

***Children!***  
**Don't just sit there!**  
***Get up – and have some fun!***



**A report of the UP4FUN project  
to reduce sedentary behaviour among children,  
with recommendations for implementing similar  
projects across Europe**

## **UP4FUN**

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Text and figures supplied by members of the ENERGY-project Consortium.

Editor: Tim Lobstein (IASO)

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The UP4FUN project was developed as part of the ENERGY-project.

Principal Investigator:  
Professor Johannes Brug, VUMC Amsterdam.

**For more information on the ENERGY-project, see <http://www.projectenergy.eu/>**

**For more information on the UP4FUN project, see [www.up4fun.eu](http://www.up4fun.eu) or contact [up4fun@up4fun.eu](mailto:up4fun@up4fun.eu)**

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## The ENERGY-project Consortium

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- Ilse De Bourdehaudhuij
- Lea Maes
- Maité Verloigne
- Wendy van Lippevelde

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- Knut-Inge Klepp
- Nanna Lien

### University of Agder (Norway)

- Elling Bere
- Froydis Vik

### Max Rubner-Institut (Germany)

- Corinna Willhöft
- Monika Grillenberger

### University of Copenhagen (Denmark)

- Jørgen Jensen

### University of Zaragoza (Spain)

- Luis Moreno
- María Isabel Mesana
- Juan Miguel Fernández Alvira
- Germán Vicente-Rodríguez

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- Yannis Manios
- Eva Grammatikaki
- George Moschonis
- Odysseas Androutsos

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## Summary

The present document is aimed primarily at health promotion workers and their funding agencies but should be of value to all health workers and education workers, researchers and policy-makers interested in promoting health in children.

This report is based on the results of a pilot intervention – the UP4FUN project – a 6 week school-based initiative for children in five European countries. The UP4FUN project was part of the EU-funded ENERGY-project into child obesity prevention (see [www.projectenergy.eu](http://www.projectenergy.eu)).

The aims of UP4FUN are to reduce and break up sitting time at home (with special emphasize on TV and PC/electronic games) and to break up sitting time in school in children aged 10-12 years.

### ***Do children really sit that much?***

Children and adolescents spend as much as 90% of their waking hours indoors. The ENERGY-project found that children across Europe spend on average more than 3 hours a day watching screens (TV and computer screens combined) with highest levels found among boys in Hungary, who spend on average very nearly 4 hours a day watching screens.

Making sure that children do not sit down for long periods of time can help them perform better in school and to improve their health. Strategies for reducing sedentary behaviour generally and screen time in particular are recommended for lowering children's risk of overweight and obesity, lowering the risk of developing insulin resistance or the metabolic syndrome, and in adults they are recommended for lowering the risk of diabetes and cardiovascular disease.

### ***What is the alternative?***

Taking breaks from sitting! Almost anything will do. Light physical activity includes most activities carried out in a non-sitting posture, such as walking while talking, playing games, carrying food and getting the mail, as well as housework like vacuum cleaning and tidying their rooms. Examples of standing activities are reading, talking on the phone and playing computer games while standing, and – of course – active play.

Active play is physical activity with regular bursts of light to vigorous pace, such as crawling, jumping or running. Active play can occur:

- Indoors or outdoors
- Alone or with friends and family
- In structured situations, such as swimming lessons or sport
- In unstructured situations, such as backyards or parks.

In some obesity interventions there may be too much focus on the issue of excess weight. A focus on obesity may distract from the wider value of improving healthy behaviour: for example an increase in physical activity can reduce the risk of cardiovascular disease, diabetes and some cancers, and contribute to mental well-being, besides helping to control weight. Taking part in physical activity also increases opportunities for making friends and feeling part of the community. School-based interventions which attempt to increase physical activity are frequently focussed on adding greater periods of time in active play, sports or other physically active behaviours within or outside school hours.

### ***What did the pilot intervention show?***

The UP4FUN project was pilot tested in autumn 2011 in five countries in Europe (Belgium, Germany, Greece, Hungary and Norway). UP4FUN consisted of one or two lessons each week with practical activities at school, combined with weekly newsletters for parents and children to encourage participation at home, with activities that encouraged family involvement.

Results of the evaluation showed that, although there was no change in the **duration** of sitting time (total time watching TV or videos, or using computers or games consoles) during the project, there was good evidence that children increased the **number** of breaks they took from sitting, and there was also an improvement in their attitudes to breaks and better appreciation of what they did during a break.

In addition, the use of pedometers (step counters) to help children become more aware of the kind of activities which constitute light physical activity and the differences between sitting and moving around, were deemed motivating by teachers and children. Other incentives that were welcomed were the small, age-appropriate incentives used to encourage breaking up sitting time such as colourful stickers and bracelets.

The evaluation found that the UP4FUN project was implemented and enjoyed in varying degrees in the different countries. This indicates that one intervention package might not fit all cultures in Europe and points towards the need to develop country and/or cultural specific interventions or at least allow for sufficient local adaptation.

The evaluation also revealed the importance of changing the environment, especially the home environment, in which children spend their sitting time. For example, asking children to break up their sitting time in the home environment might need to be supported by changes in family rules on TV or games screen-time, or to reduce the number of screens (e.g. removing screens from bedrooms) in order to support the child when they are motivated to change their behaviour.

### ***What can be done?***

Obesity prevention and health promotion in childhood can be achieved through changes in children's energy balance related behaviours. Such behaviour includes improved dietary

patterns, increased physical activity and – a feature of the present report – reduced sedentary behaviour.

The findings of the ENERGY-project suggest that increased breaks in sedentary behaviour can be achieved through a school and home-based intervention. An intervention has to take certain circumstances into considerations: national and cultural traditions and social disparities need to be recognised, along with variations in family structure, ethnicity and education levels (see section 1.2 below). All these may influence the opportunity for intervention and the form and content of the intervention. For this reason it is valuable to involve the participants – especially the teachers, the parents and the children themselves – in the development stages of an initiative.

Some specific recommendations for developing an intervention like the UP4FUN project are given in section 3 of this report. These should be considered as guidance, and it should be kept in mind that local adaptations and flexible interpretations are important to achieve good participation.



# 1. Introduction and background

## 1.1 Promoting health among children in Europe

In Europe as well as other affluent regions of the world, close to or more than half of the population is overweight or obese. Obesity is one of the main determinants of avoidable chronic disease. In the absence of effective, low-cost, long-term obesity treatment, and because the ill-health effects of obesity are not fully reversible, a focus on obesity **prevention** is recommended. Because overweight and obesity in adulthood are predicted by childhood and adolescent overweight, obesity prevention should start early in life. One important target group is school-aged children, and there is an urgent need to develop effective approaches to improve obesity prevention in this age-group<sup>1</sup>.

The school environment is regarded as a good setting for health promotion interventions among school-age children. Schools offer an environment where almost all children can be reached repeatedly and continuously, and where health education can be combined with health promoting structural environmental changes. For obesity prevention, schools have additional relevance as a health promotion setting, because most children eat a significant amount of food at school and schools offer physical education as well as other physical activity opportunities. Furthermore, schools can set a standard for good health behaviour which can transfer to the family environment and can have an influence on other family members.

## 1.2 Energy-balance related behaviours among children in Europe

Preventing overweight and obesity and promoting healthy dietary patterns, healthy physical activity and reduced sedentary behaviour (together referred to here as *energy-balance related behaviours*) during childhood are important health policy priorities in Europe and beyond. To curb the obesity epidemic, data on the prevalence of overweight and obesity, and on children's current energy-balance related behaviour is needed in order to identify groups at highest risk for overweight and the forms of intervention which might be appropriate. In earlier reports large differences in childhood overweight and obesity between European countries have been found, but data for these studies come from a range of different investigations, conducted in different years, with different age groups and using different methods, such as self-reported vs measured weight and height.

The present document presents data from the ENERGY-Project (ENERGY is derived from *European Energy balance Research to prevent excessive weight Gain among Youth*<sup>1</sup>) which included a survey of over one thousand children aged 10–12 years in each of seven European countries.<sup>2</sup> The countries were: Norway, the Netherlands, Belgium, Spain, Greece, Hungary and Slovenia. The surveys were conducted in 2010 and included measurement of

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<sup>1</sup> World Health Organization *Population-based Prevention Strategies for Childhood Obesity*. WHO Geneva 2010.

<sup>2</sup> The two key papers are (i) Brug J et al. Differences in Weight Status and Energy-Balance Related Behaviors among Schoolchildren across Europe: The ENERGY-Project. *PLoS One* 2012, **7**:e34742, and (ii) Brug J et al. Differences in weight status and energy-balance related behaviors according to ethnic background among adolescents in seven countries in Europe: The ENERGY-project. *Pediatric Obesity* 2012, (epub).

children's height and weight, and questions about a range of energy-balance related behaviours, including key dietary behaviours, physical activity and sedentary behaviour. The surveys aimed to answer the following questions:

- What are the distributions and differences in body mass index (BMI), waist circumference (WC), overweight and obesity in schoolchildren aged 10-12 years in seven countries across Europe?
- What are the distribution and differences in dietary intake, physical activity, sedentary behaviour and sleeping duration among these children?
- What are differences in anthropometrics and energy-balance related behaviours according to gender, parental education and ethnicity across different countries in Europe?

The results are shown in the set of maps on the next pages, drawn from the scientific reports of the study.<sup>3</sup> They show large differences in many of the measures and indicate significant variation between different countries, and between different social groupings defined by parental educational level and by ethnicity.

The prevalence of overweight (including obesity) pooled across all seven countries from different regions in Europe was 25.8% and 21.8% for boys and girls respectively.<sup>4</sup> Although some studies have suggested that overweight has ceased to rise in some countries, the present prevalence remains higher than desirable and unacceptably high in some countries.

Across all countries children engaged frequently in dietary intake, physical activity behaviours and sedentary behaviour that are regarded as potential risk behaviours for becoming overweight/obese, with large differences between countries. Many children skipped breakfast on one or more days per week, especially in Greece and Slovenia, and the mean intakes of sugar-sweetened beverages in the Netherlands, Hungary and Slovenia was high. Low levels of active transport were reported especially in Belgium, Slovenia and Hungary, while low levels of sports were reported in Greece. Norwegian children reported the most minutes of cycling and walking to school.

Soft drink consumption ranged from more than 600 ml/day among Hungarian and Dutch boys to less than 150 ml/day in Greek and Spanish girls. In all countries except Hungary, boys had significantly higher intakes than girls. Fruit juice intake was high in Dutch boys, bringing their mean sugary drinks consumption to more than one litre/day.

Children of lower educated parents reported less favourable intakes regarding soft drink, fruit juice, and breakfast than children of higher educated parents. Children whose parents were born in a different country consumed greater quantities of soft drinks than children whose parents were born in the country of current residence.

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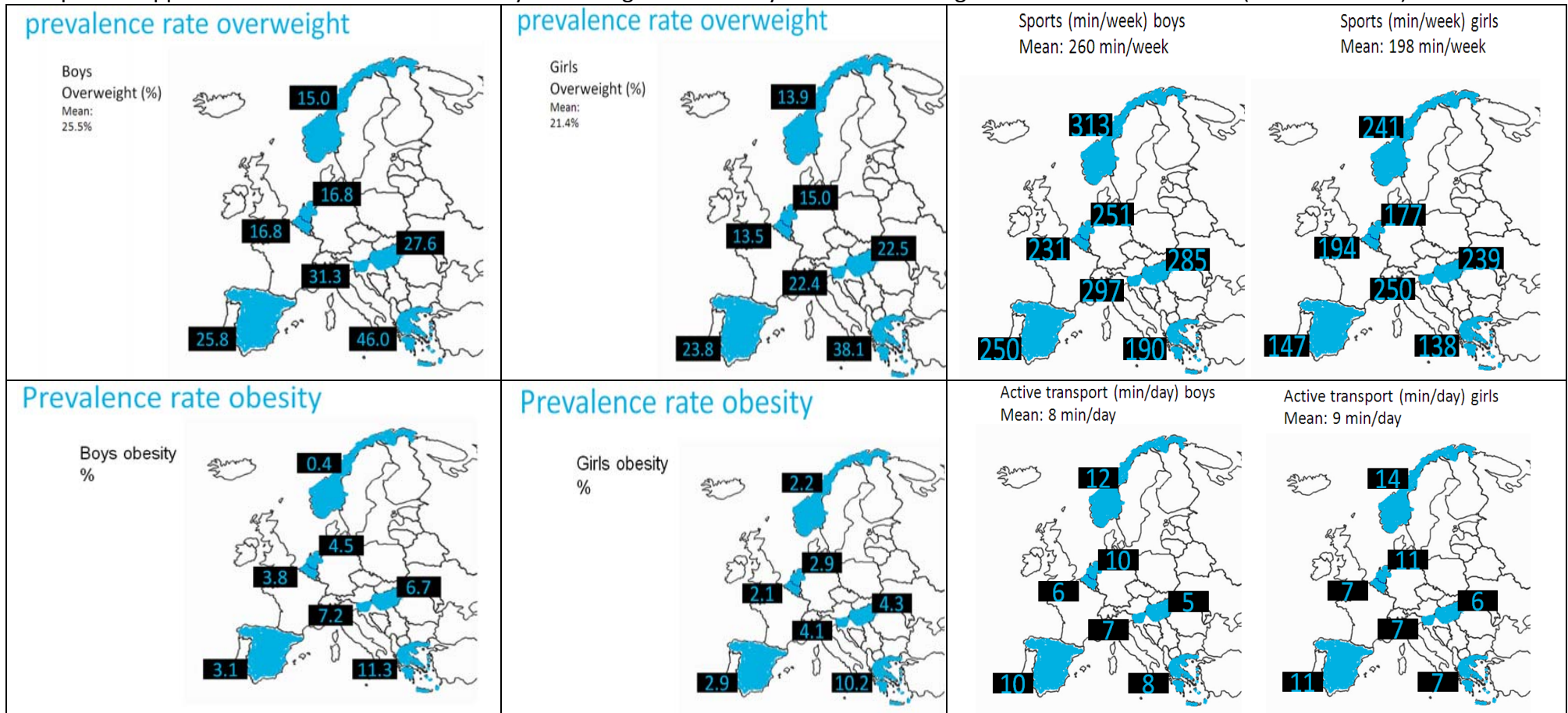
<sup>3</sup> See the two papers cited in the previous footnote.

