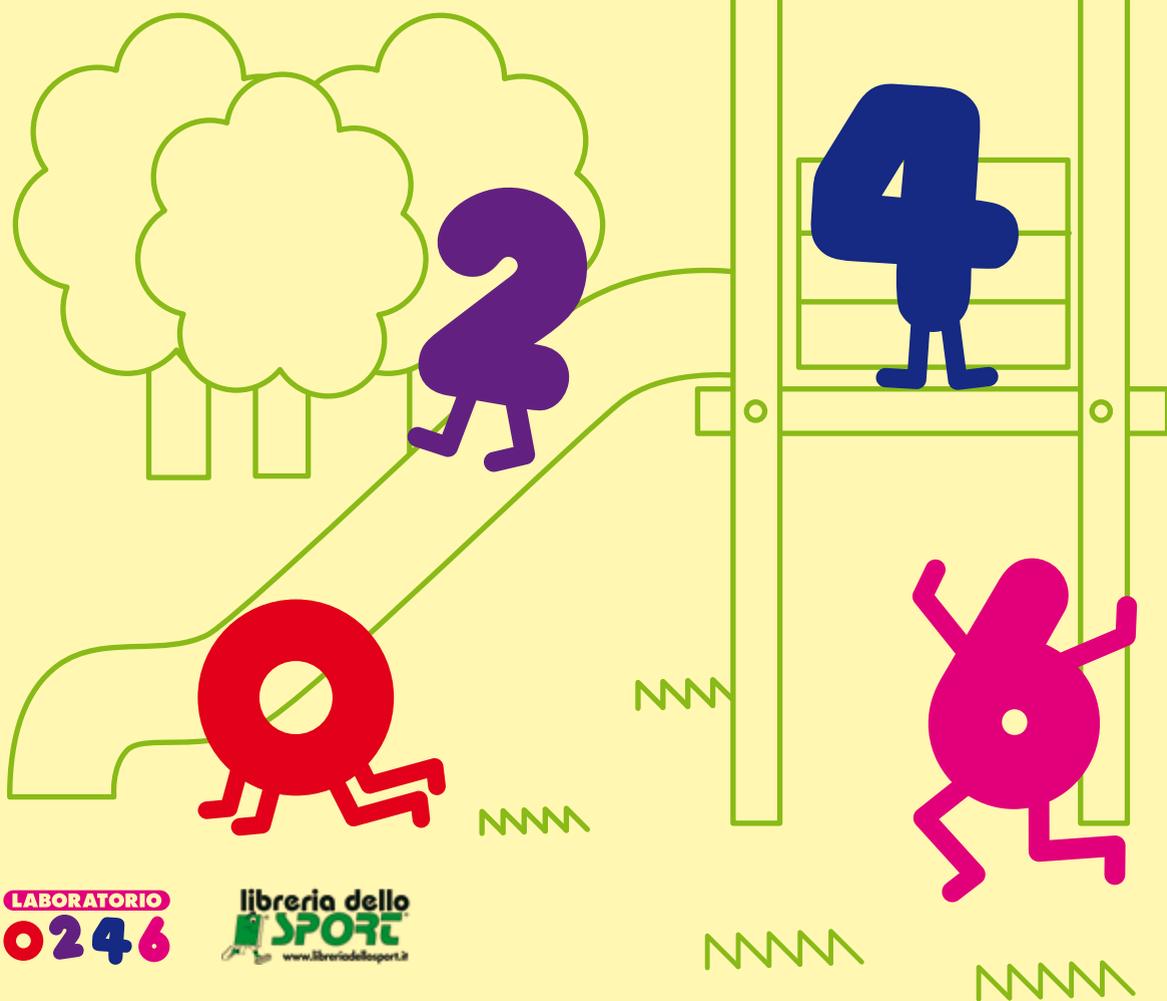


PRIMO SPORT

Surroundings and activities just right for growing up well





The playground for
each and every child

Publishing project by
Laboratorio 0246

Graphics and layout
Giuliana Danieli
Lorena Tumari
Omar Vulpinari

Editorial coordinator
Guido Fumagalli

Publishing coordinator
Enrico Castorina

Contents by
Giorgio Buzzavo
Liviana Da Dalt
Valter Durigon
Guido Fumagalli
Claudio Maffeis
Paolo Moghetti
Maurizio Romano
Patrizia Tortella

Photos
Maki Galimberti
Michele Gregolin
Marco Sabadin
Verde Sport archive

Thanks to
Centro Sportivo Libertas Verona

No part of this book may
be reproduced or transmitted in
any form or by any
electronic, mechanical or
otherwise, without the authorization of
rights owners and creators.

ISBN 978-88-6127-021-3
Printed in June 2011
Published by Edizioni Libreria dello Sport - Milano
Printed by lartegrafica.com - Treviso
Printed in Italy

PRIMO SPORT

Surroundings and
activities just right
for growing up well

CONTENTS

Preface

Maurizio Sacconi
Rocco Crimi
Giovanni Petrucci
Valentina Vezzali

Introduction

Giorgio Buzzavo

Chapter 1

Growth and movement: the importance of those first steps

Guido Fumagalli, Paolo Moghetti and Claudio Maffei

- Is my child growing properly?
- How does one understand these charts?
- Can the graphs and charts show if our child will grow up to be tall?
- What determines the height of a child? What difference does the height of their parents make?
- Which is the growth hormone?
- Is it true that children today tend to develop diabetes and other metabolic diseases?
- Is it true that obesity is widespread?
- Is body fat a threat to health, to be avoided at all times?
- How can I tell if a child is too fat?
- Are there other ways to tell if my child is overweight?
- What becomes of a child who is overweight or obese?
- For how long does obesity last? Is it true that it goes away of its own accord during adolescence?
- What should you do to prevent a child becoming obese? How can hunger be contained?
- If hunger control takes place in the brain, why is it important to develop muscles?
- Metabolic and motor programming

Chapter 2

Play and motor development

Patrizia Tortella

- At what age do children start to play?
- What is so important about a child's play?
- What kind of games does a child like?
- What makes a game or a place purposeful for a child's development?
- Children often get bored of games they are given. What can be done about it?
- How does play influence a child's motor development?
- Are all children the same, in terms of motor development?
- What help can be given to a child, in terms of motor skills?
- How do children learn?
- Is there a relationship between motor and cognitive development?
- How is children's motor development perceived?
- Do clothes matter during motor activities?
- To what extent is a child influenced by its environment?

- How can we structure the environment so that a child grows properly?
- How should the environment be structured, so that a child may have the greatest number of spatial and material options
- Should an environment be tailored to the age of the child?
- How much space and importance should be given over to a child's activities?
- Active games and the risk of harm: what can be done about it?
- What kind of relationship is established between a grown-up and a child, and what has that to do with development?
- How can one help a child's healthy development?

Chapter 3

PrimoSport 0246: playgrounds for early years

Patrizia Tortella and Giorgio Buzzavo

- Why do we need playgrounds for the under 6's?
- What is the point of activities taking place in the open air?
- What do playgrounds offer children, that other places do not?
- What can you do in a playground?
- What is the PRIMOSPORT 0246 like?
- How is PRIMOSPORT 0246 set out?
- How does this spatial planning create motor-development opportunities?
- Is playground activity important for the development of social skills?
- So, are we having an impact on our children?
- What is meant by a playground for everyone?
- Is it suitable for children who have certain difficulties?
- Who goes to the playground PRIMOSPORT 0246? How is it used?
- Can schools use it?
- What if a child needs the lavatory or is hungry?
- So what should parents be doing at the playground?
- Must children be encouraged to play together?

Chapter 4

Play, movement and nutrition: for a better tomorrow

Claudio Maffei

- How much energy does a child need?
- Do children eat too much or too little?
- How many meals a day should a child eat?
- Does physical activity involve an increased consumption of calories?
- Will a child who is physically active eat better?
- What about snacks?

Chapter 5

Motor activity practice

Patrizia Tortella

- What happens if a child has not developed motor skills typical for its age?
- Why should children acquire motor skills?
- Why should children develop good motor skills from an early age?
- At what age should a child start gaining good mobility?
- What can we do to foster healthy motor development in a child?
- What can be done to create an effective environment?

- What are motor skills?
- How are motor skills developed?
- What does one need to know in order to help the right motor development in children?
- How can the environment help the motor development of a child?
- How can our children improve their motor skills in a playground?
- How is a child able to play in the PrimoSport 0246 playground?
- What should you say or not say to a child doing physical activity?
- How should one do, when a child engages in “dangerous” activities?
- What to do when a game “seems” dangerous?
- Often, adults are concerned that excited children become unpredictable. What should one do?

Mobility card

- How can a parent help?
- At what age do children start slithering and crawling?
- Can the PrimoSport 0246 playground help the development of slithering and crawling?
- How walking and running be helped along?
- What is the best clothing?
- What can a parent do to help?
- Can the PrimoSport 0246 playground help in the development of walking and running?

Card dexterity and tactility

- Why should children have to develop manual dexterity and touch?
- Which is your dominant hand?
- What help can a parent give?
- Can the PrimoSport 0246 playground help in the development of dexterity and touch?

Balance sheet

- Why is it important that children develop a balance?
- What can you do to help the development of balance?
- What help can a parent give?
- Can the PrimoSport 0246 playground help the development of balance?

Chapter 6

Risk Management for children's recreational motor activities

Valter Durigon

- Experience or prevention? What can be done to reduce injuries amongst children during motor activity?
- How does chance affect the occurrence of injuries during children's motor activities?
- Is it possible to predict and control causes of accidents?
- Is there a link between motor skills and injuries?
- What can be done to prevent accidents?
- Should safety standards be reconsidered?
- What can parents do?

BOX: Trauma related to physical activity

Liviana Da Dalt

Chapter 7

CONI and the “Giosport” project

The National Olympic Committee of Italy (CONI), Office for the Promotion of Sport

- The National Olympic Committee of Italy (CONI) plans to promote a culture of motor skills , sports and an active lifestyle among children
- The project: Active and exciting play is what draws in children.
- The guiding principal: “NO ONE IS TO BE EXCLUDED”
- Project Participants
- The Programme
- Recreational and Motor Skills Activities in classes one and two
- GIOCOSPORT for children in classes three, four and five
- GIOCOSPORT Activities



Maurizio Sacconi
Italian Minister for
Labour and Social Affairs

A “good life” for our sons

The book published by Laboratorio 0246, University of Verona and the Italian Olympic Committee deserves the utmost attention by the Institutions, since that it concerns a tough matter that is not enough considered in its different aspects yet.

The risky relationship among childhood, obesity, sedentary is relevant and must be explored in order to plan the proper and useful actions to break it definitely, since that this relationship can threaten the wellness of the future generations. Messy diet, poor physical activity, the power of television and videogames are some of the reasons for a situation that was unknown just few years ago. The alarm that doctors, sportsmen and teachers are strongly spreading through parents is significant and moves us to make some observations about it.

Children often suffer the lifestyle of their parents, the risk is to get used to solutions that are easy for adults (for instance: let your son stay the whole afternoon in front of TV) but dangerous for the babies. Sedentary brings to obesity even more when our child is living the age of liveliness and activity: further more, a situation of obesity in the early childhood causes heavier failures and diseases during the growth and psychological effects on the daily relationships. Given that, we consider as a basic factor the motor education and the promotion of a proper lifestyle, starting from the first steps: this is the most important mission for parents, who have to push their sons to practice regular sport activities. Sport is a successful tool for education from many aspects: it helps people building up their own personality, sharing positive values, having a correct motor development. Many guys learnt the best way to stay together throughout the sport activity and not only during the school time. Then, it is really important for us to create a strong link between the educational process and the pshysical activity.

The loss of the awareness about the social values that sport can represent is a great risk the our Country has to avoid, given also the great sport tradition we all carry out in Italy.

From this point of view, we appreciate the actions taken by the Italian Olympic Committee in order to confirm the principle of autonomy for sport, even if dedicated to children.

I would like to remember my passion for tennis: when I was young, I learnt the meaning of sacrifice, loyalty during the match, the importance of practice and, the last but not the least, the positive effects brought to the body by the sport activity.

So, when we wrote about “wellness” on the White Paper in 2009 (the title was significant: “The good life in an active community”), our purpose was more to consider a “way to promote wellness” than to talk about the disease situation. It is really important to focus more on prevention and promotion of proper lifestyles, starting from the early childhood. This is the same purpose of this book and I express my appreciation because it makes another step forward, to reach that “good life” concept that makes the person and his needs from the birth stand out.



Rocco Crimi
Undersecretary
to the President of the
Italian Council
of Ministers Sports
Delegation

We consider sport as an important factor for adjustment and sharing in the daily life, that is why the physical activity has to be accessible to everybody, without age limits, respecting his own expectations and capabilities.

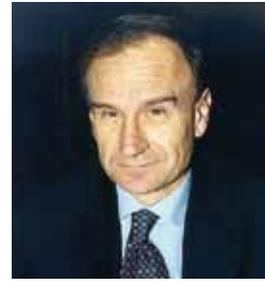
The sport practice is healthy for adults and, what matters the more, for children, since that it represents a unique chance to learn the basic values concerning a polite life, such as loyalty, fair play, respect for the rules and the other players.

Playing sport, or simply playing, it's healthy for children because it helps their psychological and physical wellness.

The motor activity, even more if it is outdoor made, supports the growth of children and aims at bringing down the problems related to a sedentary life, together with a correct diet. This is what this book wants to point out, a useful tool for parents who try to teach their babies a proper lifestyle.

This book is focused on the most important matters related to childhood and presents the studies by a special team of the University of Verona, which faced these matters in the last years in order to give the educators the awareness on the benefits related to the sport activity, a key factor for the well growth of the body, the mind and personality development and, further more, a successful way to prevent the main threats for children, such as sedentary, over weight and obesity.

I would like to leave a special message to the parents who will read this book, born from the cooperation of Laboratorio 0246, University of Verona and the Italian Olympic Committee: push your babies to move and play, since that the motor activity makes them express their capabilities in the best way.



Giovanni Petrucci
President of CONI

Sport is a vital part of society. It promotes togetherness, is good for health, creates the right conditions for mental well-being and helps bring about social cohesion.

This preface is to make you understand how important it is to engage in sporting activity during the first few years of life of every single person. Over the last two years, we at Italy's National Olympic Committee, in conjunction with Italy's Ministry of Education and together with the help of the national Government, have been employed in rolling out just such a project alongside primary teaching in elementary schools. We have long sought to do this and the project is being renewed this year, to the satisfaction of all, as it shows great and lasting potential.

This book aims to draw out the basis of an ideal environment for healthy growth and development, involving of course the parents. As such, it is not about trying to obtain a result, but about thinking of sport as a means of knowing your own body, as a means of communication, as a development tool, not just something physical. Being active helps combat obesity and, amongst other things, find a mind-motor balance which is fundamentally important to the growth processes of each child.

One problem, as one might expect, is to do with sedentary lifestyles. This can be addressed and resolved through taking advantage of the many facilities that a country can offer and establishing, if possible, sporting activity as a habit. Then, the boom of sportsmen amongst youngsters, rather than being restricted simply to those driven by desire and adolescent dreams, will be based on a fundamental, already chosen direction. Therefore, I support the development of initiatives designed to establish a sports culture from an early age. Because of this, the role of the family is crucial. This book aims to lay out some options and suggest to parents the most suitable ways of achieving important targets. This is an area that borders on sociology, but sport does permeate all of society, and therefore it is neither premature nor inappropriate to deal with certain issues starting from pre-school ages. In such situations you end up further removed from logical results and closer to the whole point of it: sport as pure play, a moment of great entertainment and fun. I like to emphasize the importance of playgrounds dedicated to early childhood development, such as the one constructed at La Ghirada, near Treviso, which I was privileged to see being built: this example, replicated to some extent in other local authorities, can certainly help form an original mind, based on the concept of "First Sport", which then can last forever. There is just no age at which one cannot begin to participate in the great family of sport.



Valentina Vezzali
Chairman
Laboratorio 0246

There are many meanings that can be given to the concept of sport, but only two are the reasons why you begin to practice it: fun, tied to a healthy lifestyle, and aggregation. These reasons can be applied to all age groups, but they are essential in early childhood: even if you can not talk about sport activity at this age, children should start taking their first steps in the right way, in a healthy and stimulating environment that conveys positive feelings and allows children and parents to share small, big emotions.

Laboratorio 0246, the non-profit company I agreed to become Chairman, aims helping families to live a positive experience in a protected space, giving the chance to parents to share the play time of their children, look after them and follow them in their first attempt of autonomy.

I am writing as a mother because I realize the importance for my son to play and move, socializing with other children, even of different ages, learning his own body language, even managing the frustration when he doesn't succeed in making some moves immediately, but his will pushes him to try again and again...until he can do it!

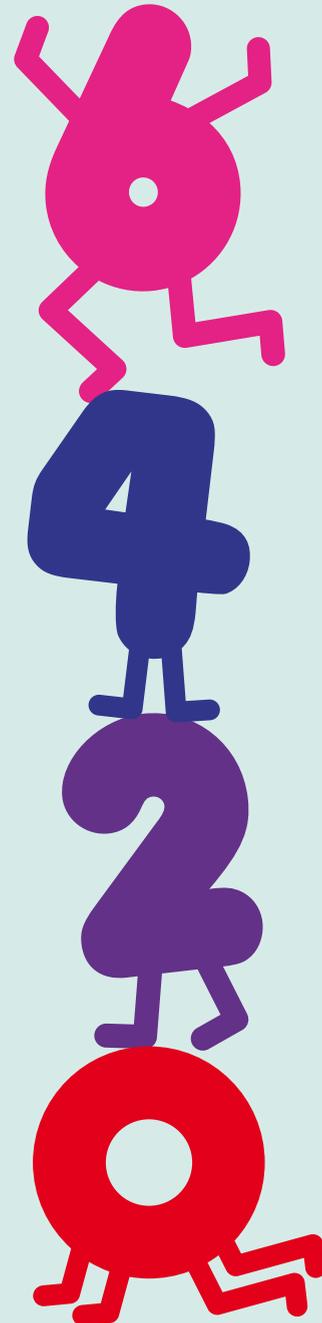
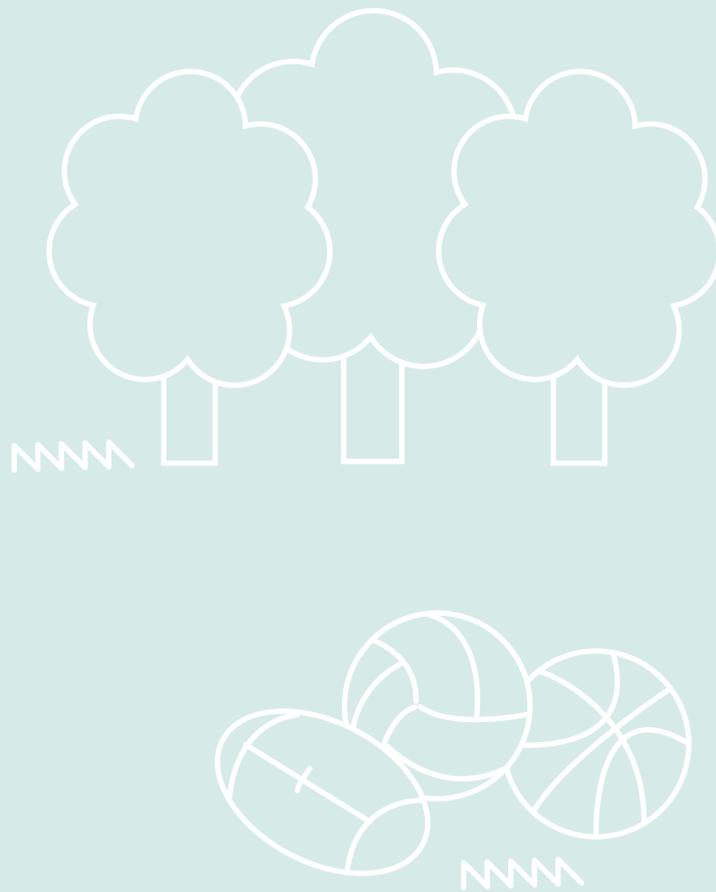
For all these reasons, the project to reply the play area "Primo Sport 0246" first built at La Ghirada, in other Italian cities is laudable and exciting, since that this is a special space that helps the sensory-motor development of children aging 0 to 6. I truly believe in this idea and I think it should be pushed as much as possible, because it offers families a unique opportunity to live a clear, safe and stimulating place, where we all can let our sons enjoy and have fun. On the other side, this book speaks to all the parents and helps to understand some of the daily life matters for our children: it's a simple way of approaching them, and I ask you all to read it, understand it and spread its suggestions, which do not bring to absolute truths but give some ways to take together with our sons. The most important challenge in our life concerns the growth of our sons: it is a difficult game to play, because there is no "magic bullet" to follow, each family has to prepare his own and parents must learn everything about it along the way ...

The purpose of both this book and the play areas Laboratorio 0246 will build, is to get closer to our families and share some of the problems we face every day.

CREATING VALUES FOR THE YOUNG

the greatest
victory in sport

By Giorgio Buzzavo, CEO of Verde Sport



CREATING VALUES FOR THE YOUNG, THE GREATEST VICTORY IN SPORT

The Benetton family's investment in sport has always been driven by a kind of social vocation. Once La Ghirada was opened in 1985, this vocation transformed into a commitment to present the community of Treviso with a space open to all, totally free of charge for 365 days a year, where sport might take place in complete freedom, across 220 thousand square meters, and where the only 'owners' are respect for those beside you and for the rules of civilised behaviour.

From La Ghirada, the message sent out by Benetton has surpassed regional borders and reached national dimensions through the foundation of Verde Sport which, in over twenty years of operation, has become the heart of many initiatives, especially geared to youths and to families.

In 1992, we started to get companies within the province of Treviso involved in the project "Pool Together in Sport", which currently coordinates the activities of over 100 different clubs of basketball, volleyball and rugby. It inspires initiatives for 6,000 children aged from six to twelve years old, starting at La Ghirada, host every week to festivals, tournaments and events with championships of teams and their staff. Even though almost 20 years has passed since the first festival of sport, our enthusiasm in welcoming young people, in speaking with managers and coaches, and in taking on board their suggestions, is the same as the first day.

In 2001, we were the first to establish a support school - "The Dragons" - a group open to all children of primary and secondary school age who are housed freely within Palaverde. They are still learning today, through the work of a social cooperative, the values of sport, the importance of rules and respect for each other, starting off with one's opponent on the playing pitch.

In 2003, we put forward an idea to the Italian Basketball Federation for a national league somewhat different from the usual. Together, we established "Join the Game", the first and only three-versus-three basketball league, the format most loved by the very young. Each year, over three weekends between January and May, we organise basketball games for 35,000 boys and girls aged under 14 across the whole of Italy, quite an army in pursuit of becoming champions: eight years on, and the dream has been shared now by nearly 250,000 young people, some of whom went on to become professionals, while others continue to play in Join the Game T-shirts on pitches all over the country.

Last year, we discovered that there was a piece missing in the mosaic that we had been building: we had never dealt with all

those children aged below six years old, the starting threshold for sporting activities.

In Italy, there live four million children of pre-school age and, although it is still too early to speak about sport for them, many of the children who come to La Ghirada to begin playing basketball, volleyball or rugby, struggle even to run and to jump ... and they are already six years old!

So begins the latest challenge: the early years. With the help of the University of Verona on the one hand, and Legnolandia and CONI on the other, we have devised a playground dedicated exclusively to young children. This is not a simple 'set of rides' such as one sees in many urban centers, but a sort of life trail, giving children the chance to use the apparatus as an opportunity for correct, motor-sensory development.

As usual, we started off at La Ghirada, where a model playground has been set up: an area of two thousand square meters, with 30 structures arranged along a route that meets the basic needs of children - dexterity, mobility, balance and symbolic play. Pathways are identified on maps which are presented free to parents, through signs in the park and by a Bluetooth system that not only provides information via mobile phones, but also allows visitors to be in communication with the video surveillance system, which sends out warning signals in case of danger.

From its very first day, this concept has been met with enthusiasm by families in Treviso, who even in the winter months gather in the park to take in the first rays of sunshine. This enthusiasm that has spread to major organisations across the region, primarily the local authority and the Provincial Committee of CONI, with whom we organize free tours for infant schools throughout the province, giving teachers the opportunity to fulfil the time allocated to motor activity within the school curriculum.

Having met the challenge in Treviso, our attention soon turned to the rest of Italy. So now "Workshop 0246, Association for Social Advance" has been set up, with its primary purpose being to address early childhood directly and the problems associated with it. For the past year, we have been touring Italy, grinding out the kilometres, knocking on doors of various local authorities offering to replicate our idea, at zero cost, discussing the importance of working for children and, indirectly, for families.

For almost a year, together with the University of Verona and CONI as always, we have been putting together this book, which is intended as the first step in trying to communicate with and meet the needs of young parents, those who relate most keenly to the subject in question and who need the right tools to tackle it. This is a book that, like the parks we are going to build, is free to download

from the 0246 website, covering early childhood, motor-sensory development, sedentary lifestyles and proper nutrition from an early age.

But ideas do not stand up without the help of people who believe in them: all this would not have been possible without the support of various institutional organisations, including the Ministry of Welfare, which has sponsored this project and promoted it through its own website, and also CONI.

Nor could it have been done without the help of those companies which have believed completely in Workshop 0246 and who are our inseparable companions along the way: United Colors of Benetton, Legnolandia, Electron and together with them all the companies that will help build the parks in Italian municipalities. To us, they are not simply supporters, but the real stars of the show, unique of its kind in Italy, undertaking work for both youth and for families in the name of sport, which by disseminating sporting values is itself one of sport's greatest victories.

