PHYSICAL ACTIVITY AND PLAY FOR TODDLERS

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LEARNING POINTS

- Under-fives who are walking should be physically active for at least three hours per day about 25 per cent of waking time
- 2 Physical activity includes both:
 - light intensity activity walking and playing board games
 - more energetic physical activity running, climbing, jumping and cycling
- Parents and carers may have to plan how to keep toddlers active throughout the day
- 4 Sedentary activity with a learning component, such as reading and listening to stories, should not be limited, but sedentary activity without a learning component, such as sitting strapped in a car seat or pushchair should be minimised

- 5 Parents and carers should aim to have toddlers:
 - at 2-3 years able to jump, hop, climb on a climbing frame, kick a ball and hit a ball with a bat
 - at 3-4 years able to catch a ball, ride a scooter and a two-wheeled bike with stabilisers
- 6 Active play has benefits beyond those of physical movement it improves mental development and later school performance
- 7 Unstructured and imaginative play helps children explore and understand the world around them
- 8 Messy play helps children get used to different touch sensations, and may benefit toddlers who are fussy eaters
- 9 12 hours sleep in each 24 hours promotes the growth and development of toddlers.





The ITF is a partner of the Department of Health's Public Health Responsibility Deal, with a pledge to take action to improve health.

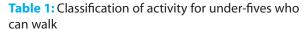
PHYSICAL ACTIVITY AND PLAY FOR TODDLERS

THREE HOURS OF PHYSICAL ACTIVITY EACH DAY ARE RECOMMENDED

Children of all ages should be active – it is vital for their physical and mental health and development. Physical activity also helps toddlers maintain a normal weight. See Factsheet 3.3

The Department of Health (DH) recommends that children under five years who can walk should be active for at least three hours each day. All sorts of physical activities, including walking, running and unstructured, active and energetic play, count towards this recommendation. The amount of activity is more important than its type or intensity. Physical activity can be spread over the day, in short bursts and interspersed with periods of rest, as toddlers tire quickly, especially with prolonged physical activity.

The DH classifies physical activity into three types: sedentary, light intensity and more energetic. Light intensity activity and more energetic physical activity contribute to the recommended three hours of physical activity per day.





Classification	Type of activity	Examples
Sedentary activity	Activities that typically occur while seated or lying down and which require very low levels of energy expenditure	Sleeping, TV viewing, fidgeting, reading, drawing, travelling by car, bus or train; or restrained while strapped into a pushchair
Light intensity activity	Minimal movement of the trunk (chest and abdomen) and slow movement of the trunk from one place to another	Pottering, moving about, standing up, walking at a slow pace, washing, dressing, playing board games, craft activities, playing at a sand table
More energetic physical activity	Rapid movement of the trunk from one place to another. This makes children huff and puff and exercises their cardiorespiratory system	Running, climbing, playing games in the park with friends, skipping, swimming, dancing to music, riding a bike

Adapted from CMO's report Start Active, Stay Active 2011¹

Most toddlers are naturally active, but research shows that some are active for only 2-2½ hours per day¹. Three hours is 25 per cent of a toddlers' time awake each day, and many spend more than 75 per cent of the waking day in sedentary activity. Insufficient physical activity, as a result of inactive lifestyles, predisposes preschool children to obesity².

To meet the DH recommendation some families may need to change their lifestyles and early years settings (nurseries, play groups, crèches and child minders) may need to adopt new policies and procedures that allow toddlers:

- more time being active
- less time being sedentary, apart from resting or sleeping
- to spend some active time outside every day even in inclement weather.

Some parents may need to plan how to keep their toddlers physically active for a full three hours each day, especially in families who do not have a garden and on days when they do not attend child care.

Carers in early years settings should plan how to keep toddlers active while in their care e.g. this may be for 2½-3 hours for toddlers who spend all day at the setting.

Suggestions are given on pages 5-7.

THE BENEFITS OF PHYSICAL ACTIVITY FOR TODDLERS

- The strength, endurance and skill of skeletal muscles improve with physical activity and with this toddlers' competence and co-ordination skills get better³. Young children who enjoy physical activity, through gaining competence and confidence, will be more likely to continue to participate in it as they get older
- Physical activity helps to maintain a healthy weight – sedentary lifestyles in three year olds are a risk factor for overweight and obesity. Three year old children who watched more than eight hours of television per week were more likely to be overweight or obese at seven years of age⁴.
 See Factsheet 3.3



- Physical activity helps to space out periods of learning – young children need more opportunities for physical exercise than older children. They are more likely to get restless after being sedentary for extended periods and run around when released from them³
- Different types of active play offer a variety of additional developmental benefits that are discussed on pages 6 and 7.