<sup>4</sup> These results are based on the use of the IOTF cut-offs for defining age- and gender-specific BMIs for children equivalent to a BMI of 25kg/m<sup>2</sup> at age 18. Using the 2007 WHO proposed cut-offs of 1sd above a defined age- and gender-specific reference, the prevalence of overweight is 34.6% and 26.8% for boys and girls respectively.

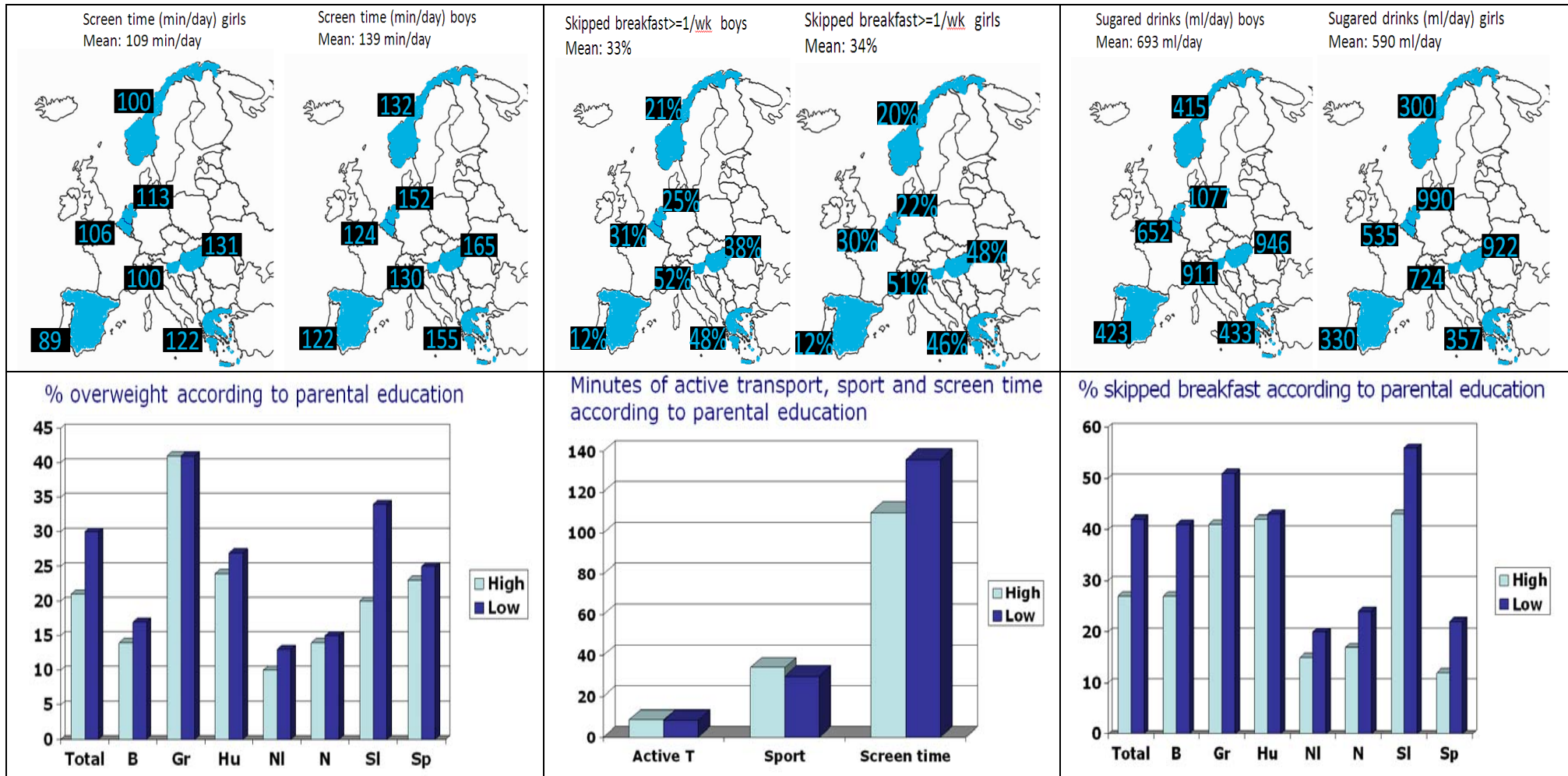
### 1.2.1 Figures: Findings from the 2010 ENERGY project surveys

Summary results for children aged 10-12 years in Norway, the Netherlands, Belgium, Hungary, Slovenia, Greece, Spain.

Sample size approx. 1000 children in each country. Overweight and obesity defined according to international standards (Cole et al 2000)<sup>5</sup>



<sup>5</sup> Cole T, et al. *British Medical Journal* 2000, **320**:1240-1243.



With an average of more than 40 minutes/week, children in Norway and Netherlands spent much more time cycling to school than children in other countries. In general, girls cycled significantly fewer days per week to school than boys, but no significant gender differences in weekly minutes of cycling were found. Spanish and Norwegian girls reported the most minutes of walking to school. In general, girls reported more weekly minutes of walking to school than boys.

For engagement in sport activities, boys reported on average 260 minutes/week ranging from more than 300 minutes/week in Norway to less than 200 minutes/week in Greece. Girls reported on average almost 200 minutes/week, ranging from 250 minutes/ week in Slovenia to less than 150 minutes/week in Greece. Girls reported lower engagement in sport across all countries. Children of higher educated parents participated significantly more in sports than those from lower educated parents.

For sedentary behaviours, screen activities were high in all countries, with children spending on average more than 2 hours/day in TV and computer activities. Across the countries, boys reported spending about 3 hours 15 minutes a day in screen-viewing activities (TV and computer-time combined). The figure was a little lower for girls, with girls in Spain showing the lowest levels at 2 hours 40 minutes a day. Children of higher educated parents and children of parents born in the country of current residence reported less screen time than those from lower educated parents or of parents born elsewhere. The results also indicate that for every hour of TV viewing, another 30-40 minutes of computer screen viewing occurs, indicating that interventions to reduce sedentary behaviour should not be restricted to television viewing only.

In summary, obesity and overweight are at record levels among Europe's children, with nearly one in twenty children obese and a further four in twenty overweight, averaged across all seven countries surveyed. Lowest levels were found in Norway where only one child in seventy is obese, and highest levels in Greece where one child in ten is obese. The reasons for this variation are likely to be complex and possibly different in each country. Children in Greece have the lowest levels of sports activities, children in Hungary watch the most television, and children in the Netherlands consume the most sugared drinks. Girls tend to be slimmer than boys, but girls also tend to participate in sports less than boys. Boys watch more television and drink more soft drinks.

Social differences are also important. Generally, children of more highly educated parents tend to engage in more favourable energy-balance related behaviours, and also tend to be slimmer, except in Greece and Spain. Children in families with non-native ethnicity are more likely to become overweight and obese, tend to consume more soft drinks, to skip regular meals such as breakfast more often, and watch more television and participate in less sporting activity. However, they also walk or cycle to school more often.

It is apparent that interventions to make changes in behaviour need to be sensitive to these differences. In particular, cultural and lifestyle differences need to be set in the context of family resources, including skills and education but also financial resources and access to support and health information.

## 1.3 Evidence review

### 1.3.1 Overview

There is good evidence that simply reducing the amount of sedentary behaviour by increasing the number and frequency of breaks in sitting time may also have a beneficial effect, even if no specific physical activities are undertaken.<sup>6</sup>

Furthermore, there is some evidence that interventions aiming simply to decrease sedentary behaviour among children may be as effective at preventing weight gain as more complex interventions that attempt to make changes in multiple health behaviours simultaneously.<sup>7</sup>

Several systematic reviews have been undertaken to examine the most effective and cost-effective approaches to obesity prevention in childhood<sup>8</sup>. Many interventions in schools have had only small effects on health behaviour and insignificant effects on body weight or BMI, especially in the longer term. The most successful interventions tend to be those which combine dietary behaviour change with physical activity and reduced sedentary behaviour, rather than focus on only one of these behaviours. Failed interventions did not combine educational with environmental change strategies, did not involve the family and home environment, and did not conduct careful pre-testing before larger scale implementation. Among a number of school interventions examined for their cost effectiveness, multi-faceted school-based programmes with an active physical education component have been shown to be most cost effective.

Evidence from research studies that have investigated dietary patterns, physical activity and sedentary behaviour in children suggest:

- Small incentives can be an effective method for altering behaviour in the school setting.
- School-based programmes to change behaviour can benefit from home support and parental involvement.
- Effective school-based programmes to change energy-balance related behaviour are more likely to be successful if such programmes combine activities to improve the children's knowledge and motivation, but also give children the opportunities to be more active and sit less

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<sup>6</sup> Tremblay MS et al. Systematic review of sedentary behaviour and health indicators in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity* 2011, **8**:98.

<sup>7</sup> van Grieken A et al. Primary prevention of overweight in children and adolescents: a meta-analysis of the effectiveness of interventions aiming to decrease sedentary behaviour. *International Journal of Behavioral Nutrition and Physical Activity* 2012, **9**:61.

<sup>8</sup> For example (i) Flynn MA et al, Reducing obesity and related chronic disease risk in children and youth: a synthesis of evidence with 'best practice' recommendations. *Obesity Reviews* 2006, **7** (Supp 1): 7-66, (ii) Waters E et al, Interventions for preventing obesity in children. *Cochrane Database of Systematic Reviews* 2011, **12**: CD001971, and (iii) Haby MM et al, A new approach to assessing the health benefit from obesity interventions in children and adolescents: the assessing cost-effectiveness in obesity project. *International Journal of Obesity* 2006, **30**:1463-75.

- Parents are more likely to be involved if there are school-based, joint activities such as cooking, tasting, walking tours and sports, and if these activities are low-cost, conveniently timed and participatory rather than didactic.
- Furthermore, the gender of the child and the socio-economic status of the family may have an influence on the effectiveness of interventions.
- In addition, children themselves can actively assist in the design of appropriate forms of support for behaviour change interventions.

Interventions designed to encourage healthy behaviour in children increasingly recommend a 'whole school' approach which integrates the various opportunities for health promotion in the school, including classroom teaching, physical activity sessions, canteen food choices and vending machine sales, and which involves children in the formation of policy. The chances of successful interventions are increased if measures are broad-based and well integrated into children's lives, such as:

- school health policies involving cafeterias, vending machines and snack bars, plentiful physical activity classes and physical activities during recess periods;
- classroom teaching linked to the school's food service and activity practices;
- school practices linked to home practices;
- prolonged and integrated changes rather than short-term programs;
- interventions involving staff and/or parents as well as children;
- interventions sensitive to the cultural, ethnic and gender characteristics of the children.

It should be noted that the large majority of interventions to change children's behaviour have been undertaken in schools, perhaps due to the convenience for structuring the trials, but also because children spend a considerable amount of time in the school environment, and the school can have a strong influence upon the child's understanding, attitudes, motivation and behaviour. In school-based projects, the experience of the teaching staff is invaluable and should be brought into the design of an intervention at an early stage. However, school-based interventions need wider support if they are to be most effective: significant effects on children's behaviour and the reduction of overweight have been achieved with multi-setting interventions which include home, school, near-school and community environments and the involvement of a wide range of institutions including food suppliers, media publishers, health services, recreation services, planners and city policy-makers.

Even in these broader community initiatives there is a need to ensure that all sections of the community are reached in order to avoid widening the health gaps between different socio-economic classes.

In addition, school-based and community-based initiatives have limited power to achieve sustained change if (a) the changes made during an intervention are of short duration and easily reversed after the intervention ends, and (b) changes in the local environment are not supported by changes in the wider environment, such as the pricing, accessibility and promotional marketing of foods and beverages, and access to green spaces and improved safety and security in local neighbourhoods to encourage physical activity.

Several reviews of the scientific literature were undertaken as part of the ENERGY-Project, focusing on scientific evidence relating to interventions that target children aged 10-12 years. Findings can be summarised as follows:

### **1.3.2 Specific factors influencing children's energy-balance related behaviours**

A review of the scientific literature found that parents' physical activity, doing physical activities with parents and parental logistic support were identified as the most important predictors of physical activity in children. A lack of parental rules was the strongest predictor of sedentary behaviour at home. Socio-economic status was positively related to physical activity and negatively related to sedentary behaviour. The available studies suggested a positive relationship between soft drink availability at home and consumption. Soft drink availability and consumption at school were the most important school-based correlates of soft drink consumption. A permissive parenting style was related to more soft drink consumption and less breakfast consumption. Little research has been done to identify school-environmental correlates of energy-balance related behaviours and more needs to be done.

#### **(1) Breakfast consumption**

Since breakfast is an event that happens most of the times at home, parents play a major role. Having breakfast together with the parents at age 10-12 is an important determinant of breakfast consumption and is influenced by rules set by the parents to create a routine of having breakfast every morning. Children with overweight parents and children from low social-economic status families tend to have breakfast less often, although children from a single-parent high socio-economic status household also have breakfast less often.

#### **(2) Soft drink consumption**

The availability of soft drinks at home at age 10-12 is a very important determinant of soft drink consumption, and parents are the main decision-makers for purchases for home consumption. If soft drinks are available at home, parental rules can control how frequently a child is able to take a soft drink. Soft drink consumption is also determined by the availability of such drinks in the school and near-school environment, and there is evidence that restrictions on soft drinks at elementary school can lower soft drink consumption.

#### **(3) Physical activity**

The most important family-based determinants of physical activity are parental activity, parental attitude towards physical activity and parental encouragement and logistic support (parents pay fees, transport their child to the activities, provide equipment and clothing and shoes, etc.). Parents who perceived more barriers for their child to be physically active at age 10 had children that were less totally physically active, participated less in sports and did less active transportation at age 16.

Solutions to tackle barriers need to be offered to the parents, and schools can be involved in this: for example organising joint sporting events and offering the use of school facilities and coaching during non-school hours. Schools also need to recognise the psycho-social aspects of encouraging physical activity: for example the need to increase children's feelings of self-efficacy might be encouraged through individualised or cooperative activities rather than



through competitive activities, and to offer skills acquisition (e.g. self-defence, dance, yoga) rather than repetitive games playing.

#### **(4) Sedentary behaviour**

Reviews of the literature indicated that the higher the parental BMI, the greater the extent of children's sedentary behaviour. Children from low socio-economic status families are also at greater risk of high levels of sedentary behaviour, as are those children that have repeated a class in elementary school. Parental rules/restrictions of screen-based behaviours, the number of TVs in the home and parental role modelling of sedentary behaviour were the three most important correlates of screen time.

