

DIET AND ACTIVITY PATTERNS OF CHILDREN IN PRIMARY SCHOOLS IN IRELAND

**Desmond Broderick
Gerry Shiel**

St Patrick's College, Dublin

Published by:
St Patrick's College
Drumcondra
Dublin 9
Ireland

© St Patrick's College, 2000

ISBN: 1-872327-31-1

Cover Design: e print

Printed in the Republic of Ireland by e print Limited, Dublin

Table of Contents

Summary	v
Preface	vii
1 Children's Diet and Activity Patterns – A Research Perspective	1
2 Research Procedures	8
3 The Home Environment and Children's Activity Patterns	10
4 Physical Education in Primary Schools	14
5 Children's Involvement in Sport as a Leisure Activity	24
6 Children's Dietary Patterns	33
7 Summary and Recommendations	42
References	48

Summary

International research indicates that taking part in physical activity during childhood can lead to a reduction in chronic diseases such as coronary heart disease, obesity and osteoporosis. In particular, it is suggested that children should engage in moderate to vigorous activity for a period of twenty minutes, at least three times a week. Research evidence also indicates that children's diets should consist of a wide variety of food including regular servings of cereals, fruit, vegetables, bread and potatoes, while foods that are high in saturated fat should be avoided.

In the current study, a representative sample of over 1700 children in fifth class in 65 primary schools completed a questionnaire that sought information about their diet and activity patterns, and their attitudes towards and opinions about participation in physical activity. The children's teachers completed a questionnaire that sought information about the teaching of Physical Education and Nutrition in schools, and the development and implementation of school policy on healthy eating.

Forty-five percent of children travel to school by car, 35% walk, and 16% travel by bus. Almost one-third of children in cities and large towns who travel to school by car live within one kilometre (0.62 miles) of their schools.

According to children, 44% of mothers and 29% of fathers 'hardly ever or never' participate in sports. The sports in which mothers participate most frequently are Walking (59% of those who participate in sports) and Swimming (11%). Fathers participate most often in Soccer (27%), Walking (18%) and Golf (15%).

Children are extremely positive about their enjoyment of PE classes – over 80% of boys and 60% of girls indicate that it is their favourite school subject. According to their teachers, children receive an average of 60 minutes of PE per week. Fifty-five percent of children attend one weekly class in PE, while 27% attend two. Eighty-one percent of children are taught PE by their own class teacher.

A feature of PE classes is the large proportion of time spent on Games. The Games/Activities in which boys participate 'almost every week' during classes are Soccer (56%) Gaelic Football (39%), Basketball (21%) Hurling (21%) and Swimming (18%). Girls participate with the same frequency in Basketball (33%), Gaelic Football (29%), Dance (28%), Soccer (26%) and Swimming (21%). Surprisingly, given that the survey was carried out in May, just 5% of boys and 7% of girls indicated that they participate in Athletics (Running) on a weekly basis. Just over 39% of children receive instruction in Swimming at least once a month as part of their PE programme.

Seventy percent of children are taught by teachers who had not attended in-career training in PE in the three years prior to the survey, while one third are taught by teachers who had not received in-career development in PE since their initial teacher training. Sixty-one percent of children are taught PE by teachers who feel that the facilities in their schools for the teaching of

Gymnastics/Movement are adequate. However, just 41% of children receive instruction in this element of the curriculum from their teachers, and 23% of children are taught by teachers who feel prepared to teach it. Two-thirds of children attend primary schools in which there is a school plan for PE.

Children also engage in sporting activities at school, after school hours, and at sports clubs. Among the sporting activities that are offered by schools after school hours, and in which boys participate, are Gaelic Football (39%), Hurling (23%), Soccer (23%), Basketball (14%) and Swimming (14%). The main sports in which girls participate in school after school hours are Gaelic Football (37%), Basketball (27%), Camogie (26%), and Swimming (12%). Among the activities that clubs offer and in which boys participate are Soccer (49%), Gaelic Football (45%), Swimming (32%), Hurling (31%), Rugby (11%), Tennis (11%) and Martial Arts (10%). Girls participate in Swimming (42%), Basketball (21%) and Camogie (20%). Although equal proportions of boys and girls take part in sports organised by schools outside of school hours, more boys than girls take part in sports organised by clubs. Among the reasons offered by boys and girls for not participating in sports offered by schools and clubs are a preference for doing other things, unavailability of a favourite sport, and insufficient time.