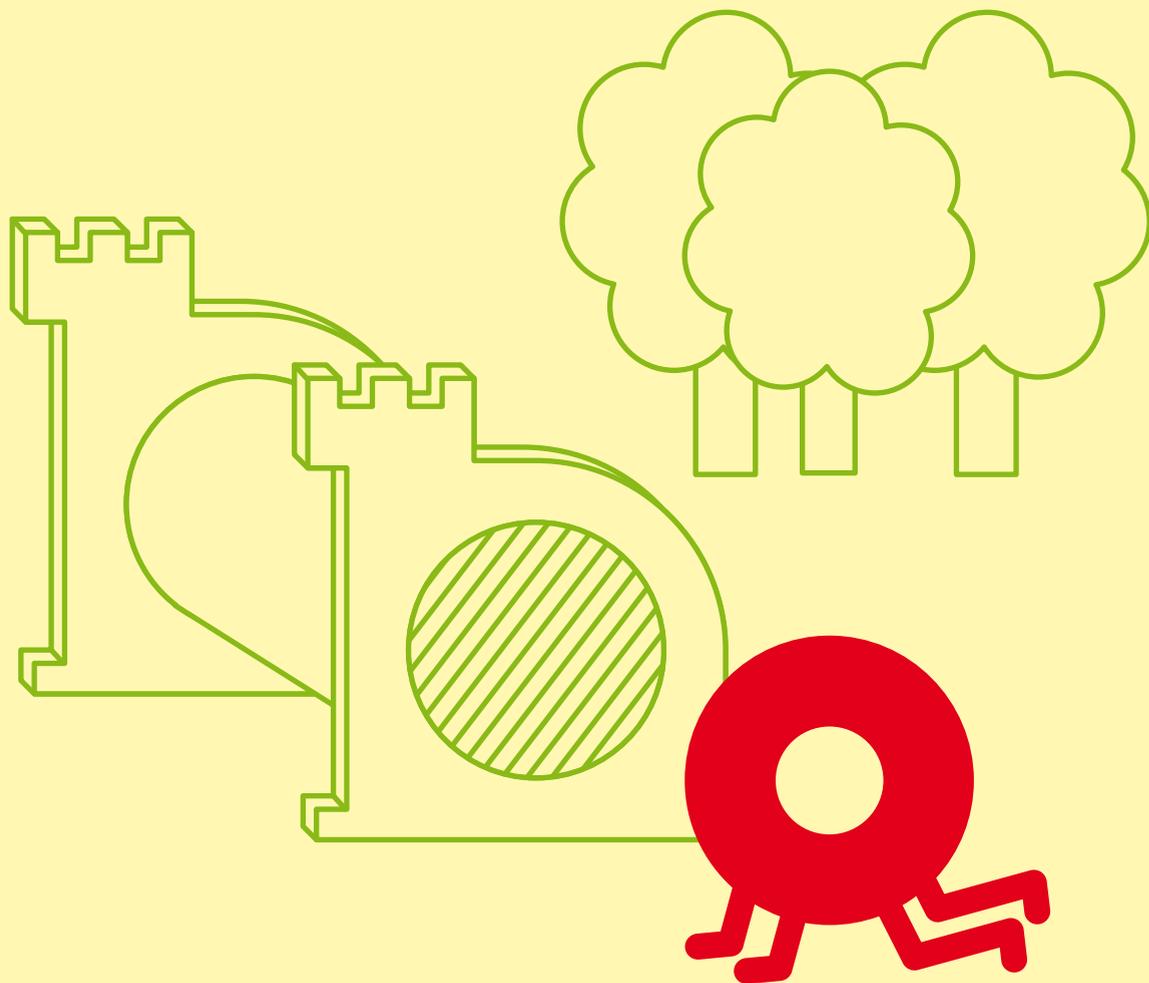
Panoramic view of
La Ghirada - The City of Sport;
children playing inside
Primo Sport 0246



1. GROWTH AND MOVEMENT:

importance of those first steps

Guido Fumagalli, Paolo Moghetti and Claudio Maffeis



1. GROWTH AND MOVEMENT

During the first six years of life, boys and girls grow up rapidly, with periods of acceleration followed by moments of standstill. They grow in height, in weight and in the ability to move. Social interaction and linguistic skills develop in phases, which for parents and anyone else watching a child grow up, evoke emotions ranging from fondness to amazement, from concern to happiness.

At heart, a parent is always concerned with the question:

Is my child growing properly?

A baby grows both in physical and psycho-social terms and the two types are often closely linked. For now, we will deal with the physical aspects of growth in height and in weight.

Figure 1 demonstrates the varying speed of growth for boys and girls during their first years of life.

Figure 1
Growth rate (centimetres per year) of males and females from birth to 18 years old. Note that for both sexes there is a second growth spurt during puberty.

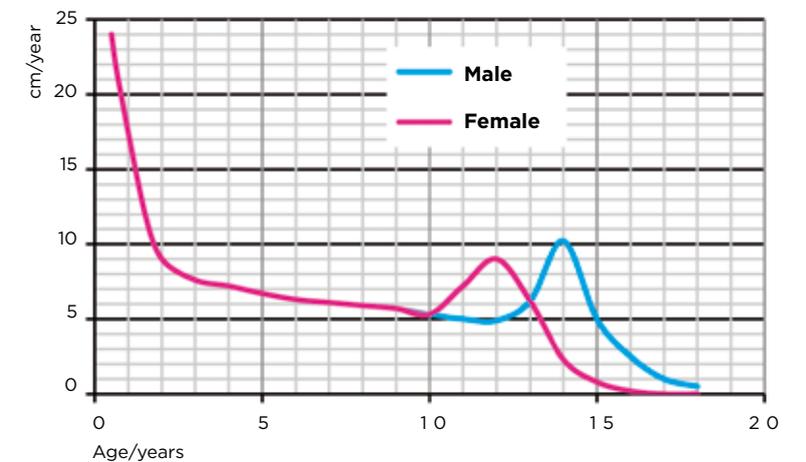


Figure 1

One can see that growth, which measures more than ten centimetres a year during the first two years of life, stabilizes at a constant seven centimetres a year until, at the onset of puberty, there is another growth spurt, occurring earlier in females than in males.

If instead you want to look simply at how high a child is in relation to its age, we have other charts that show the correlation between height and age. Figure 2 shows graphs of height/length in relation to age during the first five years of life.

These diagrams have been produced by WHO (the World Health Organization) and are freely downloadable from the WHO website <http://www.who.int/childgrowth/standards/en/>

There are similar tables constructed from data on Italian children, produced by researchers coordinated by the Italian Society of Pediatric Endocrinology and Diabetes, and which can be found at the web address:

<http://www.sipps.it/pdf/lecce2006/Cicognani.pdf>.

Male - from birth to 5 years old (percentile)

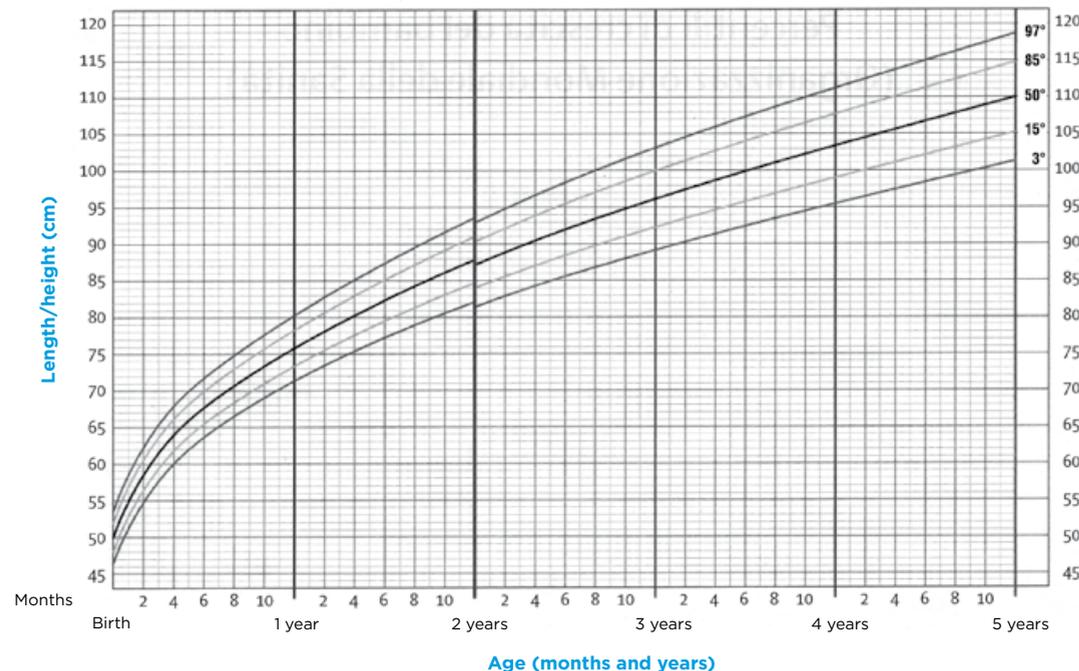


Figure 2a

Female - from birth to 5 years old (percentile)

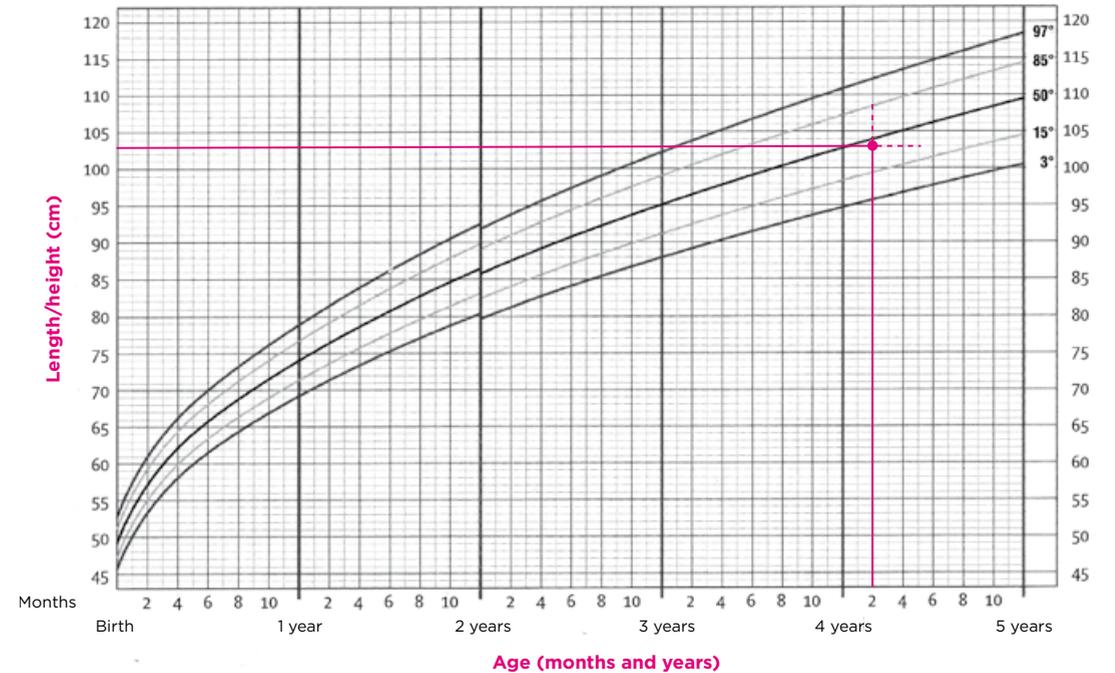


Figure 2b

Figure 2
Height/length chart, produced by the World Health Organization. Modified with permission of the author of "Growth, pressure and sexual development of children: benchmark parameters," edited by Claudio Maffei, Centre of Scientific Publishing, 2009, Turin

How does one understand these charts?

Each curve on the chart represents the growth performance of a particular percentile. The term 'percentile' defines, within statistics and within social science, a value below which there are a certain percentage of individuals.

To explain it simply, let's measure the height of 100 children and place the values in ascending order. The fiftieth value is in this scale is termed the "fiftieth percentile," while the ninety-fifth value represents the "95th percentile".

Let's look at the chart in Figure 2. For instance, our daughter Veronica is 4 years and 2 months old and 103 cm tall. We mark her age on the horizontal straight line; using a ruler, we then mark a vertical straight line starting from that point. Now, we find out on the vertical straight line of the diagram the point that correspond to the 103 cm height and then, using the ruler again, we draw an horizontal straight line. The cross between the two lines represents the "level" where Veronica stays in at present and, taking into account the percentile curves, we could say that Veronica reached the 50th percentile. In other words, she places in the mid range of the children at her age concerning the growth parameters.

At the end of this chapter, we have provided a series of graphs regarding growth in height and weight, which are there for you to follow the growth of your child during the first six years of their life. Take regular weight and height measurements of your child (length if they cannot stand up yet), checking where they are on the graph and whether or not they are growing properly.

Can the graphs and charts show if our child will grow up to be tall?

These graphs should not be taken as a definite indication that your child will grow up to be a giant, or, conversely, smaller than average. To assess growth, it is proper practice to repeat measurements over several years and, if you notice regular deviations from the norm, then you should consult your paediatrician.

A paediatrician, as well as being able to review the age chart, will take into account the bone growth stage. This can be measured by seeing (with x-rays) to what extent the long bones (particularly in the hand) have completed their growth process. It can happen that a child who seems short for their age (within the bottom percentile) actually has delayed bone development, suggesting that there is still time for growth to be completed, allowing a better prediction of final height.

This difference in growth potential can be marked between males and females. In females, bone growth is completed earlier, so that even if by the age of ten to twelve years old they are taller than their male peers, they stop growing earlier and may then be overtaken by their male peers. However, such aspects of growth are to do with the advanced age bands of youth, while growth curves in the first six years of life can be considered as essentially equal between males and females.

What determines the height of a child?

What difference does the height of their parents make?

The height of a child in its first years of life is determined mainly by health, quality of life, nutrition, and the height of its parents. This last factor is important particularly in the later years of growth. There are several ways to estimate the extent to which parental height affects the overall growth of a child. One method commonly used is as follows:

For males: (father's height in cm + mother's height in cm + 12.5 cm) / 2 ± 10 cm

For females: (father's height in cm - 12.5 cm + mother's height in cm) / 2 ± 8,5 cm

For sure, growth during the first six years of life is influenced mainly by:

- absence of chronic illnesses

- correct intake of nutrition through protein and calories
- absence of significant and prolonged physical and emotional stress

These are the three conditions that permit the normal secretion and production of hormones that regulate the growth of children during their first years of life. In particular, within the age group 0-6 years old, the most important of the hormones that support and drive growth are:

- growth hormone
- insulin
- thyroid hormones

Sex hormones are more important later on in life.

The endocrine system (the system that regulates the secretion of hormones and, along with them, their hormonal effects) is important in inducing and controlling a child's growth and body composition, meaning not just his/her height but also the quantity and distribution of fat across different parts of the body.

Which is the growth hormone?

The Growth Hormone (GH) is secreted by the pituitary gland, an endocrine gland located at the base of the brain, which regulates the activity of almost all the other endocrine glands in the body.

Figure 3

Pituitary gland and brain.
This gland is controlled by the brain and, in its own turn, controls other endocrine glands and body tissues. Each number refers to the organ controlled by the pituitary gland and the hormone with which this control is carried out.

- 1 - Mammary gland - Prolactin
- 2 - Adrenal gland - ACTH
- 3 - Thyroid - TSH
- 4 - Bone - GH
- 5 - Testicle - FSH / LH
- 6 - Ovary - FSH / LH
- 7 - Kidney - ADH
- 8 - Uterus - Oxytocin

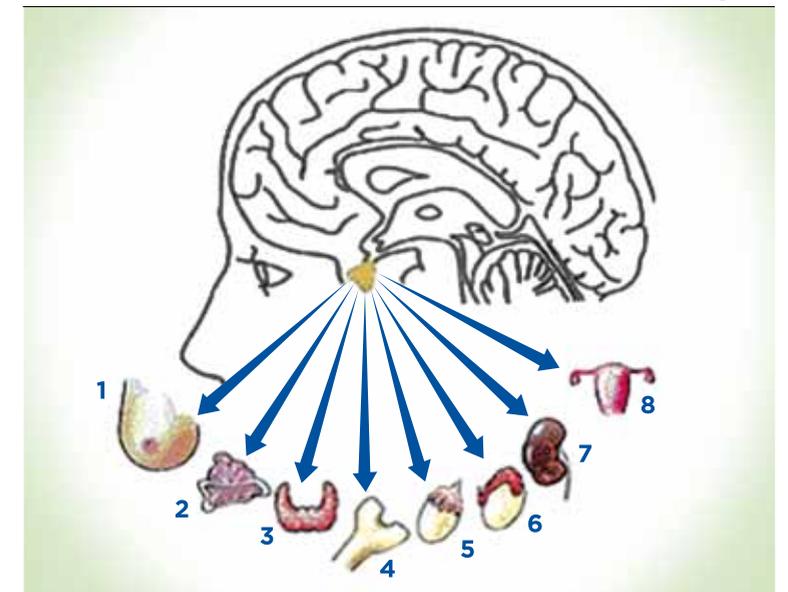


Figure 3

GH is produced not only during growth but, to varying degrees, even in adults. During puberty, its predominant effect is on the growth of bones as well as several other tissues in the body, including muscles. This effect on the growth of muscle tissue makes the hormone a drug often used for doping purposes!

It is not easy to measure a lack of GH, since hormonal secretion varies both within the same individual and between different individuals. In each child, secretion of GH varies notably throughout the day. The old saying, "You grow while you sleep," carries an element of truth, because GH levels do rise during the night. A lack of GH causes pituitary dwarfism, characterized by an individual being abnormally short, but otherwise normal when it comes to the proportions between different parts of the body.

Quite a different situation is one where thyroid hormones are lacking (a condition known as hypothyroidism) because, in addition to defects in growth and bone development, this contributes to defects in brain development, with abnormal behaviour, feeding difficulties and neurological delays which, if not corrected, will cause irreversible damage (cretinism).

The most common cause of hypothyroidism is iodine deficiency, but cases of congenital hypothyroidism are not uncommon (1 in approximately every 4000 births). Today, there is an active system of screening at birth for all children to check their level of thyroid hormones.

Parents who are concerned about slow growth (physical and behavioural) of their child should consult a paediatrician, who will make a diagnosis and prescribe a course of treatment: hormonal defects are easily controlled through proper treatment and the earlier one intervenes, the better.

Is it true that children today tend to develop diabetes and other metabolic diseases?

Diabetes is a disease characterized by concentrations of blood sugar higher than normal. There are two types of diabetes. Type 1 diabetes is due to a failure to produce insulin, the hormone that controls blood sugar. The cause of this defect is an auto-immune reaction which destroys the cells of the pancreas that produce insulin. Insulin is the hormone produced by the pancreas, which allows glucose to enter cells, thereby reducing glycemia (ie: the concentration of sugar in the blood). Type 1 diabetes occurs in individuals with pre-dispositions and is more common in childhood. Type 2 diabetes is characterized by the fact that insulin, although present, does not function properly. Type 2 diabetes is more common than Type 1 diabetes and occurs at an older age, typically around 40-50 years of age.

Until a few years ago, no one spoke about Type 2 diabetes amongst children, but now things are changing. There are an ever greater number of teenagers being diagnosed with Type 2 diabetes. What is particularly striking, is that the likelihood of developing diabetes in adulthood is caused by improper eating habits and the rapid rise in sedentary lifestyles. Indeed, there is a strong correlation between obesity and the development of diabetes. Obesity in girls is also associated with the onset of early puberty and other endocrinal abnormalities including increased levels of male hormones.

Is it true that obesity is widespread?

In the USA, over the past 15 years, there has been a dramatic increase in the number of obese individuals. At the base of this sudden change in the physique of Americans (but not just Americans) are bad nutrition habits and the spread of a lifestyle in which physical activity is neglected or drastically reduced.

Since Italy generally follows the USA when it comes to lifestyle habits, we can predict that obesity will become more widespread amongst us too. The available data, presented in Figure 4, is alarming.

Figure 4

Excessive body weight across different Italian regions; the shading indicates the percentage of children aged 8-9 years in each region who are overweight or obese. Data from the Ministry of Health's Health Watch, 2008

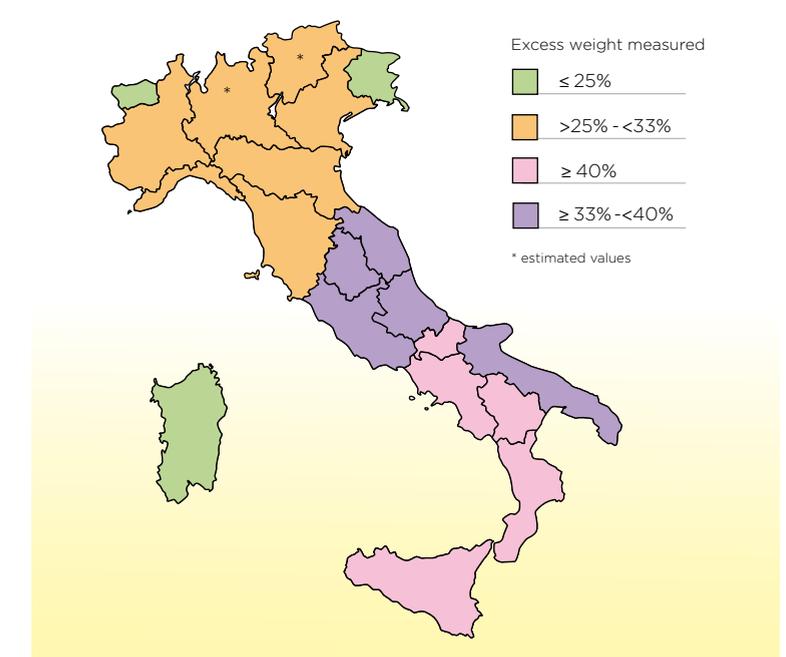


Figure 4: Italy and obesity

The data shows how in some regions, the proportion of overweight or obese children is more than 40%. The data comes from the project “Health Watch: Promoting good health and growth in children of primary school age,” organized by the Ministry of Health and the University, and are available at the website:

<http://www.epicentro.iss.com/okkioallasalute/>

Here is a major issue, which will plunge the national health system into severe crisis. Because obesity means higher rates of diabetes, hypertension, strokes and heart attacks. These are cardiovascular and metabolic diseases that are far easier to prevent than to cure, that cost a lot in terms of pharmaceutical spending (drugs generally should be taken throughout life) and spending on care (particularly for stroke, heart attacks and kidney failure).

Is body fat a threat to health, to be avoided at all times?

Body fat – or ‘puppy fat’ – is a normal, physiological feature that varies in quantity according to age, development stage and gender. Figure 5 shows how the amount of body fat (depicted as circles) and lean body mass (muscles, basically, depicted as triangles) change in a relation to age and gender (male symbols are in black; female symbols clear).

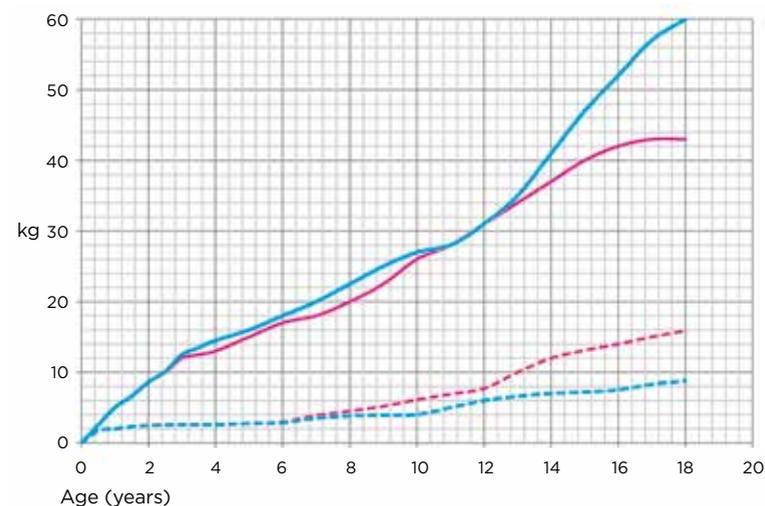


Figure 5
Lean body mass and body fat, according to age and sex

— Female (Lean body mass)=
- - - Female (Lean body fat)
— Male (Lean body mass)
- - - Male (Lean body fat)

Figure 5

During development, body fat reaches its physiological maximum (with respect to total weight) at four months of age. At this stage of life, children resemble “little Buddhas,” while at 6-7 years of age they are generally very thin. Although often mothers and grandmothers are concerned about this thinness, this is a perfectly normal and typical phase of childhood.

A reserve of fat is connected, later on in life, with the healthy development of secondary sexual characteristics in women. In fact, females have a higher percentage of fat than males. This build-up is driven mainly by reproductive needs. In the past, it was celebrated in art and is still considered a sign of well-being and great aesthetic quality in various different Arab and African cultures.

It is important to consider that the opposite condition, of excessive thinness, is good neither for health nor for sexual development. Amongst elite, adolescent ballerinas (who tend to be thin in order to dance effectively) the start of menstruation is delayed by about a year. This delay in puberty is not an advantage, because delayed exposure to sex hormones includes a delay in building bone mass, which is completed by the age of 20. Girls kept thin have less time to attain normal bone health and, as a consequence, will be exposed to earlier osteoporosis.

How can I tell if a child is too fat?

Just like the growth charts for height previously shown, there are also growth charts of weight relative to age. Many of these graphs are available at specialized websites or can be downloaded from the internet. At the end of this chapter, we have gathered together charts of growth with respect to weight: using these pages, you will be able to see how your child is positioned in relation to other friends of the same age. Height and weight should be measured every two months and updated against these charts, so that you can monitor the physical development of the child.

As with the chart showing height measured against age, it is easy to see in which percentile a child may fall. For example, a two year old boy weighing 12kg lies on the 50th percentile, while a girl of the same weight and age lies on about the 55th percentile.

However, since weight is determined also by height, this diagram alone cannot tell us whether the child is normal or overweight. Because of this, there are special tables in which weight is related to height. These are also listed at the end of the chapter. Take note how the tables are quite different for males and female, and for ages above or below 24 months.

Clearly, children who fall within the highest percentiles are considered overweight, with the boundary between normal and overweight

situated for now around the 75th percentile.

Are there other ways in which to tell if my child is overweight?

Another useful measure for evaluating the level of obesity is BMI (Body Mass Index). This value is calculated by dividing weight, expressed in kilograms, by height squared, expressed in meters. This indicates approximately how much body mass is made up of fat, while the remainder (lean mass) is for the most part comprised of muscle tissue and bone.

So, a person weighing 77kg and 1.75m high has a BMI equal to $77 / 1.75^2$, which equals $77 / 3.0625$, which works out as 25.14. A BMI over 25 is overweight; a BMI over 30 indicates obesity. This varies according to age, as shown in Figure 6, while Figure 7 shows the boundaries between normal weight, overweight and obesity during the first years of life.