#### **(5) Incentives that motivate behaviour**

A systematic search of the literature found evidence that price incentives are effective for altering consumption in the school setting. Other types of economic incentives have been used in combined intervention schemes, but the inclusion of a mix of intervention elements makes it difficult to draw conclusions about the effectiveness of the economic incentive instruments per se in these studies.

#### **(6) The mediators involved in changes in behaviour**

A review of the literature was undertaken in order to identify psycho-social and environmental mediators that can be used in interventions to change energy-balance related behaviours in young people. There was strong evidence for *self-efficacy* and moderate evidence for *intention* as mediators of physical activity interventions. Indications were found for *attitude*, *knowledge* and *habit strength* to be mediators of dietary behaviour interventions. There were too few sedentary behaviour interventions reporting on mediating effects to reach a conclusion.

#### **(7) The moderators which influence behaviour change**

A literature survey found that gender, ethnicity, age, baseline values of outcomes, initial weight status and socio-economic status were the most frequently studied potential moderators. The moderator with the most convincing evidence was gender: school-based interventions appear to work better for girls than for boys. However, many studies reported non-significant moderating effects, and the methodological quality of most studies was poor, and consequently there is lack of insight into what interventions work for whom.

#### **(8) Role of parents and families in school-based interventions**

A survey of scientific publications found evidence for positive effects of parental involvement in changing children's behaviour and changing the determinants of that behaviour. When interventions addressed several home-related determinants and practices concerning eating and physical activity behaviours simultaneously, the effects were stronger. However, no conclusive evidence could be provided concerning the added value of parent involvement, and there is a need for more studies comparing school-based interventions with and without a parental component.

#### **(9) Parents' views**

A series of discussion groups were undertaken with parents of children aged 10-15 years, in order to understand the best procedures to encourage parental participation in school interventions to promote healthy behaviour. Variation in parental socio-economic status

and parental school involvement was taken into account when recruiting the parents. The discussions showed that physical activity was considered to be a joint responsibility of school and parents, while nutrition was parent's responsibility but supported by the school, and prevention of sedentary behaviour (e.g. TV watching, screen-games playing) as parent's sole responsibility.

Parents suggested that the best way of being involved was through interactive and practical activities undertaken together with their child, including cooking, food tasting and nutrition workshops, walking or cycling tours, and sport initiatives together with their child. Activities should be cheap, at a convenient time, focused on their children and not on themselves, not tutoring, not theoretical, and could be either school-or home-based.

## 2. The UP4FUN project

### 2.1 Rationale for the development of the intervention

The previous section outlined the evidence-base for developing an intervention to reduce children's sedentary behaviour. The ENERGY-Project was designed to develop a pilot intervention scheme for 10-12 year old children. The form of intervention which was piloted in the ENERGY-Project was a 6-week school-based, family-involving initiative to reduce and break up sitting time.

As indicated earlier, sedentary behaviour is a neglected area of research and yet can be a significant point of access for changing energy-balance related behaviour overall. Prior to the current survey, there were few figures for children's sedentary behaviour in Europe but data from other countries indicate that children can spend 2 to 4 hours a day watching screens and up to 10 hours a day in sedentary behaviour.<sup>9</sup> Children tend to sit more during weekends and sitting time increases throughout adolescence. The ENERGY-project survey results indicate that children across Europe are spending an average of over 3 hours a day watching screens (TV and computer screens combined) with highest levels found among boys in Hungary, who spent on average very nearly 4 hours a day watching screens.

In school, breaking up sitting time may help improve children's concentration and learning. Reducing screen time at home may also improve school performance, including improved grades and results on numeracy and literacy tests. Having a bedroom television may reduce hours of sleep and impair day-time concentration as well as influence school performance negatively. Multiple TVs in the home and having TV in the bedroom may also increase children's TV viewing, and children who watch more TV at a young age are likely to continue to do so as they get older. Analyses within ENERGY also confirmed that parental and peer modelling are influential: children are more likely to watch more TV when their parents and peers do so too. Parental rules are also important: TV and PC time is considerably lower in families where parents have put rules in place regarding TV and PC time. Furthermore, the pattern of sitting time is important for health not just the amount of accumulated sitting time throughout the day, so it is important to consider interventions which break up the periods of sitting.

What is the alternative to sitting? *Light physical activity* includes most activities carried out in a non-sitting posture, such as walking while talking, getting the mail, undertaking household chores such as washing dishes, tidying a room and helping prepare meals. Examples of standing activities could be reading, talking in the phone and even playing computer games while standing. The more time children spend in light physical activity, the less time they spend sitting. Getting out of the home may help: although there is seasonal variation, children may spend more than 90% of their waking hours indoors, whereas being outside may increase the opportunities for standing and walking activities.

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<sup>9</sup> Salmon J, Tremblay MS, Marshall SJ, Hume C. Health risks, correlates, and interventions to reduce sedentary behavior in young people. *Am J Prev Med.* 2011, **41**:197-206.

Research has shown that parental encouragement and support are important when modifying children's sitting time. Children in families with clear rules about screen time also spend less time watching screens. As children grow older, intrinsic motivation is likely to cause more lasting changes because the motives are then in line with the person's own values and interests. For a child to become intrinsically motivated they should feel that they are capable of doing what is needed (have competence), they should feel they have a choice to do it or not (autonomy) and they should feel they are in a supportive environment and situation where they belong (relatedness). If any of these are not in place the motivation may be diminished.

## ***2.2 The structure of the UP4FUN project***

An intervention was designed on the basis of the five steps of the Model of Planned Health Education and Promotion<sup>10</sup> in which a health problem is assessed and its behavioural and environmental risk factors are analysed, the determinants and mediators are considered and specific goals set and methods adopted to tackle the problem, followed by implementation, which is then assessed and fed back to the analysis stages. In the current project, the aims are to reduce and break up sitting time at home (with special emphasis on TV and PC/electronic games) and to break up sitting time in school among 10-12 year olds in Europe.

The ENERGY-project review of the added value of a parental component to school-based interventions, suggested that addressing multiple home-related determinants and parenting practices were most likely to be effective and that the parental components should encompass different strategies. In the process of considering effective interventions, a series of 17 focus groups was held with a total of 92 parents. Parents said that they want to be involved in activities related to energy balance-related behaviours if this implies 'doing things together' with their child at school or at home. Physical activity was considered to be a joint responsibility of school and parents, nutrition as parent's responsibility but supported by the school, and prevention of sedentary behaviours as parent's sole responsibility. Parents proposed interactive and practical activities together with their child as the best way to involve them such as cooking, food tasting, nutrition workshops, walking or cycling tours, sport initiations together with their child. Activities should be cheap, on a convenient moment, focused on their children and not on themselves, not tutoring, not theoretical, and school- or home-based.

On the basis of the scientific reviews and the stakeholder interviews, an intervention was developed named 'UP4FUN' which included a school component and a family component. A pilot implementation and evaluation of the intervention was carried out in a selected number of schools in Belgium, Germany, Greece, Hungary and Norway in the autumn of 2011.

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<sup>10</sup> Brug J, Oenema A, Ferreira I: Theory, evidence and Intervention Mapping to improve behavior nutrition and physical activity interventions. *Int J Behav Nutr Phys Act* 2005, **2**:2.

The school component of the intervention included one or two lessons per week for 6 weeks. The teachers were provided with a manual for school lessons and activity breaks. Each week there was a focus on a different topic: week 1 introduction to UP4FUN, week 2 increasing awareness about sedentary behaviours, week 3 goal setting related to sedentary behaviour, week 4 influence of the home environment on sitting time, week 5 breaking up prolonged sitting time and practicing active transport, and week 6 summary of the UP4FUN intervention and a family challenge.

The teachers were trained by the ENERGY-Project staff before the start of the intervention. The family component included 6 newsletters for pupils and parents (the UP4FUN *NEWS*, one per week). The *NEWS* included personalized messages from the children based on tasks done in school or as homework, educational information and a homework assignment.

In addition, teachers had an option to organize a Family Fun Event to strengthen the intervention as a family activity and sustain the effects beyond the end of the project.

Throughout the intervention, incentives were used to support motivation (step counters and stickers) as well as the social commitment to the message (bracelets printed with UP4FUN).

An UP4FUN website with information regarding the aims of the project was made available in English and in native language in three of the participation countries: Belgium, Greece and Norway.

Specific tasks of the intervention for the pupils to be performed at school were: registering steps for undertaking different activities in school and from home to school, making a drawing of sitting and non-sitting activities throughout the day, making lists of indoor and outdoor alternatives for sitting activities, registering sitting time duration and setting challenges (for reducing sitting time), making a list of the activity breaks at school to break up sitting time during lessons, making a poster of active recess alternatives.

Family-involved tasks were: showing/talking about the work done at school, handing out and reading the *NEWS*, taking the family challenge (to reduce family sitting time), discussing the options for making or changing rules regarding TV/DVD watching and computer/game console use, counting and noticing the location and use of screens at home, making a list of activity breaks taken at home.

## 2.3 UP4FUN project procedures

This section provides a list of material used in the intervention, a brief overview of the intervention and its components and a check list for the things to do in preparation for the implementation.

### 2.3.1 Overview of the UP4FUN project

Week #	Lesson	Practical tasks for pupils in school	Theme Family NEWS	Homework	Other
<b>Week 1</b> <i>Introduction to UP4FUN</i>	Lesson 1: Introduction and overview of UP4FUN	Write date of Family Fun Event in <i>NEWS 1</i>	<i>"Welcome!"</i>	Tell about project and have parent note down date for Family Fun Event from <i>NEWS 1</i> .	Hand out bracelets
<b>Week 2</b> <i>Awareness of sitting and light physical activity alternatives</i>	Lesson 2A: Step counting  Lesson 2B: Registration of sitting time	Try out step counter in class Draw a normal week day in <i>NEWS 2</i> . Make lists of fun no-sitting things inside/outside home in <i>NEWS 2</i> . Set due dates for homework with step counting and homework of registering sitting on one weekday and one weekend day.	<i>"Awareness of time spent sitting"</i>	Talk to parents about their figure of sitting during a normal week day and the lists of fun alternatives in <i>NEWS 2</i> . Show them step tasks in <i>NEWS 2</i> . Register steps for 5 small activities in <i>NEWS 2</i> . Show them sitting registration card. Register sitting time one afternoon + one weekend day and do sub calculations per activity.	Register who get which step counter. Collect the class set of step counters after use.
<b>Week 3</b> <i>The challenge – reducing sitting time</i>	Lesson 3A: Evaluating sitting time Lesson 3B: Taking on a challenge	Calculate total minutes of sitting and write results in <i>NEWS 3</i> . Define Challenge – write it in <i>NEWS 3</i>	<i>"Helping and supporting your child to aim for less sitting time"</i>	Show parents own sitting time result and the challenge for the next week in <i>NEWS 3</i> and ask for support. Register progress on challenge with stickers in <i>NEWS 3</i> daily and write up to 3 things that made it difficult and	Hand out stickers  Collect the class results on sitting for the quiz.

				the solutions to these difficulties.	
<b>Week 4</b>  <b>Home environment and sitting time</b>	Lesson 4: What influence us? Environmental influence vs own choice (rules/physical environment)	Class discussion about experience with challenge – difficulties and solutions? Write down how many in the class has some rules about screen time + some examples of rules in <i>NEWS 4</i> . Guess number of screens at home and write in <i>NEWS 4</i> .	<i>“Do screens control your family life or do you control them?”</i>	Have parents guess screens and then count them and write in <i>NEWS 4</i> . Share how many in the class had rules about screen time and the examples of these and then discuss own rules. The optional family challenge of 1 screen free day – write up to 3 positive and negative experiences with this.	Note how many in the class has some rules about screen time and the guessed numbers of screens for the quiz.
<b>Week 5</b>  <b>Breaking up prolonged sitting and practicing active transport</b>	Lesson 5: Finding them breaks.  Active transport, recess and activity breaks	Write date, time and place for Family Fun Event in <i>NEWS 5</i> and hand out response forms.  Have class discussion on what to do during recess and write these into the poster.	<i>“Short activity breaks are better than no breaks at all”</i>	Remind parents about the Family Fun Event by giving them <i>NEWS 5</i> .  Go by active transport to school one day and register steps	One Activity break in every sitting class for the whole week. Note the numbers of steps to school for the quiz.
<b>Week 6</b>  <b>Summarizing the class results and spreading the Challenge</b>	Lesson 6: Prepare Family Fun Event and evaluate active transport.	Prepare Family Fun Event – assign groups to the different tasks in the program. Write results of quiz, new ideas and number of families that have taken on the challenge in <i>NEWS 6</i>	<i>“Thank you for taking part in the UP4FUN project!”</i>	Fun facts from quiz, some new ideas and number of families that have taken on the UP4FUN challenge at the Family Fun Event written in <i>NEWS 6</i> .	Family Fun Event with bracelets Handing out bracelets to those not at Family Fun Event.

