or plasma	0-12 y: 20-50 mcg/dL 13-17 y: 26-72 mcg/dL ≥ 18 y: 30-100 mcg/dL	Moderate: ≤ 20 mcg/dL Severe: ≤ 10 mcg/dL	> 100 mcg/dL	Fasting level preferred. May be falsely decreased during inflammation. Levels not always reliable of status as does not decline until levels in liver and other storage sites are almost depleted.
VITAMIN D					
Calcidiol 25-hydroxyvitamin D [25(OH)D]	Serum or plasma	≥ 20 ng/mL	Deficient: < 12 ng/mL Insufficient: 12-< 20 ng/mL Neonates: < 20 ng/mL	> 150 ng/mL (toxicity) > 50 ng/mL (high)	May be falsely decreased during inflammation. Levels > 50 ng/mL linked to potential adverse effects. Toxicity results in hypercalcemia, hypercalciuria. Chronic disorders (eg, malabsorptive disorders, CKD): sufficient target may be > 30 ng/mL.
VITAMIN E					
Alpha-tocopherol	Serum or plasma	5-20 mg/L	< 5 mg/L	> 20 mg/L	May be falsely decreased during inflammation. If abnormal lipid levels (hyperlipidemia) or fat malabsorption, using the ratio of alpha-tocopherol to total lipids is more accurate.
Alpha-tocopherol (mg): total lipids (g)	Serum or plasma		< 0.8 mg/g total lipid		

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