Figure 6
Chart showing the variation of BMI (Body Mass Index) according to age. Edited by TJ Cole et al. 1998, BMJ 200.320: 1240

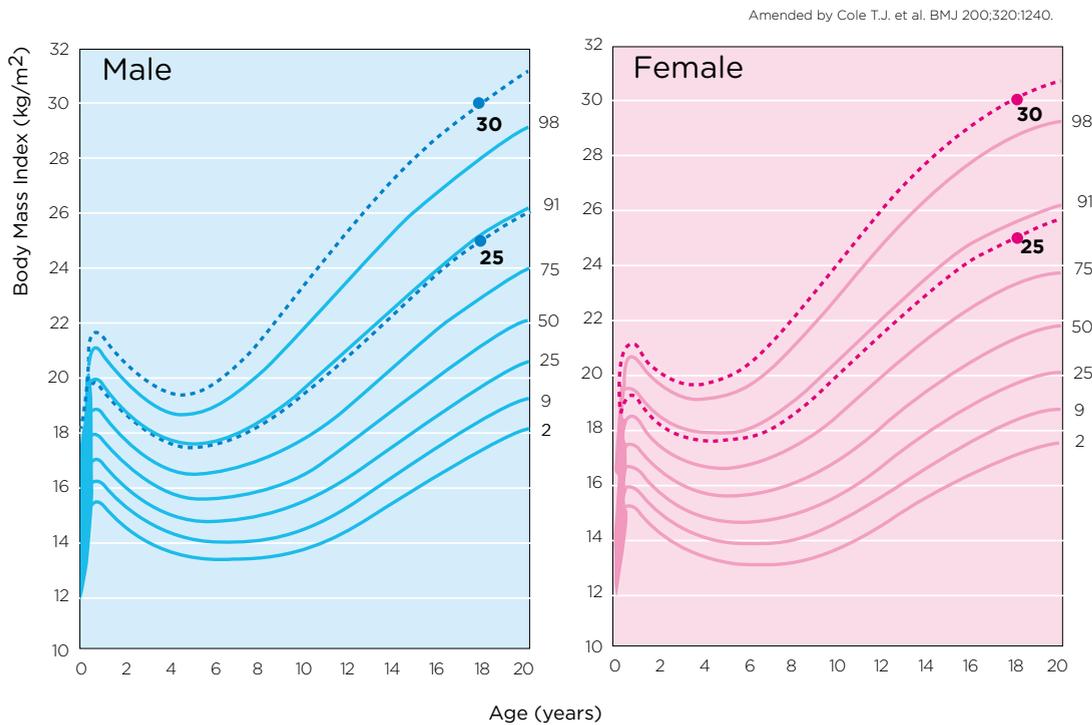


Figure 6

Figure 7
Benchmark levels of body fat according to age. Amended by McCarthy et al., 2006, Int J Obesity, 30: 599.

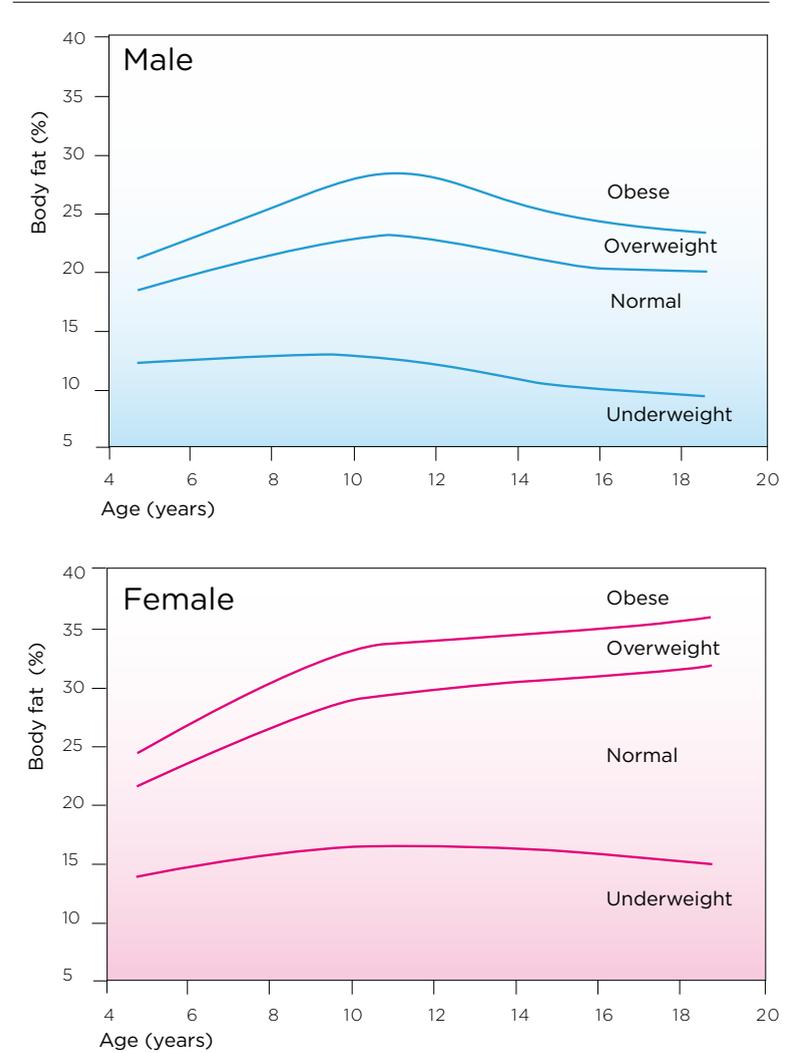


Figure 7

From a practical point of view, for children younger than 2 years old it is better to use the length/weight chart, while for those over the age of two, BMI is preferred.

A simple benchmark to measure, and one which is also very useful in checking for obesity, is waist circumference.

Circumference should be measured with a soft, tailor's measuring tape, without tightening and passing around halfway between

the last rib and the iliac crest (the top of the pelvis).

The ideal waist/height ratio is less than 0.5, for individuals six years old and above. If the waist/height ratio is more than 0.5, the probability of experiencing metabolic problems increases by 12 times.

However, it should be said that there is no data currently available to show correlations between waist circumference and obesity in children younger than 5 years old.

Another measurement that can be made, to assess deposits of subcutaneous fat, is skinfold thickness.

The fold is produced by raising, with the thumb and the index finger, the child's skin across their shoulder blade or around the back of the arm.

The measurement is made with a special instrument called skinfold calipers, simple to use and not traumatic.

Table 1 shows directions for evaluating excessive weight, drawn up by the Italian Society of Paediatrics

First step evaluation for over – weight

1. Weight and height must be always tested, then you can calculate the BMI, given from the ratio between these data: $\text{Weight (kg) / height (m)}^2$.

It is to be hoped to calculate other parameters such as:

- a) triceps skinfold in order to have a diagnostic confirmation
- b) waist measurement and blood pressure in order to have an evaluation on cardiac – vascular risks.

2. Suggestions about the diagnosis on the over weight:

- **Up to 24 months:** ratio weight / height (see diagrams: CDC 2000 on www.cdc.gov); limit: 85° percentile for over weight; 95° percentile for obesity
- **After 24 months:** BMI with a limit on the percentile line reaching the 25 BMI at the age of 18 for over weight and at the age of 30 for obesity.

3. In case of over weight, further anamnestic examinations are suggested:

- other cases in the family regarding over weight and related pathologies
- weight increase during pregnancy
- person and family behaviour about weight
- weight report

- food habits and meals frequency
- present and past organized and free will physical activity
- teenagers habits concerning smoking, alcohol, other substances
- person and family awareness and expectations on the weight

4. Habits and lifestyles evaluation

A. Food habits

In order to make a correct evaluation on the food habits (what, how much, where, with whom, the way he eats), the most useful way is a food history reported together with the person and the parents or who takes care about the child.

B. Lifestyles

It is basic to make an evaluation of lifestyle and physical activities usually led by the person in over weight situation: Sedentary factors:

- daily hours in front of TV
 - daily hours in front of pc/videogames
 - daily hours of study after the school time
- Weekly frequency of organized physical activity (sports, recreational activities) at school and after the school time
- Free will activity (walks, outdoor play, biking, sports, running, dancing at home).

5. Relationships evaluation

- Behaviour evaluation
- Cognitive key factors
- Emotional key factors

6. Laboratory examinations

The laboratory examinations are suggested in case of over weight or obesity situations for the children who also have family cases of cardiac – vascular risks (high blood pressure, diabetes, dyslipidemia, cardio-vascular diseases), or for children born under weight. The examinations are:

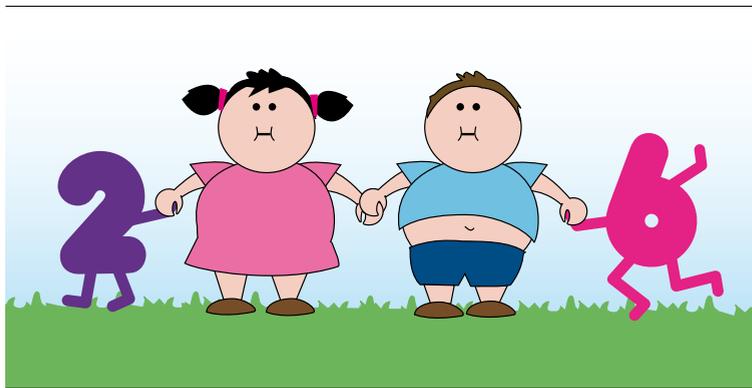
- Glucose before meals
- Insulemia before meals
- Lipid profile (triglycerides, total cholesterol, HDL and LDL)
- Transaminase

What becomes of a child who is overweight or obese?

In an obese child, the risks of becoming unwell are greatly increased. An obese child is not a healthy child. Although these words may seem alarming, unfortunately they correspond to the truth.

An obese child carries a higher risk than a normal weight child of developing high blood pressure and changes in the control mechanism of glycemia (from simple glucose intolerance, right up to Type 2 diabetes). Furthermore, the child exhibits higher levels of triglycerides and “bad” cholesterol (LDL) in the blood and a reduction in “good” cholesterol (HDL). It should be remembered that a build-up of cholesterol in the artery walls is the main cause of atherosclerosis.

Obesity is the most significant risk factor regarding sicknesses such as heart attack, hypertension, stroke and kidney failure. Given how slowly the damage caused by obesity takes to become apparent, the sicknesses listed above occur mostly in adulthood. However, while the onset of symptoms typically occurs from around 40-50 years of age in non-obese people, in patients who have been obese since childhood, problems arise at 20-30 years of age and, ever more frequently, already in adolescence.



Another serious problem associated with childhood obesity is “fatty liver”. This is a build-up of fat in the liver, similar to that which is done forcibly to geese in order to produce the famous “foie gras” (paté made of fatty liver). One obese child in three has fatty liver, which can lead to serious problems including a worsening of the child’s already reduced sensitivity to insulin, causing the liver to accumulate yet more fat. Finally, obese children develop chronic inflammation, which further compromises their health.

Besides these medical problems, obese children suffer psychological and social problems. It has been shown that obese

children tend not to be rejected or to be marginalized by their peers of normal weight. A marginalised, overweight child cannot play with friends and so moves about even less. Often, this includes a lowering of self-esteem and falling into isolation and depression. A real handicap becomes established, doing serious harm to the quality of life of the child.

For how long does obesity last?

Is it true that it goes away of its own accord during adolescence?

As will be discussed more fully in another chapter, the more overweight you are, the more likely you are to stay overweight. 40% of children who are overweight, remain so as adults. Unless something is done, using the right tools, to achieve lasting changes in lifestyle and behaviour, it will be difficult for children to get better by themselves.

Statistics show it not to be true, that during puberty the problem of obesity resolves itself spontaneously. Instead, it is a fact that the longer a child remains obese or simply just overweight, the longer and more severe the damage that will be going forward. Finally, it is also a fact that a child who was obese in childhood, but who drops to a normal weight during puberty, has however suffered damage to their body during pre-puberty.

Avoiding obesity is therefore a must, to which parents should pay serious attention for the sake of the future quality of life of their child.

What should I do to prevent a child becoming obese?

How can hunger be contained?

The tools available, to prevent and reduce obesity, are to counter physical inactivity and to watch what you eat. Through the first, energy reserves are consumed, through the second, any build-up is reduced.

To understand properly how to deal with food and calorie consumption, you need to understand how appetite is controlled. Regulation of appetite and of feeling satiated, and the dynamic relationship between the two, is finely regulated by the brain as it constantly receives and processes signals arriving from the furthest reaches of the body in the form of hormones (leptin, insulin, etc), nutrients (glucose, fatty acids, amino acids), neuro-chemical messages released by the nervous system (cortex, sensory nerves, etc) and hormones secreted by the digestive tract (ghrelin, GLP-1, PYY, etc).

The stimulus of hunger causes motor responses (foraging for food), a heightened sense of smell, increased secretion of certain hormones (such as glucagon) and reduced secretion of other

hormones (such as insulin). Being satiated provokes opposite responses.

The anatomical and functional development of brain structures, which regulate hunger and satiety, start during pregnancy and continue during the first years of life. In particular, the metabolic conditions to which a foetus is exposed, especially during the third trimester of pregnancy, affect the long term development of its own metabolic controls, supporting or hindering its successful adaptation to environmental conditions (availability of food, lack of exercise) beyond the womb.

There is a kind of metabolic “programming” acquired during foetal and post-natal life. This is either difficult or impossible to modify later on, rendering individuals more susceptible to poor nutrition and more likely to develop illnesses such as obesity, hypertension, diabetes and atherosclerosis, which contribute to a reduction in life expectancy.

This sort of programming has also been proven with regard to the metabolic activity of muscles.

Leptin, the hormone whose primary function is to signal to the hypothalamus how much body fat there is, appears to have a major influence on both metabolic programming and also the burning of energy. The resistance of the hypothalamus to the effects of leptin is a central factor in this process.

If hunger control takes place in the brain, why is it important to develop muscles?

Skeletal muscle plays a major role, together with the liver and body fat tissues, in regulating metabolism. Skeletal muscles make up the body's protein deposits and store more than 80% of its glucose reserves. Almost all muscles contain two types of cells, called primary and secondary muscle fibres. The latter can be divided into oxidative (which use mainly fatty acids at rest) and glycolytic (which use mainly glucose).

The number of primary cells is genetically predetermined and barely affected by environmental influences. In contrast, secondary fibres are sensitive to environmental conditions, such as the metabolic environment within the uterus.

Should the number and the activity of oxidative fibres be restricted during the prenatal phase, because of metabolic conditions within the uterus, this will have an impact on a child's metabolism both immediately and later on in adult life.

Metabolic and motor programming

The quality of “metabolic life” in the prenatal and perinatal phase has a tremendous impact on the standard of metabolic controls

of an individual. Such sensitive tuning of appetite control systems, with regard to both the brain and to the muscles, continues during the first years of life. Therefore, what we do during this period matters to our future metabolism, for better or for worse. This sensitivity to environmental factors is known as “metabolic programming”.

Once acquired, this programming is very hard to change.

Fact is, that poor attention to diet and to muscle development (or ignorance of the matter) creates the conditions that bring on obesity, along with a metabolism that maintains it throughout adulthood, whatever attempts (and corresponding relapses) are made to correct obesity through extreme dieting.

So the main tool to combat obesity is to prevent it in the first place, by making sure that early in life, one's diet is appropriate and correct (both in quantity and quality) and that the development of muscle tissue, brought on through constant physical exercise, can take place properly and not be held back by inactivity.

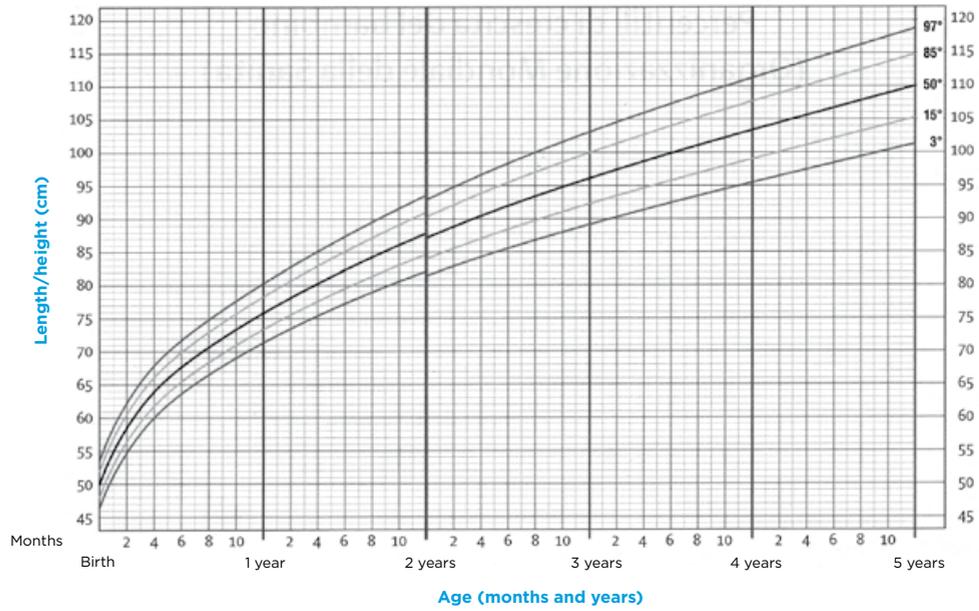
To support the thesis, that you should pay attention to motor development from an early stage of life, there are some studies conducted in recent years showing that muscles can be “programmed”, not just in a metabolic way but also in terms of motor action.

Moving around as a baby actually seems to be the best way of developing the motor skills that stay with you later in life.

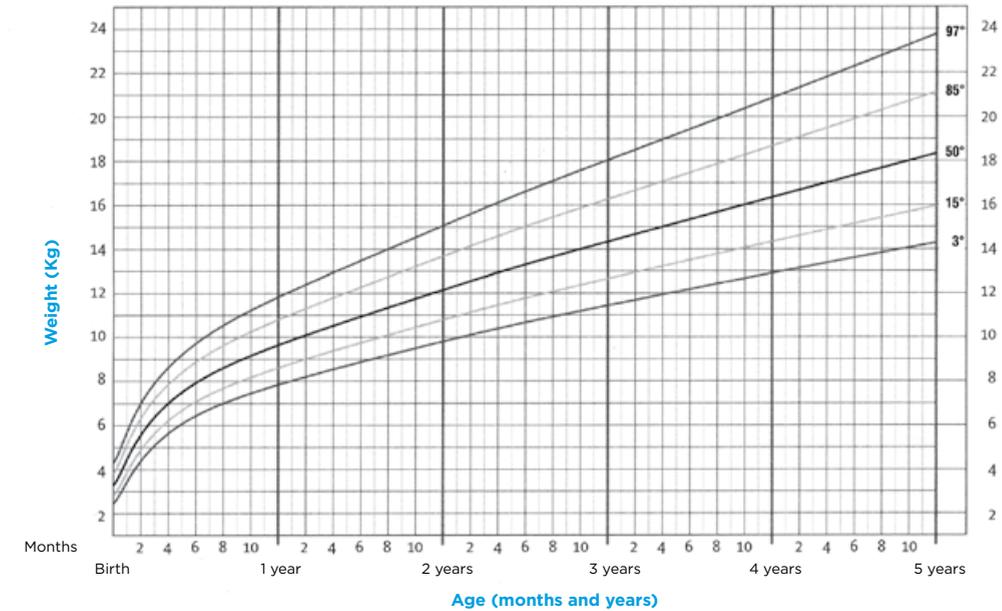
First steps are important not just for exploring your environment and for becoming independent.

First steps are also about programming your future quality of life and health.

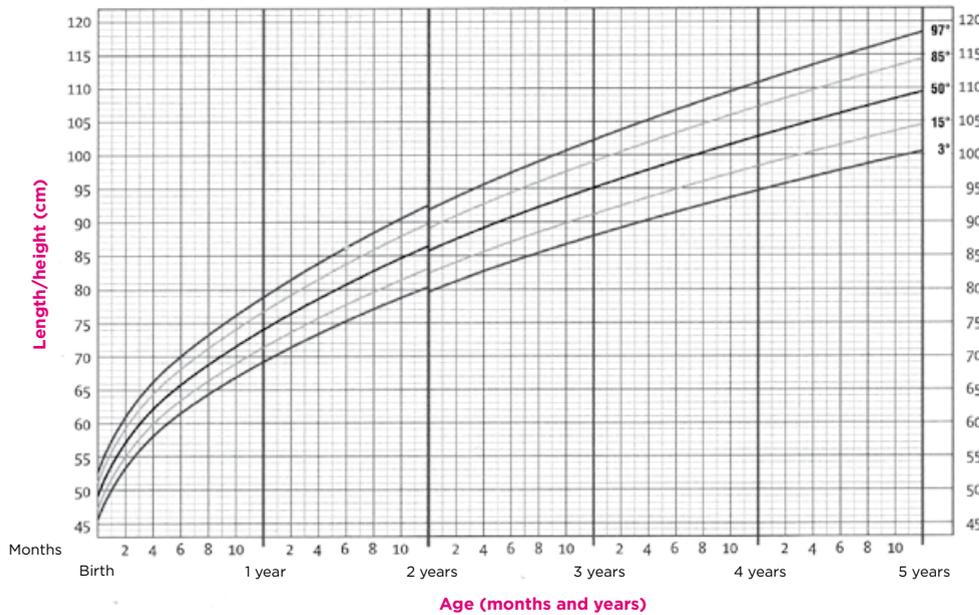
Male - from birth to 5 years old (percentile)



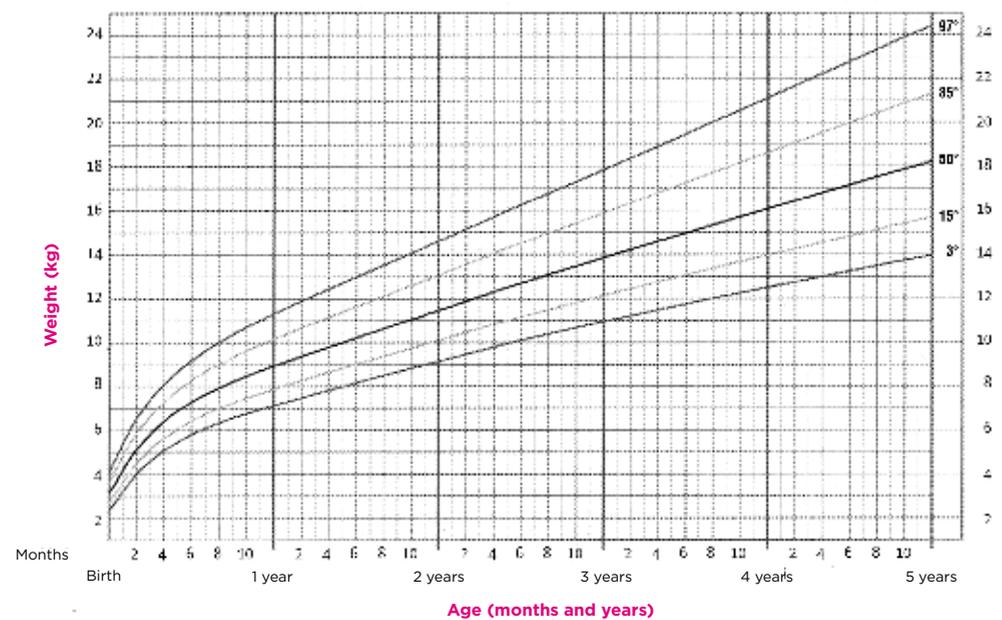
Male - from birth to 5 years old (percentile)



Female - from birth to 5 years old (percentile)



Female - from birth to 5 years old (percentile)



2. PLAY

and motor development

Patrizia Tortella



2. PLAY AND MOTOR DEVELOPMENT

The principal activity of a child is play. Through play, he* gets to know his own body, those of other children and the world of objects, and is able to experiment.

A child can play anywhere and the game that he chooses will depend very much on where he is, on what materials he has to hand, the nature of the space, the temperature, and the social setting - on whether or not there are grown-ups or peers present. Play is the primary way of discovering the world and child's relationship to it: this takes up his whole day.

At what age do children start to play?

A baby starts to play inside his mother's belly. You will see him, through ultrasound, with his thumb in his mouth, rocking in the amniotic fluid. His world is made up of sensory feeling and movement. Once out of the belly, there are changes in temperature, noise and senses, and the baby needs to re-orientate himself within the world. He desperately needs his mother, or someone else, to love him and help him in this task, because he is not independent and his opportunities depend on the social setting and physical surroundings in which he will grow up. The **social** setting is comprised of the people that surround the child. The quality of this depends on the atmosphere created and on whether or not the child gets to be with adults, with children and with different kinds of people, and the relationships that spring from there. The **physical** surroundings are comprised of structures, objects and materials with which he interacts.



* For he/his, please read also she/her

What is so important about a child's play?

What is important, is the actual importance that a child attaches to what he is doing and discovering.

He builds his life and himself step by step, attaching meaning to familiar things and becoming ever more independent.

Experience which is derived through play actually builds up self-identity and, as we will see later, the child's body.

What kind of games does a child like?

A child's favourite game is to do what he most likes doing.

This is called free play, often known as symbolic play.

Free play comprises an activity chosen by the child; he decides what objects to use, how to use them and for how long to carry on.

The term symbolic play signifies a type of game based on fantasy, in which actions and objects are removed from their normal role and function: a pencil may become a magic wand, a doll the baby being looked after by the girl.

There is no universal agreement amongst teachers, on the importance of free play.

Some say that it is of no use to a child and prefer to direct activities. However, in recent years, evidence has been produced to show that not only does free play contribute positively to different aspects of a child's development, but it is also fundamentally important for a child to have moments of absolute freedom to choose what he does.

Amongst the matters positively influenced by free play, is the important ability to maintain a prolonged attention span.

A child that plays freely is quite focussed on what he is up to, and remains so for a far longer period than a child playing some game put forward by others. In our culture, this is an important skill, because it seems to be at the root of our ability to concentrate and to learn, which will be needed when starting at school.

Some studies have identified a direct link between the attention span of a child of pre-school age and its successive academic performance. It seems that the moment best suited for acquiring such a skill is precisely between the ages 0 - 6 years old.

Children who have difficulty in maintaining concentration during normal situations can, to some degree, correct this defect during free play.

Free play is thus a kind of training ground for acquiring concentration skills, which far more than any other characteristic, separates mankind from other species.

What makes a game or a place purposeful for a child's development?





Playing provides the experience through which a child “constructs” himself. Often, parents run off to the shops to buy an elaborate toy to enrich their child’s life, in the belief that this will help them grow and develop. But what is it about a game that makes it purposeful in the development of a child?

The basic principal of any game, situation or implement, is that it should be within a child’s grasp. By “within his grasp”, that means that his level of ability should be such that he can engage with it. For example, if you put a tree in the garden for a child to climb, you must ensure that it has low branches, within reach of the child. That should foster in him the skill of “trying to climb”, together with attendant success.

Bit by bit, as he becomes an accomplished climber, the options become more complex. If, however, the level of difficulty at the outset was beyond the ability of the child, then he would never have tried or if he had, the experience of failure would, if very severe, have dissuaded him from any further attempts. This is the case with children who tell their teachers or parents, “I can’t do that”, even when faced by something do-able.

For an experience to be positive and constructive, it needs to be one of success.

A good parent will create the right circumstances for a child to succeed in what he does and enjoy doing it. This creates a virtuous circle which reinforces a child’s confidence and self-esteem,



elements that are fundamental to his growth.

A place, a game, a suggestion, must be tailored to each and every child. This requirement applies to the great variety of children, including those with disabilities. Therefore, this is not about choosing either simple games or complicated games. This is about the adult having to choose what is best suited in order to stimulate a child, paying attention not just to the object being played with, but also to the place in which he is playing.

Children often get bored of games they are given. What can be done about it?

If games are too easy, a child will become bored and learn nothing new; if it is too difficult, he cannot play with it and therefore abandons it. The best strategy is to take into account what the child already knows how to do. The object of the game should be to put the child in a position of trying out something slightly more difficult than his current ability.