### 2.3.2 Procedural check-list for the UP4FUN project

	Tasks	
1	Contact schools and ask them to take part in UP4FUN. Allow six months between the first contact and the start of the project.	<input checked="" type="checkbox"/>
2	Provide the schools with the brief overview of the UP4FUN project in order to plan it into their teaching in the next semester.	<input checked="" type="checkbox"/>
3	Set a start date for UP4FUN. The project should be conducted within one semester, but does not need to be conducted within a 6 week period.	<input checked="" type="checkbox"/>
4a	Set a date for Teacher training. Teacher training can be done in the week before the first of the six weeks, or earlier, but it is preferable to do it as close to the start of the implementation as possible.	<input checked="" type="checkbox"/>
4b	Invite all teachers and assistants involved in UP4FUN to take part at Teacher training. Include the headmaster or someone else from school management, and a parent representative. Teacher training takes about 1 hour. This can be organized locally at each school, or teachers from multiple schools can be invited to one common training.	<input checked="" type="checkbox"/>
5	Provide contact information (e-mail address and telephone number of person in charge) that teachers can use if they have any questions, and the participants can use to communicate their feedback. This can also be done through the UP4FUN web-site.	<input checked="" type="checkbox"/>
6a	Have someone fluent in English and knowledgeable of the topic translate the materials (Teacher's manual, The <i>NEWS</i> , the Sitting time registration card, the Teacher training presentation) or have a professional translator/company do it.	<input checked="" type="checkbox"/>
6b	Verify the translated texts and adapt to local circumstances if needed.	<input checked="" type="checkbox"/>
7a	Order UP4FUN materials from a printing office. Advice on design, fonts and material specifications can be found in the UP4FUN Design Manual – see <a href="http://site.up4fun.eu/up4fun/up4fun-material">http://site.up4fun.eu/up4fun/up4fun-material</a> (item P8.2.1).	<input checked="" type="checkbox"/>
7b	Teacher's manual, one per teacher.	<input checked="" type="checkbox"/>
7c	<i>NEWS</i> , one per pupil + some extra for teachers and others.	<input checked="" type="checkbox"/>
7d	Sitting time registration card, one per pupil.	<input checked="" type="checkbox"/>
7e	Poster frame for recess activity ideas, one per class.	<input checked="" type="checkbox"/>
8	Order bracelets. Order five per participating pupil as both the pupils and their siblings and parents should get bracelets.	<input checked="" type="checkbox"/>



9	Order step counters. The class set of step counters can be passed around among the classes at a school that takes part, meaning that one class set (approximately 30) can be enough.	<input checked="" type="checkbox"/>
10	Order stickers. One sheet per pupil.	<input checked="" type="checkbox"/>
11	Make one electronic copy (i.e. CD-rom) per class or school of all relevant materials.	<input checked="" type="checkbox"/>
12	Carry out teacher training.	<input checked="" type="checkbox"/>
13	Hand over UP4FUN materials to teachers.	<input checked="" type="checkbox"/>
14	Provide support on request during the implementation of the UP4FUN project.	<input checked="" type="checkbox"/>
15	Collect the Step counters for reuse at other schools. Other materials can be kept by the schools when they have completed the UP4FUN project.	<input checked="" type="checkbox"/>

### 2.3.3 Materials check-list

Letter for parents (information about the project and a consent form for participation)	<input checked="" type="checkbox"/>
Handout for teacher training	<input checked="" type="checkbox"/>
Teacher's manual (including manual activity breaks)	<input checked="" type="checkbox"/>
Binder for teacher's material	<input checked="" type="checkbox"/>
CD (electronic copy of material)	<input checked="" type="checkbox"/>
Forms for pupils	<input checked="" type="checkbox"/>
Sitting time registration card	<input checked="" type="checkbox"/>
Classroom poster frame for recess activity ideas	<input checked="" type="checkbox"/>
Stepcounters/pedometers	<input checked="" type="checkbox"/>
Stickers for pupils	<input checked="" type="checkbox"/>
Silicon bracelets with UP4FUN embossed	<input checked="" type="checkbox"/>
Newsletters for parents	<input checked="" type="checkbox"/>
Software Adobe InDesign C S6 to edit Newsletters	<input checked="" type="checkbox"/>

See the UP4FUN website materials at <http://site.up4fun.eu/up4fun/up4fun-material>.



## The UP4FUN Newsletter

The Newsletters are a key element linking school and home and encouraging children to involve their families in assessing the home environment. Homework activities can be included in the Newsletter, along with messages for parents and siblings.

For the complete set of Newsletters used in the pilot study, see <http://site.up4fun.eu/up4fun/up4fun-material>.

**SUGGESTIONS FOR PARENTS**

- Show positive interest in your child's project and be supportive of the activities he/she is doing.
- Read the Up4Fun News and help your child with the homework in them.
- Talk to other parents about the project and share your experiences of what works to reduce children's sitting time.

**SUGGESTIONS FOR CHILDREN**

- Start noticing when and why your family members are sitting.

**Does too much sitting really matter?**

- Screen time and media content may have adverse effects on school performance like grades and results on math and reading tests (3).
- Sitting for prolonged periods, even if you also exercise regularly, could be bad for your health (25).
- Screen time in childhood may increase the risk for poor fitness, and raised cholesterol in adulthood (14).
- In healthy adults sitting time is observed to increase the risk for type 2 diabetes and cardiovascular disease (28).

**Do children really sit that much?**

- Most children spend 40 hours per week sitting during leisure time (16), and this is more than in previous generations (1).
- Watching TV and other forms of screen-based entertainment accounts for 50% of the children's sitting time (16).
- Most children spend more than 90% of their waking hours indoors (4).

**Homework for children**

- Give your parents (or grandparents or older sibling) this News and invite them into the project. Make sure they note the Family Fun Event in the calendar.

**WELCOME!**

Up4Fun wants to give you and your child impulses, ideas and tips for trying out FUN activities that will get children UP on their feet in order to reduce their sitting time.

In the life of children today, TV and computers play a natural part. They have the potential to offer new and alternative ways of learning - but may also contribute substantially to children's total time spent sitting.

Not sitting for long periods and taking breaks in between can help children to be more active, healthier, concentrated and perform better in school.

If you and your family are already very conscious about not sitting too much - keep up the good work!

**What is Up4Fun?**  
Up4Fun is a 6 weeks school based project aimed at 10-12 year olds across Europe.

Up4Fun consists of 1-2 lessons per week and practical activities at school, and these weekly News for the family with homework for the children. The findings of the project in the class will be presented by the children at a Family Fun Event in the last week.

**Up4Fun covers the following themes:**

- Week 1:** Introduction to the project
- Week 2:** Awareness of sitting and light physical activity alternatives
- Week 3:** A challenge - reducing sitting time
- Week 4:** Home environment and sitting time
- Week 5:** Breaking up prolonged sitting and practicing active transport
- Week 6:** Summarizing the class results and spreading the Challenge



**DEAR** \_\_\_\_\_

The class' findings of the project will be presented at the Family Fun Event \_\_\_\_\_ day \_\_\_\_\_ at \_\_\_\_\_ o'clock. Please mark the calendar and help me get my homework done on time to get them into the overall class findings!

**UP4FUN NEWS 01**

## Sitting Activity self-report cards

Children can use these cards to monitor their sedentary (sitting) behaviour and count the instances of different sitting activities during out-of-school hours.

MY SITTING ACTIVITIES ON A REGULAR		AFTERNOON							
<b>TV/Film</b> TV/DVDs/videos	TOTAL MINUTES : <input type="text"/>	1	2	3	4	5	6	7	8
<b>Games</b> computer/game console/mobile phone	TOTAL MINUTES : <input type="text"/>	ONE WEEKDAY AFTERNOON							
<b>Computer</b> chatting, e-mailing, surfing	TOTAL MINUTES : <input type="text"/>								
<b>Reading</b> comics, books	TOTAL MINUTES : <input type="text"/>								
hours/min →	 1 2 3 4 5 6 7 8								
		UP  FUN							

## Local UP4FUN websites

Websites are optional and although they require effort to develop and maintain, they bring potential added value to the intervention. The purposes of the website can be to create awareness of sitting time and health, present the purpose of the UP4FUN project and provide links to more practical information on some of the intervention strategies not explored in depth in UP4FUN and to track which of these receives the most interest (“clicks”). The site also provides a common contact point for collecting e-mails with questions on the project, and can be used as a means of disseminating the project. The UP4FUN pilot intervention website is at [www.up4fun.eu](http://www.up4fun.eu).

Project organisers and school staff can be given access to the ‘back’ of the website when they are given a login name and password by the site’s coordinator. This allows teachers to set up a contact email address, set up a national or school-specific sets of pages, edit these pages, upload documents and other material in electronic form, and download all the intervention material already available through the pilot testing of UP4FUN.

## ***2.4 Evaluation of the UP4FUN pilot intervention***

In this section we describe some of the results of the outcome and process evaluation of the UP4FUN pilot intervention.

### **2.4.1 Overview of results**

In order to evaluate the effectiveness of the intervention, the pilot intervention was tested in the autumn of 2011 in a cluster randomized controlled trial with a pre- and post-test design in five countries across Europe: Belgium, Germany, Greece, Hungary and Norway. The children were aged between 10 and 12 years, with two grade levels participating in the intervention.

Measures of sedentary behaviour along with attitudes and knowledge about a range of factors that might influence sedentary behaviour were assessed in the intervention and control schools.

The results show that, compared with children in non-intervention schools, an effect of the intervention was observed on

- the number of breaks during watching TV/DVD and using computer/games consoles;
- the attitude towards, and liking/preferences for breaking up continuous sitting time.

No effects of the intervention were observed for total screen time, either for watching TV/DVD or using computer/games consoles.

A few determinants of screen time were affected by the intervention, but this appeared to be related to an increase in the accuracy of the perceptions after the intervention, since the intervention children were more likely to agree that it is hard not watching TV/DVD, and their parents reported an increased number of games consoles at home. It is possible that the intervention triggered greater awareness about the problem of screen time use in adolescents; i.e. that the children became more aware of how hard it really is to not watch TV/DVD, and the parents became more aware of the actual numbers of games consoles present at home as part of the homework in week 4.

The process evaluation of the intervention showed that the implementation of the intervention was good for some parts of the intervention, especially the handing out of bracelets and stickers by the teachers, and also the handing out of the newsletters (*NEWS*). However, the *NEWS* received by the parents decreased throughout the intervention period indicating that increasing numbers of pupils did not deliver the *NEWS* at home.

Most of the intervention classes registered the sitting time, the steps and undertook activity breaks at school. Fewer children did the drawing of when they sit and what they do, wrote a list of alternative non-sitting things they like to do at home, took the challenge to reduce sitting time, made a poster at school for active recess activities, or took the family challenge, but there were country variations in these numbers.

Teachers and parents believed that the intervention had only a moderate or low effect on reducing child sitting time. However, the children, parents and teachers reported that they

liked the project, and in particular, the activities regarding the usage of pedometers (for step counting) and the activity breaks. The activity breaks were also conducted at home by several children. This might explain the effect seen in increased breaks during sitting time in the intervention group.

The Family Fun Event/family challenge was not implemented in all five countries. In general the intervention did not appear to trigger the amount of family interaction that was intended. (See comments in 'What the participants said' section, below.)

Country differences were observed in the process evaluation, and Greek children, parents and teachers rated the project the best and implemented the largest number of the intervention components. However, analysing the effect of the intervention for separate countries did not show a larger effect of the intervention in Greece than in the other countries.

#### **2.4.2 What the participants said**

As part of the evaluation of the UP4FUN pilot intervention, teachers, parents and children were given the opportunity to give their opinions as free-text answers. A summary of their comments, suggestions on how to improve the project and some original quotes are given in this section. Documents analysed were: the evaluation forms of the teacher training, the teachers' log-books, the post-test teacher process evaluation questionnaire and the post-questionnaires for children and parents. Because the comments were simply compiled from the five pre-test countries, not quantified and generally not differentiated by the country of origin, it has to be kept in mind that they cannot be generalised to all countries, but can give valuable hints about what might be issues to consider when implementing an external project such as UP4FUN in schools.

#### **Interest and motivation**

In the participating schools, most teachers were generally interested in the topic and recognised the relevance of reducing and breaking up sitting time. Teacher motivation is essential in an intervention that depends largely on classroom activities. However, German teachers of two schools said that they were not very motivated to participate in UP4FUN and gave as a reason that the head of school decided to participate in the project without consulting and involving the school staff.

Teachers commented that pupils were generally interested in the project and participated actively which was thought to be at least partly due to the "group spirit" during school time within the class and together with the teacher. The children themselves did not give a lot of comments about the project on the post-test questionnaire, but when they did the comments were mostly positive.

"The project helped me to observe what I usually do!" (*child, Greece*)

"We liked the project very much and we had a really good time. We also learned how to reduce our sitting time in front of TV!" (*child, Greece*)

"The project was fun and cool!" (*child, Belgium*)

"... In fact, I find bracelets and stickers lovely.... We also learned a lot of things on how to reduce our sitting time and do break up activities in front of the TV." (*child, Greece*)

After the project the teachers wrote that it was difficult – after the first excitement for UP4FUN – to keep children interested and also doubted that families will continue with the behaviour change (if they were made) after the end of the project.

"I have done several projects on such a topic. After a short while, pupils were mostly back to their daily grind." (*teacher, Germany*)

"The pupils are tired of "nagging" about screens, so this could have less emphasis." (*teacher, Norway*)

"We (our class and us teachers) have become pretty much unenthusiastic to the project. We were eager in the start, but now the commitment and engagement has fallen. We think many pupils are active in their leisure time. Some lost motivation and thought that NEWS tasks were unnecessary and seemed tired of the project. Others were enthusiastic and had reasonable feedback to the project." (*teacher, Norway*)

A factor that might have contributed to little or decreasing interest in the project for some parents and children could be that the topic of reducing sitting time while watching TV, playing electronic games or using the computer was thought to be not relevant as they do not spend much time using screens and/or have strict rules for screen use. It was mentioned by some parents that they did not see the relevance of the project, because their children are quite active. However, it appeared that they were rather thinking that being physically active will prevent children from being sedentary, but it has to be kept in mind that a person can be both, physically active, but still spending a significant amount of time sedentary.

"In our family, we anyway pay a lot of attention to physical activity, so that the project was not really new for him." (*parent, Germany and Norway*)

"It is questionable if pupils in grade 5 or 6 at the Gymnasium [type of school with the highest level of education in Germany] are a good target group: they seem to be very physically active during their leisure time." (*teacher, Germany*)

"The thing is that screen time is NOT a problem in our house. PE, playing outside, school activities, - weekends and holidays together with us parents are prioritized and pleasurable." (*parent, Norway*)

## Implementation of UP4FUN

### Timing

There were specific concerns about the time in the school year when the project was introduced: the Up4FUN project was carried out in fall during the time between the start of the school year and Christmas holidays, several teachers commented that this is a busy time of the school year where there are already a large number of activities and that it was difficult to integrate the lessons into their regular schedule. They also said that the parents usually don't have time for extra activities at this time of the year. It was also mentioned that this was exam time and teachers were busy with the respective preparations. A further reason for the problematic timing of the project in Germany was that pupils in grade 5 are new to the secondary school and – before conducting a new project – have to get used to the regular school life. Also in Hungary there are some structural changes for grade 5 students to which they have to get used.

“I had exams, a maths projects is concurrently going on and the parents don't have time on the eve of Christmas!” *(teacher, Germany)*

“The project would have been nice during summer. Then the children could have spent more time outside. After Whitsun holidays the exam pressure would have been gone. Shortly before Christmas, we and also the parents did not have time to do the Family Fun Event.” *(teacher, Germany)*

The timing wasn't the best for the 5th grade pupils, because this is the first semester in the upper grade which requires an adaptation for pupils to new teachers, new circumstances, more serious school task standards which makes the teachers' duty more difficult. It would be better to start the project in the spring semester when the pupils already got used to be upper grader. *(teacher, Hungary)*

### Integration of UP4FUN in the school routine

A number of teachers commented that there is hardly any extra time during the regular teaching to include an external project because their workload is already very high. Another reason given is that there are already too many projects in schools that teachers have to do besides their regular teaching. It was commented that UP4FUN was time-intensive and that it was not always easy to integrate all topics into their daily school routine and curriculum and that teachers had to skip regular lessons. A German teacher commented that she had to give priority to various other issues, particularly in the social context, in the class. After the implementation of the project, some German teachers said that they used specific lessons that were meant for other internal or external projects or the “class teacher lesson” that is reserved to address important issues the pupils are concerned with. It was suggested that such projects should be rather integrated into the education plan with extra paid hours.