REPORTED BENEFITS IN OLDER CHILDREN WHO CONTINUE ACTIVE LIFESTYLES INCLUDE:

- Blood pressures and blood lipid levels are closer to the normal healthy range in five to ten year olds who have optimal aerobic fitness^{5,6}
- Academic performance in school children improves in those that participate in physical activity⁷. When children had more to time to play at school, their academic performance improved despite spending less time in lessons
- Overweight sedentary school children who had an hour of vigorous physical activity every day showed improvements in memory skills, problem-solving, concentration and the ability to think ahead⁸.

DEVELOPMENT OF PHYSICAL SKILLS IN TODDLERS

Environmental and genetic factors influence child development, including physical abilities during infancy and the toddler years³.

Individual influences:

- Genotype
- Antenatal and prenatal environment and events
- Temperament
- Health and nutrition
- Vision and hearing.

Environmental influences:

- Family social and economic conditions
- · Learning opportunities
- Parent-child interaction
- Parenting behaviour
- Social network and community learning activities.

Physical skills are acquired gradually and sequentially. While they are attained in a fixed order (Table 2) each child develops specific skills at his or her own rate⁹, which depends upon the opportunities to engage in activities and to attain the skills listed¹⁰.

Physical development is tightly interwoven with development of perception, cognition, motivation and communication. Talking to toddlers and interacting with them on simple learning tasks improves understanding and language development. Table 2 shows the average age ranges for achieving milestones in physical skills development^{3,9,11}.

Table 2: Average age ranges for achieving milestones in physical skills development

Average age range	Skill	
7-14 months	Starting to try to crawl Crawling	
9-14 months	Standing alone momentarily and walking with hands held	
9-18 months	Walking alone – flat footed gait	
From 18 months	Walking with heel to toe gait	
16-24 months	Climbing onto an object e.g. chair	
15-24 months or 6 months after beginning to walk	Running	
18-24 months	Walking down stairs Learning to kick or throw a ball	
Around 22 months	Galloping	
2-3 years	Jumping Standing on one foot	
2 years after walking	Hopping	
3 years	Walking in a straight line	
3-4 years	Throwing a ball overarm with one hand Catching a large ball with both hands Climbing the rungs of a ladder	
By 4 years	Mature walking pattern	
3-4 years	Pedalling a tricycle	
5 years	Skipping – step and hop on each foot alternately	

Most children begin to walk towards the end of their first year and begin running during their second. It should be remembered that the achievement of milestones in toddlers born preterm may be delayed. Children who bottom shuffle rather than crawl may begin walking as late as two years or more.



AIMS FOR PARENTS AND CARERS

Parents and carers of toddlers should aim to give young children the opportunities to achieve the following skills:

• By 2-3 years of age:

jumping hopping climbing on a climbing frame kicking a ball hitting a ball with a bat.

• By 3-4 years of age:

catching a large ball with both hands riding a scooter riding a two-wheeled bike with stabilisers.

Lists of local amenities can be collated for parents that offer:

- green spaces where toddlers can enjoy outdoor play – the local authority usually has this information
- activities such as swimming, outdoor play parks, indoor soft play areas, active play sessions run by children's centres, structured activity programmes (e.g. SoccerTots® and Tumble Tots).

WAYS TO INCREASE PHYSICAL ACTIVITY

1. BUILDING PHYSICAL ACTIVITY INTO EVERYDAY LIFE

- Allow/encourage toddlers to walk rather than sitting in a car, pushchair or being carried. It can take longer but keeps them active
- Reins can be used to keep walking toddlers safe rather than strapping them into a pushchair
- Ways of making walking more fun:
 - count birds, trees, aeroplanes, white cars etc. en route
 - avoid stepping on cracks in the pavements
 - race to a landmark giving toddlers an earlier start or let them use a scooter or bike
- Park the car further from the destination so that the toddler and family walk further
- Use stairs rather than lifts and escalators
- Take toddlers to a playground for at least 20-30 minutes each day where they can run, climb and jump – especially toddlers who do not have a garden to run around in or do not attend childcare facilities where physical activity is encouraged
- Encourage toddlers to help in tidying up their toys or tidying up around the house and garden e.g. raking up leaves.