The great psychologist L.Vygotskij defined this as the “zone of next development”. This is where a child, thanks to the support of an attentive grown-up or of a little friend more expert than himself, succeeds in developing his own solution to the problem that a new game presents.

Here, an adult can really contribute to the healthy development of a child, getting him to try out experiences a little more testing than he is used to. By providing some assistance - but always with regard to the child’s autonomy - an adult can help the child in making a leap towards acquiring new skills and abilities.

How does play influence a child’s motor development?

Until a few years ago, it was assumed that motor development depended upon genetic make-up and that an individual’s central nervous system was the driver of his development, both physical and motor. Motor conduct was, therefore, considered to be a direct consequence of the development of the nervous system. One’s body was regarded as a mere executor, and it was thought that environment had no impact. The prevailing theory was that motor development proceeded through pre-defined stages, in relation to age and aside from any surroundings.

This concept began to change when scientists started to examine social interaction involving children, and to measure its effects on their development, both psycho-social and motor. L.Vygotskij was a pioneer in this new approach to motor development. A law graduate with a passion for psychology, this revolutionary scientist remained unknown for almost forty years. He lived between the two world wars and propounded a theory of personality



development quite at odds with the regime of the time. Vygotskij demonstrated that physical and social surroundings play a prime role in a child's development. His research data is still used as a benchmark for scientific theory.

Today, scholars who study early social interaction maintain that a child's development depends on the environment in which he finds itself. To prove the point, studies of identical twins show that even though they share the same genetic make-up, they will develop differently if raised in surroundings with different stimuli. The decisive factors in the development of a child are therefore:

- The nervous system
- Body structures
- Physical and social surroundings

Motor conduct stems from a child adapting to different environmental conditions.

Are all children the same, in terms of motor development?

Each child starts off differently from the other because of its own personal genetic make-up, and therefore his nervous system and his body are potentially different. Furthermore, each child lives in his own particular physical and social surroundings. Therefore, children are all potentially different in terms of mobility and motor skills. The task of the adult is to take advantage of these differences, creating and preparing all the environmental conditions possible that can help with future growth.

If, for example, a child always plays on a beautiful lawn, then in terms of motor development he will be able to run, jump, roll, do somersaults, go on all fours, crawl and really enjoy himself. But he will not be able to climb.

In this sense, the child's environment should offer different possibilities. The word "environment" here also includes the adults, who need to understand correctly how to fit the social and physical environment to the growth needs of the child. It should be full of those "zones of next development" which are so important in the development of new skills.

What help can be given to a child, in terms of motor skills?

The basic requirement is that a child should, at all times, be able to act independently in what he does. The surroundings should instil in him the desire to try out something. It is for the child to decide when to try it.

It is instructive to observe what different social and ethnic groups do with this regard. For example, African babies in rural zones are left alone next to wooden supports, which they grip onto and, imitating other children, begin to walk. They try and retry and

by nine months old are already walking! In Europe, parents and grandparents put their offspring in baby walkers and in pens, hold their hand and help them take their first steps, so that they have not yet had a real taste of independent movement. As a result, European children start to walk some months later than African children.

In some parts of India, on the other hand, babies are never put down on the ground but are always carried on the backs of their older siblings, until that they can stand on their own, because it is considered life-threatening to leave them on the ground if they



cannot move around for themselves. Compared to European toddlers and those in Africa, these children do not start to walk until the age of 21-23 months.

These considerations point to the fact, that the best way to help a child in his first stages of motor development is to organise his surroundings so that he can move about easily. It would instead be counter-productive to use props and devices that seem more like prosthetics than real aids to development. The action, for example, of holding a baby's hand to help him stand up and walk, actually leaves him unable to test out the strength of his legs, nor able to test his balance, nor able to learn how to fall. By missing out on these experiences, a child's abilities are impaired and his development slowed.

How do children learn?

The primary method of learning amongst babies and young children is mimicry and imitation. Watching companions of different ages at play is very important, and it is helpful if children are exposed to children of different ages, sex and culture, since this diversity provides new, educational stimuli.

It is therefore important that children, even while still little, live as much as possible together with other children of different ages, ethnic backgrounds and social settings.

Is there a relationship between motor and cognitive development?

The issue of a relationship between motor and cognitive development is an open one. Sternberg states that we are made up of three forms of intelligence, which require adequate space to function: analytical intelligence, creative intelligence and practical intelligence.

During play, these three forms of intelligence operate together at the same time. In particular, creative and practical intelligence come into action during complex situations.

There is also Gardner's theory of body-aesthetic intelligence to consider, which proposes that some children are more naturally pre-disposed than others, for example in finding solutions to activity-based games or in creating new games.

Other recent studies point out that some cognitive processes, such as concentration and memory, can be improved by practising certain motor activities.

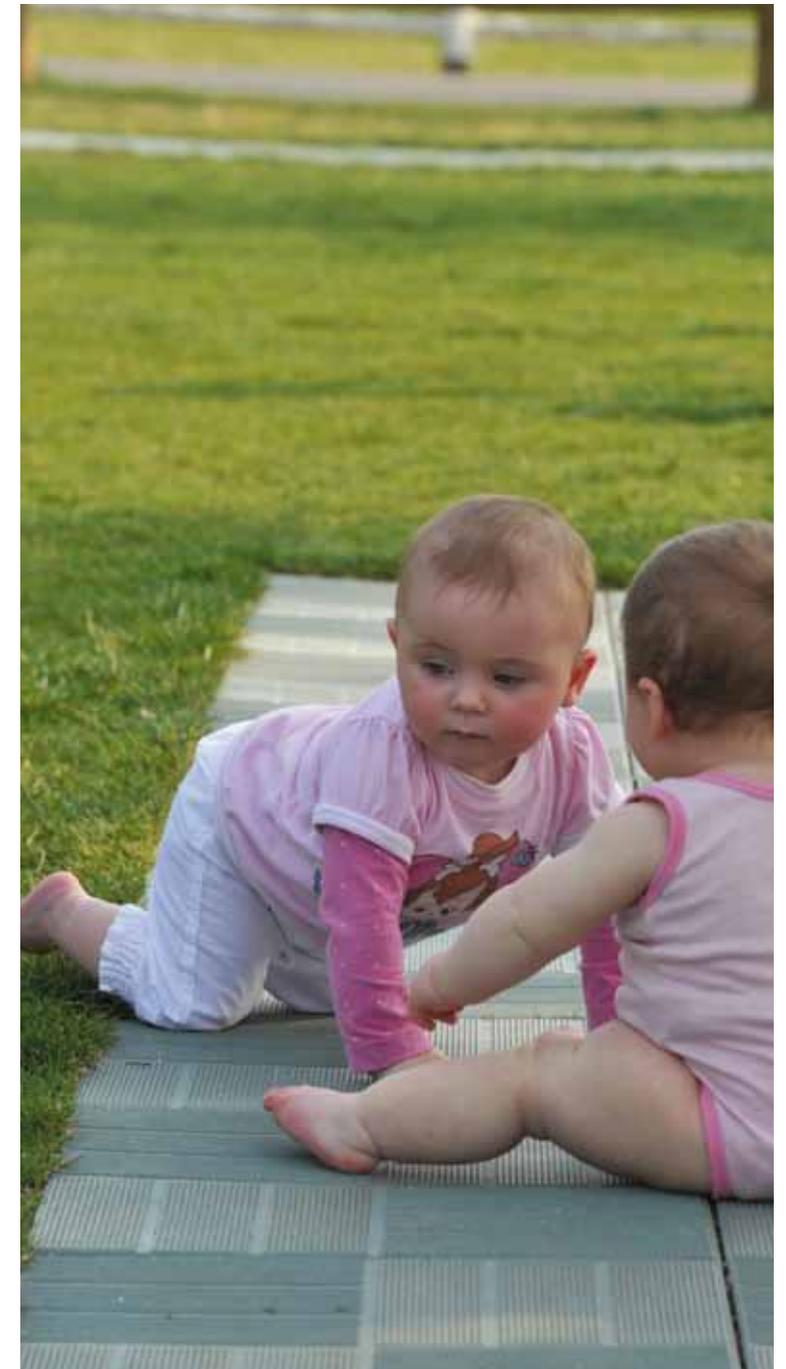
However, it should be made clear that it is still not possible to establish exactly what link there may be between the development of cognitive skills and motor abilities. Some new data has come out in recent years; for example, the ability to solve mathematical problems corresponds with the ability to control rapid eye movement (study conducted in Norway by an eminent group of researchers led by Prof Sigmundsson).

While it is good to show that two different abilities, one cognitive and one motor, are linked, it in no way demonstrates that by training one you improve the other.

How is children's motor development perceived?

In Western culture, motor development of children is seen as part of natural development.

Therefore, it is taken for granted and proceeds relatively free of any framework. But in countries where a child needs to learn quickly how to fend for himself, greater attention is paid (more or less consciously) to motor development and adults direct themselves towards pushing forward a rapid and effective motor development



of the child. Scientific research on motor development and practices, conducted in different countries, makes it possible to appreciate how great the differences are between cultures in terms of attention to motor development.

For example, Western mothers tend to talk a lot to their children, to show them objects and to stimulate them at a cognitive level, while leaving less room for aspects that are motor in nature.

By contrast, as already cited above, motor development is highly valued by adults in traditional African cultures because it provides, for the child, the ability to run, to escape from danger.

This attentiveness is expressed, for example, through giving toddlers little carts with long handles, which they push. By slowing the movement of the toddler, the cart helps him maintain his balance while walking.

Normally, a baby brought up like this will be walking by himself at the age of nine months.

In Japan, on the other hand, in certain traditional villages, newborn babies are put face down on a clean surface, protected and soft to the touch, so that they can learn quickly how to move about, wriggling first and then on all fours.

These babies soon learn how to sit and stand up and start walking early. A child's play adapts to the circumstances, comprised of time, place, materials and social relations. It is interesting to note that development charts in the West set aside more time for motor development than the average time taken for development within rural populations. Therefore, the importance that adults attach to motor development is strictly dependent on the social and cultural contexts in which we live. In our society, care and attention to motor development (and to maintaining an active lifestyle as adults) has come about recently in connection with extended life-spans and serious problems with health and the quality of life. This care almost always comes second to the primary requirement which a Western parent feels with regard to a child: safety of the parent and of the child. Time pressures mean that children are kept in controlled situations. From when he is very young, a baby will be put in a baby rocker or a playpen. Later on, he is sat at the table to draw or on the sofa to watch television.

This extends the amount of time being spent inactive, as well as leading to a reduction in energy consumption, an increase in the rate of child obesity and the greater likelihood of pathological consequences.

It is important to understand how a child's motor development is strongly influenced by the behaviour of adults, which in turn is connected not to biological needs, but to traditions and cultural views.





Do clothes matter during motor activities?

Clothes either allow a child to move, or make it difficult to do so. It depends on what the child is doing, and his age.

For example, a baby who is wriggling or crawling does not need shoes: he needs his feet kept free, in order to grip the mat and move.

So, for a baby in its first year of life, the ideal clothes consist of a vest and a nappy, with arms and legs kept naked, so as to be able to grip the mat, preferably made of leatherette, able to wriggle backwards at first and then forwards (of course, this requires both the room and the floor to be kept at a suitable temperature).

A baby who is moving quickly on all fours, putting weight on his knees, is instead more comfortable in a pair of soft trousers, preferably with padded knees.

Finally, a child who is walking and running around on different surfaces is fine with a pair of shoes and soft clothing.

To what extent is a child influenced by its environment?

There is no data to show any difference in development between children living in cities and those in the countryside, between those living in Africa and those living among the skyscrapers of New York.

However, studies on environmental influence are invaluable in showing just how important this is with regard to development. The nervous system is formed quite early.

Within the first six years of life, it has already reached an advanced stage of development.

The first years of life are therefore vital.

Some crucial aspects of development, such as speech, eyesight and hearing, occur at critical times in the life of a child. If, during these critical periods, the child does not experience stimulation of certain functions, then they may be lost.

This is why it is considered necessary now, in cases of severe deafness, to take action using implants or prosthetics during the very first years of life.

Without early intervention, hearing and speech functions would be severely impaired. Spatial organization is important. A recent study made by us in a nursery school for 150 children aged from 3 to 6 years, who were placed in a free play situation (ie. allowed to play how they wanted), showed that they spent their time initiating activities of either symbolic/manual type or of motor type (e. running, jumping) according to how the available objects were set up in the room.

Other studies demonstrate the importance of the floor in a room, as to whether a baby a few months old decides to wriggle or to crawl.

How can we structure the environment so that a child grows properly?

The main thing is to see things from a child's perspective, in order to understand what might be positive or negative for him.

You can see immediately that if a young baby never happens to be put face down on the ground, he will not experience the force of gravity in that position, will have little reason to lift up his neck (an action which helps develop the muscles of the torso), and will have few opportunities to try and move around by wriggling and crawling.

Although there is no data to show that crawling is an absolutely vital stage in a child's development, recent studies conducted by Professor Adolph of the University of New York suggest that the development of a child's various motor skills is essential in becoming capable of dealing with risky situations. As will be discussed more fully in another chapter, motor experience forms the basis of knowing your limits and dealing with danger.

Providing babies with motor experience is also important, because the acquired skills are lasting. For example, research conducted by Professors Hopkins and Sigmundsson shows that babies who have had experience of water-based motor activities, have acquired higher level motor skills than their more sedentary peers - skills which have stayed with them beyond the age of five years, regardless of their subsequent lifestyle.

In parallel with what happens with regard to the endocrine system and nutrition, there is also "programming" of the motor system. In other words, the first years of life seem to be essential not just for development, but also for the continuation of our motor skills.

How should the environment be structured, so that a child may have the greatest number of spatial and material options?

The ability to move around within an environment allows greater autonomy. Therefore, great attention should be given to structuring the environment in such a way that it facilitates and encourages motor skills. Important features of the environment for a young child are obviously hygiene, temperature and safety.

As far as the indoor environment is concerned, for babies that do not yet know how to walk, it is important to consider places for activity and for rest, which foster as broad a motor-sensory knowledge as possible. It would be a good idea to place a baby face down on a leatherette mat, on which he is able to wriggle. The leather-like surface is washable, comfortable and hygienic. When he starts to crawl, a softer, cloth mat could be added. The child no longer needs an environment which encourages wriggling, because now he wants to use another way to move around. At this point, it is timely and appropriate that the space around him allows him to be able to stand up, perhaps leaning on some kind of support, and being able to take his first steps.



Bit by bit, as a child begins to walk, the environment should be structured so as to enable him to practice this new and complicated way of moving. Not only does he have to coordinate his movements in order to go where he wants, but he must also now deal with the problems of balance and falling over. The surrounding space should then be enriched with elements just for him, which stimulate development through play, such as a playhouse, toy boxes and objects of different size, weight and colour.

As for outside space, a child should get to know the natural environment around him. To do this, it is good for children to be able to walk on different terrains, such as wood or stone flooring, tiles, grass, earth, sand, dry leaves, pebbles and rocks.

This varying, underfoot experience helps the development of surefootedness in walking and running. The same can be said for hills, hummocks and ramps that allow children to experiment and practice walking up and down hill.

Those that live in the countryside can take themselves off to the green spaces still available, while those that live in cities can count on playgrounds and places set aside for children to play freely.

Education is as much about motor experiences conducted in diverse environments, typical “non-urban”, like beaches, woods, snow and water.

Any concern that a child gets dirty should be held in check by knowledge of the great advantages that children derive from these exceptional motor exercises. His clothes will get a bit dirty, but he will learn to move about deftly in different environments, knowing that he can avoid danger and happy that he has also learnt how not to graze his knees!

Should an environment be tailored to the age of the child?

The development of a skill is dependent on experience, while age is merely indicative of a child's potential. As a consequence, one should take account of the skills possessed by a child rather than his age.

The role of the adult should be to tailor the environment so as to encourage a child to discover games by himself. In doing this, the adult must also take into account the fact that a child will not stay alone all day playing, but at a certain point will spontaneously ask for a grown-up's attention.

So the adult must not only set out the child's environment, but must also be part of it.

Moments when he relates to his mother or with anyone else close to him, are important for the development of a child's effectiveness. Such relationship issues are not covered in this book.

How much space and importance should be given over to a child's activities?

This is a much debated topic. Until recently, experts agreed that over-stimulation of children is harmful, but recent research data challenges this theory. In fact, it is known today that the pace of development of children of the same age, is quite different depending on their country of birth. It has been found that the environment does have a slight influence in speeding or slowing development. Parents should realize that everything around a child, including people, influences its development, helping or hindering it.

Through comparative analysis of motor development amongst populations of different cultures and traditions, the accepted idea today is that motor development is highly dependent on a child's exposure to opportunities for movement and, even more importantly, that there is no single model of motor development, without which a child will be harmed.

For example, the old wife's tale that a child who leaps up onto his legs runs the risk of becoming bow-legged, must give way to the evidence of how legs appear straight and strong in those African populations where children begin to walk for themselves at nine months old. The concern that a child will automatically get hurt because he is too small to handle a knife, should be dispelled by watching the videos of Professor Keller, showing 12 month old children in the Amazon jungle, walking with sharp machetes to clear the path in front of them!

Motor development, especially the acquisition of motor skills, is especially dependent on experience and should not be constrained by cultural preconceptions. The truth is that in our society, we forget that our grandparents and great grandparents lived in courtyards, together with brothers and cousins of diverse ages and different adults. They had far greater possibilities to move around than today, some of which would make their mothers and grandmothers tremble with fear today.

Nowadays, children spend much of their time indoors, either at home or in nursery schools. Under these conditions, children engage in games that are stationary, not active. This contributes to a reduction in space allowed for free play, so important for the development of a child and in building up virtual reality. Today's children of the digital age have an extraordinary ability to use computers, but often eat the flesh of animals that they have never seen!

Recent studies show a link between being able to handle an object, to follow it with one's eyes, to turn it over and over as much as a child wishes, and the development of three-dimensional vision.



This suggests that children should be able to hold objects and handle them for as long as they want. The intervention of an adult, either indirectly by not creating the right conditions, or directly by stepping in to stop the exercise (for example, for hygiene reasons), can interrupt the discovery process and delay experience.

A child must be respected in what he does, letting him take as much time as he wants, even if we think that what he is doing is pointless. Remember that for a child, his play is his research work, through which he builds his knowledge.

Active games and the risk of harm: what can be done about it?

Recent studies reveal that in a developing baby and young child, the ability to recognize danger is strongly correlated with the development of motor skills.

A baby who is adept at crawling will, when faced with a drop, stop and turn around, while a beginner will fall over it.

The same behaviour is repeated when the same baby learns to walk and is exposed to an identical situation: a beginner will fall over it, while an adept walker will avoid it.

Therefore, a young child's ability to avoid danger is more dependent on mastery of movement than on an abstract notion of danger. Research into this at the University of New York, was conducted by asking parents to keep watching over their children who had not yet developed motor skills, but to increase as much possible the level of possible, new motor experiences.

It should be noted that when children reach school age (six years old and up), cognitive skills become ever more important. Between the ages of six and eleven, observing accidents (directly or through photos) is already enough to be able to recognise dangerous conditions and avoid them. This ability improves with age.

What kind of relationship is established between a grown-up and a child, and what has that to do with development?

In Western societies, the relationship established with little ones is geared towards encouraging psychological independence. A baby will often be put in a lying position, able to look his mother in the eye, while she talks to him. Physical contact and connectivity is rather less developed and some mothers touch their children only very little. Instead, mothers will talk a lot to their children, giving or showing them objects. A child will be asked how he is and what he is thinking, encouraging the ability to think for himself and be psychologically independent.

In our culture, children develop the ability to stay on their own and they can often be seen in nursery schools playing on their own for long periods. They are highly stimulated at a cognitive level, less

so at an emotional level.

In traditional rural society, everyone joins together and contributes to the community through a patriarchal system, where the oldest is the most revered. Children do not get to choose: they have to respect their elders and adults. Independence here is understood as autonomous action, being able to do things yourself in different situations. Motor development is encouraged as a way for a child to become independent as soon as possible and be helpful to the community. In these environments, there is less talk and more action; children are massaged and their limbs made supple from a very young age. Often, children remain in the arms of their older siblings until they can walk, shaken around and held for the most part in a vertical position from birth. In order to strengthen their necks and backs, they are sat in buckets as babies.

Everything is aimed at instilling early independence. Furthermore, children are used to being with their siblings and other people from young, so they have great social skills.

How can one help a child's healthy development?

We have seen how motor development, even though confined by our biology and genetics, is variable and adaptable.

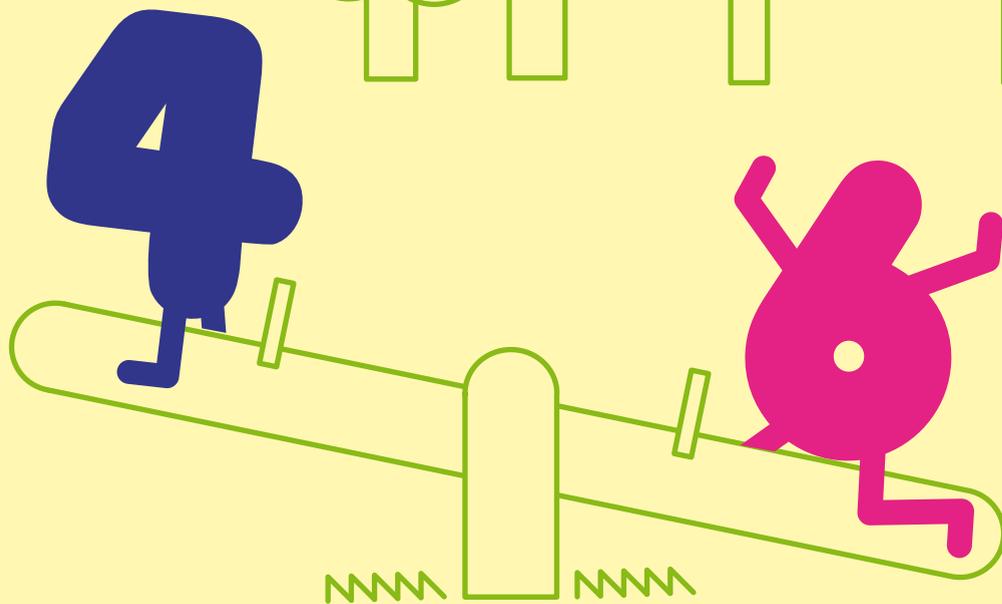
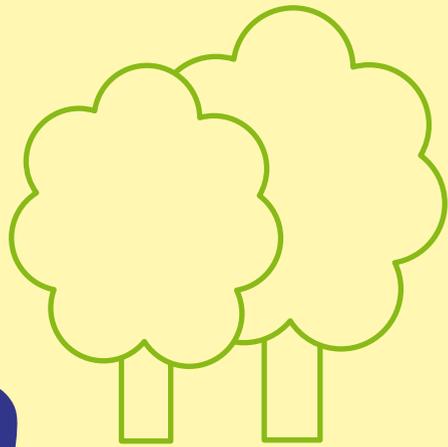
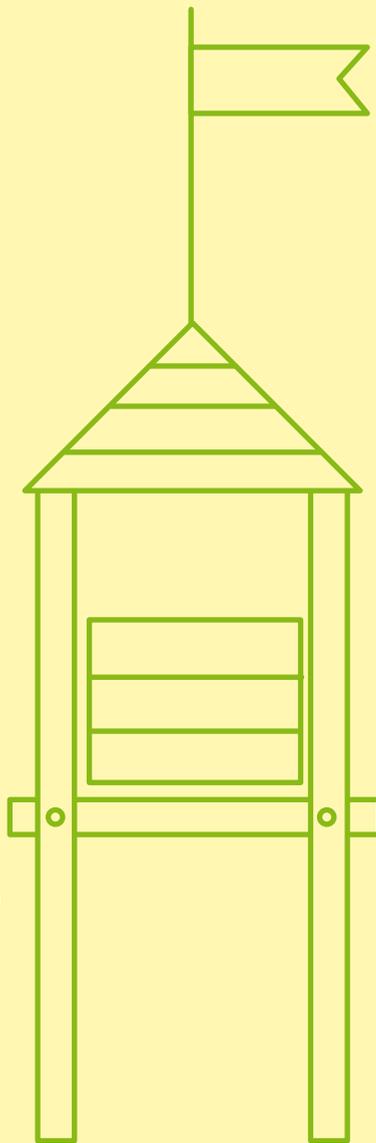
A parent who wants to help his or her child growth up in a healthy and positive way, should bear in mind what has been discussed in this chapter. Remember that the best help you can give, is to love your child by making him feel important and by expressing this through caring about the environment in which he lives.



3. PRIMO SPORT 0246:

playgrounds
for early years

Patrizia Tortella and Giorgio Buzzavo



3. PRIMO SPORT 0246



Primo Sport 0246

- Multiactivity area
- Balance area
- Manuality area
- Mobility area
- Symbolic game area



Why do we need playgrounds for the under 6's?

This is the answer to a dream long cherished by Giorgio Buzzavo, which at last has come true. Finally, there is a special place where young children can be taken: one which is totally safe, peaceful and unique.

It is the first ever playground to concern itself with developing children's motor skills.

For many years, the Ghirada centre in Treviso has worked on the right way to design activities suitable for very young children, and this is the result.

What is the point of activities taking place in the open air?

The under 6's spend most of their time at nursery, in crèches, at pre-school or at home. They occasionally play in public gardens, visit leisure centres or go to swimming pools.

They conduct very few activities outside, mainly because of the lack of space, particularly green, open spaces.

The place where you can still go and play, without the danger of being knocked down by a car, is a playground.

Various studies have proven the advantages of spending time in green, open spaces; even just to see them through a window. W Sullivan's research, undertaken in 2001, revealed that for children with attention deficit hyperactivity disorder (ADHD), who spent a certain amount of time in playgrounds, their condition diminished and their attention improved.

Also, Kaplan in 2008 showed that playgrounds, particularly those in noisy and polluted urban centres, relaxed children and improved their concentration levels. C Boldemann, in 2004, studied the performance of 200 children aged between four and six in a playground in Sweden and noticed that children who played most, chose shady parks, full of shrubs, with a varied landscape containing plenty of grass, sand and foliage. Socially, playgrounds have an important role: they are meeting places for both children and their guardians.

A mother's presence in the playground provides a sense of security and enables the child, mainly under 3's, to play peacefully.

What do playgrounds offer children, that other places do not?

A playground is a place where children can run around on grass, play amongst foliage, in the sand or with water, with the wind blowing and the sun shining in their faces. It is a protected place that offers children independence and their parents tranquility. Children can play a variety of games that are mostly of their own choosing, compared for example to being in the courtyard of an apartment block, where the social dimension of the community



will impact (for better or worse) on the actions and behaviour of the children.

What can you do in a playground?

Normally, playgrounds are places where different types of games and equipment are dispersed around the place.

Children can play wherever and however they choose, for as long as they like.

Generally, these are places where children up to the ages of 10- 12 may go. Given their young ages, the children are accompanied and followed around.

