

TODDLER MEALS: HOW MUCH DO THEY NEED?

www.infantandtoddlerforum.org



LEARNING POINTS

- 1 Toddlers require a healthy, varied and well-balanced diet to thrive and grow.
- 2 Toddlers have smaller stomachs than adults and eat smaller amounts of food more often. They need a regular routine of three meals and two to three healthy snacks each day.
- 3 Toddlers should not be allowed to 'graze' on food throughout the day.
- 4 Portion sizes should be tailored to toddlers' needs. A large active toddler will need more food than a smaller, less active child.
- 5 Toddlers regulate their food intake by eating when they are hungry and by stopping eating when they feel full.
- 6 When toddlers eat too much or too little at one meal they may compensate by eating less, or more, at the next meal.
- 7 Restricting food or persuading toddlers to eat when they do not want to can interfere with these regulatory and compensatory processes.
- 8 Coercion can lead to stressful mealtimes, which in turn can cause toddlers to refuse food at that and at future meals.
- 9 Withholding specific foods can make them seem more desirable.
- 10 Serving desirable foods as a reward can make them seem even more desirable.
- 11 Toddlers will best maintain a normal weight and growth rate when meals and snacks are regularly spaced throughout the day.
- 12 Fussy eaters may be in control of their food intake, although regulation may be week-to-week rather than day-to-day.
- 13 Growth is a better indicator of food intake than mealtime behaviour.

TODDLER MEALS: HOW MUCH DO THEY NEED?

Toddlers require a healthy varied and well-balanced diet to thrive and grow. During the course of the day toddlers should usually be offered three meals and two to three snacks. The foods they are given should be part of a mixed balanced diet designed to meet their nutritional needs.

see Factsheet 1.1, 1.2 and 1.3

Food should not be freely available throughout the day because 'grazing' reduces toddlers' ability to regulate their food intake to match their needs. Nor should food and snacks be withheld in order to make toddlers hungry for the next meal. Toddlers maintain

their weight and rate of growth appropriately when they have regular meal and snack times throughout the day. However they should not be forced to eat everything on their plate, nor should they be coaxed to eat more than they want.

Parents should avoid using food to reward their toddler's eating behaviour, or insisting that a first course must be finished before a second course is offered. Portion size should be appropriate for the toddler; a small child has a smaller appetite than a large child of the same age, and will eat and require less food to maintain normal weight and growth.

FOOD INTAKE: A BALANCING ACT

Regulation - While parents and carers control how much food is offered to toddlers and should supervise them at mealtimes, children can regulate the amount

that they need to eat and drink if parents allow them to do so. The child's brain (just like the adult's) has appetite and satiety centres which can 'recognise' how many calories (the energy content) are in the food and drinks they consume and they 'know' when energy requirements have been met and they are no longer hungry.



Compensation - When a meal is missed, or not much is eaten, a toddler may eat a larger portion or a more calorie-dense food at a subsequent meal. This process, is called compensation and over the course of the day, or over the course of some days, this will even out the peaks and troughs of food intake.

The processes of regulation and compensation can go wrong, or be over-ridden by certain feeding practices. If food is restricted in any way it may be seen as more desirable, and a child, or adult, might want to eat more of the food than they need, leading to weight gain. This is especially true of sweet and fatty foods. Similarly, if toddlers are pressured to eat foods that they do not like, they will try to avoid eating, and this may in turn lead to under-eating and weight loss.

This process works both ways: parents will try to restrict the food intake of children that they perceive to be overweight, and try to pressure a seemingly underweight child to eat more.

LEARNING TO REGULATE FOOD INTAKE

Children learn to regulate their food intake and to compensate for missed meals from infancy. Very young infants begin to show compensatory behaviour if the calorie (energy) load of their milk feeds is changed.¹ Similarly, breastfed infants control the amount of milk they take from the mother. If they have a small or short feed early in the day then they will usually have a bigger or longer feed later in the day.