The Chief Medical Officers' report Start Active, Stay Active states that, "For pre-school children, physical activity mainly comprises unstructured, active play and learning locomotor, stability and object-control skills. It is important that they have the opportunity to practise these skills in a variety of enabling environments and that they receive encouragement, regular feedback and support from adults\(^1\)."

Activities to encourage will depend on each toddler's physical skills and stage of development.



Physically active toddlers should be in a safe environment and supervised at all times.

CHILDREN WITH DISABILITIES AND CHRONIC DISEASES

Children with physical and mental disabilities and chronic diseases should be physically active unless there is a specific medical reason why exercise should be restricted. Toddlers with cerebral palsy, diabetes or asthma, for instance, may benefit positively from physical exercise, which can improve muscle strength, blood sugar control and respiratory function respectively. Whenever possible all young children should be treated in the same way and enjoy the same opportunities for physical activity and play.

Table 3: The ways toddlers play develops with age from solitary to cooperative play

Average age range	Mode of play	
0-2 years	Solitary play	Child plays in a private world
2-3 years	Parallel play	Children play alongside others but do not co-operate. They do not play with each other
3+ years	Associative play	Aware of other children and starting to communicate and co-operate with them during play
3+ years	Co-operative play	More sociable play in which co-operation leads to new and interesting things to do and games to play

i) Interactive games with parents or carers as role models

Active games with parents, carers or other children will make physical activity more fun. Toddlers learn new skills by copying others so it is important that parents and carers play with them.

Indoors or outdoors games:

- 'Keep it up' with a balloon
- Singing with actions
- Dancing or a dance-a-thon
- Playing catch with a bean bag or balloon
- Planning an in/outdoor treasure hunt
- Playing musical statues
- Playing hide and seek
- Making a den.

Rough and tumble play is more often initiated by fathers than mothers and may promote the development of competitive skills without physical aggression¹². Boys usually begin rough and tumble play around about two years and, if safe, it can be allowed to continue. When it is unsafe parents or carers should stop it.

Active games for outdoors in a garden or local park:

- Nature hunt to collect leaves/twigs/berries to make a decoration/collage
- Playing hide and seek
- Playing chasing games, such as tag
- Rolling over and over on a flat surface or down a slight incline
- Kicking, throwing or rolling a ball
- Hitting a ball with a bat/racket along the ground
- Hitting a ball that is thrown underarm, with a bat
- Climbing frames, ladders or low branches on trees
- Riding scooters and tricycles
- Playing in a paddling pool on warm summer days
- Kicking piles of leaves during walks on autumn days
- Painting the garden/yard fence or walls with water using a large paint brush and bucket of water.

In the rain:

• Walking and jumping in puddles

In the snow:

- Making and throwing snow balls
- Building a snowman
- Putting toys in a sledge and pulling them along
- Pulling each other around a flat area of park/ garden on a sledge
- Making snow angels by toddlers lying on their back in soft snow and moving their arms up and down to create the image of an angel in the snow.



ii) Unstructured imaginative play

Pretend play develops from about 15 months and is mainly imitative. By pretending that a toy or other object is a real person in a real world, children explore and learn about the world around them. They may talk to themselves about what they are doing, and take on different roles as their play becomes more elaborate.

Play with loose parts: Simon Nicholson proposed that 'the degrees of inventiveness and creativity, and the possibility of discovery, are directly proportional to the number and kind of variables' within a child's play environment¹³. He cited a beach as a near ideal environment. Loose parts are 'natural or synthetic materials that can be moved, carried, combined, redesigned, lined up, and taken apart and put back together in multiple ways. They range from found objects like fallen leaves, pebbles or sticks to recycled materials like cardboard boxes to building blocks and other construction toys.'

Unstructured imaginative play is valuable and toddlers should not be hurried on to more complex or interactive forms of play. Although definitive research in this area is lacking the advantages of unstructured and imaginative play may be that the child attains greater^{14,15}:

- success in problem solving
- understanding of the viewpoints of others
- ability to take on the perspective of another
- ability to get on with others.

Imaginative constructive play, such as blockbuilding may help with:

- understanding how things fit together
- spatial tasks
- later mathematical skills.

iii) Messy play

Through messy play children become more accustomed to different touch sensations.

If toddlers are reluctant to touch messy play mixtures, they can be encouraged to play firstly with dry textures. Some may find it easier to hold a toy and play with it in loose dry textures, such as sand, before putting their hands into the texture. If the child is not comfortable touching loose dry textures start by encouraging them to play with dry contained textures, such as sand paper, bubble wrap and textiles, and then move on to loose dry textures.