What is the PRIMOSPORT 0246 like?

It is a unique place. In particular, it is restricted to boys and girls under 6 years old, who can explore and run around freely, without fear that older children will knock them over or sweep them off their feet.

This playground, restricted to very small children, is located next to the town of Ghirada in Treviso, in a green area, set in a huge area of activity, tranquility, entertainment and sport, for all ages.

What is so special about this playground for the under 6's, is the way that the place is laid out, giving boys and girls the opportunity to experience everything needed for healthy motor-sensory development.

How is PRIMOSPORT 0246 set out?

It is 2500m² in size, extending into the open countryside, with sports facilities at hand for the young, adults and senior citizens. There are three entrances, which correspond to the three principal areas of activity as illustrated on a bulletin board outside each entrance.

The different sections are:

Manual:

permits motor development linked to the use of fingers, hands, arms and touch.



Mobility:

encourages standing, crawling, running and jumping.



Balance:

this is an area where children can experiment with the way they control their bodies. They can walk on unstable surfaces and try out different pathways.



There is even a specific location for **symbolical play**, a place where boys and girls may play in a playhouse, see themselves in a mirror and invent imaginary worlds. Imagination is a learning tool that children use all the time, but this is a place where they can also lie down, sleep or rest.



There is a **running trail**, where children can demonstrate their motor skills, rounding off their performances with the chime of a bell.



There is also an area for **breastfeeding**, a log cabin where mums and their babies may have some privacy.



Each area is subdivided, with noticeboards explaining how to use them, into one for toddlers (under 3's) and the other for children aged 3-6. All the games and equipment are labeled with various difficulty levels.



The whole playground is furnished with tables and benches where families may congregate, for having picnics, doing homework or just drawing. Finally, there is a wooden amphitheatre, an arena that can be used to accommodate groups of schoolchildren and put on shows.

How does this spatial planning create motor-development opportunities?

The **concept** behind this playground project is that a child should be in a location where the games to hand also help develop motor skills. In all of the afore-mentioned areas, there is equipment that does just that; these are of various difficulty levels, which have been studied in depth and not just chosen casually.

There are many **advantages** in applying these methods. The first is that where there are games present with different levels of difficulty, a child can always find a game to suit their own ability. The playground is accessible to all children, not only to those that are more able. The playground's motto is, "a park for each and everyone".

A **second advantage** is that when a child becomes bored of a game, he can move on to another which will continue to develop the same motor skills. It is possible to focus in depth on a specific motor skill.

A **third advantage** is that while playing, a child can observe other more able children playing harder games, which will stimulate him towards more challenging tasks of his own free will.

As the great experimental child psychologist Vygotskij said, this kind of stimulus will make a child more resourceful, more aware of their limitations and give them an understanding of how to improve their skills.

All this is spontaneous, natural and without the frustration of failure.

Is playground activity important for the development of social skills?

The playground, a meeting place for children of all ages, sex, social background and culture, is conducive to an exchange of learning and mutual imitation.

In a playground, children run around, go up and down the same slide over and over again, or just stay in the same place for the whole afternoon. This apparent moment of calm actually requires great concentration by a child. Even going up a slide requires concentration and awareness, as at a certain point other children will also be climbing at the same time. They will need to work out who should go first. Informal rules of how to behave will need to



be recognised, so that the children can play together and enjoy themselves. Respect, waiting your turn and showing consideration to others are important aspects of the real world, that need to be deployed in a busy children's playground.

So, are we having an impact on our children?

Adults and the environment influence and affect children all the time. Often, we are unaware of this, of the positive or restrictive aspects of what we are doing. What is really important, is to be aware of this "privilege" and know how to use it best in opening up the world for children.

Often, the risk we run is to be satisfied simply when a child is happy and playing, but this is not enough. Children should not have to do something just because an adult asks them; when they play, they should be able to choose, to understand what they are doing and develop the desire to do things. Moreover, children may not like everything that we suggest.

An adult should always look more widely at the immediate situation, and ask what kind of long term impact it can make on a child. A child that plays forever in a room, 2 metres by 2 metres, may be having fun, but the small space restricts their experience. If they cannot climb or to go down slides, this will deprive them of such an experience, despite our good intentions and all the bright colours and pictures hanging up on the walls of their room.

An important characteristic of the Primo Sport 0246 playground is that it adapts to EACH AND EVERY CHILD, with respect to their RIGHT TO PLAY and their right to a healthy DEVELOPMENT, for the good of their future WELL-BEING. It is a playground that takes into account a child's complexities, its physical build, its stages of development and reactions to environmental stimuli.

What is meant by a 'playground for everyone'?

When we say "a playground for each and everyone", we mean one where children, irrespective of their age, will feel at ease and may experience the joy of play. The games are of diverse difficulty levels, created for the under 6s. Each child is free to choose where they want to play and with which games.

Is it suitable for children who have certain difficulties?

The idea of disability is a hard one to apply to growing children. When all is said and done, a 2-year-old toddler is "handicapped" compared to a friend who is 6 years old.

The playground area, because it is constructed for children aged 0-6, is intrinsically suitable for all children, even if they have a disability. For example, all the apparatus is accessible via hard

rubber floor surfaces, allowing wheelchairs and bicycles to pass over. Some apparatus is covered in protective material, such as the see-saw.

In addition to the recommendations from the American Pediatrics Association and Unicef, Professor Fumagalli's team from the University of Verona drew up plans of the playground to take into account the international classification of functioning, disability and health (ICF, 2001) formulated by the World Health Organisation. This classification identifies a strict correlation between health and environment, to the point that disability may be defined as a health condition derived from living in an unfavorable environment.

This classification is very important, because it postulates an approach in which health is linked to personal, biological factors, as well as the environment in which you live.

The main components of the ICF are activities and participation.

The Primo Sport playground is a place that favours both activity, thanks to the variety of games present, and also participation, thanks to the graduated difficulty levels and also meeting other children and parents. The rubber flooring beneath the games and equipment breaks any fall, encouraging those who are less able to try the various games, without fear.

Who goes to the playground PRIMOSPORT 0246? How is it used?

Anyone who wants to can visit the playground. It is free, with free access to all children under six years old and their parents. It is always open and supervised. It is kept clean and under surveillance via CCTV cameras. Children can come along to the playground with their parents, grandparents, and nannies or even in a school group. Its size and location make children feel safe.

Observations made in the playground show that children move around the place on their own; whoever is looking after them, is able to watch from the comfort of a bench.

In good weather, families use this peaceful, green space to have a picnic on the tables in the playground.

When it is too sunny, there is shade to be found under the trees or under the gazebo.

It is the perfect moment for pre-school children to get together and have fun. They can spend their mornings here interacting and trying out everything.

The various pathways, which criss-cross the playground, are also the perfect trail for little cyclists.

Can schools use it?

Nursery schools can benefit a great deal from what it offers children, of being able to enjoy themselves by playing and



practicing motor activities outdoors. The playground presents an alternative to the confines of being indoors, where motor activities are normally carried out.

We are planning a motor activity programme for schools that will help the development of motor skills.

It will either substitute or complement motor activity gym lessons, with the added benefit of being outdoors.

What if a child needs the lavatory or is hungry?

The Ghirada centre has provided lavatories at the entrances of the playground, which both adults and little ones can use. If mothers need to breastfeed, they can go inside the log cabin, and for the grown-ups there is also a lovely cafe.

So what should parents be doing at the playground?

We have established how important the environment is to a child's development. This includes adults, who are mediators between the child and the environment. An adult's behaviour influences the small child's activity even without them knowing it. The effect can be helpful or suppressive.

An adult's influence on the child is not only exerted through verbal means but also (and more likely) through behaviour. For children, adults are role models, observed in minute detail.

So if a parent thinks that going to the playground is a waste of time, the child will read these signals and undergo the experience with little enthusiasm.

Therefore, it is essential that the adult motivates themselves to spend time playing with their own children in the playground. British research has revealed that an ever greater number of parents do not know how to play with their own children and in fact they are bored by it.

Work pressure and lack of time dents their enthusiasm, imagination and desire to play.

What is needed is for adults to rediscover how to play and be children again, to see the world through the eyes of a little one! All this helps to promote the well-being and health of the adult.

Watching over your own child playing is also a moment of growth for a parent. It is the child that is the real teacher, with no limits to the imagination, if he is given the space to be free.

The playground, being protected, supervised and safe, allows this. Every child can find the right place to do what he most wants.

You will see children aged 2-3 years old playing for a whole hour in the sandpit, removing their shoes and socks.

The commitment with which they play provides a valuable lesson to parents. When young ones of different ages play nearby, it is

an extraordinary sight: the older ones will generally run and jump and do the most bizarre things, such as using the hillock in the playground to run up and roll down.

The smaller children will copy the big ones and it is not uncommon to see the very little ones trying to roll down the hill.

Dissatisfied with their performances, they will go back up and roll down again, even for an hour at a time. You also see children adding little personal variations to the way they use a game. Every piece of equipment stimulates a child's imagination.

The parents' behaviour on these occasions is fundamental.

As shown through the research of K. Adolph study, children's ability to understand risk and so avoid it depends on the acquisition of motor skills.

At this stage in their life, children are developing bit by bit and consolidating their skills.

Therefore, It is essential that parents allow their children to have diverse experiences and not restrict their imagination or activities, since the child, as we will see later on, must have these experiences in order to learn.

Knowing that the games are all checked over and rubber-cushioned to break falls, parents must avoid keeping too close an eye on their children, remembering that their sense of security – or insecurity – can be transmitted to their child.

Visual contact is very important. Younger children, mainly 2-3 year olds, love to play by themselves at a distance, but they will still look around for their parents, who are normally sitting on a bench, watching over them.

The children will come back often, on some pretext, and when they really want direct contact they will make specific requests, such as if they can have permission to go on the swings.

The playground becomes a place for physical contact with parents and grandparents, a dimension that western culture does not take much into consideration.

What should the person, who brings a child to the playground, do?

- Relax and enjoy a moment of calm, keeping an eye on your child but leaving them free to do what they like.
- Let your child have all the time they want to play and to try out different games over and over again.
- Do stay alert, however, and ready to jump in.

Must children be encouraged to play together?

All children are different. Some enjoy spending time alone, others prefer being with other children. Sometimes there will be funny moments, for example on the slide, when one child meets another who speaks a different language.



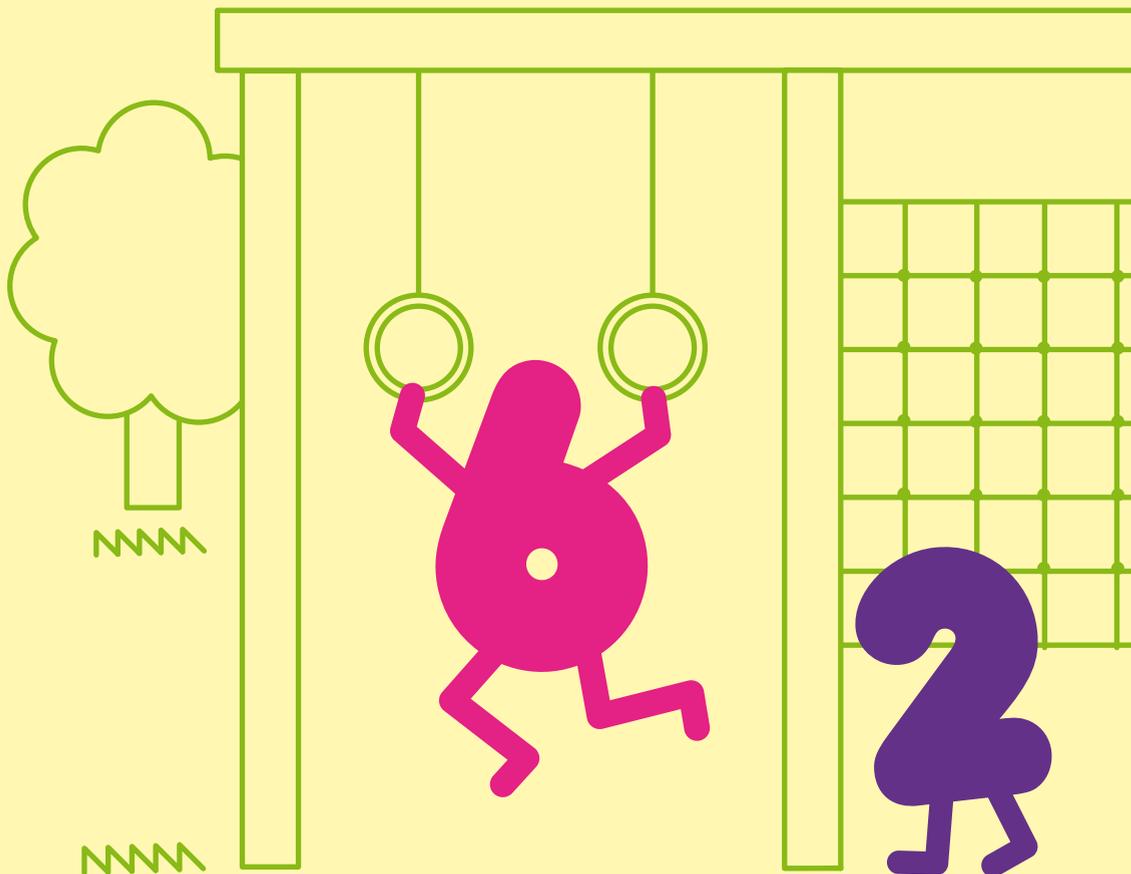
It is incredible how they do not care for any language barrier and continue to speak to their new friend, even raising their voice if they get no response, or reminding the other what they have just said or asked. In the end, by some strange means, the two always manage to understand each other whereas us adults, who are watching, are left open-mouthed by the simplicity of it. Children do not need to be shown how to play or how to choose their friends.



4. PLAY, MOVEMENT AND NUTRITION:

for a better
tomorrow

Claudio Maffeis



4. PLAY, MOVEMENT AND NUTRITION

There are three main characteristics of a child's evolving years: physical growth, neuro-psychological and motor development, and the completion of their immune system. Nutrition and motor activity are closely connected: having them working together smoothly is a prime objective in the care of a child, in order to achieve the full potential of an individual with respect to their physical, neuro-psychological and motor development, and the immune system.

How much energy does a child need?

The body needs constant energy and nutrients. From 2 to 6 years of age, a child puts on about 2 kilogrammes (kg) per year (see Table 1), or around 5 to 6 grams (g) a day, for a daily burn rate of less than 30 kcal.

Table 1
Average increase in weight,
expressed in kg/per year
and grams/ per day,
for boys and girls.

Age (years old)	Male growth (kg/year)	Male growth (g/day)	Female growth (kg/year)	Female growth (g/day)
1-1,9	2,04	6,6	2,4	6,6
2-2,9	2	5,5	2,2	6
3-3,9	2,01	5,8	1,9	5,2
4-4,9	2	5,5	1,7	4,7
5-5,9	2	5,5	1,8	4,9

Apart from the first two years and during adolescence, the essential energy requirements for a child's growth are <5% of their total daily requirement.

The other 95% is needed for maintaining vital functions (basal metabolism, around 60% of the total), muscle contractions (about 25-30%) and to support digestion, absorption and storage of food (<10%).

As regards weight, height and sex, the energy requirements linked to muscular activity are the greatest variable amongst children.

Table 2 shows the average calorie requirements for boys and girls aged 2-6, based on moderate levels of physical activity.

Age (years old)	Weight (kg)	Energy requirements (kcal/day)	Energy requirements (kcal/Kg per day)
Boys			
1-1,9	11,5	950	82
2-2,9	13,5	1125	84
3-3,9	15,7	1250	80
4-4,9	17,7	1350	77
5-5,9	19,7	1475	74
Girls			
1-1,9	10,8	850	80
2-2,9	13	1050	81
3-3,9	15,1	1150	77
4-4,9	16,8	1250	74
5-5,9	18,6	1325	72

Table 2
Average energy requirements of boys and girls, aged from 13 months to 6 years old, undertaking moderate levels of physical activity.

Do children eat too much or too little?

In Italy today children are on average overfed. In fact, in nursery schools, a child who is under four tends to be already overweight with respect to its sex, age and height. One child in ten is frankly obese. There are fewer cases of children who are underweight (<5% of the total.)

Often, parents and grandparents are more worried about their child not eating enough rather than their little one being "robust". On the contrary, a chubby child is considered healthier than a thin one.

These errors of judgment can lead to pathological situations that are important in successive years. A simple way of avoiding mistakes is to consult a paediatrician and have your child's growth in weight and height measured at least every 6 months, comparing it to benchmarks. This check up is extremely simple and useful.

If a child appears to diverge from the typical range, he can be put back on track through nutrition guidance and behaviour advice. If, instead, there is a greater divergence, then this will be time-consuming and challenging for the child and family, and the outcome will be more uncertain. Therefore, it is best not to wait but to prevent.

Where a child is underweight, it is important that parents go and see a paediatrician to check it out. If the weight loss is caused by illness, this can be treated. However, where it is connected to constitutional factors, it is never right to stimulate the appetite with

drugs or induce it with acrobatic exercises or force the child to eat. On the contrary, these practices have negative effects, particularly over the long term.

As well as quantity, quality plays an important role in the make up of a diet. Common elements of an Italian child's diet are an abundance of fat and sugar and a scarcity of fibre. They eat very little nutrient-rich food (minerals, vitamins and fibre), such as fruits, vegetables and wholefoods, and tend to eat too many foods rich in calories but poor in nutrients, such as fast foods, sugary drinks and deserts.

Therefore, it is important to vary the food often, to avoid giving in to the child's favourites, and instead to lead him with patience and by example, into exploring new food and flavours, widening as far as possible his experience. Dietary variation is the surest way to avoid nutritional deficiencies. Among the most common deficiencies are in vitamin D, calcium, iron, zinc and the fatty acids $\omega 3$.

How many meals a day should a child eat?

A child should eat five meals a day (breakfast, lunch, dinner and two snacks: one mid-morning and another in the afternoon). This guarantees a supply of precious nutrients, mainly carbohydrates and proteins, at regular intervals of about three hours, which satisfies metabolic needs with maximum efficiency.

Spacing out meals enables glycogen supplies in the liver and muscles to rebuild, thus avoiding an increase in appetite caused by any depletion of reserves through long intervals between meals.

Does physical activity involve an increased consumption of calories

One myth to discredit is the amount of energy required for motor activity. Children are generally very sedentary: they spend a large part of their day at school participating in lessons, doing homework, going everywhere by car or by public transport and sitting in front of a video (for 2 hours a day on average). Even for the under 6's, the level of physical activity is generally modest.

Alongside the reduced length of time dedicated to recreational and/or sports activity, one needs to consider that the amount of energy used during these practices is generally modest. For instance, to walk at a moderate pace (3-4 km per hour), a 4-5 year old child will use up about 2 kilocalories per minute and to run will use up less than 3 kilocalories per minute.

However, spending an hour not sitting around does definitely involve an increase in energy use, but not enough to justify extra nutrition above the norm. For example, an ice cream cone provides as many calories as used in an hour of walking. If after activity, one

has a large snack, the risk is to over-compensate for the energy used up, leading to an increase in fatty tissue.

Will a child who is physically active eat better?

Carrying out physical activity regularly is associated with a naturally better apportionment of nutrients in the diet. As a matter of fact, the body adapts super-efficiently to conditions. However, if muscular activity is regular, the utilisation of carbohydrates and fats which supply the calories vital to muscular contraction, remains constant and in working order. This includes a disposition towards consuming carbohydrates according to the required rebuilding of glucose supplies in the muscles and the liver.

The recommended daily nutritional intake for children is 55% or more in carbohydrates, less than 30% in fat, and the rest in protein. Children who regularly exercise tend to stick to these recommendations without a problem.

What about snacks?

Snacks are important meals for children. They are needed to replenish the previous consumption of nutrients and to provide an essential supply for activities to follow.

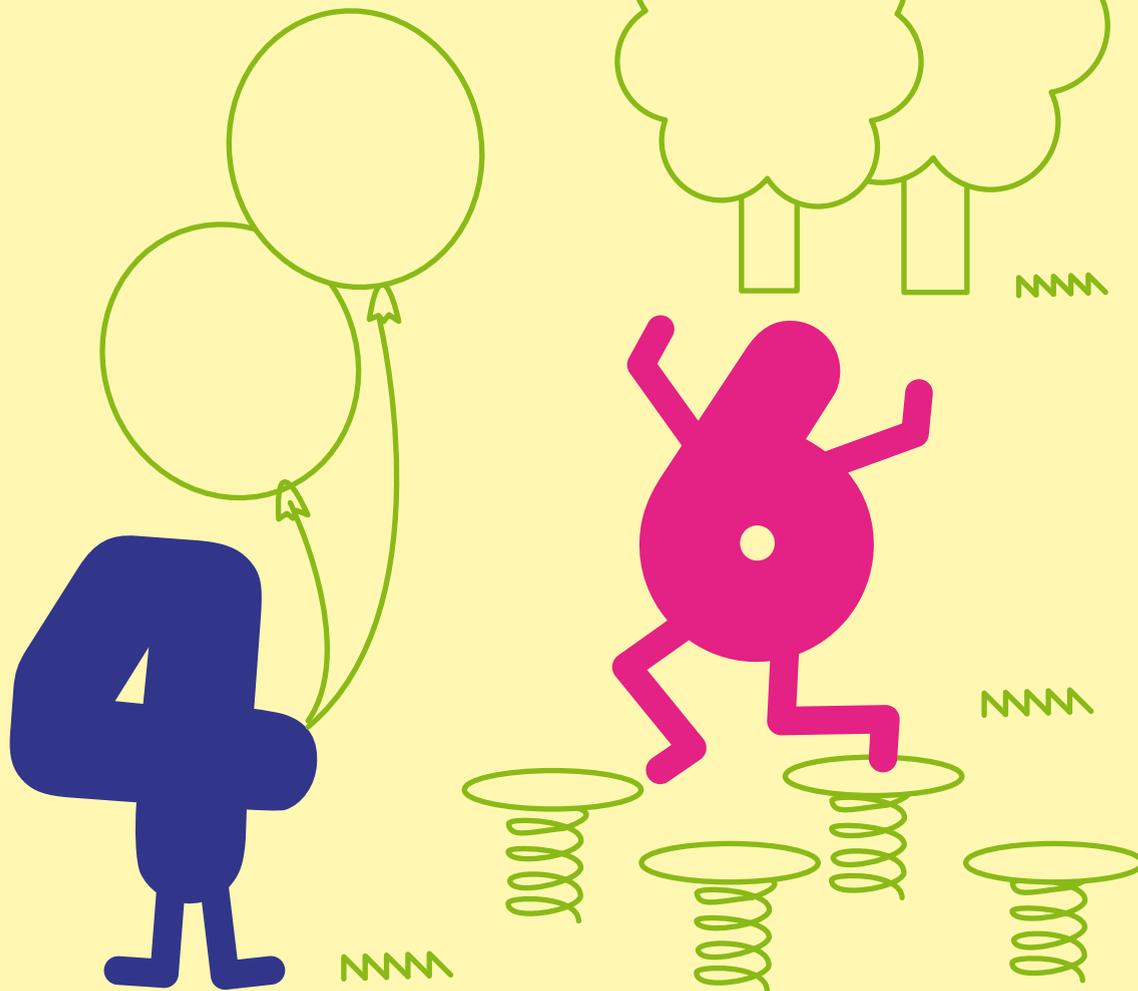
Snacks need to be varied each day. Ideally, they should consist of fruit, which is rich in minerals, vitamins, water, carbohydrates and fibre. Milk and yoghurt are good too. Pizza, focaccia, cakes, biscuits and snack foods are not forbidden but, to maintain a healthy balance, must be eaten in moderation.



5. MOTOR ACTIVITY

practice

Patrizia Tortella



5. MOTOR ACTIVITY PRACTICE

What happens if a child has not developed motor skills typical for its age?

Recent studies in Australia, into the motor skills of primary school children, have found that an interest in practicing motor activities is directly proportional to the skills possessed.

In other words, a lack of motor skills seems to affect the desire to be physically active.

When he has to engage with his peers, a child with little mobility will avoid confrontation on the physical plane, resorting instead to sedentary activities like reading, drawing and games played on tables.

This lack of interest in movement-based activities, in proportion to lack of ability, can also be seen in nursery schools.

Systematic observation of youngsters at the PrimoSport 0246 playground shows that even at this young age, when faced with challenges that can be easily overcome, children with low levels of mobility will tend to avoid them and engage in other activities in which the motor requirements are less difficult.

One observation, made in PrimoSport 0246 at Ghirada in Treviso, typifies this.

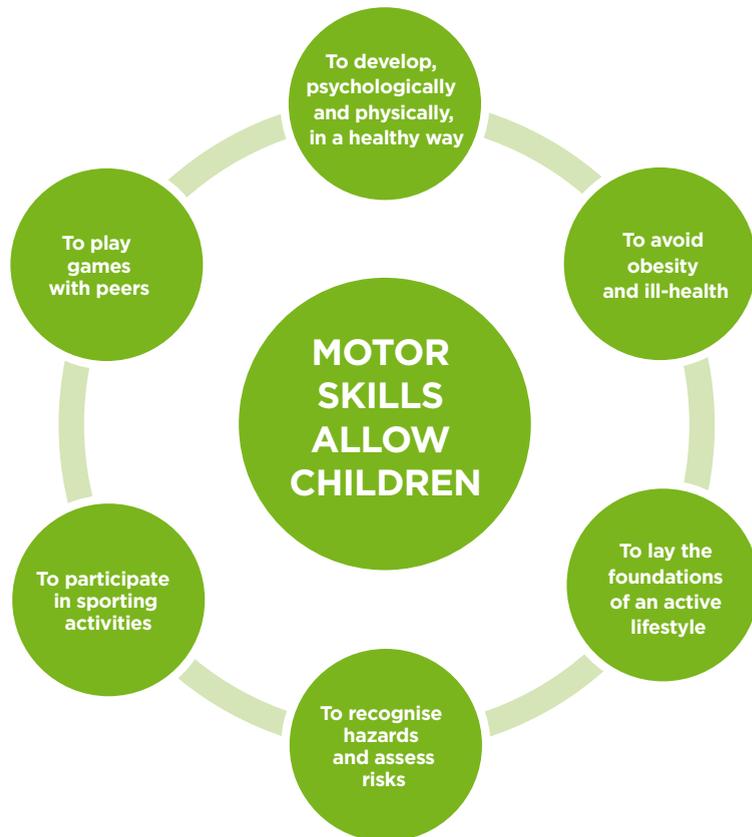
While children with adequate motor skills used a range of strategies to cope with the balancing beam (such as dragging themselves along the beam; putting one foot up and the other on the ground; almost crawling on all fours, with the help of their hands), the children who were more “clumsy” left the beam after a few attempts and moved off to play on the swings.

Why should children acquire motor skills?