Fifteen percent of girls and 10% of boys indicated that they were on a diet at the time of the study. Methods for losing weight cited by the children were more exercise, cutting out sweets, fasting, and eating less food. Children in the study indicated a good understanding of the foods that promote healthy living, and of those that are less beneficial for their health. However, children's preferences for different foods, and their eating patterns at home and at school, point to difficulties in utilising this information. For example, 65% of children eat a chocolate bar for lunch at school at least once a week, while 59% of children eat sweets.

Parents and teachers are perceived by children to be the most important providers of information about the health benefits of various foods. However, 61% of children obtain dietary information from television, which would be highly likely to include food messages from advertisements.

Finally, schools are reasonably proactive in promoting healthy eating habits, with two-thirds of children attending classes in which formal lessons on Nutrition are taught. In addition, 62% of children attend schools in which there is a policy on foods that should/should not be eaten for lunch.

The current study indicates that, even in mid-summer, when conditions are optimal in Ireland for engaging in physical activity, many children devote a disproportionate amount of their leisure time to watching television/videos and playing computer games. Allied to this inactivity, children eat a large range of 'unhealthy' foods. These patterns are highly likely to increase unless there is positive intervention, in particular by parents.

Preface

Organisation of The Report

This remainder of the report is organised into seven chapters. In the first chapter, national and international literature on children's diet and activity patterns is described, and issues related to the measurement of diet and activity are considered. Chapter 2 describes the research methodology underlying the current study. Chapter 3 looks at factors in pupils' home environments that may affect their activity patterns, including parents' involvement in sport and exercise. Chapter 4 addresses children's perceptions of the teaching of PE in schools, and looks at factors that affect the implementation of PE programmes. Chapter 5 describes pupils' involvement in a range of leisure-time activities, including sports offered by schools and clubs. Chapter 6 examines pupils' dietary patterns and their preferences for particular foods and drinks. In Chapter 7, the outcomes of the study are summarised and recommendations relating to children's diet and activity patterns are made.

Acknowledgements

The authors wish to thank the following persons, who contributed to the study:

- The children and teachers who completed questionnaires during the pilot and main studies
- Dr. Michael Gibney, Professor of Nutrition, Trinity College Dublin, who advised in the preparation and interpretation phases of the study
- Dr. Thomas Kellaghan, Director of the Educational Research Centre, St Patrick's College, who provided feedback on an earlier draft of this report
- Donal Kelly and John Coyle of the Educational Research Centre, who provided assistance with the preparation of the data

Children's Diet and Activity Patterns – A Research Perspective

A spate of recent newspaper reports reflect current concerns about the diet and activity patterns of children, both in Ireland and abroad. Headlines that have appeared in the recent past include:

- 'Lazy Irish Are a Fat Lot o' Good' (*Evening Herald*, March 11th, 1999)
- 'Teen Boys Prefer to Slouch on the Couch' (*Irish Independent*, December 1, 1999)
- 'Children Growing Up on a Diet of Death' (*Daily Express*, June 2nd, 2000)
- 'Ireland's Lazy Children Told to Shape Up' (*Sunday Times*, July 2nd, 2000)

There are several reasons for current concerns about children's health. First, there is a view that, if children do not engage in moderate to intense exercise while they are young, they are unlikely to do so as adults. According to Armstrong (1991),

Many children seldom experience the intensity and duration of physical activity that are believed to promote health-related outcomes. It appears that participation in health-related physical activity as a child increases the likelihood of such participation as an adult. Children must therefore be encouraged to adopt and maintain activity lifestyles – the development of 'activity independence'. (p. 151)

Second, there now exists strong evidence to suggest that physical activity alters the risk factors for a number of diseases, especially coronary heart disease, obesity and osteoporosis (see, Berlin and Colditz, 1990; Fentem et al., 1988; Sternfield, 1992). Results of unpublished research for the North/South Food Consumption Study, conducted over three years as a joint project involving Trinity College Dublin, University College Cork and the University of Ulster concluded that over half of Irish people (North and South) are officially overweight (59.9%) (*Irish Times*, August 8, 2000). The study also shows that the proportion of Irish people who are clinically obese has increased from 11% in 1990 to a current level of 18% – an increase of 7% is just 10 years. This, coupled with the evidence that coronary heart disease and obesity may have their origins in childhood, suggests that exercise and healthy eating should operate as preventative strategies, and should be firmly in place before adulthood.