When toddlers are confident at playing and touching dry textures, they can progress to increasingly sticky textures, such as plasticine and Play-DohTM, which they can use to roll, squash, and shape into models.

Wet textures can be used for printing and painting: cut root vegetables, such as potatoes, can be used as stamps for making prints. For painting, toddlers can begin with finger painting and then move on to handprints, toe painting and feet printing, in that order.

It is best not to combine non-food textures with food in the same play activity. When only foods are used toddlers can be encouraged to put their hands in their mouth and to try tastes as well.

Benefits of messy play for toddlers who are fussy about foods:

Messy play can be particularly helpful for children who are fussy about the foods they eat and who are also sensitive to touch and smell¹⁶.

See Factsheets 2.1 and 2.2 In particular children who:

- dislike getting their hands sticky or wet they are less likely to pick up foods to eat, especially messy foods like fruit
- dislike the feel of food around their mouth and get worried if their clothes get dirty or stained.
 These children may not eat foods like yogurt by themselves if they are worried about getting what they are eating on their face
- have been kept very clean and as a consequence avoid mess. They may also be reluctant to feed themselves and try new foods.

Children are more likely to try tasting new foods when they have become more familiar, through seeing¹⁷, smelling and touching them. Children can be encouraged to do this by:

- using foods in simple counting games or shopping games
- selecting and putting foods into a trolley or basket when out shopping
- being involved in food preparation and simple cooking
- messy play with different food textures (see Table 4).



Table 4: Textures for messy play can be dry, sticky or wet

Textures for messy play	Foods	Non-foods
Dry	Loose textures: uncooked pasta shapes, oats, lentils, rice, dry breakfast cereals	Contained textures: sandpaper and textiles, faux fur, bubble wrap, sponge Loose textures: sand, grass
Slightly sticky	Cooking dough, cooked and uncooked vegetables, cooked rice and pasta pieces	Play-Doh™ or plasticine or other substances, which can be modelled, squashed, rolled or shaped
Sticky	Fruit pieces, cooked porridge, pastry dough, rice pudding	Wet sand, mud
Wet textures for painting	Tomato ketchup, tomato puree, yogurt, thin custard, fruit purees	Finger paint

SEDENTARY ACTIVITY

Sedentary activity during the day can have positive and negative effects and it is divided into two types:

- Beneficial sedentary activity is when a child is sitting but also learning, e.g. listening to a story or sitting playing in a sand pit. This type of activity does not need to be limited
- 2. Sedentary activity with no learning opportunity is when a child is standing or sitting still, such as in a queue or strapped in a car seat or pushchair. Such sedentary states should be limited in inactive toddlers and replaced by more physical activity. Screen time such as watching TV and playing on computers, tablets or other mobile devices should be limited to less than one hour each day.

Sleep is also a sedentary activity but toddlers need about twelve hours sleep in each 24 hours to ensure healthy development and growth. They sleep better after a physically active day and will achieve more the next day if they have slept well.

CASE STUDY

Notes from a nursery in North London that restructured their days to include 2½ hours activity each day:

"We play outside every day in all weathers and have our own area to enjoy natural outdoor activities – weaving, counting acorns or pine cones, making our own bird feeders – and we include snack time outside too. Other activities include drawing with chalk on the paving stones foods from each of the groups, and the children are asked to run to whichever one is called out. We also go on walks to pick blackberries and apples to make crumble. For outdoor activities, and outdoor snack time, we bought a large water container with a tap, normally used for camping, which was very popular with the children."