Society today is predominantly urban, so children must be educated in movement and activity in order to:

- Promote sound psycho-physical development
- Lay the foundations for an active lifestyle
- Prevent obesity and consequent illness
- Recognise hazards and be able to assess risks
- Participate happily in games with peers
- Access sports activities

Figure 1
Benefits for children who
have motor skills



Why should children develop good motor skills from an early age?

Statistics show that activity preferences and the adoption of an active lifestyle are strongly influenced by motor experiences and skills acquired during the first six years of life. So, the pre-school period is the most critical period for the development of motor skills; after the age of six, there is a phase of consolidation and improvement of the skills already acquired.

Studies on obesity show that early childhood is also crucial for the development of eating habits and that there is a relationship between this and levels of physical activity.

In fact, children who run and jump all the time tend to eat more healthily and under control, whereas children who are sedentary

tend to snack and eat food rich in fat and calories. Other studies have shown that children who are overweight or obese move around much less, and possess poor basic motor skills. Again, researchers recommend an increase in the development of motor skills for pre-school children. This way, a child will be predisposed towards a physically active lifestyle rather than becoming a future victim of obesity.

At what age should a child start gaining good mobility?

Motor activity is important at any age!

A study conducted in the UK has linked motor skills acquired in the first year of life with those present in the same individual aged 14. The study's results showed that children who started walking early were, by the age of 14, in possession of better motor skills, tended to move around much more and participate in a greater number of sporting and scholastic activities, and did better in sport. Importantly, these results were achieved regardless of the child's weight at age 14. So there is a relationship between the motor skills acquired at a very young age and a person's future level of physical activity.

In line with these findings are studies made by Sigmundsson and Hopkins (referred to elsewhere in this book) of children a few months old who had taken part in physical activities conducted in water. The same children at age five, regardless of what activities they had engaged in later, showed greater expertise in certain movements compared to peers of their same age who had not had the same, early exposure to motor experiences in water.

Therefore, being encouraged to move and acquire motor skills from a very early age, allows you to be active and able not only when young, but also brings advantages as an adult.

What can we do to foster healthy motor development in a child?

Motor development is the result of two factors: firstly, genes; secondly, the environment.

In the case of the first, intervention happens only when there are genetic disorders. In the case of the second, there are more ways to step in and it is amazing how little we do to help and how much instead we retard healthy motor development at all ages, including infants.

The environment is both physical and social, and either supports or represses individual skills from being exercised, improved and enhanced. Skills, even basic ones, need to be tested in order to become established and improved. As reported elsewhere

in this book, even basic functions such as speech need to be exercised to grow.

What can be done to create an effective environment?

The focus should be on a child's development and the possibilities of experience. An environment should be structured to allow a great variety of different experiences.

Consider an example of how the environment can hinder or help the development of motor skills.

A floor that is cold, rough or very soft makes it difficult for a baby to wriggle or crawl, because the cold is unpleasant on the belly, the roughness hurts the skin and the softness gives way, making it difficult to move.

On the other hand, a warm floor, possibly wooden and covered with leatherette mats with rigid foam fillings, will help any effort to crawl and also cushion falls.

Adults must be aware of how the socio-relational and physical environment impacts a baby from the first days of its life. For example, gates, baby pens and baby rockers are very useful to a parent in controlling their baby, but they impede a baby from moving his arms and legs, and from exploring the environment through early movements and understanding the effectiveness of such movements.

In the early stages of motor skill development, an environment which is adapted to a child can stimulate the repetition of an experience, if it was fulfilling, or otherwise its abandonment. Learning takes place through what are, at first, random movements, which a baby will try to repeat if the movements have proved effective.

The same applies later in childhood. If we have a garden, we will try to create an area where our children can run, jump, climb, throw a ball and play with friends.

If we live in an apartment and space is limited, apart from making best use of the domestic space, we will take care in choosing a park where to take our child.

It is equally important to be aware that adults always affect children. Our presence, as parents or teachers, is never neutral. An anxious mother, who fears that her child may fall over as he runs, inhibits a child from exploring his own limits, something that the child is doing all the time.

Even a teacher who, to prevent children from falling over and hurting themselves, keeps them all in the classroom playing with clay or drawing, is not a help when it comes to the motor development of his pupils.

In order to encourage motor development, put yourself in the

shoes of a child and think: how would I like the space around me to be organised, so that I can play freely? What should adults do **to play with me** and not make me play what they want?

What are motor skills?

The European Parliament's guidance defines a skill as the demonstrable ability to use knowledge and abilities which are personal, social and methodological, within different social situations and for personal development.

Skills are described in terms of responsibility and independence.

- Initially, a child is able to do basic things, such as starting to crawl;
- He then acquires the capability to become faster at it and gains in strength;
- Eventually he acquires a competence or skill in crawling, whereby he can perform the manoeuvre in different ways, such as crawling up different types of terrain, uphill, downhill, and surmounting obstacles.

When a child has acquired skills, he is able to act independently, relative to his age, and resolve ever more complex situations.

The main motor abilities, that through experience become skills, can be grouped into three key sets:

- **Manual dexterity and touch.** Manual dexterity is the ability to grab, throw, pull, push, grip, hold on, and climb. Touch is the ability to recognize objects by tactile means. These are motor skills that require mostly the use of the upper limbs: the arms and hands.
- **Mobility.** This is the ability to move around, crawl, walk, run and jump. The upper and lower limbs are used.
- **Balance.** This is the ability to keep the body in a certain position or to regain it after a change, for example following a push.

Balance includes the ability to respond to and counteract the force of gravity, something that a baby begins to develop from the moment of birth; it also includes the ability to walk along a narrow pathway and to carry an object on the head. This ability requires development of the vestibular system and the involvement of both the trunk and limbs.

How are motor skills developed?

The tables shown below elaborate on the different motor skills within the three key sets, and how and when they are acquired. However, these tables are purely indicative, because motor development is highly variable from child to child and very much dependent on the experience of the child and cultural

differences.

So do not worry if your child moves from one skill to another by jumping an intermediate stage.

Consider that many children living in Third World countries learn to walk without ever having crawled!

Consider, too, that much depends on the possibilities that you offer your child.

For example, a child always kept in a playpen will find it difficult to learn to crawl, because for him it is better to learn to stand up and walk, being kept in such a confined space; a child in a city will be less able to climb a tree or to run confidently along a steep country lane.

What does one need to know in order to help the right motor development in children?

There is some basic knowledge in knowledge and advice to bear in mind.

Knowledge refers to the fact that any motor skill, in order to grow and become a skill applicable any situation, needs to be tried out and “trained”.

Figure 2 shows what “training” implies.

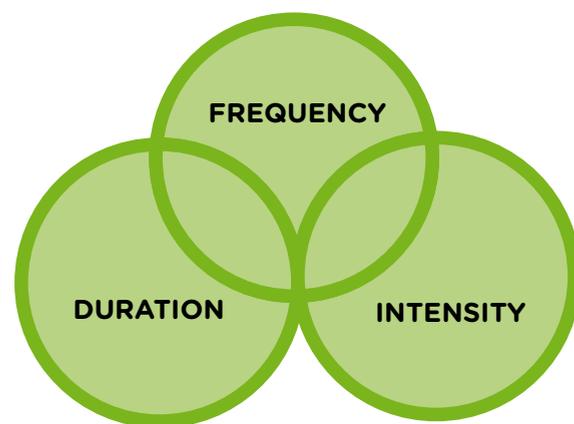
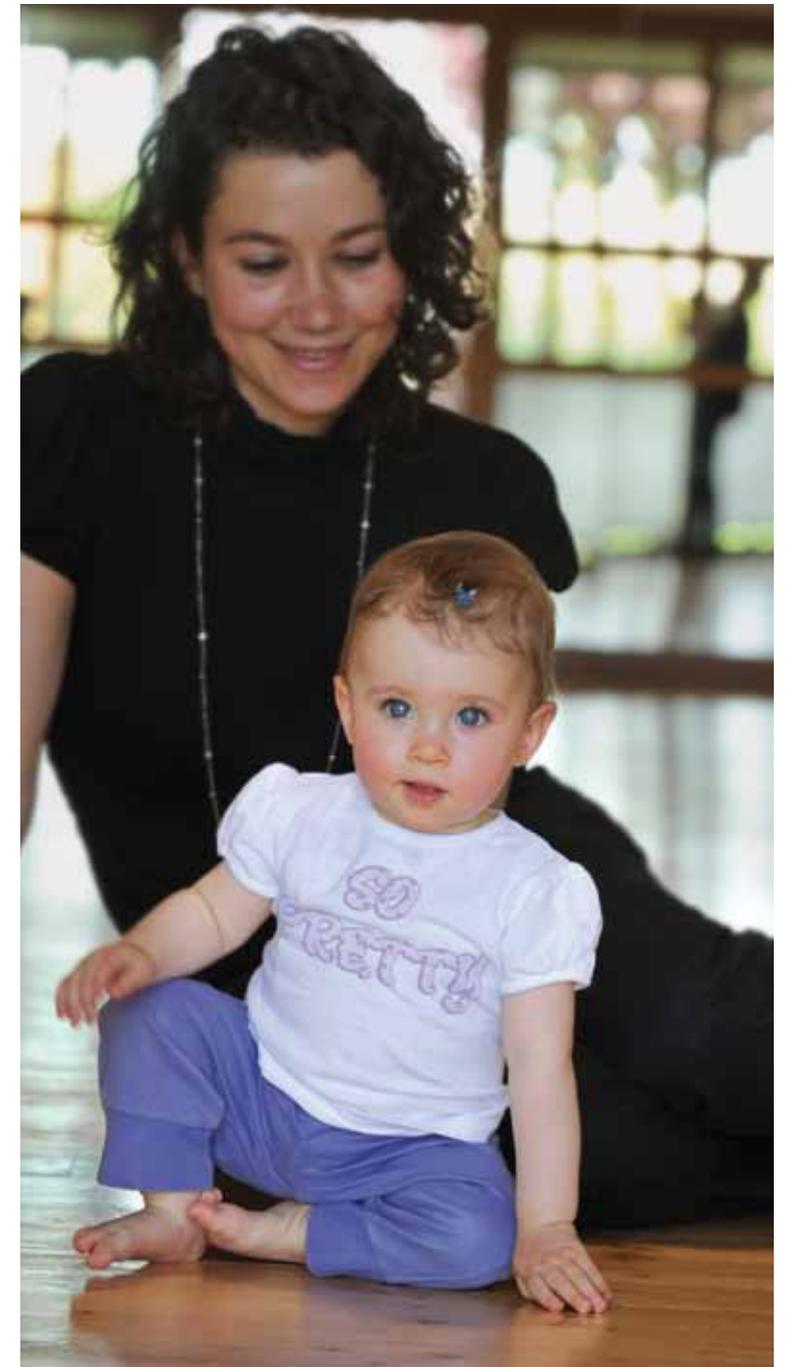


Figure 2
Physical activity and its
three variables, which form
the basis of training

So, in order to run well, it is not good enough to go just once a month to the park; there should be daily and multiple opportunities for a child to run around whilst playing (increasing



the frequency variable), and the child should run for longer and longer (duration) with increasingly short rest intervals (intensity). Diversity and richness of experience dictate the pace of development of a child.

Any delay in the acquisition of a skill, due to a lack of experience, can often be made up for later.

However, it is important to know that in the meantime, a situation may have arisen which may be difficult to change later.

For example, a lack of any physical education leads to a sedentary lifestyle, which is associated with low self-sufficiency, low self-esteem, lack of development of social relationships with peers, a preference for playing quiet games, and a disposition towards gaining weight.

If a child has not developed the muscles of his arms and trunk properly, then he may encounter problems with posture at primary school, where he will have to spend hours sitting at a desk continually using his arms, hands and fingers to write.

Remember that primary school is fast-paced and a child, who in his first year encounters difficulties, even if they are motor-based rather than intellectual, often struggles to recover.

It is important that parents and others realize that the acquisition of motor skills early in life is an educational process ("training") that on the one hand requires the participation of the child, and on the other hand, the adult to create the right conditions (environmental and psychological) for playing to be able to be able to expand and meet the needs of the growing child.

The following pages give some guidance on what to do and how to structure the environment (including the domestic environment) in order to facilitate the growth and development of motor skills.

Many of these descriptions relate to the development of movement during the first three years of life.

In following three years, there comes consolidation and refinement of the various motor skills through a child's experience.

These descriptions include some pointers on how the PrimoSport 0246 playground might be helpful in the development of motor skills.

Although these suggestions are of direct benefit only to those parents who can frequent the playground, they are useful indications of how to make the most of public and private spaces.



MOBILITY

Age	Mobility
1 MONTH	Limb movements without displacement
2½ MONTHS	Slithering in a prone position, culminating in a cross-action
7 MONTHS	Crawling, culminating in a cross-action
12 MONTHS	Walking with arms used to help balance, held above or at shoulder height
18 MONTHS	Walking with arms free from being used to help balance
36 MONTHS	Walking and running with a cross-action
72 MONTHS	Using sophisticated leg movements controlled by the dominant hemisphere

Figure 3



Figure 3 (MOBILITY) shows the development of different forms of mobility during the growth period from 0 to 6 years. As mentioned above, sequences and times are indicative. The development of mobility (and the ability to move the body around) passes through phases that are almost unique to the first months of life (slithering, crawling) while some others, usually acquired within the first three years of life, are subsequently refined and enhanced. Firstly, we will deal with mobility and movements that characterize the first few months of life.

SLITHERING is the action that allows a child to move itself, often backwards at first and then forwards, with the body completely resting on the floor in a prone position. The peak of slithering is when a cross-action is achieved, i.e. when the forwards advance of the right arm corresponds to the advance of the left leg, and vice versa.



CRAWLING is the action with which a child moves forward, raising his belly from the floor, resting on hands and knees. A cross-action represents the final stage. Not all children slither or crawl on all fours. It often depends on what opportunities they have.

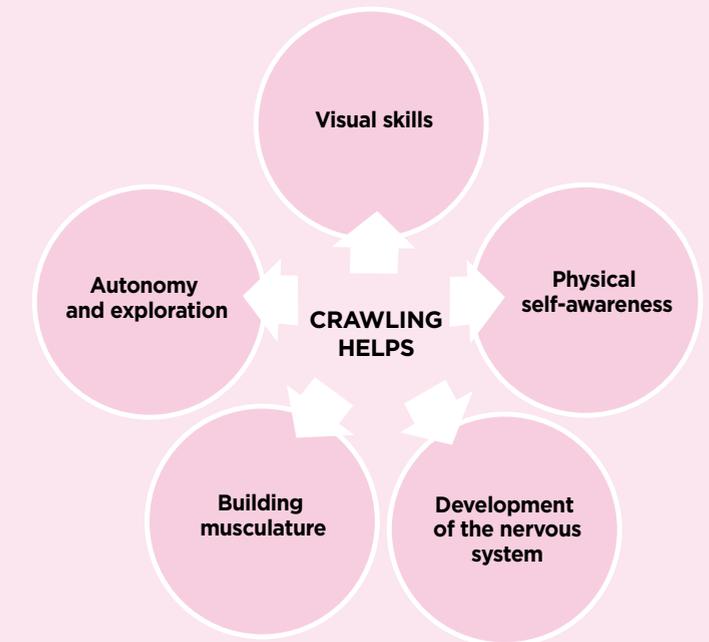


Figure 4

Figure 4 indicates the benefits a child gains by slithering and crawling around. Experience gained during these phases allows proper development of the musculature of the arms, shoulders and neck.

How can slithering and crawling be helped along?

At this stage of life, a child is in contact with the floor with his whole body and not just with his feet. Therefore, it is necessary that the floor is safe, clean, warm and appropriate to meet the requirements of the action:

- **SLITHERING:** soft but not so soft that it slips. The ideal flooring would be a mat of rigid foam, covered with leatherette.
- **CRAWLING:** smooth and soft flooring. The ideal flooring would be a foam mat covered with fabric and floors covered with carpet.

What is the most suitable clothing?

A child's clothing should be comfortable, given the action required:

- **SLITHERING** : shirt and trousers or nappy, with bare elbows and bare feet to exert grip on surfaces.
- **CRAWLING**: smooth and soft flooring. The ideal flooring would be a foam mat covered with fabric and floors covered with carpet.

How can a parent help?

It is important that a child, once he has learnt a new action or movement, should be able to repeat the experience and test it in different environments, with full independence. Staying near the child is the best form of help.

The mum or dad should sit or lie on the floor with the child, encouraging him with their voice to try and move independently, and also showing an object to be reached. Conveying affection and love are always the main requirements for development, while the environment should be looked after by adding anything that encourages experience and removing anything that could hinder it.

At what age do children start slithering and crawling?

The table shows that on average, children slither at around two and a half months and crawl at around seven months but, as we have stated several times, times are dependent on the frequency, intensity and duration of the experience.

Can the PrimoSport 0246 playground help the development of slithering and crawling?

It is a special playground: clean, well looked after and safe. Therefore it is very suitable even for babies.

A mother can bring her own mat and put it on the lawn. When the child can crawl independently, he can be placed on the rubber walkways, around the games and on the grass, in order to move around on different surfaces and thereby develop the requisite skills.

WALKING: moving about on foot in an upright position.

- **First walk**: arms are used for balance, positioned at shoulder height or above.
- **Walking with arms free** from the function of balance.
- **Walking** with a perfect cross-action.



RUNNING: moving about in an upright position, with moments off the ground.

The advantages are the same as previously described for slithering and crawling but, obviously, the muscle groups now involved and which are developing are mainly those of the lower limbs.

How walking and running be helped along?

These recommendations should be followed in order to help a child acquire the right skills in walking and running:

- Avoid baby walkers, baby pens and rockers. These domestic devices actually limit the movement of the child; they are objects of use to an adult, to be freed from continuously monitoring the baby, but are a hindrance to the acquisition of independent movement. Always remember the scientific fact, that a child with experience is able to recognize danger and avoid it.
- Encourage the child to walk and/or run and congratulate him.
- Support the development of independence and not give him your hand to help him walk. Giving a hand to an adult, means that the child has to maintain his balance in a way different to being free, which slows down the acquisition of independent movement. Trying

to move independently develops strategic thinking and decision-making. As for falling down, he will learn how to fall without getting hurt. Many accidents which older children suffer may be due to the lack of experience gained in looking after their own selves.

- Step by step, as your child walks, have him walk ever further.
- When your child can walk well, take him onto different surfaces (sand, grass, leaves, etc) and have him go uphill and downhill on paths.
- Give him objects to carry that are ever more heavy.

What is the best clothing?

A child should walk about barefoot as much as possible, to strengthen the fine structure of the ankle. Clothes, lightweight and loose fitting, should include long trousers to reduce the injury caused by falls.

If a child is outside, he should have a good pair of trainers or tennis shoes.

What can a parent do to help?

Being near the child is the best form of help. Conveying affection and love are the main requirements for development, together with looking after the environment and enriching it with possible experiences. Playing with your child, taking him for long walks in nature, searching for surroundings with different ground structures, are the best help that a parent can provide.

Can the PrimoSport 0246 playground help in the development of walking and running?

The playground is designed to encourage the development of motor skills, including walking and running.

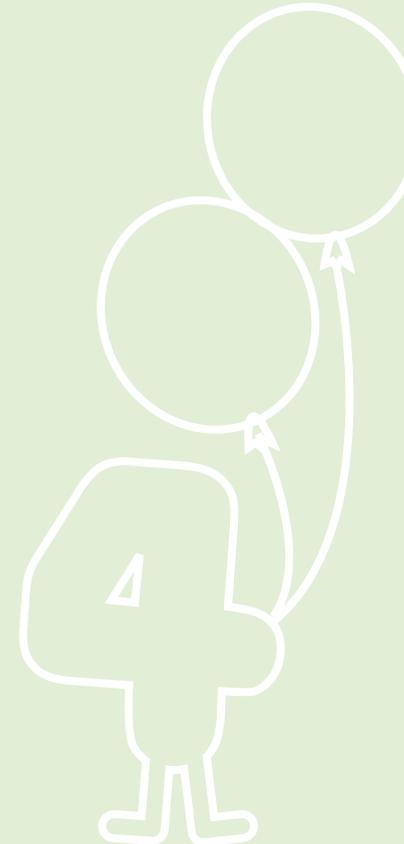
A natural hill allows boys and girls to experiment and practise running uphill and downhill, forwards, backwards and sideways.

Different types of flooring (grass, earth, hard rubber, soft rubber) provide diverse environments; the regular cleaning carried out by the maintenance service allows younger children to touch all parts of the body on the ground without any problems of hygiene.

MANUAL DEXTERITY AND TOUCH

Age	Manual dexterity	Touch
1 MONTH	Grasping reflex	Babinski reflex
2½ MONTHS	Releases grip	Perception of vital sensations
7 MONTHS	Voluntary grip	Appreciation of finer, gnostic sensations
12 MONTHS	Cortical opposition in one hand: the ability to oppose thumb and forefinger to grasp an object	Recognition of three dimensions by touching apparently 'flat' objects
18 MONTHS	Cortical opposition in both hands and simultaneously	Differentiation through touch of similar but different objects
36 MONTHS	Use of hands for complex tasks, with a dominant hand	Ability to specify the characteristics of objects through touch
72 MONTHS	Continued use of a dominant hand	Identifying objects by touch

Figure 5



Dexterity.

This is the ability to grab, throw, pull, push, hold, grip and climb;

Touch.

This is the ability to recognize objects by touch.

Figure 5 (Manual dexterity) shows the development of manual dexterity during the first 6 years of life. Progressions and timelines are for guidance only and are strictly dependent on the environment and the experiences to which a child is exposed.

The first demonstration of manual dexterity is the voluntary grasping of an object. Following that, a child is able to oppose the thumb and forefinger of one hand (e.g. when picking up a crumb) and then is able to do it with both hands simultaneously. Then they direct both hands towards one goal, with one of the two hands being dominant; finally, the dominant hand is “refined” to perform complex tasks such as, for example, writing.

Why should children have to develop manual dexterity and touch?

- Hands are fundamental to being human, and a child needs to develop strong fingers in order to develop more refined motor skills
- Fine motor skills are essential for learning to write and participating in games and activities which require precise hand control
- Being able to manipulate an object, turning it around and around, enables a child to understand it and also develop three-dimensional vision.
- The development of larger scale manual dexterity can also develop the kinetic chain of the arm and shoulder, helping maintain posture.
- The development of touch, such as the ability to identify an object, stimulates the cognitive process of memory.

Which is your dominant hand?

- The specialization of the nervous system entails the identification of one hand, say, to hold an object and the other hand to hold a pair of scissors and cut it.
- Your child needs to gain experience of manual work in order to develop the dominant side. The more experience he has, the earlier this will occur.

To help, you should:

- Provide opportunities for working with objects that require both hands, in such a way that particular motor strategies must be identified
- Preferably, the adult should give a child an object straight on, not from the right or left, in order to discourage the use of just one hand
- It is essential that the experience should be repeated.





What help can a parent give?

Being near a child is the best form of help. A young baby has a prehensile reflex, whereby he automatically grabs everything and cannot voluntarily open his hand. It would be good to create situations in which he will be forced to grab something, and then help him to open his hand.

Trying this several times will help him understand what it means to open his hand and so accelerate the development of the nervous system, with respect to his prehensile abilities. To help a child to move beyond the prehensile reflex, a simple way is to put the child in a lying position on a mat, and have his hands touch your thumb or a bar. He will cling to it, and can be raised off the ground a couple of inches for a short moment while you support his body, neck included. After a moment, he can be helped to release his grip.

Later on, parents can help the development of their child's arm muscles by providing him with the opportunity to climb, even indoors.

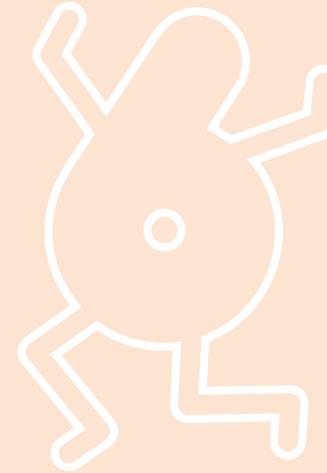
For example, he can climb onto the sofa or onto the bed on his own, or when he is bigger, rings can be hung around his room so that he can play at being a monkey, in order to strengthen his arms.

Can the PrimoSport 0246 playground help in the development of dexterity and touch?

The space and equipment in the playground can help at all stages in the development of dexterity and touch. Here are some examples:

- Various games involve children hanging onto handles and bars, if only to get up onto their legs.
- The horizontal ladder, used by older children for swinging and climbing, may also be used by a baby if adequately supported by the parent. Remaining suspended even for just a few moments, allows a baby to feel the weight of his own body.
- As a child grows in age and experience, he can start to swing himself along under the horizontal ladder.
- There are different climbing exercises, involving the use of hands, arms and torso.
- A child can pick up objects of different weights and sizes.
- There are objects that can be manipulated and turned around.
- There is sand and water to play with.

- There are objects hidden in the sand, which can be identified by touch.



BALANCE

Balance is the ability to keep the body in a certain position or to recover its position after being pushed, or walking on unstable surfaces or along a narrow strip. Balance is connected to vestibular development.

Passive balance: This is the ability of the child to maintain his posture by resisting external forces, such as being dragged on a cloth along the ground, being swung, being carried in the arms.

Active balance: This is voluntary movement, by which the child remains in a stationary position or to regain his position after being moved, or walking on unstable and restricted surfaces.

Balance is a basic skill, since it forms the foundation of the development of other skills. To walk, you need to be able to balance; and to use your hands while sitting down, you need to balance. The primary state of balance is when a child is sitting down and is free to use his hands for tactile exploration. The manipulation of objects and the ability to focus his eyes helps a child develop the ability to see objects in three dimensions.

Another important characteristic of balance is that body



muscles must adapt accordingly. So, to develop the skills of balance, a child must also develop his musculature. Activities that improve balance are also a positive influence on the development of muscles.

Why is it important that children develop balance?

- It helps the development of eye movement and vision
- A child becomes aware of his own body and the environment around him
- He learns to handle different situations

The ability to balance allows a child to confront continual changes in the external environment.

Learning how to cope with challenging situations involving balance, forms the basis of learning other skills.

What can you do to help the development of balance?

- Carry a newborn baby around the house in your arms, moving him gently in every direction, with movements up, down, left, right and rocking.
- While lying down on your back, move the baby in the air
- Hold your baby while sitting on a swing or a rocking chair
- Put him on his back, face down or on his side on a cushion, and slide the cushion around in different directions
- Lift the cushion off the floor and repeat the same movements
- Roll him over from one side to the other, on a mat
- Hold him in your arms and dance around gently
- When he is a little bigger, put him on a drape and drag him across the floor
- Put him on a drape, and between two of you, lift him off the ground
- Between two of you, take him by the hands and feet and swing him
- Take him by the hands and spin him around
- Take him by the feet and spin him around
- Make him roll over
- Make him do somersaults backwards and forwards
- Make him walk on unstable surfaces and a narrow support

It is essential to repeat the experiences.



What help can a parent give?