In the review that follows, three broad issues are examined: (i) research on the health and lifestyles of children in Ireland and in other countries; (ii) research on the teaching of Physical Education in schools, and its contribution to children's health and fitness; and (iii) issues in measuring children's diet and activity patterns.

Research on Children's Lifestyles

Recent surveys of children's health and lifestyles, conducted in Ireland and abroad, suggest that while children at primary-school level are more active than their counterparts at post-primary level, and tend to have more positive eating habits, there is, nevertheless, cause for concern.

Results of the Health Behaviour of School-aged Children Study for Ireland

In 1998, representative national samples of Irish pupils in three age groups, 9-11 years, 12-14 years and 17-19 years, participated in an international survey of Health Behaviour of School-aged Children (HBSC) organised by the World Health Organisation's Regional Office for Europe (see Currie et al., 2000; Friel et al., 1999) and conducted in Ireland by the Centre for Health Promotion Studies at the National University of Ireland-Galway. The survey included most European countries, Canada, the United States and Israel. Participants responded to questionnaires that sought information concerning their involvement in exercise and their lifestyle choices.

One focus in the HBSC survey was on children's participation in exercise outside of school time. Children were asked about the frequency with which they exercised so that they got out of breath or sweated (defined as 'vigorous exercise'). Across all age groups, 53% of respondents reported exercising in this manner at least four times per week, while 6% indicated that they exercised like this less than once a week. Substantially more boys (62%) than girls (45%) were found to engage in vigorous exercise at least four times a week, while more girls (7%) than boys (5%) were found to exercise less frequently than once a week. A decline in the frequency of exercising as children grow older was also noted. Although 63% of 9-11 year olds reported engaging in exercise four or more times a week, just 40% of 15-17 year-olds reported doing so. A relationship between frequency of participation in vigorous exercise by girls and socio-economic status was also observed, with girls in the higher social classes more likely to participate in such exercise than girls in lower socio-economic groups.

A second focus of the HBSC survey was on children's diet and nutrition. Forty-one percent of children aged 9-11 reported that they eat fruit more than once a day, while just 32% of 15-17 year-olds reported doing so. Across the three HBSC age groups, 40% of girls and 31% of boys reported eating fruit more than once a day, while 7% of boys and 10% of girls reported that they never eat fruit. Twenty-one percent of children aged 9-11 reported eating vegetables more than once a day, while 16% of those aged 15-17 reported doing so. No gender differences emerged for consumption of vegetables.

HBSC also asked children about their consumption of high fat/high sugar foods [i.e., cakes and pastries, soft (fizzy) drinks, sweets, chocolate, and crisps/fried potatoes]. Fifty-five percent of children in the 9-11 age range, 63% of those between 12 and 14, and 61% of those between 15 and 17 reported that they consume at least three high fat/high sugar products each day. Relative to their counterparts in such countries as Denmark, Norway, Sweden and Finland, Irish children reported very high levels of consumption of potato crisps and fried potatoes (chips), sweets, chocolate and soft drinks. Only N. Ireland, Scotland,

Wales and England reported similarly high levels. In addition, consumption of low-fat milk by Irish children was among the lowest in Europe. Indeed, just 30% of Irish children reported drinking low-fat milk at least once a day. In contrast, 79% of children in Finland, and 73% of children in N. Ireland reported similar levels of consumption.

An unpublished survey by the Physiotherapy Department at Trinity College, Dublin involving 786 children attending Dublin schools found that 25% of girls and 14% of boys in the 7-9 years age range do less than a recommended minimum of 30 minutes moderate exercise per day (e.g., cycling, walking and swimming) (*Sunday Times*, July 2, 2000). On the other hand, 60% of the children in the same age group were found to view television/videos or play computer games for 2-3 hours a day, while 18% were found to do so for more than three hours. One-third of 7-9-year olds were found to travel to school by car, while a further 22% were found to travel by car and also to walk.

Concerns about children's diet and activity patterns are not confined to Ireland. In a report on the outcomes of the UK National Diet and Nutrition Survey (ages 4-18), children were found to eat less than half of the recommended 4-5 portions of fruit and vegetables per day, and to consume high amounts of salt (*Daily Express*, July 2nd, 2000). Moreover, it was estimated that 17% of children's energy comes from sugary foods – substantially more than the recommended 11%. The survey also revealed links between low socio-economic status and poor diet, with lower-SES children eating more foods that were deemed to be unhealthy.