Teachers said that they are not willing to sacrifice specific subjects. A suggestion for a better integration into the curriculum given by some teachers is that the project lessons could be integrated in different subjects, such as physical education, social studies, biology, English (e.g. when talking about leisure time/hobbies) as well as history and society. However other teachers thought that it would be better if only one person was in charge of the project and



conducting all parts although this would have the disadvantage that lessons of certain subjects would have to be sacrificed.

It was thought to be important by some teachers that the material is handed out well in advance (before summer holidays) so that the project can be integrated in the planning of the school year and does not conflict with already-planned lessons. In Norway teachers said that they were under the expression before the project started, that the project worker from the University would take over the teaching or do some part of the implementation, and suggested that not so much responsibility should be left for the teacher.

"Lack of time is the main obstacle. In our curriculum there is no similar topic, into which we could integrate in this project." *(teacher, Hungary)*

"The topic does not fit with the current topic of the subject and had to be dealt with separately." *(teacher, Germany and Norway)*

"I had to shorten the time for carrying out the project and reduce it to the most important issues, because otherwise too much teaching time is lost." *(teacher, Germany)*

I think it was too much work for the teacher to add up and calculate all the results. It takes too much time, that's why I did not do it." *(teacher, Norway)*

" We have lot of other tasks to do (e.g. weekly headmaster's duties, administration). Sometimes we had to exchange certain lessons for holding UP4FUN lessons." *(teacher, Hungary)*

"We did not know enough about the project before we started. One of the teacher at this level said that he did not want to participate had he known the workload for the teachers ahead of the project." *(teacher, Norway)*

"The three 7 grade classes have gone through structural changes this semester, and that means that "outside projects" like this, has been even more demanding to carry out/implement." *(teacher, Norway)*

### **Organisation within the school**

Some teachers – particularly those in the small schools – said before the start of the project that the flexibility of teachers and the easy collaboration with their colleagues will facilitate the implementation of UP4FUN. However, after the project was conducted, some teachers said that the organisation of the project within the school was not always easy as the teachers had to decide who should carry out the project or allocate the individual parts to several teachers and that often there is lack of time to pass on detailed and timely information amongst colleagues.

### **Duration of a project**

The design of the project has to take account of the need to be sufficiently long to ensure there is a chance of achieving behaviour change, while being sufficiently short that there is no loss of focus or interest in completing the project. Generally the duration was considered acceptable, but a number of teachers commented that it is difficult to carry out such a project within six weeks and proposed to spread it over the whole course of the school year. However some teachers had the opposite opinion and would prefer to do the project in fewer lessons (e.g. to integrate the project weeks 1 and 2 into one week) or even to

condense it into a project week or split the project into different sub-projects, e.g. on project days. In Norway it was also said that one lesson per week can easily be forgotten due to the busy time schedule.

### **Procedures and contents of the project**

It was commented by teachers that it would be better to have shorter more condensed units than a whole school lesson, because it is rather difficult to keep the attention of the pupils if the content is more cognitive. It was also commented that it was a high workload for the pupils. Teachers commented that some children get confused if too many tasks are given and that the contents should not be too cognitive for class 5 and 6 but that more emphasis should be given to practical activities, such as the use of pedometers and activity breaks. It has to be kept in mind that in the pilot study several different types of school (i.e. with differing educational level) and different classes with e.g. differing previous knowledge of the children participated and therefore the project might have been too challenging for some children whereas others did not have any problem to follow (it was even suggested to give more challenging tasks, particularly to older children).

It was suggested that practical tasks could be started in the first week of the project in order to get pupils engaged right from the beginning. This was supported by other teachers who had the impression that pupils favoured all practical exercises and particularly enjoyed the activity breaks that were carried out during lessons.

“It was a lot (too much) for the pupils to answer. Several of the weaker pupils did not endure to participate in the last tasks, because it appeared “too much work”. It is a pity if the pupils will get scared of the workload – too much to read/take a stand or a position to.” (*teacher, Norway*)

“Pupils had to fill too many data, this kind of exercises are hard to understand at this age.” (*teacher, Hungary*)

Some more suggestions from teachers: nutrition should have been integrated; for classes of grade 6 in German schools, the material could be used in English as this was thought to be more interesting and more relevant for the lessons; information about the goals and the structure of the project would be sufficient for the teachers as the theoretical information is mostly already known.

### **Specific project elements**

Not all elements of UP4FUN were rated equally useful or practicable by the teachers. Many teachers said that they liked the material provided in UP4FUN, they liked the peppy look and said that the teacher manual was well-structured and helped to organise the lessons. The stickers and bracelets and particularly the pedometers were thought to be fun for the children, and teachers observed that they contributed to an increased motivation. Some

more specific comments on the material used in the project are listed in the following paragraphs.

"Well organized. "Ready to give out" – packages to parents/pupils worked fine."  
(teacher, Norway)

### Bracelets

Some teachers said that the bracelets were welcomed at first, but after a few days not many wore them. As a reason it was suggested that maybe they were not "cool" enough, although some children seem to have liked them. A teacher suggested that the project could be done without the bracelets as not all children liked to wear them. It was said that bracelets should be coloured (and not black as they were).

### Pedometers

During the project, pupils used the pedometers to count their steps during some activities at school, during some daily activities at home and on their way to school in order to increase their awareness about activities that are more physically active and those that are more sedentary. Teachers suggested some other possibilities for the use of the pedometers (however it should be kept in mind that there is a specific purpose, i.e. to increase awareness, and the pedometers should not just be used as a fun tool):

- Pupils could count steps during sport activities.
- Pupils could count steps for the whole day (this was tried by a teacher and s/he said this motivated the children and encouraged them to be more active during daily life as a real class competition evolved. Nobody was laughed at if s/he did less. Children who have not been very physically active before were motivated a lot.).
- Have the pupils count steps for the whole day for one week (this was thought to be effective and lead to a positive competition).
- Pedometers could be kept by the pupils throughout the project.
- A better system for administrating the pedometers is needed (too much hustle).
- The use of pedometers could be integrated in week 2

"Step counters, being "gadgets", have motivational effect." (teacher, Hungary)

"The task with the pedometers was enjoyed most by the pupils." (teacher, Germany and Norway)

" It was hard to control the pupils after they had received the step counters, they wanted to keep on moving continuously" (teacher, Hungary)

"The pedometers were fun, but the homework was not so fun..." (child Norway)

"The pupils found it exciting with the pedometers. They used it for school and PA. I met students on my way home from work that wore it. They competed in getting most possible steps." (teacher, Norway)

### **Sitting card**

The only comment on the sitting cards was that a teacher thought that they were too small and easy to lose.

### **Activity breaks**

"It was easy to introduce the activity breaks because children basically liked the time periods during which didn't have to learn." (*teacher, Hungary*)

"The pupils liked the activity breaks." (*teachers, Germany and Norway*)

### **Drawing task**

One teacher commented that this was not being motivational enough for the children.

### **Poster**

A teacher said that it was not necessary to make the poster, but did not give a reason.

### **Active transport**

In project week 5 the topic of active transport was addressed with the aim to encourage the pupils to walk to school or use the bike instead of being driven to school by car. A teacher suggested integrating this topic in week 2. If most children in a school already come by bike and only those children who live too far away use public means, the topic could be skipped. However, in Hungary it was thought that it is an important topic to integrate.

"Active transport is done by almost all our pupils in these grade levels, they walk or bike." (*teacher, Norway*)

"The topic of active transport to school is needless as most pupils come to school by bike or tram." (*teacher, Germany*)

### **Newsletter**

Although the process evaluation data showed the newsletters were generally liked by parents and children, one Norwegian teacher thought that there was too much information in the newsletters and that the design was too confusing and that it does not need to be "so cool, like a music video."

### **Homework**

Homework involving other family members was an important part of UP4FUN. However, some teachers said that it was difficult to know to what extent they really did what they were asked to do and to say something about the effects in the homes.

“Had talks with the pupils every week, sometimes more than once, but did not get a clear picture of how this was implemented at home. *(teacher, Norway)*”

“Pupils like to tell about their rules and screen use at home. “ *(teacher, Germany)*”

“The pupils liked counting screens at home. A lot of them have rules at home for screen time.” *(teacher, Norway)*

## Quiz

Only one teacher from Norway commented on the quiz.

“We had saved previous forms and sheets and the pupils found it fun to guess number of screens and so on. How long they had walked on one school year and how long they were sitting down in a weekend day.” *(teacher, Norway)*

## Family involvement

Teachers said before the start of the project that information for parents needs to be in an understandable language. One teacher had the wish that external experts should inform the parents about the project (and not the teachers themselves).

A number of teachers said that generally parents are difficult to be reached as they often lack motivation and interest concerning extra activities done at school and that participation at parents’ meetings is low. It was asked why the school has to be used as an approach to reach the parents and it was even suggested that all activities should be carried out in school and not to involve the parents at all. Other teachers had contradicting opinions and said that in the project emphasis should be given to the involvement of the parents and for them there was even too little information and/or events that address the parents.

“Parents are reluctant to participate in additional events.” *(teachers, Germany and Norway)*

“Most of the parents don’t have enough time to do the homework together with their children.” *(teacher, Hungary)*

A teacher had the notion that parents might not be willing to be involved in UP4FUN, because they might perceive it as an interference with their privacy or that they might feel accused that they are not able to do enough for the health of their children. Teachers think that they have too little influence on what happens at home and that the additional extra time needed for homework might be problematic. Involving the parents through homework given in the newsletters was thought to be difficult in some families due to their background. This is in line with the results of the process evaluation that showed that the newsletters did not seem to have successfully reached all parents. However, a number of parents commented that they liked the project and were able to accomplish some behaviour change.

"I very much liked your project. It helped me and my family to reduce our sitting time." *(parent, Greece)*

"I think the project is really great. My child had a lot of fun. From time to time s/he reflected if it is useful to walk or use the car." *(parent, Germany)*

"Sorry, newsletters are just not my thing. I found the whole project very appealing. My daughter liked best using the pedometers." *(parent, Germany)*

"The newsletters only 'appeared' now [at the end of the project]! Our son did not realise the need to pass them on. His motivation was not very high 'it's of no use'". *(parent, Germany)*

"We did get NEWS in the beginning of the project. But then it stopped. Maybe my son did not give it to us, but we looked and did not find anything in the back pack. We think the school did not send it home." *(parent, Norway)*.

"We do get up from the coach almost every commercial break on TV to do activity breaks, ...our child remind us to do so". *(parent, Norway)*

"Very nice try, although it takes time to get results. You have to do this (means the changes) for a long period of time" *(parent, Greece)*

### **Family Fun Event**

In some countries (Belgium, Greece and Hungary) the Family Fun Event was realised not in all, but in a few schools and seemed to have been a great success: In Belgium, two schools did the Family Fun Event and the parents who were present were very enthusiastic and seem to have had a lot of fun. In Hungary, it was organized in one school. In Germany and Norway no Family Fun Event was carried out, teachers arguing that they did not have time to plan it and that parents would not have time shortly before Christmas for any extra event.

"I had a really good time in the Family Fun Event. We played, laughed, sang and danced." *(child, Greece)*

"During the quiz we stopped at times to have activity breaks along with music and dancing, in order to draw more attention to the importance of reducing our sitting time. It was an amazing evening and it really worth the time and effort. All children and parents enjoyed it very much and got the take-home messages of the UP4FUN project." *(teacher, Greece)*

"The family fun event and giving bracelets to families was not done because pupils were too old for this ("childish")." *(teacher, Norway)*

" The family fun event was integrated with another school event. The teachers were glad to see that it raised interest for the program: not only the classes participating in the Up4FUN joined the quiz, but the other families as well. This encouraged us that such a program could be implemented". *(teacher, Hungary)*

## ***2.5 The costs of the UP4FUN project***

For the purposes of evaluating value for money, the main costs to be considered are the 'repeat costs' that are expected if an intervention is undertaken in a new situation. In the UP4FUN project the original research and design costs were funded under the ENERGY-project budget. The UP4FUN project depends on already-existing classroom teachers and therefore the costs of staff are included in the school budgets. The main 'repeat costs' in the UP4FUN project are the materials used in running the project.

The table on the next page shows the costs for materials used in the pilot interventions undertaken in Belgium, Norway, Germany, Greece and Hungary.

Estimates are given for four classes of 25 pupils each (total 100 pupils) in one school. The costs have been estimated by the ENERGY-project teams based on the implementation of the UP4FUN pilot intervention in autumn 2011. Prices are in Euro including VAT.