It is important to stay near your baby during his first few months, looking after him, massaging his body and taking him around: these activities help him become aware of his own body. Experiencing the activities defined in the preceding paragraph will help the healthy development of the vestibular and visual processes that are the basis of balance. Helped by the parent, the child acquires greater sense of self-efficiency, secure in his relationship with those who are looking after him.

Can the PrimoSport 0246 playground help the development of balance?

Many of the previous suggestions can be carried out in the park, where the games are a great stimulus. Swings, slides, balancing beams, moving platforms, games with springs, are all ideal for the development of balance.

How can the environment help the motor development of a child?

Not everything designed for a child is actually helpful. To make the correct decision, the following should be considered:

The environment must provide the opportunity to practise the three motor skill sets (dexterity, mobility, balance) in a playful context. The place, the equipment and the games should allow the child to: (mobility zone) creep, crawl, walk, run, and jump; (manual dexterity zone) play with a ball and other items, handling them and climbing; (balance zone) play with games and equipment that allow the development of passive balance (e.g. swings) and active balance (e.g. balancing beam).

How can our children improve their motor skills in a playground?

Children who go to a playground choose how they use it, for as long as they are there.

Often, the organization and choice of structures and equipment follow ill-defined criteria. Also, many decisions are based on beliefs which have not been verified. For example, it is difficult to say whether children prefer going on the slide because the slide is a rewarding activity for them or because the slide is an activity encountered only a few times.

As it happens, all parks are equipped with slides but no child has ever said what they think of them and no parent has ever questioned what good they do.

It is different in the PrimoSport 0246 playground, where both the spatial organization and the choice of equipment and apparatus are directed towards the motor development of the child.

Although unique, this playground sets down some rules that parents may follow to take advantage of locally available facilities.

How is a child able to play in the PrimoSport 0246 playground?

The first rule is that a child should be given the chance to play. There are several modes of play: free play, semi-structured play and structured play.

Free play means that a child chooses both the type of playing and how to conduct it. This is the most natural way to play in the early years of life and is the one that has added value in terms of education and growth of individual skills.

Semi-structured play means an activity that is driven in part by the parent or teacher, who invites the child to follow a specific mode of play without intervening in the game itself.

Structured play means an activity in which the child is led into it and shown what to do. Typical examples of structured play are school sports activities (football, basketball, etc). These games are

not a subject of this book.

A parent, who wants to take an interest in the development of motor skills of their children up to the age of six, should create the conditions for their child to experience as much semi-structured or free play as possible.

The main rule to follow is that the choice of game has to be about what he wants to do, and with an appropriate amount of time devoted to it.

Remember that imitation and mimicry is well developed in children, especially in little ones.

For example, one morning, when some nursery school children were at the PrimoSport 0246 playground, a two year old child approached them with the intention of mixing with the older children and playing with them.

The grandfather reported that only the day before, the child did not want to play in that zone! Imitation is also an important way for children to refine their motor strategies: an insuperable obstacle becomes easy if you look at how your friend solved the problem!

In choosing where to take your child, the parent should consider first the opportunities of contact between children, rather than between adults or the conveniences available (toilet, changing tables, cafe, etc...).

What should you say or not say to a child doing physical activity?

“Slowcoach!” And his mates look at him, laughing and repeating what was said by the teacher!

This and similar such phrases are often said to children who are a little clumsy or cannot do what we would like.

Even teachers will use this language often, which is the worst thing you can do to a small child.

The great neuroscientist J. LeDoux maintains that emotions, derived from the physical and human environment, determine how the brain is formed. Positive emotions are associated with living positively and experiencing success, producing an increase in motivation to repetition of the experience. Negative emotions, on the other hand, inhibit activity.

A misplaced word can trigger a confrontation with comrades, a decrease in one's sense of self-efficiency, demotivation, and failure to act.

Therefore it is important that children experience success, positive living and positive emotions.

Then there is the Pygmalion effect of self-fulfilling prophecy. A child who hears things said that make him apprehensive, gradually becomes convinced that the reality is so and assumes



the characteristics as predicted.

He does this for better or worse. Therefore it is important to value the child, recognizing his every achievement and success. He is following a new road and it must be positive and rewarding. Even if your child is not as good as his friend, you need to be positive about what he can do, and not what he cannot do.

He can be helped by supplying experiences best suited to him, which can provide the taste of success. The objective is that a child should learn more than he already knows.

How should one do, when a child engages in “dangerous” activities?

First of all, dangerous is something very subjective. It often depends on the adult’s perception of their own ability to intervene and help the child in case of difficulty. Then, the perception of danger varies across different cultures. What does this mean?

When a mother, who is afraid of water, takes her child to the swimming pool, it will be a struggle to convey a sense of security to the child, because she herself is afraid and not certain of being able to intervene in case of difficulty. As a result, you feel apprehensive and will show more fear than another mother, in playing games with him.

On the other hand, children like to experiment with everything they can and, as research shows, within the first years of life a child’s ability to evade danger depends on his motor skills. A child who is very skilled and expert in climbing, will be a child who is capable of anticipating risks and stopping himself before getting into trouble.

Have you ever happened to see a little boy aged 2-3 years climbing quickly and confidently up a staircase, almost to the top? Then, have you seen what happens when he has to come down?

We refer to observations made of climbing games in the PrimoSport 0246 playground. Here, there is a structure that allows children to climb up the rungs of a ladder or up a net and to attempt, once at the top of the structure, to hang down or try “walking with their hands.” Capable children climb up the net or the ladder to the top (or even part-way) and come down slowly. Children who are not skilled climbers pull themselves up with deceptive ease: often, they climb the ladder quickly, but when it comes to the descent, they act in the following way:

- They throw themselves backwards all of a sudden (there are soft carpets below);
- They try to come down by jumping down and taking steps which are too long for their legs, and so falling;
- Sometimes they cry and call for help.

What do you do when a game “seems” dangerous?

It is always advisable to follow a child and stand beside him when he tries to do something at which he is not very good. Forbidding him from doing an activity may only inspire him to hide what he is up to, so impeding an adult from helping him during his initial attempts.

The best approach must be prevention, not by taking away “dangerous” games or the opportunity to play, but by strengthening the child’s motor skills. In this way children develop autonomy,

safety and coordination.

Therefore, it is important to:

- Encourage freedom and self-discovery from birth.
- Turn your house into a gym for your child.
- Take your child out into the open air regularly.
- Visit fun places that can at the same time promote motor development.

Often, adults are concerned that excited children become unpredictable. What should one do?

The unpredictability of children when they are happily running around is such that one of them could already have climbed up onto the horizontal ladder and be preparing to launch into flight, while you are reading this page!

Firstly, do not panic, but remember that motor activity is a great “relief”, especially for children who struggle to stand still. It is important to direct their energies into the action and into paying attention to what they are doing.

When children are very excited (and so ready to get into trouble!), you would do well to follow them and remind them when to be careful.

For example, your child climbs up the rungs leading to the horizontal ladder; once he reaches the top, he wants to show you how good he is at jumping rather than going along the ladder, which is supposed to help strengthen his arms.

Given the height, you would prefer that he did not jump too often, because of the risk of spraining an ankle. Instead of forbidding him from using the equipment, ask him to try and hang onto the horizontal scale, saying for example that Spider-Man practiced a similar activity when he was little and now climbs everywhere. A little child is generally taken in by this approach and will try to do what we have asked, albeit carefully, because we have created a generic, mental representation of an unfamiliar situation.

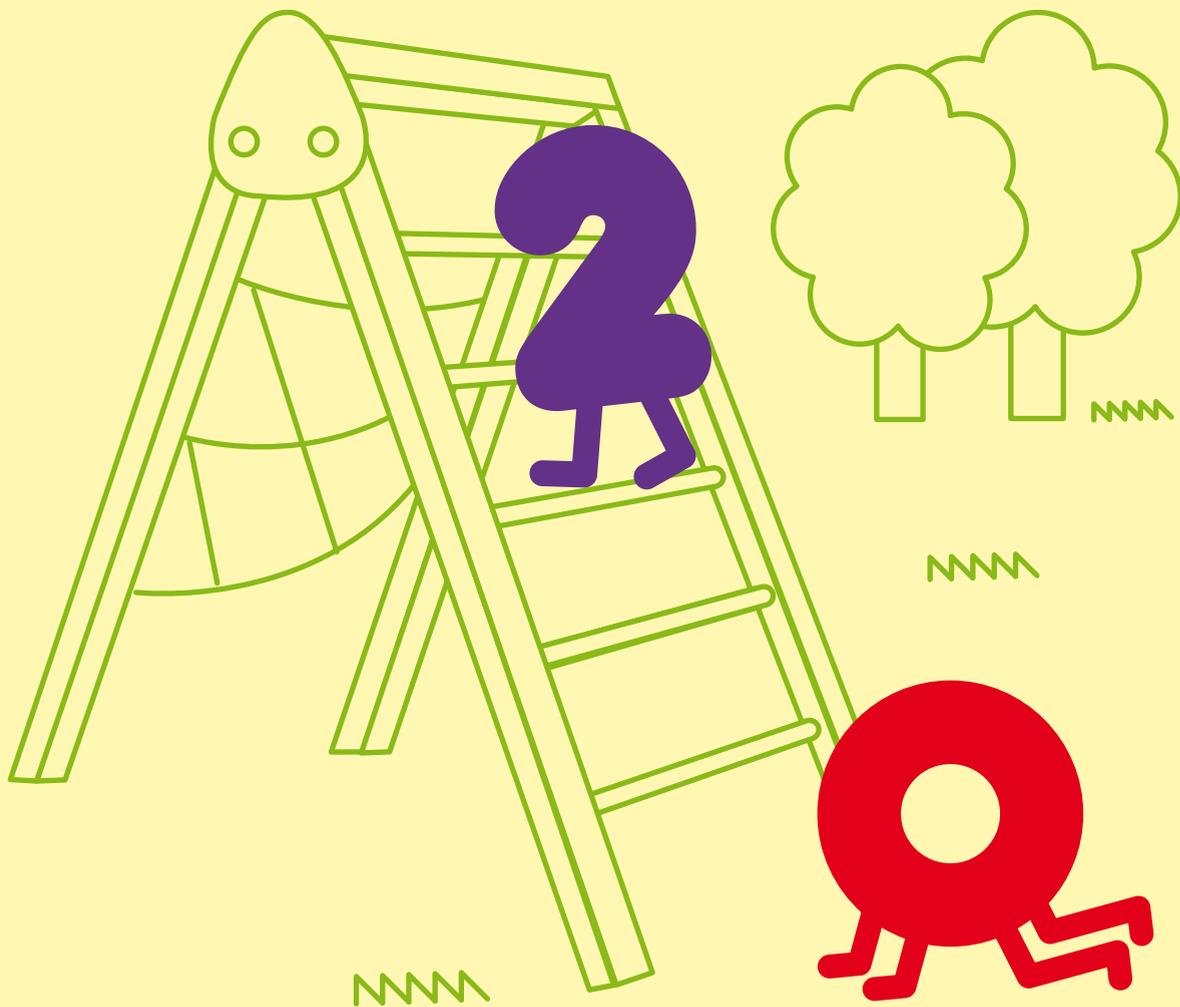
After he has tried to hang on, even if only for a matter of seconds, it is important to shower him with compliments because, apart from the motor benefits, has done something beyond his ken.



6. RISK MANAGEMENT

for childrens' recreational motor activities

Valter Durigon



6. RISK MANAGEMENT

"The flat floor is an invention of architects. It is fitting for engines, not human beings. If modern man is forced to walk on flat tarmac and concrete floors, cut off from his age-old relationship and contact with earth, a crucial part of man withers and dies.

This has catastrophic consequences for the soul, the equilibrium, the well-being and the health of man."

Friedensreich Hundertwasser

(Architect, painter and philosopher. Vienna,1991)

Running downhill, sliding down a slide, climbing a wall and then jumping off, leaping across a ditch, trying to keep your balance on a wobbly surface, struggling uphill, climbing a tree and then dangling from a branch, swinging on a swing, are all activities that apart from being essential in the motor development of each individual are also engaging and enjoyable for children.

Most important of all these activities is climbing, which has a role in the evolution of man's essential counter-gravity system. From an ontogenetic point of view, a child moves from a quadruped system to a biped system of walking during his first few months of life: this step, "from horizontal to vertical", starts off with crude attempts to climb (a child will look for handholds to help pull himself up into the standing position). Furthermore, "crawling" is nothing more than climbing on a horizontal plane.

Experience or prevention? What can be done to reduce injuries amongst children during motor activity?

Climbing and other physical, motor activities (hanging, swinging, sliding, rolling, etc) carry the risk of injuries: blunt trauma, abrasions, cuts, bruises, sprains, etc. Therefore, it is necessary to adopt all possible expedients, both passive (protection, impact absorption structures, safety zones, elimination of protrusions and sharp corners, etc), and active (help, supervision, adult guidance) to eliminate or at least reduce the dangers and consequent risks of injury.

Stripping out any possible danger, however, does not provide any education in risk assessment and responsibility: children by nature know their own limits, so a poor education in risk recognition and assessment, due to motor experience that is limited only to situations with high levels of protection, leads to a lack of awareness of danger. Paradoxically, it may be that children who are accustomed to being in a highly secure environment, will do things which are really dangerous, because

they have never been in a position of knowing their own limits and never confronted with unusual situations.

Obviously, a reduction in motor activity leads to a reduction in accidents; at one extreme, it can be argued that staying immobile is the only, secure way to eliminate injuries. In the long run, however, the negative effects of lack of movement will impact heavily on the health of children: in fact, apart from prevent problems such as obesity and the onset of paramorphism, a healthy physical activity strengthens the immune system and develops body functions.

Playing is a prime motivation for movement and sport, and the kind of activity that children like.

Playing is a form of free body expression which is nice, natural, and an end in itself. Playing is characterized by pleasant emotions, measured risk, and exciting uncertainty. In their turn, it is the elements of uncertainty, sudden changes in the situation, and the rush and excitement of the game, which are the main causes of traumatic events during physical activity.

On the other hand, playing provides an education which is of enormous importance for the development of children not only at a physical level, but also cognitive, psychological, social, practical and emotional levels.

How does chance affect the occurrence of injuries during children's motor activities?

"Accident" signifies an episode in which a random element determines the damage, ruling out any decision-making and control process by the individual. The World Health Organization (WHO) defines an accident as "an event independent of human will, caused by an external and fast-moving force, which manifest itself in the form of physical and psychological damage."

However, the element of randomness that causes an accident is still determined by a series of human actions; so injury itself can be anticipated, in order to be avoided or at least reduced in its harmful effects.

This relationship between risk awareness and risk control may be discovered through empirical assessment of recreational activities, where there is a human factor in preventing accidents. In a playground or a schoolyard during break, you can see children who automatically limit risks (eg. by reducing the force of the swings, or partial braking with hands and feet when coming down the slide) or progressive and cautious exploration of situations (a child trying to ride a bike without hands will choose a straight, flat track, free of obstacles, and then lift their



hands while keeping them close enough to the handlebars to quickly be able to resume control of the bike in case of loss of balance).

In these cases, there is clearly a primary human factor involved, of risk awareness and behaviour..

Is it possible to predict and control causes of accidents?

Establishing what contributes to accidents is not easy. So how can the problem be resolved?

A proper education in basic motor skills is a definite help, representing a starting point for an education in risk assessment. Risk education means appreciating and looking after mental and physical well-being (through an appropriate physical education) and also means educating youngsters to take rational decisions. Research has shown that following a programme of physical activities specifically designed for children, not only influences their cognitive, sensory and emotional development, but also turns up significant results in terms of accident prevention. Many researchers sustain that the cause of most accidents that occur amongst pre-adolescents, not only in sport but also on the road and at other moments of daily life, are mainly due to a lack of motor skills.

Studies in psychology have determined that the reflexes underpinning accident prevention behaviour are really only effective if they are taken on board before the age of 12. Determining a path for the formation of safety-orientated behaviour is no easy task, especially when aimed at pre-adolescent subjects.

Because of similar such difficulties, education experts (teachers, psychologists, etc) direct their efforts towards enhancing the mechanisms that make up the basic instinct of self-preservation. Research on nursery school children has shown that during this developmental phase, risk perception is dependent on the state of maturity of logical and cognitive structures. Safety training for children should involve them acquiring the ability to identify and assess hazards to avoid, or to adopt the most appropriate solutions to address them.

The prevalence of short-term memory over long-term memory poses a major obstacle in teaching about danger. In pre-school, it is almost impossible to carry out safety education through cognitive means. What should not be forgotten, are the physical factors that impact upon accidents: poor morphological, locomotive and sensory development, and difficulties with balance and reflexes. These deficiencies, which are transient



in nature and belong to the pre-school phase of children's development, do not allow for motor coordination to get out of danger.

Is there a link between motor skills and injuries?

It is not easy to estimate the effects by chance or, viceversa, by inexperience in the accidents happened during the motor activity. In order to find the way in this huge matter, we should select a heuristic model about the risk awareness, considered as a strategy to prevent accidents during the physical activity, and get the help by different scientific and professional areas, starting from the game theory about the motor science and the statistical health models of approaching the injuries; from the statistic feature as a matter of chance estimate up to its professional applications in insurance; from the injuries' model of prevention in the psycho-motor activity provisioned by the Laws, up to the concept of deliberation and the distinction between injury and accident, ending with a review on biology and physics to look into the relationship between chance and necessity.

So how can the problem be resolved?

A proper education in basic motor skills is a definite help, representing a starting point for an education in risk assessment. Risk education means appreciating and looking after mental and physical well-being (through an appropriate physical education) and also means educating youngsters to take rational decisions. Research has shown that following a programme of physical activities specifically designed for children, not only influences their cognitive, sensory and emotional development, but also turns up significant results in terms of accident prevention. Many researchers sustain that the cause of most accidents that occur amongst pre-adolescents, not only in sport but also on the road and at other moments of daily life, are mainly due to a lack of motor skills.

Studies in psychology have determined that the reflexes underpinning accident prevention behaviour are really only effective if they are taken on board before the age of 12. Determining a path for the formation of safety-orientated behaviour is no easy task, especially when aimed at pre-adolescent subjects.

Because of similar such difficulties, education experts (teachers, psychologists, etc) direct their efforts towards enhancing the





mechanisms that make up the basic instinct of self-preservation. Research on nursery school children has shown that during this developmental phase, risk perception is dependent on the state of maturity of logical and cognitive structures. Safety training for children should involve them acquiring the ability to identify and assess hazards to avoid, or to adopt the most appropriate solutions to address them.

The prevalence of short-term memory over long-term memory poses a major obstacle in teaching about danger. In pre-school, it is almost impossible to carry out safety education through cognitive means.

What should not be forgotten, are the physical factors that impact upon accidents: poor morphological, locomotive and sensory development, and difficulties with balance and reflexes. These deficiencies, which are transient in nature and belong to the pre-school phase of children's development, do not allow for motor coordination to get out of danger.

Is there a link between motor skills and injuries?

The situation, already difficult enough, is exacerbated by lifestyle, housing conditions and social dimensions.

The growing shortage of space for physical, motor activities and relentless urbanisation do not take into account children's needs for movement and play, and are the main causes of lack of movement, a sedentary lifestyle and hypokinesia.

Holzapel, in a survey conducted in 1989 in German schools (see footnote 1), found that 60% of pupils in elementary classes had problems of posture and gait, that more than 40% had muscle deficiencies, and that nearly 40% lacked coordination. T. Krunz, in a survey conducted in kindergartens in Frankfurt around the same time, found that almost all accidents (90%) caused by falls, bumps and pushes were due to inexperience and the little developed motor skills of children.

These studies suggest that the regulations intended to prevent accidents on playground equipment (height restrictions, cushioning, etc) provide damage limitation only.

An effective prevention plan should, therefore, build in practical teaching aimed at strengthening motor skills, based on the specific motor characteristics of children and applicable in playtime situations.

This hypothesis has been proven by tests conducted on about 1,400 children at nursery school. Initially, the subjects underwent physical, motor tests to assess their muscle quality, reactions, static and dynamic balance, and coordination. Then

the subjects were divided into two groups of equal level and ability: one group (the experimental group) was subjected to an 8 week programme of recreational activities which included physical activity outdoors, with safety being taught through movement.

The other group (the control group) continued with their usual, recreational activities.

At the end of the experiment, the results regarding injury prevention were surprising: in the experimental group, common accidents (bumps, pushes, falls, and slips) were 50% lower than the control group.

The results confirmed the close link between an increase in motor skills and a reduction in accidents.

What can be done to prevent accidents?

The authors of the above research assert that a programme of motor stimulation for the prevention of injuries should continue throughout school, since the causes of accidents in pre-adolescents, at home, at school, during sport and on the street, are principally a lack of motor skills.

Parents and responsible adults tend to adopt one of two different mindsets during motor activities: either they are excessively concerned and anxious, for fear that the children under their care may be hurt while playing, or else they underestimate the risks and are fatalistic. Neither attitude helps: either the spontaneous impulses of children are limited, or else they are allowed to run wild (in this case, there is the risk that a child may suffer a traumatic experience, which could adversely affect their motor development).

The common denominator in both these apathetic positions is a lack of any teaching-based programme of initiatives.

In 1972, Lord Robens, in a report to the British Government on a strategy for the prevention of injuries, stated:

“Apathy is the greatest single contributing factor to accidents at work.

This attitude will not be cured so long as people are encouraged to think that health and safety at work can be ensured by an ever-expanding body of legal regulations enforced by an ever-increasing army of inspectors.”

Children, under some guidance, should be allowed to encounter situations that contain some mild peril, so learning to assess the danger and make their own decisions about how to navigate it, developing their own skills through direct experience.

Only in this way can children establish their own personal rules,

that will keep them from doing far more dangerous things. Obviously, the surroundings and facilities need to be safe, in order for children to move around in full freedom.

The American writer Elbert Hubbard (1856-1915) said: “Where parents do too much for their children, the children will not do much for themselves.” This motto could be extended to all professionals who play a role in the motor development of children, in order to design a teaching approach aimed at creating a new culture of safety.

Should safety standards be reconsidered?

The safeguarding of children engaged in physical, motor activity cannot be simply delegated to those who establish safety standards for design and construction of recreational and sports facilities (playgrounds, gymnasiums, swimming pools, etc).

Responsibility must be shared by parents, politicians and professionals who are all concerned with the mental and physical health of children.

Establishing limits and restrictions that reduce motor activity does little to develop real awareness of the risk.

Over-protection does not help growth; but closets children from reality and does not allow the acquisition of experience, indispensable for the independent assessment of the danger.

An action plan needs to be developed, starting off by developing opportunities for movement through an increase in facilities (playgrounds, gyms, swimming pools, etc) and continues by building up motor activities (physical education in schools, structured activities in the outdoors, etc), because only correct motor development can ensure any significant reduction in accidents sustained during physical activity.

What can parents do?

Up to the age of six, the first motor experiences are usually conveyed by a parental figure (usually the mother and father), so it is important to encourage parents to engage their children in motor activity and to educate parents to observe their children continuously but intervene only when the need arises, so allowing children to gain experience based on trial and error. A parent should be realistic with regard to their child, encourage him when he shows uncertainty, support him if he fails, get him to try again, offer suggestions without giving the whole solutions, transmit courage and confidence while avoiding

forcing him to do things which he is not ready for and which make him anxious, express satisfaction over small successes without overdoing it, respect the pace and show patience, step in only when there is a risk to the child, explaining the dangers and effects of what is being done, provide assistance and help. To prevent injury, a parent should also assess the surroundings (space, equipment, etc) and monitor the progress of their child, asking themselves which activities are within their child's capabilities.

This is clearly a challenging job, which must be added to the many other burdens of a parent, but which plays a key role in the motor development of a child and his safety education.



TRAUMA RELATED TO PHYSICAL ACTIVITY

Professor Liviana Da Dalt,

Director of UOC Pediatria,
Ospedale Cà Foncello, Treviso

Physical activity plays an increasingly important role in the well-being of subjects who are of a developmental age. Paediatricians agree that physical activity has a positive impact on the physical, mental, motor and intellectual development of a child.

However, physical activity constitutes a risk factor for the occurrence of traumatic events, although in most cases these are mild and have little impact on the health of the child.

The problem is closely studied in schoolchildren aged over 6 years old, and adolescents. It is estimated that each year, 3% to 10% of children in this age group are victims of trauma related to sports. Rates are almost double in males compared to females, which is attributed to their more aggressive attitude during activities.

Little data is available on the incidence and types of traumatic events related to physical activity in the very first years of life.

However, the frequency of injuries increases with age due to the greater force and competitiveness of games amongst older age groups.

A recent US study has calculated that the annual number of Accident & Emergency visits regarding injuries related to movements in games or sport is equal to 18 children per thousand in the age range 3-5 years, but this increases to 38 and 51 respectively in every thousand within the age ranges 6-12 years and 13-18 years [Simon TD 2002].

The type of physical activity affects the frequency and type of injury, reaching maximum levels in contact sports and sports involving jumping.

A survey conducted in Realtà Veneta, not recently but unique to the Italian population, has shown how the most injury-prone sport is rugby, where almost everyone who plays it suffers an injury, whereas the least injury-prone sport is athletics, where the the risk of injury was only a little more than 5% [G Tagliavoro 1994].

(1) Survey data is drawn from the documents presented at the Fifth international conference on safety in schools of the European Union countries - Berlin 09.10.1990.

This data is partially confirmed by other recent studies, such in the U.S. where sports carrying greater risk of injury in males are American football, followed by wrestling, basketball, soccer and baseball; for females, the riskier sports are soccer, handball and volleyball. It is obvious, however, that the frequency of injuries is related not only to the intrinsic characteristics of the sport in question but also the frequency with which it is played in a given population, which explains the differences between various studies in different countries [Spinks 2007, Shanmugan C 2008].

The type of injury subsequent to a trauma is very wide and varies with the type of sporting activity taking place. In general, however, it should be remembered that most traumatic events have minor consequences which can be sorted out by resting a short while, and relieved by the administration of pain medication and/or immobilization. Traumatic injuries are usually acute and the most common are limb sprains, followed by bruises and fractures; dislocations and wounds are rarer. (Table 1).

Regarding the location, despite the diversity of sports, the upper limbs are most frequently affected, followed by the lower limbs, thirdly the head and, more rarely, the spinal column.

Although less frequent, close attention is paid paediatricians to head trauma, in view of the potential severity of intracranial bleeding and, more frequently, the appearance of functional anomalies such as disorders of the central nervous system function, manifested by a variable number of symptoms such as an altered state of consciousness, headache, vomiting, drowsiness, difficulty with memory, and mental confusion.

These symptoms usually disappear within a few minutes, or even up to an hour.

Only a few patients retain some disorders long after the trauma, but in a lessened state, such as a mild headache, or difficulty concentrating.

After any significant trauma, a return to sports should be preceded by an adequate rest period.

All the available data is based on school-age children (over 6 years old): there is still a lack of information about trauma and injuries related to very young children

engaged in physical activity.