Much can be done to improve children's physical development, and their attitudes towards health and physical activity. According to the UK *Health of the Nation* White Paper, individuals should establish the habit of being physically active from a young age, as participation in exercise is associated with a reduced risk of many chronic disease states and improved psychological health (Great Britain, 1992). Additionally, the point is made that early participation may affect exercise behaviour in later life.

Physical Education in Schools

In 1971, a modern curriculum that included Physical Education was introduced into primary schools in Ireland. The accompanying Teacher's Handbook states that 'the aims [of the programme] are to promote the organic well-being of the child, to develop a suitable range of motor skills, to help him to adapt himself to his immediate environment and to cultivate desirable social attitudes' (Department of Education, 1971, p. 289). Additional aims, to which the Handbook makes reference, include providing opportunities for expression and contributing towards emotional, moral and aesthetic development.

Concerns about the implementation of the 1971 curriculum in PE have been expressed. An INTO survey conducted in 1976 found that 64% of the teachers sampled taught PE, and that, of these, only 34% were satisfied with the way they taught it. Fontes and Kellaghan (1977) reported that one-third of teachers in schools they surveyed found Physical Education to be the most difficult subject in the curriculum to implement. In a survey undertaken by members of the inspectorate, two-thirds of inspectors indicated that they were not satisfied with

the work done in PE classes (Department of Education, 1979). The majority of teachers responding to Keating's (1982) survey of sixth-class teachers in the Dublin area reported that they achieved only one-third of the objectives that had been specified in the 1971 PE curriculum. Responding to findings such as these, the Review Body on the Primary Curriculum (1990) recommended that the time devoted to PE be increased, that specialisation be encouraged, that specialist courses be provided in Colleges of Education, and that teachers who have taken these courses should be available to act in an advisory capacity. Most recently, a survey by McGuinness and Shelly (1996) pointed to continuing difficulties with the provision of PE, including lack of facilities and equipment, inadequate allocation of time, and provision of a narrow range of activities during PE lessons.

According to McGuinness and Shelly, small schools (those with one to three teachers) often lack the most basic facilities, such as hard outdoor surfaces, grass areas, indoor facilities, and equipment such as mats, benches, bats, and goal posts/nets. However, these researchers point out that, even in cases where large apparatus was available in schools, teachers were sometimes reluctant to use it because of lack of confidence and fear of accidents.

Research has indicated that the amount of time allocated to PE in schools is unsatisfactory. The inspectorate suggested an allocation of 7% in the case of infant classes and 4% in the case of all other classes at the time the 1971 curriculum was introduced (Review Body on the Primary Curriculum, 1990). This would amount to approximately two hours and one hour per week respectively. However, Burke and Fontes (1986) found that teachers of pupils in sixth class spent an average time allocation of 0.71 hours per week teaching PE.

Concern has been expressed at the narrow range of activities covered during PE classes in Irish schools. McGuinness and Shelly (1996) reported a strong emphasis on teaching games, such as Basketball and Gaelic Football, and interpreted this as being consistent with the training received by teachers during their pre-service teacher education programmes. However, they also found that, whereas 42% of third- and sixth-class teachers in their sample received pre-service training in gymnastics, only half this proportion actually taught it. Significantly, 61% of teachers in the survey indicated that they pay little attention to the PE programme outlined in the 1971 curriculum, while a similar proportion indicated that they do not implement an alternative programme. Sixty percent of teachers indicated that their schools did not have a school plan in physical education.

In a study conducted by the Educational Research Centre (1997) on behalf of the National Safety Council, it was found that swimming instruction was provided as part of the curriculum in 46% of schools attended by 54% of pupils (National Safety Council, 1997). Among the reasons offered by schools for not providing swimming instruction were distance from the nearest pool (60% of schools without a service), high cost of providing transport (54%), and lack of time (42%). In schools that did not provide swimming instruction, no more than 25% of pupils were found to avail of such instruction outside of school. Sixty-one percent of schools reported providing instruction in water safety to their pupils.