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MATERIAL	Amount needed	Total amount	Costs of 1 (€)	Costs for 4 classes (100 pupils) (€)				
				Belgium	Norway	Germany	Greece	Hungary
			<b>Belgium/Norway/ Germany/ Greece/Hungary</b>					
<b>Letter for parents (information about the project)</b> 2 pages; copies (black-and-white)	1 per pupil	100	0.075/0.08/0.08/ 0.025/0.03	7.5	8	8	2.5	3
<b>Print-out Teacher Training</b> 8 pages; copies (colour)	1 per teacher + headmaster	5	4.0/2.4/2.4/0.7/2.4	20	12	12	3.5	12
<b>Teacher's manual (including manual activity breaks)</b> 65 pages; copies (black-and-white)	1 per teacher	4	3.25/2.6/2.6/1.05/2.6	14	10.4	10.4	4.2	10.4
<b>Binder for teacher's material</b>	1 per teacher	4	3/3/3/1/-	12	12	12	4	-
<b>CD (electronic copy of material)</b> package of 10 CDs	1 per teacher	4		4.90	7	7	6	6
<b>Set of forms for pupils (10 forms each 1 page)</b> printing (black-and-white)	1 per pupil	100	0.3/0.4/0.4/0.12/0.4	30	40	40	12	40
<b>2-page Newsletters</b> 3 editions, two-sided, colour, 115g/m <sup>2</sup> paper	1 per pupil, 20 for teachers	120	0.5/0.5/0.5/0.15/0.07	180	179	179	54	25.2
<b>4-page Newsletters</b> 3 editions, two-sided, colour, 115g/m <sup>2</sup> paper	1 per pupil, 20 for teachers	120	1/1.4/1.4/0.31/0.1	360	493	493	112	36
<b>Software Adobe InDesign C S6</b> to edit Newsletters		1	906	906	906	906	906	
Additional fonts		1	55	55	55	55	55	
Expert to make changes with Adobe InDesign								172
<b>Stepcounters</b> (plus postage if ordered in the Internet)	2 class sets to be shared	50	8	400	400	400	400	400
<b>Sitting time registration card (2 pages)</b> printing (DIN A6 (148 x 105 mm), colour, two-sided, paper 300g/m <sup>2</sup> )	1 per pupil	100	0.6/0.42/0.42/0.01 0.07	60	42	42	1	6.85
<b>Classroom poster frame for recess activity ideas</b> printing (size: 500 x 700 mm, colour, paper 250 g/m <sup>2</sup> )	1 per class	4	6/70/12/8/1.07	24	280	48	36	4.28
<b>Stickers</b> one sheet per pupil if ordered from local company (including postage)	1 per pupil	100	2.5	250	250	250	250	250
<b>Silicon bracelets with UP4FUN embossed</b> (plus postage and customs duty)	1 per pupil, 2 for siblings, 2 for parents	300 small, 200 large	0.49	245	245	245	245	245
<b>Total with Software Adobe InDesign</b>				<b>2568.4</b>	<b>2939.4</b>	<b>2707.4</b>	<b>2091.2</b>	<b>-</b>
<b>Total without Software Adobe InDesign</b>				<b>1662.4</b>	<b>2033.4</b>	<b>1801.4</b>	<b>1185.2</b>	<b>1210.73</b>



## ***2.6 Steps and time needed to prepare and implement the UP4FUN project***

### **2.6.1 Putting an institution in charge**

The UP4FUN project was carried out as a pilot study in Belgium, Hungary, Germany, Norway and Greece and the involved researchers of the five research institutes were the ones who developed and prepared the material and carried out the teacher training in the participating schools. If the intervention is planned to be put into practice, it is of utmost importance that a local institution, such as a local education authority in charge of health promotion in schools, will be put in charge of promoting the project and assisting schools with its implementation. As schools are already overloaded with their original tasks and extra projects, it is necessary that they are provided with ready for use material and be instructed by an external trainer.

### **2.6.2 Local adaptation of UP4FUN**

The UP4FUN intervention was developed in such a way that it could be implemented during the pilot study in a uniform way in different European countries and across a variety of schools. However, the evaluation showed that UP4FUN worked better in some countries than in others, e.g. in terms of parental participation, indicating that one intervention may not fit all. UP4FUN might need adaptation to a) the local conditions and b) the schools. If an institution wants to promote UP4FUN, it should check if all parts of the intervention are relevant and suitable to the country, region and school. Schools should be able to adapt an intervention according to their needs in order to make it fit to the school's focus, interest and curriculum, the school's environment and clientele of parents and pupils. For example in a certain country or school the topic of "active transport" (coming to school by e.g. bike or walk to school) might not be relevant or a school has already implemented activity breaks in their classes. When implementing an intervention such as UP4FUN it is important to involve stakeholders, such as local school authorities, headmasters, teachers, parents and pupils themselves right from the beginning of the planning process. In order to increase motivation and sustainability amongst teachers, parents and pupils, they should participate during the adaptation of the intervention.

The materials to be translated to the local language (versions in English, Hungarian, Dutch, Greek, German and Norwegian are available from the UP4FUN pilot project coordinators at [up4fun@up4fun.eu](mailto:up4fun@up4fun.eu)) and might have to be adjusted depending on changes in the order of the intervention weeks, the contents, the language used etc. Particularly the newsletters for the parents need to be written in a language that is easy to understand by everybody. The materials need to be bought and prepared ready for use by the teachers. The teachers need to be trained on the rationale of the project in order to increase understanding and motivation, on the content and on details on methods, material and time needed to include it into their teaching.

### **2.6.3 Time needed for preparing UP4FUN**

Estimates of the time needed for preparing UP4FUN before it will be handed over to the schools for implementation are given below.

### Time needed for preparing UP4FUN

What to do?	Who?	Estimate of time needed
Adapt intervention to local conditions and schools	Institution in charge involving stakeholders	30 hours
Translation of material	Institution in charge	20 hours
Ordering and preparing material	Institution in charge	5+ hours
Training of teachers	Institution in charge/headmaster/teachers	2+ hours per school

### 2.6.4 Time needed for implementing UP4FUN

During the pilot study, the UP4FUN project was carried out over a period of six weeks. This was done due to time constraints, but also in order to keep the intervention as similar as possible within the different countries for evaluation purposes. However, some teachers favour having the flexibility to include the UP4FUN contents into their curriculum whenever they match with the topic or at a time point during the school year when there are fewer constraints due to exams. During the pilot study, six lessons, i.e. one lesson per week was given as the minimum teaching time. However, evaluation showed that this time was not always sufficient and that it would be good to give some additional time for deepening the contents. Teachers need sufficient time to prepare the lessons. At the end of the project, it is suggested to organise a Family Fun Event to finalise the project. The preparation and implementation of the Family Fun Event needs some extra time by the teachers, parents and pupils involved.

The institution in charge will need time throughout the implementation phase to assist the implementing schools in any arising issues and if necessary providing additional material.

Estimates for the time needed for implementing UP4FUN, after the teachers have been trained, are given below.

### Time needed for implementing UP4FUN

What to do?	Who?	Estimate of time needed
Familiarization with the contents of UP4FUN and preparing the integration into the teaching plan of the school year	Teacher	8 hours
Prepare lessons	Teacher	Less than 3 hours per week
Carry out lessons	Teacher	Week 1: 45 min. Week 2: 2 x 30 min. Week 3: 2 x 30 min. Week 4: 45 min. Week 5: 45 min. Week 6: 20 min. (evaluation of active transport from

		week 5) + 20 min. (evaluation of Family Fun Event) + preparation and carrying out of Family Fun Event
Prepare family fun event	Teacher/Parents/Pupils	5 hours
Carry out family fun event	Teacher/Parents/Pupils	Up to 1 hour preparation, 2 hours event and 1 hour clean up

### **3. Recommendations for interventions**

The ENERGY project consisted of a series of systematic reviews of the scientific literature along with the design of the UP4FUN project and its pilot testing in five countries. Much of this work is being reported in scientific journals, and a selection of the reports published by mid-2012 is given in section 5.5, below.

From this work it is possible to give recommendations for implementing interventions that aim at preventing overweight and obesity in children with a focus on reducing sedentary behaviour, particularly sitting time, elsewhere in Europe.

As a point of principle, it is important to recognise the need to design interventions on the basis of evidence and scientific understanding of the theories of behaviour change and methods for achieving this. Resources provided for interventions need to be used responsibly and professionally, and the project proposals need to be justifiable and feasible and the results timely and measurable.<sup>11</sup> Within this context some flexibility is needed to ensure that an intervention is suitable for the local context and the participants' concerns.

#### ***3.1 Addressing multiple behaviours***

In order to make an intervention with a great impact on preventing excessive weight gain, multiple behaviours need to be addressed. Some of these behaviours have been identified in the ENERGY-project: eating breakfast, drinking sugar containing drinks, using active transport, participating in sports, and sedentary behaviours. Other factors to consider are the consumption of fruit and vegetables and unhealthy snacks.

Measures to reduce sedentary behaviour are reported to be effective in reducing children's risk of obesity, and therefore a focus on sedentary behaviour – aimed at increasing the frequency of breaks as well as reducing the duration of sitting time – is recommended. As we have indicated, the UP4FUN project material can be used to develop the part of such an intervention targeting sedentary behaviour.

#### ***3.2 Breaking up sitting time***

The UP4FUN project was able to break up sitting time, and strengthened children's awareness of the need for activity breaks and increased their liking of such breaks, in a six-week intervention run during normal school timetables and with modest family involvement. These parts of the intervention are strongly recommended to be included in an intervention to prevent excessive weight gain and promote healthy energy-balance related behaviours among school children in Europe.

#### ***3.3 Use of incentives***

The process evaluation of the intervention indicates that age-appropriate incentives were important to support motivation and increase enjoyment of such a project for children. The

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<sup>11</sup> For more on the indicators for assuring success, such as the SMART indicators, see Barnekow V, Buijs G, Clift S et al *Health-promoting schools: a resource for developing indicators*. European Network of Health Promoting Schools, 2006. See [http://www.nepes.eu/files/Report%20Health%20Promoting%20Schools\\_0.pdf](http://www.nepes.eu/files/Report%20Health%20Promoting%20Schools_0.pdf).

step counters (pedometers), colourful stickers and bracelets, were liked very much by the pupils. Particularly the use of the step counters appeared to be a valuable factor for increasing motivation and interest in taking breaks and assessing light physical activity.

### ***3.4 Involving the family***

An important barrier for interventions that target a behaviour that is mostly performed at home, such as sitting during leisure-time activities, is the difficulty in reaching the family, particularly the parents. The UP4FUN pilot intervention did not reach the parents to the extent that had been intended. Parents were asked in focus groups carried out within the ENERGY-Project how they wanted to be engaged in family involved projects like UP4FUN. These findings and results from the literature were used to develop an approach to reach the parents using newsletters including tasks at home to be done by the child involving other family members, a family fun event, incentives (bracelets for the whole family) and a website. Nevertheless, this did not seem to be sufficient to ensure adequate access to and participation by the parents. Future projects need to consider how to overcome these barriers.

### ***3.5 Allowing for adaptation***

One intervention does not seem to fit all: the process evaluation showed clear country differences in the implementation of the intervention. Even though screen time activities were high in all countries surveyed in the cross sectional study (see section 1.2 above) and varied little between the countries, the UP4FUN intervention was implemented and enjoyed in varying degrees in the different countries. This shows that one intervention package might not fit all cultures in Europe and points towards the need to develop country-specific or culture-specific interventions and ensure there is sufficient flexibility to allow for local adaptations of a core intervention. Also schools should be able to adapt an intervention in order to make it fit with the school's focus, interest and curriculum, the school's environment and the needs of parents and pupils.

### ***3.6 Involvement of teachers***

It should not need to be said, but it is always important to remember that the timely planning, preparation and provision of materials is important for a successful project, and so too is the preparation by the school if the project is a school-based initiative. In particular, teachers need to know as much as a semester in advance what changes to their normal timetables, teaching procedures and curriculum might need to be accommodated.

It is of utmost importance that teachers are motivated to participate in the project: They need to feel that the project is worthwhile and of benefit to their pupils if they are being asked to make changes to their normal routines and have to accept an extra work load. Flexibility is important, and teachers need to be able to adapt the core elements of a project so that they fit comfortably into their normal practices. Furthermore, teachers know their pupils' abilities and interests and therefore should actively participate in the project design process – and this can further improve the teachers' motivation to participate and improve the chances of successful outcomes.

For an example of teacher feedback in the UP4FUN project, see section 2.4.2 above.

### ***3.7 Participatory design***

The teachers are not the only group who can have a valuable role to play in shaping the intervention. Children themselves, and their parents, will have useful insights into what will be interesting to them, what might act as an incentive and increase motivation, what they might resist or find difficult or embarrassing, and what might be unnecessary, e.g. if sedentary behaviour is already at a lower than average level. Parental involvement – a key aspect of making changes in the family environment where most sedentary behaviour occurs – may be increased by including parents in the design of the intervention, and parents may even be able to take on some of the roles in implementing the project in the community, for example motivating other parents, helping to reduce the dependence on external resources and potentially increase the sustainability of the initiative.

As we suggested in the start of this report, projects are more likely to be successful if their design has been shared and developed with all participants: teachers and school staff, children and parents. Furthermore, participants should be encouraged to provide feedback as the project develops.

### ***3.8 Choosing the appropriate duration of the intervention***

An intervention of only six weeks could be predicted to be too short to result in large changes in behaviour. However, the teachers' motivation and the number of *NEWS* reaching the parents appeared to decrease throughout the intervention period, and both these changes indicated that it may be difficult to motivate the participants to engage with a longer intervention. However, the decrease in implementation of some elements of the intervention could at least be partly explained by the overload of work the teachers reported during the intervention period, which made them not being able to skip their regular classes in order to carry out the intervention teaching. More participation in the project design, and greater flexibility of adaptation by the teachers, may strengthen the long term sustainability of the project. In some situations it may be possible for teachers to design the project so that it fits into their curriculum.

### ***3.9 Making structural changes***

Behavioural change interventions like the UP4FUN project often aim to change cognitive determinants such as attitudes and self-efficacy. In addition, the UP4FUN project had a strong focus on the home environment and aimed to address the parents' understanding and actions to reduce children's sedentary behaviour. However, behaviour change is difficult and takes time. Therefore in order to achieve longer-lasting effects, structural changes, such as reducing the numbers of screens at home, or instituting family rules for watching TV/DVD or using of computers, or having class-room breaks on a routine basis, may require more specific, environment-focussed and policy-focussed interventions than achieved by a single school-based project such as the UP4FUN initiative.

Furthermore, as children live in a highly obesogenic environment in virtually all locations in Europe, the changes being instituted in homes and schools need to be supported by policy changes at community and national level. Many examples can be given:

- incentives to schools to encourage more breaks and activity periods, changes to the curriculum so that nutrition and physical activity are part of the teaching role (and are taught in teacher training colleges),

- incentives to parents to reduce the screens in homes, to provide the right example and to establish rules regarding maximum screen time,
- incentives for community improvements to increase street safety and personal security so that parents are comfortable allowing children out, and the provision of attractive environments – clubs and play areas (without screens), organised activities and use of school facilities out of hours – as alternatives to sitting at home.

### ***3.10 Reaching all children***

Lastly it is important to recognise the need to reach children who might benefit most from reduced sedentary behaviour and improvements in energy balance related behaviours generally. Interventions are often taken up more enthusiastically by children and families with better resources, better educational levels, greater time flexibility and a willingness to focus on obesity prevention and health promotion. Children and parents from lower income households, or ethnic immigrant families or one-parent families or families enduring other forms of social or financial stress may find it harder to participate, yet these children may be the ones who would benefit most. Such disparities can serve to widen the health inequalities seen in Europe and shown in the ENERGY-Project surveys (see Section 1.2, above). Furthermore, language barriers can exacerbate the problem if, for example, newsletters and activity sheets are not easily comprehended by parents, or parents do not feel they can participate in teacher-parent meetings. Also the capabilities of the pupils have to be considered in intervention development and allow for flexible adaptation by the teachers: not all children benefit equally from one type of intervention: for example some may not benefit if the contents are to be conveyed in a very cognitive manner and not in a more appropriate playful, practical and motivating manner.