References

- Chief Medical Officers from the Four Home Countries. Start Active, Stay Active London 2011 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/152108/dh_128210.pdf.pdf (Accessed June 2013)
- 2. Reilly JJ. Physical activity, sedentary behaviour and energy balance in the preschool child: opportunities for early obesity prevention. Proc Nut Soc. 2008; 67:317-325
- 3. Hopkins B, ed. The Cambridge Encyclopaedia of Child Development Cambridge, UK: Cambridge University Press. 2005
- 4. Reilly JJ, Armstrong J, Dorosty AR et al. Early life risk factors for obesity in childhood: cohort study. BMJ. 2005; 330:1357-1359
- 5. Shea S, Basch CE, Gutin B et al. The rate of increase in blood pressure in children 5 years of age is related to changes in aerobic fitness and body mass index. Pediatrics. 1994; 94:465-470
- 6. Sääkslahti A, Numminen P, Varstala V et al. Physical activity as a preventive measure for coronary heart disease risk factors in early childhood. Scand J Med Sci Sports. 2004; 14:143-149
- 7. Singh A, Uitdewilligen L, Twisk J et al. Physical activity and performance at school. Arch Pediatr Adolesc Med. 2012; 166:49-55
- 8. Davis CL, Tomporowski PD, McDowell JE et al. Exercise improves executive function and achievement and alters brain activation in overweight children: a randomized, controlled trial. Health Psychol. 2011; 30:91-98
- 9. Sharma A. Developmental examination: birth to 5 years. Arch Dis Child Educ Prac Ed. 2011; 96:162-175
- 10. Fisher A, Reilly JJ, Kelly LA et al. Fundamental movement skills and habitual physical activity in young children. Med Sci Sports Exerc. 2005; 37:684-688
- 11. Squires J, Bricker D. Ages and Stages Questionnaires: A parent-completed child monitoring system, 3rd Edition. Paul H Brookes Publishing Company Inc. Baltimore. 2009
- 12. Paquette D, Carbonneau R, Dubeau D et al. Prevalence of father-child rough-and-tumble play and physical aggression in preschool children. Eur J Psychol Educ. 2003; 18:171-189
- 13. Nicholson S.The Theory of Loose Parts: an important principle for design methodology. Stud Des Edu Craft Tech. 1972; 4:5-14
- 14. Pepler DJ, Ross HS. The effects of play on convergent and divergent problem solving. Child Dev. 1981; 52:1202-1210
- 15. Vygotsky L. Mind in Society; the development of higher psychological processes. Cambridge, MA, Harvard University Press. 1978
- 16. Harris G. Food refusal and the sensory sensitive child. Paed Child Hlth. 2009; 19:435-436
- 17. Houston Price C, Butler L, Shiba P. Visual exposure impacts on toddlers' willingness to taste fruit and vegetables. Appetite. 2009; 53:450-453

Resources

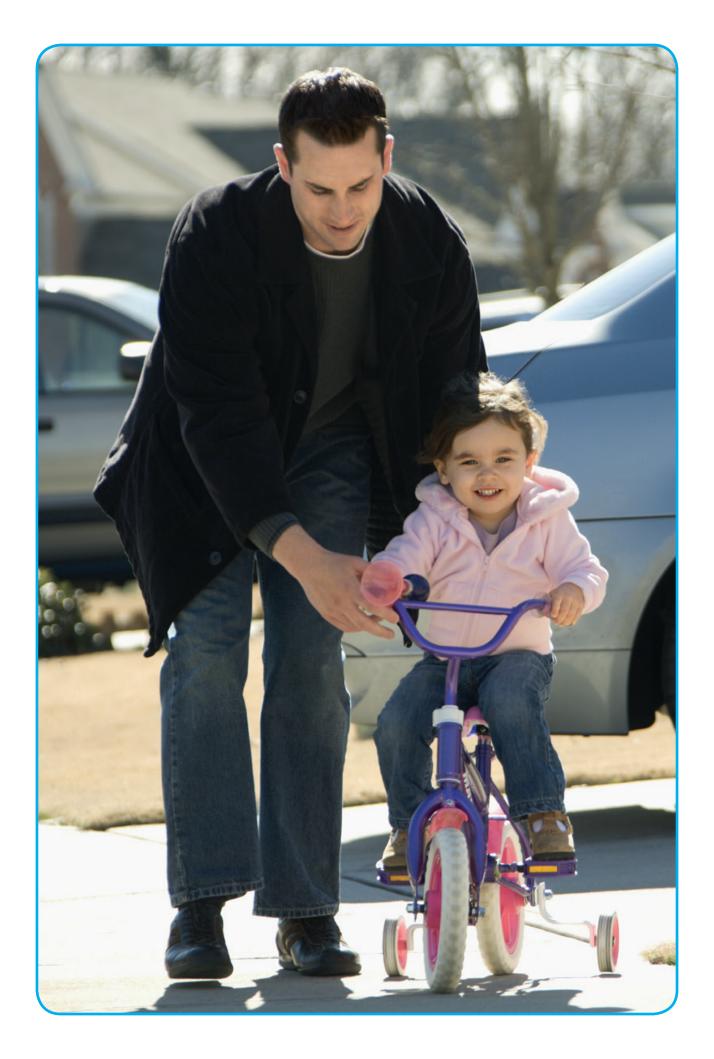
The British Heart Foundation National Centre for Physical Activity and Health (BHFNC) www.bhfactive.org.uk