The revised *Primary School Curriculum for Physical Education* (National Council for Curriculum and Assessment, 1999a, 1999b) proposes a comprehensive PE programme that includes the following areas:

- Athletics – running; jumping; throwing, understanding and appreciation of athletics;
- Dance – exploration, creation and performance of dance; understanding and appreciation of dance;
- Gymnastics – movement; understanding and appreciation of gymnastics;
- Games – sending, receiving, travelling; creating and playing games; understanding and appreciation of games;
- Outdoor and adventure activities – walking; orienteering; outdoor challenges; understanding and appreciation of outdoor games and activities;
- Aquatics – hygiene; water safety; entry to and exit from the water; buoyancy and propulsion; stroke development; water-based ball games; understanding and appreciation of aquatics.

While the development of children's health-related fitness, including the maintenance and enhancement of fitness through physical activity and the promotion of a healthy lifestyle, is cited as a broad objective of the programme, it is just one of several such objectives. Others include social and personal development, the development of knowledge and understanding, and the development of a sense of safety. The time available for implementing the revised PE curriculum may be affected by the broadening of the primary school curriculum to include new subjects such as Science, and Social, Personal and Health Education, though the latter includes information on diet and nutrition.

The provision of comprehensive programmes in PE has also challenged other countries. In relation to England, Rowe and Campion (2000) reported that:

- the proportion of pupils in years 5-6 spending an average of 2 hours or more per week in PE had declined from 45% in 1994 to 21% in 1999;
- in 1999, 22% of primary teachers felt that sports facilities at their schools were inadequate;
- more pupils were found to participate in sports outside of school in 1999 (79%) than in 1994 (74%).

According to Rowe and Campion, the decline in the amount of time given to PE in English schools could be attributed to a shift to other priorities (e.g., preparation for assessments and exams). They point out that this situation is likely to impact most on less well-off children who may not have the same level of access to club sports as other children, and may not always be able to meet the financial costs involved.

Defining and Measuring Pupils' Fitness/Activity Levels and Dietary Patterns

A range of methods has been employed to measure children's fitness/activity levels and dietary patterns. These include:

- self-report measures (questionnaires and activity diaries);
- physiological measures;
- observational measures.

The most common approach to measuring aspects of children's lifestyles, including diet and activity patterns, is by requesting them to complete self-report measures. These measures include questionnaires and activity diaries. Among the surveys that have used this approach is Shepherd et al.'s (1989) study of the fitness of Canadian children. In that survey, children aged 10-14 years were asked to complete an '24-hour activity diary' twice during the year – for a 'normal' Wednesday, and for a 'normal' Saturday – and to complete a more detailed 'short' activity questionnaire for one week. Seventy-five percent of children were found to take sufficient exercise (defined as an average of three hours a week over a nine-month period). Boys were found to be more physically active than girls, and to have more positive perceptions of their sports skills, strength, and physical self-worth. In a study conducted in the U.S. by Simmons-Morton et al. (1990), using a self-report questionnaire involving 8- and 9-year old children, it was found that just 33% of boys and 35% of girls were sufficiently active (i.e., participated in moderate to vigorous activity at least three times per week).

Where children are too young to complete self-report questionnaires/diaries, their parents may be asked to do so on their behalf (see, for example, Sleaf & Warburton, 1990; Telama et al., 1985). This approach was also used in the recent study conducted by the Physiotherapy Department at Trinity College Dublin. Whereas Telama et al., found relatively high levels of physical activity among Finnish children, the opposite conclusion was reached in the case of English children in the Sleaf and Warburton study (in which an activity diary was completed by parents), and in the case of Irish children in the Trinity College study.

A second general approach to measuring children's fitness and activity levels is through the application of physiological measures such as continuous heart monitoring. In a study of fitness levels among English children, Armstrong and Bray (1991) assessed the heart rate of 11- and 12-year olds to determine the extent to which they engaged in sustained moderate to vigorous physical activity. This involved monitoring heart rate for three 12-hour periods on weekdays and on Saturdays. It was concluded that few children experienced the vigorous activity required for general fitness. Children were more likely to be active for short bursts of activity (five minutes) rather than for the period associated with optimum fitness (i.e., 20 minutes).

A third approach to assessing activity levels involves using observational measures. Hovell et al. (1978) used this approach to measure the physical activity of approximately 300 8- to 11-year olds by observing them for five minutes at a time and categorising their activity as moderate or vigorous. The study showed that a sample of U.S. students took little vigorous activity during

break/lunch, due to the fact that they spent too much time waiting to take turns at the various activities that were available.