Projects need to be designed with these issues in mind. Interventions which lead to structural changes in school routines are more likely to benefit all pupils, whereas interventions which rely on individual child or family motivation outside the school may enhance inequality. Interventions which lead to structural changes in the community can benefit all members of the community, especially if the provision of community facilities is effectively communicated and can be easily accessed by all families who might use them. This requires considerable further exploration.

## 4. Monitoring and evaluating interventions

This section summarises the evaluation question that can be considered in the monitoring and evaluation of health promotion project including large scale projects in Europe

There are several reasons why monitoring and evaluation of interventions are important, indeed essential, elements of an intervention project and should be included in the proposals for making interventions and built into the designs of interventions.

Key reasons for evaluation are (i) to ensure that successes are communicated to other potential beneficiaries of interventions, and failures are communicated to prevent their repetition, and (ii) funding agencies are encouraged to use their resources in the most effective way. The lack of a clear set of successful interventions in Europe to prevent child obesity at present means that any steps forward need to be fully examined and the best practices developed, so that successful programmes can be introduced across the region., adapted for local circumstances.

Evaluation is particularly important for interventions that aim to tackle overweight and obesity. We need to know as much as possible about which approaches are likely to yield results, and to do this we need to be able to compare results across settings, populations and types of intervention. We can then focus public health investment appropriately. This is even more important in a time of restricted public finances.

### 4.1 What to examine?

The purpose of evaluation is to reach a judgement on the value of an activity and assessing whether or not it has achieved what it set out to do. In health promotion, an evaluation considers the extent to which a programme has achieved its objectives, and how different elements contributed to achieving these objectives. **Monitoring** is a form of evaluation that is undertaken during the project as it proceeds; **evaluation** includes monitoring during the project and assessment of the project after its completion or at a decision point for redesigning the project.

Evaluation should not be a stand-alone activity, nor should it occur only at the end of a project: it should be considered an integral part of the overall project planning, ideally beginning before a project is implemented. It should be closely linked to setting the project's objectives. At its most simple, evaluation answers the question: "Has the project achieved its objectives?" Answering this relies on the project having had defined, clear, measurable and achievable objectives from the outset. Evaluation of the achievement of the overall objectives is usually called **outcome evaluation**.

Evaluation also involves assessing the way in which a project was set up, structured and run, so that lessons about the nature of the processes and relations involved in the project can be judged and lessons about how the project was undertaken can be learnt. This is usually called **process evaluation**.

In addition there are formative and scientific evaluations (see below), and finally there is a question most often asked by funding agencies and politicians: *Is the project good value for money?* To answer this question, estimates of the costs of an intervention need to be made,



and an assessment given of the benefits gained in relation to the costs. In general it is expected that the 'repeat costs' are listed – i.e. the money that would be needed to run a similar project in a similar situation, but excluding the 'one-off' costs for the original research, primary design and formal evaluation of the project.

#### **4.1.1 Outcome evaluation**

Outcome evaluation starts at the beginning of a project where data can be collected on the state of play before the intervention has its effects, in a form that can be compared with similar data collected after the period of intervention. This is used to compare 'before' with 'after' to show if there has been any change for the better (or – in the case of rising trends of obesity – if a change for the worse has been prevented).

Simply showing that there is a difference between before and after an intervention can be useful, but it begs the question of whether this difference could have occurred without the intervention. Thus a well-designed project includes a control group – a group similar to the group receiving the intervention but where the intervention does not take place – and this group is also evaluated before and after the same period of intervention, to see if this group showed similar changes over the period.

Depending on the objectives of the intervention, the outcomes might include the following:

- improvements in bodyweight status (e.g. reduced BMI or reduced gain in BMI, change in BMI z score, change in proportion obese or overweight, change in waist circumference);
- improvements in other health measures (e.g. cardiovascular fitness, blood pressure, blood lipids, respiratory fitness, insulin resistance);
- improvements in behaviour (e.g. changes in dietary patterns, changes in physical activity patterns, changes in sedentary behaviour patterns);
- improvements in understanding (e.g. knowledge of nutrition and healthy eating, knowledge of the benefits of physical activity and breaks in sedentary behaviour);
- improvements in motivation and attitude (e.g. greater preference for healthier food items, greater liking of active behaviour, greater enjoyment of breaks in sedentary behaviour);
- Improvements in opportunities, i.e. better facilitation for breaks in sedentary behaviour
- improvements in the environment (e.g. the numbers of healthy items selected in school cafeterias or vending machines, the content of school lunchboxes, the presence or absence of fruit bowls in the family home, the presence of bicycles in the home, or the presence of screens in children's bedrooms).

Policy changes may also be defined as outcomes, and might be assessed using measures such as the presence or absence of a written statement about school nutrition policies, the time allocated for teaching nutrition, the timetabling of class breaks and physical activity, the range of activities offered during physical education lessons, the presence of screen-time rules in the family home, the presence of breakfast rules and eating together rules, controls on pocket-money expenditure and similar rule-based or policy-based influences on energy-balance related behaviour.

In any of the types of outcome measure suggested above, the results need to be analysed according to a number of dimensions, including **age group** (e.g. was the intervention more effective in one age group compared with another?), **gender** (did girls or boys show a better response?), the family's **social status** (were the effects greater in one ethnic grouping or socio-economic group or educational group compared with another?). The results also need to be assessed in terms of the **sustainability** or duration of the effect.

Lastly, evaluation of projects concerned with promoting health bodyweight should pay attention to potential negative outcomes:

- failure to achieving the anticipated health benefits can lead to a reduced sense of self-efficacy, lost self-esteem and reduced motivation for subsequent behaviour change;
- focussing on obesity issues may increase peer teasing or stigmatisation, or increase poor self-esteem among more overweight children;
- focussing on dietary patterns could possibly enhance the risk of eating disorders among vulnerable children;
- unsupervised restrictions on dietary intake may have a negative impact on healthy growth and development.

#### **4.1.2 Process evaluation**

Besides using evaluations to assess whether a project's aims and objectives have been achieved, it is valuable to find out what else went well or could be improved. Information about the organisation of the project, the roles played by different participants, their views on how the project proceeded, what materials and resources were required, and how decisions were made and how feedback was used are all valuable parts of a process evaluation.

Process evaluation is valuable from the start of the project, so that it can help

- to influence and improve a project's development;
- to warn of potential problems before they become serious;
- to demonstrate progress to everyone involved including funding bodies and supporters;
- to demonstrate that resources are well-allocated;
- to share experiences with others including those developing similar projects elsewhere;
- to motivate participants, and encourage more participation (e.g. from parents).

Process evaluation can take a number of forms. Measurements might include **quantifiable** results such as the numbers of participants receiving the intervention; the percentage of these from different sub-groups (e.g. by ethnic group or socio-economic group); the number dropping out of the intervention as it proceeds, and the number being recruited in their place; the number of meetings that were held and the number of attendees at each meeting; the distribution and take-up of the materials and resources being put into the programme; or visits to project internet sites and numbers of resource downloads. The **resource costs** of an intervention are a valuable process indicator, and help policy-makers and funding agencies understand the value of their support and the feasibility of expanding the project to a wider population (see section 4.1.7 below).

In contrast, **qualitative** measures might include interview data on participant's expectations at the start of the project; feedback forms asking what was liked and disliked with the various components of the project; comments put into an email feed-back facility by participants anonymously; end-of-project children's satisfaction ratings; end-of-project teacher assessments; end-of-project parents' comments and ratings. It is important to ask for both the strengths and the weaknesses, the likes and the dislikes, encouraging honesty and remembering the saying: "Complaints should be like jewels: rare and valuable".

An important purpose of process monitoring is to provide management feedback to ensure the project is proceeding as intended. In this respect, there may be a need to assess the project in terms how well it is including all the range of target groups that are anticipated. For this, an assessment needs to be made of how well the project is **reaching across** the different social groups so that all groups have an opportunity to participate, and how well it is **penetrating** each of those groups so that all members in a group can participate.

**Monitoring** checks the extent to which a project is proceeding according to plan, for example, looking every week to see if there is a drop-off in attendance, or checking the flow of materials used by the project, or checking the bank statements to ensure that resources will be adequate at every stage. It is an essential component of the management of a project. It is really a subset of evaluation and should not be used as a substitute for a full evaluation.

Process evaluation can be carried out in a small scale by institutions themselves (self-evaluation) and in a wider context by external evaluators. In any case, a good documentation system, including the personnel to carry out this task, should be implemented.

#### **4.1.3 Process-outcome interactions**

A further point needs to be made about the potential interactions between processes and outcomes which need to be monitored and reported. For example, those participants that drop out of a project while it is underway may also be the participants with the greatest need – e.g. are the most overweight children finding the intervention more difficult?

Similarly, some aspects of the project may make participation by some families more difficult – e.g. asking parents to attend sessions after school may be more difficult for lower-income families who are also the families with children who have the higher levels of home-based sedentary behaviour.

For these reasons, process evaluation while the project is underway can help to identify barriers to successful outcomes and so help improve outcome effectiveness while the project continues.

#### **4.1.4 Scientific evaluation**

Some funding agencies may propose that an intervention project be scientifically evaluated. The involvement of professionals from research institutes and universities can add significant strengths to the evaluation programme but may also add significant costs.

The principal purpose of scientific evaluation is to strengthen the value of the evidence generated by the project – i.e. to increase the likelihood that the project was indeed the cause of changes found and that they did not happen due to extraneous or random events. To achieve this, the design of the intervention should include a **control group**, the intervention and control groups should be of a sufficiently **large size** to ensure that effects can be statistically evaluated, and sophisticated **statistical techniques** may be used to separate the influence of different potential causes.

In general, a stronger evaluation design increases the confidence with which conclusions can be drawn from findings. However, in health promotion projects, there are often multiple stakeholders, multiple intervention elements, and it may be impossible to use the optimal scientific evaluation design. The project context, the role of the participants in the community, the population reached and engaged, may be just as important elements in an intervention as is the need to generate scientific proof of benefit from the intervention.

Semi-experimental designs may use a control group but may not randomly allocate participants to either the intervention or control groups. So, for example, in a community-based weight control programme, the findings might be compared to a community, group or setting where there was not an intervention. This increases the risk of changes in outcomes being due to the differences between two communities. Although there may be something different about the comparison community that was not an outcome of the project, it does make the evaluation much more manageable.

Comparisons could also be made with earlier measures in the same population, rather than from a control group. This is a time-series design in which multiple measures are taken at different time points before the project, and then multiple measures taken afterwards. In this way, we can see whether the project made a difference to the prevailing trend. This is relevant to obesity interventions as groups of people seldom lose weight without intervention; if anything, there is a tendency for people to gain weight over time and thus if this trend has been reversed it is more likely to have been specifically due to an intervention.

Although a scientific evaluation may be desirable, it requires more resources. Some projects rely on external consultants or academic bodies to support their evaluation design and undertake the evaluation. It may be worthwhile finding out if any expertise or support is available locally from, for example, a school, college or university, the local authority, primary health authority, voluntary groups or health promotion units. They may have students, volunteers or employees available to help collect data.

Note that research is not the same as evaluation. In research projects, an intervention tends to be designed and controlled by researchers who aim to ensure that it is delivered in a standardised way. When evaluating a 'real-life' intervention, the challenge is to investigate a project that is usually being delivered by other people (e.g. teachers, parents) in every-day settings. This tends to lead to more varied results and requires a pragmatic approach to evaluation, demonstrating feasibility and possible generalisability as well as effectiveness.

### 4.1.5 Formative evaluation

Formative evaluation is an initial form of evaluation to determine the feasibility, nature and design of a project. It provides a structured approach to the development and planning of the project's approach, components and pilot testing. Formative evaluation assesses a project's relevance to identified health problems, and the practicality of different intervention methods. Pre-testing is a type of formative evaluation and involves trying out some of a project's parts before it is launched in full.

A formative evaluation might identify features from a literature search that support a particular approach, for example, classroom motivational tasks combined with incentives and home-school interactions. This information can be used to develop the best possible project for the setting. A pilot study with a small sample of children could test the design of the intervention and this leads to refinements to the project. For example, teachers from the pilot study might say they need more time interacting with each child than had been allowed for, or children might say they find the *NEWS* bulletins too juvenile. This could lead to changes to the project's structure, format or resources before it is launched in full.

### 4.1.6 Project costs

As noted earlier, the most frequently asked question by policy-makers and funding agencies is whether a project was good value – were the costs reasonable for the gains that were shown in the evaluation? Reports of interventions often fail to describe the costs incurred or the funds that would be needed for someone to repeat the intervention. This is a serious omission. We recommend that funding agencies should require all funded projects to include statements of costs in their reports.