This process is not very precise in young infants but improves with age. Toddlers are capable of regulating their food intake to give them enough calories not only to match their energy needs for physical activity but also for normal growth.² [see Factsheet 3.1](#) If healthy children are allowed to regulate their food intake then they should grow normally as expected and neither lose nor gain too much weight.

This regulatory and compensatory system applies to all sources of calories, including food at meals, snacks, milk and other drinks, and food and drink given both during the day and at night. Toddlers who have a lot of milk in their diet or who are still drinking milk from bottles, may not have such good appetites for solid foods.

Toddlers have smaller stomachs than adults and therefore need to eat small meals more often; e.g. more than three times per day, but not all day grazing. For this reason, it is best not to withhold snacks to make a toddler hungry for the next meal.³ Some children cannot regulate their food intake well if food is withheld; they learn to be less rather than more hungry, and may lose weight as a result. Conversely, older children are more likely to become overweight if they eat infrequently throughout the day.⁴ Giving regular meals and snacks helps with weight and intake regulation.

OVEREATING AND UNDEREATING

REASONS FOR FALTERING GROWTH

The commonest cause of growth faltering in toddlers is not eating enough food.⁵ It is rare that there is a medical cause. [see Factsheet 4.1](#)

Insufficient food intake sometimes occurs because toddlers are poor at regulating their food intake, but more often it is because of what is happening at mealtimes. Many toddlers are fussy and difficult eaters, which is common at this age, but some parents may not be sensitive to their child's signals of preference and fullness.

If parents repeatedly coerce a child to eat because they are worried about poor intake, then the child is more likely to refuse the food that is offered. This coercion can be quite mild; it does not have to be overt force-feeding, although force-feeding is the strongest predictor of food refusal. Repeated prompts to eat a food can lead to a decrease in intake of that food.⁶ This can be a circular process: as parents become more anxious about a child's weight they put pressure on the child to eat more at mealtimes, and the child is then likely to refuse the food offered.

Sometimes, when parents and toddlers get into this vicious cycle, the child may eat more as a snack, when there is less pressure from the parents to eat. This reaction by the child is another reason for a regular routine of giving food at meals and as snacks. [see Factsheet 2.2 and 2.3](#) for practical tips on how to manage faddy eating and food refusal.

Food refusal at mealtimes has two main causes other than normal toddler fussiness:

Stress If mealtimes are stressful toddlers become anxious and lose their appetite as a mealtime approaches.

Coercion If toddlers are made to eat, they can feel that they do not want to. If they are forced to eat a food then they are less likely to want to eat it. They are more likely to want a food that is restricted or withheld because this makes it seem special.

REASONS FOR EXCESS WEIGHT GAIN

The commonest cause of excess weight gain, sometimes leading to obesity, is excess food intake and/or insufficient physical activity.

[see Factsheet 3.3](#) Some parents expect children to eat all the food on their plate or finish up their first course before they are allowed their pudding.

This may prevent toddlers 'listening' to their internal signals of hunger. Instead of eating the amount of food that they need to eat, they will start to eat as much as their parents think that they should eat. When this happens in a family, the toddler can grow up thinking that he or she has to finish up all food given, whether still hungry or not.⁷ This food responsiveness may lead children to become overweight. Parents should not insist that their children finish up everything on their plate.

Children can be hungry for their puddings even though they have not finished their first course. Encouraging children to eat up the first course to get the sweet course can cause problems; the sweet course becomes more desirable to them.⁸ When children who have had sweets and puddings withheld grow older, they may prefer to eat sweet or fatty foods as comfort foods when they are tired or stressed. Such overt food restriction may contribute to over-eating in later life.⁹



HELPING PARENTS TO FEED THEIR TODDLERS

EVERY TODDLER IS DIFFERENT

Many parents worry that their toddlers are not eating enough, and this can lead them to try to override their toddler's attempts at appetite regulation. But small children have smaller appetites than larger children.¹⁰ Children are programmed to take in the amount of food that they need to grow normally and maintain body proportions. They generally follow the same growth centiles for height and weight on the growth charts. [see Factsheet 3.1](#) A toddler whose height and weight are both on the 2nd centile will eat less than a child whose height and weight are following the 98th centile. Both of these children should be able to regulate their food intake to accord with their energy requirements, but the taller child will need to eat more.