The British Heart Foundation Early Years Physical Activity Guide www.bhfactive.org.uk/homepage-resources-and-publications-item/360/index.html

NHS Choices Live Well page on physical activity guidelines for children www.nhs.uk/Livewell/fitness/Pages/physical-activity-guidelines-for-children.aspx

Play England http://www.playengland.org.uk/resources.aspx

Squires J, Bricker D. Ages and Stages Questionnaires A parent-completed child monitoring system, 3rd Edition, Paul H Brookes Publishing Company Inc. Baltimore. 2009



PHYSICAL ACTIVITY AND PLAY FOR TODDLERS GUIDANCE & TIPS FOR PARENTS



Toddlers learn eagerly and most want to try new activities. Encouraging your toddler to keep physically active will help him/her to:

- develop movement skills
- keep up with friends in the playground and in sporting activities as they get older
- stay a healthy weight
- keep a healthy heart.

If toddlers learn to enjoy games and sport and then continue playing them at school, their school work will benefit.

Be patient; some toddlers take longer than others to learn new skills. Some are better co-ordinated than others. Keep gently encouraging, make it fun and give lots of praise.

Keeping you and your toddler more active:

- Park your car further away from where you are heading so that everyone has a walk to get there
- Climb stairs together rather than using escalators and lifts
- Encourage your toddler to walk everywhere rather than confining him/her in a stroller – use reins to keep him/her safe while letting him/her walk.

Ideas to make walking more fun:

- Count something as you go along e.g. birds, trees, aeroplanes, white cars
- Have a race to a visible landmark give your toddler an earlier start or let him/her use a scooter or bike
- Visit the playground on your way to or from somewhere and allow your toddlers to run, climb and play on the equipment for 20-30 minutes
- Kick piles of leaves during walks on autumn days.

Fun activities for indoors or outdoors:

- Play 'keep it up' with a balloon
- Have a dance-a-thon
- Play catch with a bean bag
- Plan an in/outdoor treasure hunt
- Play musical statues
- Play hide and seek
- Read stories and sing songs that require actions in time with the words
- Dance or jump to music
- Make a den.

Rough and tumble play is also fun, particularly for boys, so only stop it if it seems unsafe. Fathers often play rough and tumble with their children – which they enjoy.

Keeping your toddler active outdoors

If you don't have your own garden take your toddler to a playground or local park every day:

- Play hide and seek
- · Play chasing games
- Find a slope to do roly polys
- Play with a ball encourage your toddler to kick, throw or roll it and learn to catch a large soft ball with both hands
- Play with a bat and ball; help your toddler hit a ball along the ground or gently throw it to him/her underarm and encourage them to hit it with the bat
- Go on a nature hunt. You can collect leaves/twigs/berries to make a decoration/collage
- Play in a paddling pool on warm summer days.

When it rains: put on waterproofs and go for a walk and jump in puddles.

When it snows: make and throw snow balls, build a snowman, fill a sledge with soft toys/dolls and pull them around the park/garden, make snow angels by lying on your back in soft snow and moving your arms up and down.

Check out your local amenities and go swimming, to a soft play area, try out active play sessions run by children's centres or programmes such as SoccerTots® and Tumble Tots.

Help your toddler achieve these skills by making sure s/he has opportunities to try. If someone is showing him/her, then s/he can learn to copy:

- By the age of 2-3 years: jumping, hopping, galloping, climbing a climbing frame, kicking a ball, throwing a ball and hitting a ball with a bat
- By the age of 3-4 years: catching a ball, riding a scooter, riding a two-wheeled bike with stabilisers.

Messy play: Getting used to putting their hands in different textures can help toddlers who are fussy about their food.

Pretend play: When toddlers play with toys and other objects and pretend they are people, they are learning about the world around them.

Sleep: Make sure your toddlers gets about 12 hours sleep in each 24 hours – toddlers perform better if they are getting enough sleep and they sleep better after a day full of activity.

Physically active toddlers should be in a safe environment and supervised at all times.

For personalised analysis of toddlers' food intake and activity levels, use the Infant & Toddler Forum's Tot It Up calculator www.infantandtoddlerforum.org/toddler-food-calculator

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Feeding young children: practical advice from experts

Supported by an educational grant from Danone Baby Nutrition