## 4.2 An example of a comprehensive project evaluation sheet <sup>12</sup>.

	Response	<input checked="" type="checkbox"/>
1. Title/name of intervention		<input type="checkbox"/>
2. Aims and objectives (including primary and secondary outcomes). Ideally these should be stated as SMART objectives: Specific, Measurable, Achievable, Realistic and Time-bound.		<input type="checkbox"/>
3. Intervention timescale		<input type="checkbox"/>
4. Intervention delivery dates and milestones. Includes dates for the initial recruitment, training, intervention and any follow-up contacts.		<input type="checkbox"/>
5. Duration of funding (including dates)		<input type="checkbox"/>
6. Location and setting		<input type="checkbox"/>
7. Description of intervention. Headings include: Target population, Content, Delivery method, Deliverer, Target recipient unit (individual, class, neighbourhood), Quality		<input type="checkbox"/>

<sup>12</sup> This section is adapted in part from the National Obesity Observatory *Standard Evaluation Framework for weight management interventions*, Oxford 2009. Available at [http://www.noo.org.uk/uploads/doc721\\_2\\_noo\\_SEF%20FINAL300309.pdf](http://www.noo.org.uk/uploads/doc721_2_noo_SEF%20FINAL300309.pdf).

checks, Management structure and processes		
8. Rationale for intervention, including theoretical basis, evidence basis and pre-test results		<input type="checkbox"/>
9. Core staff competencies required		<input type="checkbox"/>
10. Equipment and resources required		<input type="checkbox"/>
11. Incentives for attendance		<input type="checkbox"/>
12. Details of training needs (including quality assurance of training)		<input type="checkbox"/>
13. Method of recruitment of participants		<input type="checkbox"/>
14. Participant consent mechanisms		<input type="checkbox"/>
15. Participant admission/exclusion criteria		<input type="checkbox"/>
16. Cost of intervention per participant		<input type="checkbox"/>
17. Cost to participant		<input type="checkbox"/>
18. Detailed breakdown of costs and resources		<input type="checkbox"/>
19. Type of evaluation and evaluation design: what will be collected, who will collect it, when and how?		<input type="checkbox"/>
20. Details of equality impact assessment		<input type="checkbox"/>
21. Relevant policy context: how the intervention fits with national and local policies.		<input type="checkbox"/>
22. Details of health needs assessments that have been conducted		<input type="checkbox"/>
23. Contact details for key people		<input type="checkbox"/>
24. Commissioner(s) of the intervention and sources of funding		<input type="checkbox"/>
25. Declaration of interest and potential conflicts of interest		<input type="checkbox"/>
26. Details of type and extent of any professional involvement		<input type="checkbox"/>
27. Participants: Age		<input type="checkbox"/>
28. Participants: Gender		<input type="checkbox"/>
29. Participants: Ethnicity (using well-documented categories)		<input type="checkbox"/>
30. Participants: Disability		<input type="checkbox"/>
31. Participants: Measure of socio-economic status. This may include employment status, employment type, educational attainment level, housing tenure, car ownership or similar indicators.		<input type="checkbox"/>
32. Participants: Household information including marital status, single parent status, siblings		<input type="checkbox"/>
33. Participants: Height and weight at start (to calculate Body Mass Index)		<input type="checkbox"/>
34. Participants: Additional measures for adiposity preferable, e.g. waist circumference		<input type="checkbox"/>
35. Participants: Details of parental weight status		<input type="checkbox"/>
36. Measure(s) of dietary intake and behaviour at start		<input type="checkbox"/>
37. Measure(s) of physical activity levels and sedentary behaviour at start		<input type="checkbox"/>

38. Potential facilitators of, and barriers to, lifestyle change. Includes environmental assessment of school, near-school and home environments		<input type="checkbox"/>
39. Follow-up data: preferably multiple follow-up points, including at one year. Include height and weight, and dietary, physical activity and sedentary behaviour measures		<input type="checkbox"/>
40. Follow-up data on potential facilitators of and barriers to lifestyle change in the environment (if collected at baseline)		<input type="checkbox"/>
41. Process: Number invited		<input type="checkbox"/>
42. Process: Number recruited		<input type="checkbox"/>
43. Process: Number attended each session or contact point		<input type="checkbox"/>
44. Process: Number completed		<input type="checkbox"/>
45. Process: Number of participants at each follow-up point		<input type="checkbox"/>
46. Process: Methods of data collection and timings		<input type="checkbox"/>
47. Process: Reasons for opt-out (where applicable)		<input type="checkbox"/>
48. Process: Details of any unexpected outcomes and/or deviations from the intended intervention design and the reasons why		<input type="checkbox"/>
49. Process: Participants' satisfaction with the intervention		<input type="checkbox"/>
50. Process: Plans for sustainability		<input type="checkbox"/>
51. Summary of results compared to baseline		<input type="checkbox"/>
52. Detail of any further analyses or statistical methods used		<input type="checkbox"/>
53. Assessment of limitations		<input type="checkbox"/>
54. Assessment of generalisability		<input type="checkbox"/>
55. Assessment of cost-effectiveness or cost-benefit		<input type="checkbox"/>

See also 'Additional resources' below.

## 5. Additional resources

This section refers readers to additional resources and materials relevant to running an UP4FUN-style intervention. For further information consult the UP4FUN website [www.up4fun.eu](http://www.up4fun.eu) or contact [up4fun@uip4fun.eu](mailto:up4fun@uip4fun.eu).

### 5.1 Schools and teachers

For suggestions and ideas regarding activity breaks during lessons or recess check out the following links:

- Several resources for physical activity in schools developed by the British Heart Foundation <http://www.bhf.org.uk/schools.aspx>
- Sign up for good ideas on Activity breaks from this US project <http://www.davidkatzmd.com/abcforsfitness.aspx>
- Find *Recess Revival - An Implementation Guide to an Active Recess* under the free downloads at the website of this Canadian network [http://www.ciraontario.com/ehr/page/free\\_downloads](http://www.ciraontario.com/ehr/page/free_downloads)

#### Active commuting

Walking or bicycling to school may increase daily physical activity level as well as fitness level. In addition, walking or bicycling to school may reduce the opportunity for sitting. Increasing non-motorized transport will also reduce air and noise pollution and improve the quality of urban life. More than half the trips shorter than 5 km – distances that could be covered on foot or by bicycle – are made by car. Check out these sites on how to organize walking or cycling to school:

- The Bicycle Network Victoria, Melbourne, Australia <http://www.bv.com.au/general/ride2school/>
- KidsWalk-to-School Program, Center for Disease Control, USA <http://www.cdc.gov/nccdphp/dnpa/kidswalk/>

### 5.2 Parents

#### Suggesting alternatives to screen time

It may be easier to motivate your child to sit less by making sure there are fun alternatives in and around the home. Check out some of the tips and ideas from the British Heart Foundation on how to keep children active at <http://www.bhf.org.uk/heart-health/prevention/tips-for-parents/keeping-children-active.aspx>

Is the neighbourhood not so inviting for outdoor play, check out what they have done in the UK to stimulate play in their communities at <http://www.playengland.org.uk/>

Remember that walking and bicycling are fun alternatives to driving your child to school, after school activities or friends. For practical tips check out these sites:

- The Bicycle Network Victoria, Melbourne, Australia <http://www.bv.com.au/general/ride2school/>



- The Walking School Bus Brochure, Land Transport NZ, New Zealand  
[http://www.iwalktoschool.org/downloads/NZ\\_walking\\_school\\_bus.pdf](http://www.iwalktoschool.org/downloads/NZ_walking_school_bus.pdf)

### **Regulating screen time**

If diverting your child into other activities does not work, revisiting the rules for TV/computer use may be necessary. At the American Academy of Pediatrics you can find useful articles on communication in the family that might be worth while reading before you plan to discuss the rules on screen time with your child.

<http://www.healthychildren.org/English/family-life/family-dynamics/communication-discipline/Pages/default.aspx>

## **5.3 Evaluation resources**

*Standard Evaluation Framework for weight management interventions*, National Obesity Observatory, Oxford 2009.

[http://www.noo.org.uk/uploads/doc721\\_2\\_noo\\_SEF%20FINAL300309.pdf](http://www.noo.org.uk/uploads/doc721_2_noo_SEF%20FINAL300309.pdf)

*Good Practice Appraisal Tool – for obesity prevention programmes, projects, initiatives and interventions*. Developed in a joint programme between the World Health Organization Regional Office for Europe and the European Commission Directorate-General for Health and Consumers. Copenhagen, 2011.

[http://www.euro.who.int/data/assets/pdf\\_file/0007/149740/e95686.pdf](http://www.euro.who.int/data/assets/pdf_file/0007/149740/e95686.pdf)

A more detailed evaluation strategy was developed by Bemelmans et al (2011) as part of a programme to create a database of community initiatives to reduce child obesity. For more details see *Final report: An EU-wide overview of community-based initiatives to reduce childhood obesity* RIVM, 2011, at

[http://ec.europa.eu/health/nutrition\\_physical\\_activity/docs/report\\_cbis\\_childhood\\_obesity\\_en.pdf](http://ec.europa.eu/health/nutrition_physical_activity/docs/report_cbis_childhood_obesity_en.pdf)

## **5.4 Press and publicity**

One of the purposes of evaluation is to be able to make statements about the success or otherwise of the intervention. These statements are expected to be reported to funding agencies and may also be expected to be reported to the participants – indeed, giving the participants feed-back about the outcomes of the project is good practice in any circumstance.

In addition, the results of the evaluation can be used to generate publicity and public interest in the project and thus in the potential extension or enlargement of the project or its replication in other communities. The present document is an example of the use of the evaluation (of the UP4FUN project) as part of the publicity for the project and the dissemination of the lessons learned so that others may develop the project ideas in other communities.

Public dissemination may require specific skills in writing and distributing a press release or other form of information document for public media use. There are websites offering advice on writing traditional press releases: see for example

<http://www.journalism.co.uk/skills/how-to-write-the-perfect-press-release-for-journalists/s7/a535287/>

or <http://www.businesswire.com/portal/site/home/how-to-write-press-release/>

and also how to disseminate news using social media: see for example

[http://www.facebook.com/note.php?note\\_id=206468996043772](http://www.facebook.com/note.php?note_id=206468996043772) and services such as

<http://pressitt.com/>

## 5.5 Selected scientific papers from the ENERGY project

<b>Title</b>	<b>Authors</b>	<b>Journal</b>
Differences in weight status and energy-balance related behaviours according to ethnic background among adolescents in seven countries in Europe: the ENERGY-project.	Brug J, van Stralen MM, Chinapaw MJ, De Bourdeaudhuij I, Lien N, Bere E, Singh AS, Maes L, Moreno L, Jan N, Kovacs E, Lobstein T, Manios Y, Te Velde SJ.	<i>Pediatr Obes.</i> 2012 [Jun 22. doi: 10.1111/j.2047-6310.2012.00067.x].
Objective and self-rated sedentary time and indicators of metabolic health in Dutch and Hungarian 10-12 year olds: the ENERGY-Project.	Chinapaw MJ, Yildirim M, Altenburg TM, Singh AS, Kovács E, Molnár D, Brug J.	<i>PLoS One.</i> 2012;7(5):e36657.
Differences in weight status and energy-balance related behaviors among schoolchildren across Europe: the ENERGY-project.	Brug J, van Stralen MM, Te Velde SJ, Chinapaw MJ, De Bourdeaudhuij I, Lien N, Bere E, Maskini V, Singh AS, Maes L, Moreno L, Jan N, Kovacs E, Lobstein T, Manios Y.	<i>PLoS One.</i> 2012;7(4):e34742.
Self-reported TV and computer time do not represent accelerometer-derived total sedentary time in 10 to 12-year-olds.	Verloigne M, Lippevelde WV, Maes L, Yildirim M, Chinapaw M, Manios Y, Androutsos O, Kovács E, Bringolf-Isler B, Brug J, Bourdeaudhuij ID.	<i>Eur J Public Health.</i> 2012 Apr 27.
Levels of physical activity and sedentary time among 10- to 12-year-old boys and girls across 5 European countries using accelerometers: an observational study within the ENERGY-project.	Verloigne M, Van Lippevelde W, Maes L, Yildirim M, Chinapaw M, Manios Y, Androutsos O, Kovács E, Bringolf-Isler B, Brug J, De Bourdeaudhuij I.	<i>Int J Behav Nutr Phys Act.</i> 2012 Mar 31;9:34.
Does parental involvement make a difference in school-based nutrition and physical activity interventions? A systematic review of randomized controlled trials.	Van Lippevelde W, Verloigne M, De Bourdeaudhuij I, Brug J, Bjelland M, Lien N, Maes L.	<i>Int J Public Health.</i> 2012 Feb 3. [Epub ahead of print]
Direction of the association between body fatness and self-reported screen time in Dutch adolescents.	Altenburg TM, Singh AS, van Mechelen W, Brug J, Chinapaw MJ.	<i>Int J Behav Nutr Phys Act.</i> 2012 Jan 24;9:4.
Family- and school-based correlates of energy balance-related behaviours in 10-12-year-old children: a systematic review within the ENERGY (European Energy balance Research to prevent excessive weight Gain among Youth) project.	Verloigne M, Van Lippevelde W, Maes L, Brug J, De Bourdeaudhuij I.	<i>Public Health Nutr.</i> 2012 Jan 24:1-16. [Epub ahead of print]
Test-retest reliability and construct validity of the ENERGY-child questionnaire on energy balance-related behaviours and their potential determinants: the ENERGY-project.	Singh AS, Vik FN, Chinapaw MJ, Uijtdewilligen L, Verloigne M, Fernández-Alvira JM, Stomfai S, Manios Y, Martens M, Brug J.	<i>Int J Behav Nutr Phys Act.</i> 2011 Dec 9;8:136.
What do parents think about parental participation in school-based interventions on energy balance-related behaviours? a qualitative study in 4 countries.	Van Lippevelde W, Verloigne M, De Bourdeaudhuij I, Bjelland M, Lien N, Fernández-Alvira JM, Moreno LA, Kovacs E, Brug J, Maes L.	<i>BMC Public Health.</i> 2011 Nov 23;11:881.
Economic incentives and nutritional behavior of children in the school setting: a systematic review.	Jensen JD, Hartmann H, de Mul A, Schuit A, Brug J; ENERGY Consortium.	<i>Nutr Rev.</i> 2011 Nov;69(11):660-74.

For whom and under what circumstances do school-based energy balance behavior interventions work? Systematic review on moderators.	Yildirim M, van Stralen MM, Chinapaw MJ, Brug J, van Mechelen W, Twisk JW, Te Velde SJ; Energy-Consortium.	<i>Int J Pediatr Obes.</i> 2011 Jun;6(2-2):e46-57.
What works in school-based energy balance behaviour interventions and what does not? A systematic review of mediating mechanisms.	van Stralen MM, Yildirim M, te Velde SJ, Brug J, van Mechelen W, Chinapaw MJ; ENERGY-consortium.	<i>Int J Obes (Lond).</i> 2011 Oct;35(10):1251-65.
Study protocol of physical activity and sedentary behaviour measurement among schoolchildren by accelerometry--cross-sectional survey as part of the ENERGY-project.	Yıldırım M, Verloigne M, de Bourdeaudhuij I, Androutsos O, Manios Y, Felso R, Kovács É, Doessegger A, Bringolf-Isler B, te Velde SJ, Brug J, Chinapaw MJ.	<i>BMC Public Health.</i> 2011 Mar 25;11:182.
Relationship between young peoples' sedentary behaviour and biomedical health indicators: a systematic review of prospective studies.	Chinapaw MJ, Proper KI, Brug J, van Mechelen W, Singh AS.	<i>Obes Rev.</i> 2011 Jul;12(7):e621-32.
European Energy balance Research to prevent excessive weight Gain among Youth (ENERGY) project: Design and methodology of the ENERGY cross-sectional survey.	van Stralen MM, te Velde SJ, Singh AS, De Bourdeaudhuij I, Martens MK, van der Sluis M, Manios Y, Grammatikaki E, Chinapaw MJ, Maes L, Bere E, Jensen J, Moreno L, Jan N, Molnár D, Moore H, Brug J.	<i>BMC Public Health.</i> 2011 Jan 31;11:65.