



Supplement shakes for underweight children

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Introduction

Children are in a constant state of growth and development. An adequate diet containing all essential nutrients is required to feed this growth and maintain overall health. In some cases, it can be difficult for children to meet their nutrient requirements. This can lead to underweight.^{1,2} Underweight children are more likely to experience stunted growth, develop nutrient deficiencies and perform poorly in school and physical activities.³ Although underweight in children can be managed with carefully planned dietary interventions, certain types of high protein and energy supplement shakes may be beneficial.^{3,4}

Nutrition needs in childhood

Childhood is a period of rapid physical and cognitive growth. Children older than one year typically grow 2 cm taller and between 2–3 kg heavier each year before adolescence.² At the same time they are developing bones, teeth and muscles. To support this development, children need more nutritious foods in proportion to their body size than adults do. This can be achieved if children consume a variety of healthy foods on a daily basis.¹ To prevent nutrient deficiencies, and reduce the risk of chronic disease, children should meet the internationally recognised Dietary Reference Intakes (DRIs) for specific nutrients. These include both macronutrients (carbohydrates, protein and fat) and micronutrients (vitamins and minerals).^{1,2}

Energy and macronutrients

Children should consume enough energy to grow and maintain muscle mass, while preventing excess weight gain.¹ The energy needs of growing children depend on their age, rate

of growth and daily activity level. For example, a one-year-old child would normally need an energy intake of 800 kcal per day, while an active six-year old would need double this amount. By age 10, an active child would need about 2 000 kcal per day.²

Macronutrients are the calorie-containing components of food and include protein, carbohydrates and fat.² Of all the calories consumed by a child in one day, 45–65% should comprise carbohydrates. Carbohydrates are the body's preferred source of fuel for both mental and physical activity.^{1,2} Protein is equally important for a growing child as it helps to build tissues and maintain normal body functions.² Protein should make up between 5–20% of the total diet before three years of age, and 10–30% thereafter.¹ The remainder of daily energy should come from fat. Dietary fat is needed to assist in the absorption of some vitamins and minerals, while essential fatty acids such as omega-3 and omega-6 promote optimal growth and skin health.^{1,5}

Vitamins and minerals

Vitamins and minerals are needed in small amounts in the body to carry out important functions.² Some of the most noteworthy micronutrients to consider in childhood include vitamin A, iron, calcium and zinc.¹ In order to maintain health, children should meet the recommended daily intake for all essential micronutrients. This can easily be achieved if a child's diet consists of a variety of nutritious foods. In healthy children, giving vitamin and mineral supplements is not advised, and can cause more harm than good. However, micronutrient supplements may be beneficial for underweight children that suffer from vitamin and mineral deficiencies.¹

Underweight children

Causes of underweight

'Underweight' in a child is a term used when body weight is too low for a normal, healthy child.^{2,6} There are multiple causes for low body mass in childhood. Children that were born prematurely, suffer from developmental delays or other

medical conditions are more likely to be underweight. Social and environmental factors also play a role. Children that follow restrictive diets such as vegan or vegetarian diets (with limited dairy) are at risk of developing protein and other nutrient deficiencies. The same applies to children with allergies, as well as those with limited access to nutritious foods. Acute and chronic illnesses are also instigators of underweight. Chronic diseases often associated with underweight include renal and liver disease, asthma, inflammatory bowel disease, coeliac disease and cystic fibrosis.¹ Acute illnesses (such as viral and bacterial infections) may be short-lived, but could have a lasting effect on nutritional status.^{1,4}

Consequences of underweight

Both the mental and physical health of a child is affected by dietary intake. Poor nutritional status has been known to cause behavioural issues. This is why malnourished children are often labelled as 'depressed' or 'aggressive' at school.² A key nutrient known to affect a child's behaviour is iron. If children are unable to reach the DRI for iron, they may develop iron-deficiency anaemia. Anaemic children tend to exhibit a short attention span, as well as poor memory and may have learning difficulties. Appearing thin or small for age is not the only physical indicator of malnutrition. For example, children with a protein deficiency may have dry skin or dull-looking hair that falls out easily. Deficiency of vitamin A, vitamin B, zinc and iron could affect the eyes, while insufficient vitamin C could compromise oral health. Bone abnormalities, altered organ function and a weak immune system are also side-effects of malnutrition.² Underweight children suffering from nutrient deficiencies should receive individualised nutritional treatment to help them achieve a healthy weight.⁴

What makes a good supplement shake?

A good supplement shake for underweight and malnourished children should be rich in both energy and nutrients.⁸ It is important to note that supplements should not replace meals but can be used to enhance a child's daily intake. Simply put, underweight children will gain weight if they consume extra calories during the day.^{1,7} However, these additional calories should come from nutrient-dense foods to promote overall health and treat/prevent vitamin and mineral deficiencies.⁸ In other words, children should not 'dilute' their diets with high-energy, nutrient-poor foods (e.g. sugary beverages). Instead, caregivers should promote weight-gain by incorporating healthy foods into a child's diet, whilst encouraging a

positive eating environment.⁴ Examples of foods frequently used to supplement the diet include margarine, oils, full-fat dairy, bananas, nut butters and seeds.^{4,8} These can be added to everyday meals or snacks. However, it can be difficult to achieve weight gain through dietary changes alone. Commercial supplement shakes provide a convenient, on-the-go solution for increasing the nutrient content of a child's diet.^{3,8} Shakes are particularly useful for promoting weight gain as a small volume could contain a significant amount of energy and nutrients.³ It is important to note that not all supplement shakes are suitable for children. It is therefore strongly advised that caregivers consult a dietitian before giving a child a supplement shake.^{3,8}

Conclusion

All children need a variety of nutritious foods to promote healthy growth and development. Factors such as dietary restrictions, illness, allergies and developmental delay may prevent children from acquiring the nutrients they need to stay healthy. Underweight and malnourished children are at a higher risk of developing nutrient deficiencies, which could have negative health effects. Increasing the nutritional value of a child's diet is the first step in promoting weight gain. Supplement shakes could be beneficial in treating underweight in children as they are nutrient-dense and convenient to use. A good supplement shake should help children to reach the DRI for all essential nutrients.

References

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