Parents sometimes compare their toddler with other children, but even children within the same family can have different appetites and physiques. Parents can be led to believe that their child should be eating an 'average' portion size according to his or her age, whereas he or she may need to eat more or less according to his or her weight and height (ideally to maintain a proportionate body shape). For this reason, exact portion sizes are not recommended for children, although portion sizes should be less than those prepared for adults. For more information on portion ranges [see Factsheet 1.7i](#).

Toddlers differ from one another in the amount of food that they need in any one day. This is because one child might be more physically active than another; each will be growing at a different rate, and making use of the food eaten at a different rate. A large energetic toddler will need more food at one meal or snack time than a small and less active child. The child's growth rate is a guide to whether he or she is eating 'too little', 'enough', or 'too much'. Most parents realise that if their child is growing out of his or her clothes and shoes and is not too fat or too thin, then they need not worry about food intake. It may be reassuring for some parents to see their child's growth plotted on a growth chart. [see Factsheet 3.1](#)

DAILY VERSUS WEEKLY INTAKE

Some children have difficulty in regulating their appetite day-to-day. They may have 'good days' when they eat well and 'bad days' when they seem to eat very little. When parents are concerned about their child's intake they often report that within any one week there are a few days when the child eats really well, a few days when the child picks at the food, and a few days of just about acceptable eating. Children who follow this pattern are regulating their food intake week-by-week, rather than day-to-day.

Children who have these ups and downs can be seen as fussy eaters, whereas they may simply be 'poor regulators'.¹¹ Sometimes some other factor, such as constipation, is causing these fluctuations in appetite, but very often there is no discernable cause.¹² Looking at their weekly food intake and/or at their growth chart will reveal whether or not toddlers are eating what they need to grow normally.



RECOGNISING THE SIGNALS

Toddlers eat most of whatever they are going to eat from one course of a meal, or a snack, in about 20 to 30 minutes, depending on their oral-motor skills.^{13,14} Most toddlers will eat most of their meal within this time without too much prompting if it is food that they like. They will stop eating when they feel that they have had enough to eat, but if parents try to continue with the meal, toddlers may show by their behaviour that they are no longer hungry.

It is easy to read infants' signals of fullness. They will turn their head away from food that they do not want, spit it out, or close their mouth and push the spoon, fork or plate away. Older infants and toddlers may hold the food in their mouths for long periods, and spend a long time chewing it. These are signals that the toddler has had enough, at least of that course. It may be that he or she will want to eat more if another course is offered. Toddlers tend to be more mobile than infants, and when feeding themselves they will often show that they have had enough food by getting out of their chair, by saying 'no', or by playing with any food that is left. When this happens it is best to remove the food without comment, to offer another course if that is appropriate or, if not, just wait until the next snack or meal to offer further food.

It could be, of course, that the toddler does not like the food that is being offered. If the toddler is going through the stage of food refusal, which is very common [see Factsheet 2.1, 2.2 and 2.3](#) it is best to offer portions of food that the toddler likes to ensure that calorie intake is maintained.

However, to expose children to a varied and balanced diet, parents should continue to offer small portions of less-liked foods that they want the toddler to eat, but without any coercion to finish them up.