Across all studies, there appears to be consensus that an appropriate amount of physical activity for children in the 8-12 years age range consists of twenty minutes of moderate to vigorous activity at least three times per week. According to Salis and Patrick (1994), this level of activity is equivalent to brisk walking.

Conclusion

The findings of studies of children's engagement in physical activities, carried out in this country and elsewhere, suggest that primary-level children are more active than their second-level counterparts. However, the relatively sedentary lifestyles of Irish primary-school children and their generally low engagement in vigorous exercise are matters of concern. This concern arises from the view that low levels of activity in childhood may lead to lower levels in adulthood, and increase the risk of chronic diseases, including heart disease and obesity. Evidence that Irish children consume higher quantities of fat/high sugar foods and drinks than children in most other European countries can only add to the concern.

While PE classes should address the matter of physical fitness to a degree, there is evidence that teachers experience some difficulties in implementing the PE programme for primary schools. Among the difficulties that arise are lack of equipment and facilities, especially in small schools, and in some cases, lack of expertise and confidence on the part of teachers.

Among the gaps in our knowledge, which the current study seeks to address, are the following:

- What activities at school and outside of school provide opportunities for children to engage in moderate to vigorous physical activity?
- What role do PE classes fulfil in providing children with opportunities to engage in meaningful physical exercise?
- What forms of exercise are parents of children in fifth class involved in?
- What additional factors determine children's participation in sporting activities outside of school?
- What foods and drinks do children consume?
- What are children's own perceptions of which foods and drinks are good/bad for them?
- Who provides information for children about what they should eat and drink?

It is hoped that, by addressing these issues, educators and parents will have a greater understanding of children's diet and activity patterns, and how these might be modified at home, at school and in the wider community in pursuit of better long- and short-term health and fitness outcomes.

Research Procedures

In November 1998, the Education Department, St Patrick's College, Dublin and the Educational Research Centre began work on a survey of the Diet and Activity Patterns of children in fifth class in Irish primary schools. The purposes of the study were to:

1. Describe the range of activities in which children engage, both inside and outside of school;
2. Examine the range of activities in which children engage during Physical Education classes at school;
3. Examine factors related to children's participation in physical activities;
4. Describe children's dietary preferences;
5. Examine factors related to children's' dietary preferences;
6. Make recommendations on improving children's diet and activity patterns.

The Questionnaires

It was decided to obtain the data to address these issues by constructing short questionnaires that would be administered to pupils and their teachers. A pilot study, in which draft versions of Pupil and Teacher Questionnaires were tried out in four schools, was carried out in December 1998. Teachers and pupils in a representative sample of schools completed revised versions of the questionnaires in the main study in May 1999.

The Pupil Questionnaire sought information about children's travel to and from school, and their involvement in PE classes and in other sporting activities in the school and in the community. Children were also asked about the frequency with which they consumed certain foods and drinks. While many of the questions sought factual information, others sought opinions and attitudes.

The Teacher Questionnaire asked for information about the provision of PE programmes in primary schools, and the development and implementation of school policy on diet and nutrition.

The Sample

A national sample of primary schools was drawn using a database of primary schools. The target population consisted of all ordinary primary schools with at least six pupils in fifth class. The sample did not include special schools. All schools were stratified according to two variables: size and gender served. Schools were divided into three categories on the basis of the total number of pupils enrolled: 'large' (more than 300 pupils), 'medium' (100 to 300 pupils) and 'small' (fewer than 100 pupils). Within the size categories, schools were grouped by gender composition. This yielded nine strata: large boys schools, large girls schools, large mixed schools, medium boys schools, medium girls schools, medium mixed schools, small boys schools, small girls schools and small mixed

schools. The three small strata were collapsed because of the small number of single gender small schools. This resulted in a total of seven strata.

Ten schools were selected at random within each of the seven size-gender strata. This yielded a total of 70 schools, all of which were invited to participate. Two schools declined. The remaining 68 schools returned a list of all fifth classes to the Educational Research Centre. One fifth class in each large school was selected to participate. In medium-sized and small schools, all pupils in fifth class were selected. Sixty-five schools returned completed pupil questionnaires by the cut-off date of June 30th, 1999. Table 2-1 compares the numbers of schools and pupils in the population and in the achieved sample. The teachers of 74 of the 84 classes selected to participate returned completed Teacher Questionnaires.