Experience teaches us, however, that in the early stages of life the risk is lower than in later life, both in terms of number of trauma incidents and the severity of injuries resulting from them.

A final, important matter is prevention, through the use of adequate protection "in the field" (helmets, body armour, etc, in riskier sports) and also through appropriate physical and cognitive education programmes to improve strength, speed, flexibility and motor coordination, and to develop awareness of risks in budding, young athletes. [Collard DC 2010].

Sprain

Temporary loss of a joint, without loss of contact between the articular surfaces.

Dislocation

Permanent displacement of the articular surfaces to one another.

Fracture

Break in the structural integrity of bone.

Bruise

Tissue injuries, with no break in continuity.

Wound

Break in continuity of skin or mucous membranes, with underlying tissue damage.

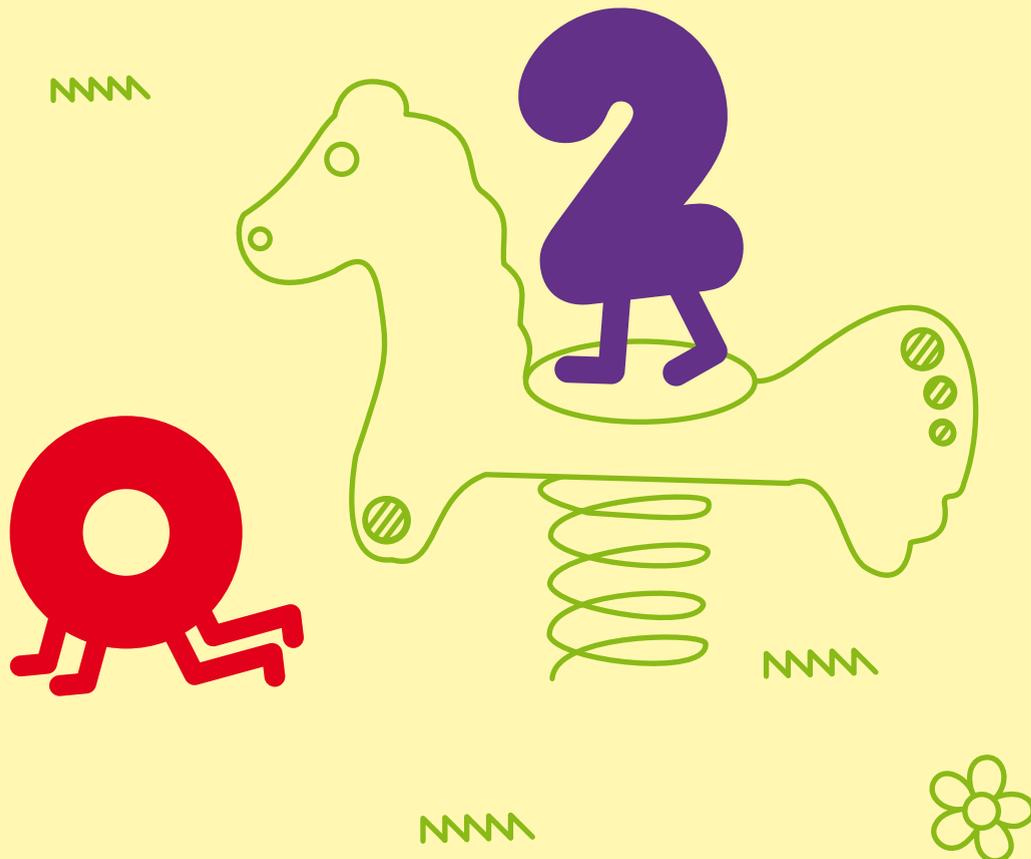
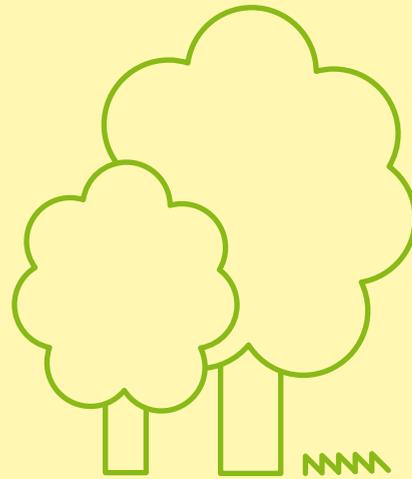
Table 1:
DEFINITIONS



7. CONI

and the “Giocosport” project

The National Olympic Committee of Italy (CONI), Office for the Promotion of Sport



7. CONI and the “Giocosport” project

Consider how important are the slightest memories of childhood, that such a great part of future life hearkens back to that age of games and invention.

G. Leopardi - Zibaldone

The National Olympic Committee of Italy (CONI) plans to promote a culture of motor skills , sports and an active lifestyle among children

The National Olympic Committee of Italy (CONI) is conscious of a growing state of inactivity and unhealthy eating habits among young children, which will impact negatively on their well-being and health.

Therefore, CONI is working with other national institutions to promote and spread motor activity training in primary schools. CONI, through its local committees, will help each child to acquire fundamental motor skills.

CONI's participation in schools aims to deliver:

- 1. Recognition that physical activity and sports are an effective tool for sustainable educational development.**
- 2. Raising awareness of motor skills activity and of Giocosport as an opportunity to develop correct posture and good mobility, as well as acquiring active lifestyles and good eating habits.**
- 3. Education of children about health and social inclusion through play.**

THE PROJECT

Active and exciting play is what draws in children.

The project is directed towards children in primary school and their teachers. It involves recreational-motor activities and simple, fun playful sport, adapted to each class year and to the different stages of physical, psychological and emotional development.

Expert and experienced consultants, working alongside the teachers, will assist in planning and developing activities across the entire school year. The consultants will be trained by CONI and will set up methodological approaches, adapted to the particular school, for teachers and their students. CONI will supply the school with sports materials and equipment as required for the games and proposed activities.

During the school year, the consultants will help plan school events which reinforce the value of the children’s commitment and reward results. CONI will support these celebration by supplying sports equipment and prizes to the winners.

The project includes communications aimed at parents and teachers, on themes such as medical issues and eating habits connected to healthy and active lifestyles, and guidance on keeping up with sport on a regular basis.

THE GUIDING PRINCIPAL: “no one is to be excluded”

The guiding principal of the project is to involve and interest every schoolchild, without exception. It will be fun and inclusive, taking into account children’s natural rhythms and level of maturity, and improve their individual skills. Exciting play is what attracts children and motivates them to participate, leading to a natural acquisition of skills and an enduring, active lifestyle.

PROJECT PARTICIPANTS

CONI’s Office for the Promotion of Sport, takes care of the overall project framework . It administers the different stages, coordinating and leading the project on the ground, collecting data and conducting communications campaigns at a national level.

Coni’s Local Committees are the active drivers at a local level. They work closely with schools, as regards planning and coordination of activity between schools in the area.

They organise fundraising by approaching businesses and private organisations to gain the maximum economic support for the project.

The local administration liaises closely with the central body. In collaboration with the Regional Schools for Sport, they recruit and train Expert Advisers. To be eligible, a consultant must have graduated in Motor Science skills or have an ISEF diploma or a sport’s education award .

The committee’s technical staff are responsible for planning and disseminating knowledge of the project to schools in the area, and events organisation . They provide technical support to teachers and sports youth workers. Local sports institutions are included in this project, so that they can contribute to supporting the national project.



The schools and educational institutions that participate in the project commit to developing the curricular activities that have been proposed and organising events. CONI supports them by assigning an Expert Adviser to shadow the teacher responsible for implementing the project on-site. These two collaborate by drawing up a plan.

Schools receive information, advice and nutrition guidance (for children and adults), materials for sports, and support for events. The teachers and expert advisers work together with CONI to set up exhibitions and events.

THE PROGRAMME

Recreational and motor skills activities in years one and two.

Giosport’s activities continue from Classes 1 to 5: from about Classe 3, children draw on Giosport’s more structured and rule-based approach, whereas in Classes 1 and 2, recreational activity is unstructured and has no rules.

In Classes 1 and 2, motor skills are centred on the body, movement, feelings and discovery and relationships. Key factors are play and participation by all. The way teachers deal with disabled students requires particular attention, such as how to ensure that they can participate in all the class activities.

“Playing” refers to:

- playing with the body
- playing with others
- playing with equipment and tools
- playing in different environments: nature, the gym, the pool, sports track, playground, etc.

“Playing” happens through many types of games, such as:

- exploration
- knowledge
- role play
- rules
- space
- time
- rhythm
- confrontation
- collective
- imitation
- expressive
- symbolic
- traditional
- popular

THE PROJECT

- **NOVEMBER**
Project presentation and promotion

PRESENTATION



November

- **DECEMBER**
Schools subscriptions

SUBSCRIPTION



December

- **JANUARY / APRIL**
Schools making the project

ACTIVITIES @ SCHOOL



January / April

- **MAY**
Giosport parties on schools

GIOSPORT PARTIES



May

If you apply the “playing with ... ” category to the list of game types, there are many variables, driven by the creativity of the child.

Take, for example, “playing with tools and equipment.” If the equipment is a ball, there are lots of games that can be invented, starting with the first exciting game which is to take a ball from home to school, providing games of exploration, and also rules of space and time.

Giosport for children in classes three, four and five

The term “Giosport” implies a great ambition: to pursue goals of education, training and sporting values, while respecting that children need to play and have fun.

Unlike sport itself, Giosport is not codified, but it still presents a sporting culture.

Each game in Giosport is highly variable, and can be simplified or complicated so that more fun can be had in playing it.



Every Giosport game should be presented to children through the sequence “Discover - Learn - Play”. To be able to get to play a Giosport game, a child needs first to discover and learn it in all its various aspects through a series of activities that increase in difficulty but are always fun and engaging for children.

Giosport takes into account the individual characteristics of children and the educational aims of the school. It is intended to help children achieve greater degrees of freedom and independence, with motor skills that will let them take part in sport.

GIOSPORT ACTIVITIES

In classes 3, 4 and 5, collaboration and cooperation is an increasingly important component of teaching.

In the teaching plans for children of classes three, four and five the emotional feature is always to be considered, together with the cognition one, but it is not predominant this time; the socializing factor becomes more and more significant, linked to social functions like collaboration and cooperation.

Playing Giosport by making many games

In order to play a Giosport game, there are many other games to play first in order to develop the minimum of essential skills, passing through the stages of discovery and learning. These can be categorised as:

- Individual Games
- Equality Games
- Group games
- Team Games
-

Individual Games

Players act and play individually with great spontaneity and everyone plays for themselves according to the formula of “all against all.”

Equality Games

In these games, there are two groups of equal number and each player has to sacrifice his own interests in favour of everyone else. Equality of task and role predominate.

Group games

These games lead children, in a natural way, to act in common and feel part of a whole. A good teacher can motivate children to work together and realise the benefits.

Team Games

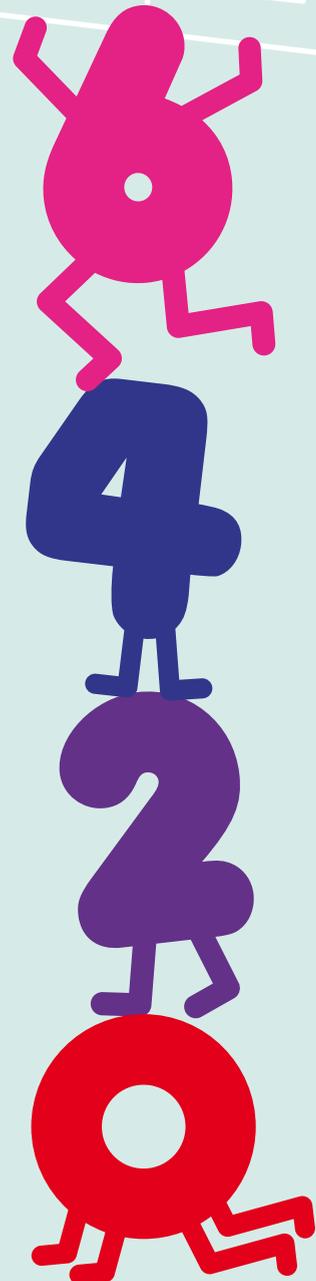
These are games and competitions which are structured and codified, in which each participant has to perform a specific task and role. These games require a good motor skill level and a developed sense of tactics.

To help teachers, we have created an index card which includes the following information:

1. Gicosport name and description
2. Activities involved
3. Number of players
4. Where played
5. How played
6. With what you play
7. How you win.



BIBLIOGRAPHY



- Adolph, K. E., Berger, S. E., Leo, A. J. (2011)
Developmental continuity? Crawling, cruising, and walking. *Developmental Science*.
- Adolph, K. E., Eppler, M. A., & Joh, A. S. (2010)
Infants' perception of affordances of slopes under low and high friction conditions. *Journal of Experimental Psychology: Human Perception & Performance*.
- Ageliki Nicolopoulou, Aline Barbosa de Sá, Hande Ilgaz, and Carolyn Brockmeyer, (2010)
Using the Transformative Power of Play to Educate Hearts and Minds: From Vygotsky to Vivian Paley and Beyond, *Mind, Culture, and Activity*, 17: 42-58.
- American Academy of Pediatrics, (2001)
Committee on Sport Medicine and Fitness and Committee on School Health. Organized Sports for Children and Preadolescents. *Pediatrics*, 107: 1459-1462.
- Antes E., (2009)
Costruire per la mente in *Mente e Cervello* 56-agosto.
- Bertinato L., Donati D., Durigon V., Fumagalli G., Tortella P., (2009)
Parco giochi e sviluppo senso-motorio. Linee guida per la progettazione, Edizioni Sapere, Padova.
- Boldemann C., Blennow M., Henrik D., Fredrika M., Anders R., Yuen K., Wester Ulf (2006)
Impact of preschool environment upon children's activity and sun exposure., *Preventive medicine*, 42 (4): 301-8.
- Bosi C., Rossini S., (2006)
Corpo e movimento: padronanza e creatività dell'insegnante, Trento Unoedizioni, Trento.
- Bruner J. (1998)
Making sense. La costruzione del mondo nel bambino, Anicia, Milano.
- Burdette H.L. and Whitaker RC. (2005)
Resurrecting Free Play in Young Children: Looking Beyond Fitness and Fatness to Attention, Affiliation, and Affect. *Arch Pediatr Adolesc Med.*, 159: 46-50.
- Callegari L. (2009)
Tesi di laurea in Scienze delle Attività Motorie e Sportive: "Indagine sulle attività motorie praticate negli asili nido di Val di Sole e Val di Non, Relatore: Prof.ssa P. Tortella, Facoltà di Scienze Motorie, Verona 2009.
- Cliff DP, Okely AD, Smith LM, McKeen K
Relationships between fundamental movement skills and objectively measured physical activity in preschool children, *Pediatr Exerc Sci*. 2009 Nov;21(4):436-49.
- Dolto F., (1992)
Come allevare un bambino felice e farne un adulto maturo, Arnoldo Mondadori Editore, Milano.
- Doman G., Doman D. (1992)
Come insegnare al vostro bambino ad essere fisicamente splendido, Armando Editore Roma, Roma.
- Gardner H., (1983)
Formae Mentis: saggio sulla pluralità dell'intelligenza, Feltrinelli, Milano.
- Gardner H., (2005)
Educazione e sviluppo della mente, Centro studi Erickson, Gardolo (TN).
- Gazzaniga M., Ivry R. B., Mangun G. R. (2005)
Neuroscienze Cognitive, Zanichelli, Bologna.



Gesell A., Francis Ilg F., Ames L. B., Bullis G. (1977)

The Child from Five to Ten. Harper and Row, New York, USA.

Grumbaum, M. (2010)

Babies On The Edge. Scientific American: Mind, November 3rd, 2010

Hardy LL, King L, Farrell L, Macniven R, Howlett S.

Fundamental movement skills among Australian preschool children, J Sci Med Sport. 2010 Sep;13(5):503-8. Epub 2009 Oct 22.

Hardy LL, King L, Kelly B, Farrell L, Howlett S.

Munch and Move: evaluation of a preschool healthy eating and movement skill program, Int J Behav Nutr Phys Act. 2010 Nov 3;7:80.

HBSC Survey 2004

Health Behavior in School-aged Children; www.hbsc.org

Held R., (1961)

Neonatal deprivation an adult rearrangement: complementary techniques of analyzing plastic sensory-motor coordination, in Journal of Comparative and Physiological Psychology, vol. 54, n. 1.

Held R., (1963)

Plastisity in sensory-motor control in Science, vol. 142, n. 3591.

Held R., (1964)

Our Understanding of Perception, in Technology Review, vol. LXVII, n. 2.

Keller H., (2007)

Cultures of infancy, Lawrence Erlbaum Assocites, March.

LeDoux J., (1996)

Il cervello emotivo, Baldini & Castoldi, Milano.

LeDoux J., (2002)

Il sé sinaptico. Come il nostro cervello ci fa diventare quelli che siamo, Milano.

Mecacci L., (1992)

Storia della Psicologia del 900, Ed. Laterza, Roma.

Okely AD, Booth ML, Chey T.

Relationships between body composition and fundamental movement skills among children and adolescents, Res Q Exerc Sport. 2004 Sep;75(3):238-47.

Organizzazione Mondiale della Sanità, (2001)

ICF-CY Classificazione Internazionale del Funzionamento, della Disabilità e della Salute - Versione per bambini e adolescenti, Erickson, Gardolo (TN).

Pento G (2007)

Crescere in movimento, Edizioni La Biblioteca Pensa, MultiMedia, Lecce.

Piaget J., (1977)

La nascita dell'intelligenza nel bambino, La nuova Italia, Roma.

Pikler E. (1979)

The competence of the infant, in Acta Paediatrica Academic Scientiarium Hungaricae, 20: 185-192.

Reinehr T, Dobe M, Winkel K, Schaefer A, Hoffmann D.

Obesity in disabled children and adolescents: an overlooked group of patients, Dtsch Arztebl Int. 2010 Apr;107(15):268-75. Epub 2010 Apr 16.

Ridgway CL, Ong KK, Tammelin T, Sharp SJ, Ekelund U, Jarvelin MR.

Birth size, infant weight gain, and motor development influence adult physical performance, Med Sci Sports Exerc. 2009 Jun;41(6):1212-2.

Robert Sternberg - Louise Spear Swerling, (1997)

Le tre intelligenze. Come potenziare le capacità analitiche, creative e pratiche, Centro Studi Erickson, Trieste

Robertson I., (1999)

Il cervello plastico, Rizzoli, Mi.

Rossini S., (2010)

Costruirsi un totem. Capire e sentire il proprio valore, Centro Studi Erickson, Gardolo (TN)

Sigmundsson H, Hopkins B. (2010)

Baby swimming: exploring the effects of early intervention on subsequent motor abilities. Child Care Health Dev., 36(3): 428-30.

Spinelli D. (a cura di), (2002)

Psicologia dello sport e del movimento umano, Zanichelli, Bologna.

Tanner, C. K. (2008)

Explaining relationships among student outcomes and the school's physical environment. Journal of Advanced Academics, 19(3). 444-471.

Taylor A. F., Kuo F. E., & Sullivan W. C. (2001)

Coping with ADD: the surprising connection to green play setting, Environment & Behavior, 33 (1): 54-77.

Taylor A. F., Wiley A., Kuo, F. E., & Sullivan, W. C. (1998)

Growing up in the inner city: green spaces as places to grow, Environment & Behavior, 30 (1): 3-27.

Tortella P., Bortolameazzi F., Bertinato L., Fumagalli G. (2010)

Space organization in unstructured games influences physical activity levels in 3 y old children, Science & Sport, 25: 33.

Tortorello, M. (2010)

With Kids and Coffee Tables, It's Trip, Fall, Ouch. New York Times, December 29th, 2010

Uras S., Bertinato L., Lanza M., Battistelli A. (2009)

Familiar context and motivations in sport among adolescents; Abstract book The 12th ISSP World Congress of Sport Psychology, Marrakesh - Maroque, June 17- 21, 2009

Van Schijndel, Tessa J. P., Singer, Elly van der Maas, Han L. J. Raijmakers, Maartje E. J. (2010)

A sciencing programme and young children's exploratory play in the sandpit, European Journal of Developmental Psychology. 7: 5- 603-617.

Veitch J, Salmon J, Ball K., (2008)

Children's active free play in local neighborhoods: a behavioral mapping study. Health Educ Res.23(5):870-9.

Vygotskij L. S., (2006)

Psicologia pedagogica. Manuale di psicologia applicata all'insegnamento e all'educazione, Erickson, Gardolo (TN).

Vygotskij L. S., (2007)

Il processo cognitivo, Universale Bollati Boringhieri, Torino.

Vygotskij L. S., (2007)

Pensiero e linguaggio, Giunti, Firenze.

Vygotskij L. S., (2009)

Storia dello sviluppo delle funzioni psichiche superiori, Giunti Editore S.p.a. Firenze.

Wenner M., (2009)

Quel serissimo bisogno di giocare, Mente & Cervello, 54: 60-67.

Winnicott D. W., (2003)

Sviluppo affettivo e ambiente. Studi sulla teoria dello sviluppo umano, Armando Editore, Roma.

Sitografia

<http://www.movingsmart.co.nz/resources-and-courses/pmp-courses/www.sparc.org.nz>

AUTHORS



Giorgio Buzzavo

Is a former professional basketball player who went on to manage sports goods companies including Spalding, Lotto and Caber. Since 1991, he has been CEO of VerdeSport, the operational sports arm of the Benetton Group. He is President of Benetton Basketball and Sisley Volley, and Managing Director of Asolo Golf Club. VerdeSport is behind the project “Primo Sport”, which will focus on the work of Laboratorio 0246.

Liviana Da Dalt

Is Associate Professor of Paediatrics, University of Padova, and Director of the Paediatrics Department at the Ca’ Foncello Hospital of Treviso.

Her experience includes working at the Paediatric Clinic of Padua, The Hospital for Sick Children in Toronto (Canada), the Children’s Hospital of Philadelphia (USA), and the Children’s Hospital Boston (USA).

She is a member of the Executive Council of the Italian Society of Emergency Paediatric Medicine, and the Paediatric Task Force of the European Society of Emergency Medicine. She is a member of the editorial boards of the journals Emergency Paediatrics, Paediatric Perspectives and the Italian Journal of Paediatrics. She is a regular participant in conferences, as an organiser and speaker. She is author of over 130 papers and two textbooks.

Valter Durigon

Is a top-flight physical education lecturer and trainer in various disciplines including rugby, basketball, volleyball, roller hockey and karate. He is a member of the international scientific research group “Project Leonardo” and is a professor in Sports Science at Verona, Padova and Chieti. In 2011, he has taught “Motor evaluation, data collection and analysis” as part of the National Course for Experts in Physical Training organized by CONI’s School of Sport. He is an author and co-author of numerous articles and book chapters.

Guido Fumagalli

Is a Professor of Pharmacology at the University of Verona. For his research work in neuropharmacology, he has received national and international awards and was appointed a member of the Academy of Sciences of Bologna. From 2003 to 2008, he was Dean of the newly established Faculty of Sports Science of Verona. This experience led him to initiate scientific research on the role of exercise in the motor development of children, which provided the rationale for the design of PrimoSport 0246, the first playground aimed at sensory-motor development of early years children.



Claudio Maffei

Is Associate Professor of Paediatrics at the Faculty of Medicine, University of Verona. He has had internships at Hôpital Herold in Paris, the University of Lausanne, the New England Medical Centre Hospitals of Tufts University, and the Centre for Clinical Research at MIT, Boston. He is in charge of a nutrition and obesity clinic at ULSS 20 in Verona. He is the author of over 100 scientific papers. He has received awards for his work on obesity and metabolic diseases in children, is a regular speaker at conferences and is a member of the governing councils of the European Childhood Obesity Group and the Italian Society of Obesity and the Italian Society of Paediatric Nutrition.

Paolo Moghetti

Is Associate Professor of Endocrinology at the University of Verona. He is author of more than 100 papers on topics related to physiopathology, insulin-resistance treatment, hormonal regulation and hyperandrogenism. He has attended endocrinology research centres including the 'Paul Sabatier' University in Toulouse and the Hvidovre Hospital in Denmark. He is a member of several endocrinology societies and is a regular conference speaker.

Maurizio Romano

is a former volleyball teacher and official of the Italian National Olympic Committee. He was Secretary General of the Italian Volleyball Federation from 1996 until 2003. Since 2004, he has been Central Director of CONI.

Patrizia Tortella

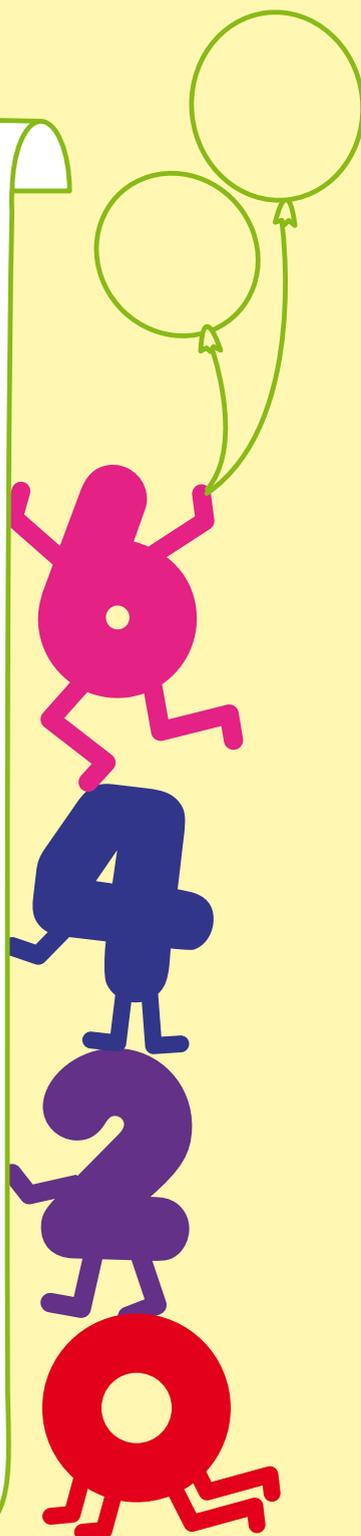
Has a degree in Sports Science and Educational Science. She is a director of Cemef, a centre for the motor education of infants. She is a lecturer at the Schools of Specialised Teaching and Support, part of the University Ca 'Foscari of Venice, and organises teaching courses at the Faculty of Sports Science of Verona, focused on motor activities in early years children. Her research, on the role of the environment in the motor development of children early in life, has been presented at conferences. She set out guidelines for the creation of the PrimoSport 0246 playground.

Official Partner

ARMANI
JUNIOR



UNITED COLORS
OF BENETTON.



Patronage by



**Italian Minister for
Labour and Social Affairs**

**Undersecretary
to the President of the Italian Council
of Ministers, Sports Delegation
Rocco Crimi**



www.0246.it

ISBN 978-88-6127-●