References

1. Fomon SJ, Filer LJ, Thomas L, Anderson TA, Nelson SE. Influence of formula concentration on caloric intake and growth of normal infants. *Acta Paediatrica Scandinavica*, 1975, 64, 172-81.
2. Birch LL, Johnson SL, Andresen G, Peters J, Schultze MC. The variability of young children's energy intake. *New England Journal of Medicine*, 1991, 324, 232-5.
3. Toschke AM, Kuchenhoff H, Koletzko B, von Kries R. Meal frequency and childhood obesity. *Obesity Research* 2005, 13, 1932-8.
4. Koletzko B, Toschke AM. Meal pattern frequencies: Do they affect body weight in children and adolescents? *Critical reviews in Food science and Nutrition*. 2010, 50, 2, 100-105.
5. Drewett R, Kasese-Hara M, Wright C. Feeding behaviour in young children who fail to thrive. *Appetite*, 2004, 40, 55-60.
6. Galloway AT, Fiorito LM, Francis LA, Birch LL. Finish your soup; counterproductive effects of pressuring children to eat on intake. *Appetite*, 2006, 46, 318-323.
7. Birch LL, Davison KK. Family environmental factors influencing the developing behavioural controls of food intake and childhood overweight. *Childhood and Adolescent Obesity*, 2001, 48, 4, 895-907.
8. Newman J, Taylor A. Effects of a means-end contingency on young children's food preferences. *Journal of Experimental Child Psychology*, 1992, 64, 200-216.
9. Faith MS, Kelley S, Birch LL, Francis L, Sherry B. Parent-Child feeding strategies and their relationship to child eating and weight status. *Obesity Research*, 2004, 12, 11, 1711-1722.
10. Blissett J, Harris G, Kirk J. Feeding problems in children with Silver-Russell Syndrome. *Developmental Medicine and Child Neurology*, 2001, 43, 39-44.
11. Blissett J, Harris G. A behavioural intervention in a Child with Feeding Problems. *Journal of Human Nutrition and Dietetics*, 2002, 15, 1-7.
12. Harris G, Blissett J, Johnson R. Food refusal associated with illness. *Child Psychology and Psychiatry Review*, 2000, 5, 2, 148-156.
13. Gisel EG. Effect of food texture on the development of chewing of children between 6 months and two years of age. *Developmental Medicine and Child Neurology*, 1991, 33, 69-79.
14. Harris G. Food refusal in the sensory sensitive child. *Paediatrics and Child Health*, 2009, 19, 9 435-437.

Additional copies of this Factsheet can be downloaded from www.infantandtoddlerforum.org

The information contained within this Factsheet represents the independent views of the members of the Forum and copyright rests with the Forum members.

TODDLER MEALS: HOW MUCH DO THEY NEED? GUIDANCE & TIPS FOR PARENTS



- Toddlers have smaller stomachs than adults and so need to eat smaller amounts of food more often. They should be offered three meals and two or three planned snacks a day
- Most toddlers quickly learn to control their food intakes to meet their energy needs for normal growth and development
- Like adults, children regulate their food intakes by feeling hungry when they need food and feeling full when they have eaten and drunk enough
- Forcing toddlers to eat when they do not want to, or withholding food that they like, can interfere with their food intake control
- Insisting that toddlers finish up what is on their plate can interfere with their food intake control
- Do not allow your toddler to 'graze' on food in between meals and snacks; they will not develop good control of food intake
- Do not withhold snacks to make your toddler 'hungry' for the next meal. This can upset his or her food intake control
- Forcing your toddler to finish food that he or she does not like can make mealtimes stressful. This may cause your toddler to refuse food
- If your toddler does not finish the first course, remove the food without making any comment and move on to the next course
- Do not say 'you can't have pudding until you've finished your first course'. This makes pudding seem even more desirable
- Do not use sweets or snacks as a reward because this will make these foods seem more desirable to your toddler
- There is no such thing as an 'ideal' portion size for all toddlers. A large active toddler will need more food than a smaller, less active child
- Do not worry if your child is a fussy eater. He or she may still be in control of their food intake, although regulation may be week-to-week rather than day-to-day
- If your child is growing well and developing normally, then do not worry too much about their eating habits. Growth and development is a better indicator of appropriate food intake than mealtime behaviour



Practical help and information
on nutrition and development

Supported by an educational grant from Danone UK