Table 2-1 Selected and Achieved Samples of Schools and Pupils

	Population		Achieved Sample	
	<i>Schools</i> [*]	<i>Pupils</i>	<i>Schools</i> [*]	<i>Pupils</i>
Large Schools				
Boys	135	9533	10	280
Girls	92	5243	9	263
Mixed	60	3936	9	287
Medium Schools				
Boys	752	16858	9	310
Girls	181	4560	10	290
Mixed	142	4603	9	245
Small Schools	1077	10719	9	87
Total	2439	55452	65	1762

737 schools on the database that with five or fewer pupils in fifth class did not form part of the sample. These schools had a combined enrollment of 1922 pupils in fifth class.

Estimation of Population Statistics

In order to compensate for disproportionate representation of pupils in some strata, it was necessary to weight pupils' questionnaire responses. Hence, all percentages and average scores reported in body of the report are weighted population estimates. Like all such estimates, there is sampling error associated with them. Readers of the report should take this into consideration when interpreting particular statistics. Responses to the Teacher Questionnaire were matched with the corresponding pupil-level data, yielding 1762 data points for each item.

3

The Home Environment and Children's Activity Patterns

This chapter provides background information on certain home background factors that may influence children's activity patterns. First, the issue of travel to and from school by children is addressed. Second, the involvement of children's parents in exercise and sport is described.

Travel to and from School

Table 3-1 indicates that over 40% of children lived in a city or the suburbs of Dublin, Cork, Galway, Waterford or Limerick, while over 25% lived in a small village or in the country.

Table 3-1 Location of Children's Homes and Average Distances Travelled to School

<i>Location of Home</i>	<i>Percent of Pupils</i>	<i>Distance from School (km) – Mean (St. Dev)</i>
City or Suburbs of Dublin, Cork, Galway, Waterford or Limerick	42.74	2.09 (2.48)
Large town (pop. greater than 10,000)	12.62	1.87 (2.49)
Small Town (pop. 1,500 – 10,000)	20.48	1.96 (3.28)
Village (pop. less than 1,500)	5.16	2.05 (3.48)
Country	18.99	2.27 (3.86)

The average distance travelled to school by all pupils is 2.44 km (SD = 3.13). This distance is equivalent to 1.5 miles. On average, pupils living in the country have farther to travel to school than pupils in cities, towns and villages.

Just over 45% of pupils travel to school everyday by car, while 35% walk and 16% travel by bus (Table 3-2). Four percent of children cycle to school. When school location is factored in (e.g., urban vs. rural), the greatest deviations from these average percentages occur in the case of pupils who live in the country. Among these pupils, almost 68% travel to school by car, 27% travel by bus, and just over 4% walk.

Table 3-2 Mode of Transport Typically Used by Pupils to Travel to and from School

Mode of Transport/Home	Percent of Pupils					
	City/Suburbs	Large Town	Small Town	Village	Country	All
Car	35.87	38.41	36.71	43.62	67.50	45.26
Bus	11.47	8.63	13.73	9.06	27.41	15.80
Train	0.10	0.28	0.46	0.00	0.00	0.16
On foot (walking)	48.10	47.86	42.32	46.52	4.20	34.97
Bicycle	4.18	3.41	6.34	0.80	0.88	3.48
Other*	0.28	1.41	0.46	0.00	0.00	0.33

*Includes walking and travel by car; walking and travel by bus.

Pupils who go to school by car travel an average of 3.39 km (SD = 4.11) each morning (see Table 3-3). On the other hand, pupils who walk travel 1.44 km (SD = 1.25).

Table 3-3 Average Distances Travelled Between Home and School, by Form of Transport Used

Mode of Transport	Average Distance from Home (km) – Mean (St. Dev)
Car	3.39 (4.11)
Bus	3.51 (2.22)
Train	10.67 (16.74)
On foot (walking)	1.44 (1.25)
Bicycle	1.64 (1.24)
Other	1.80 (0.84)

However, the data also indicate considerable variation in the distances that pupils travel by car (Table 3-4). For example, almost one-third of pupils living in cities and large towns who travel to school by car live no more than 1km (0.62 miles) from their schools. On the other hand, 13% of pupils in cities and towns travel more than 5km (3.11 miles) to school by car.

Table 3-4 Distances Travelled to School by Car, by Location of Home

<i>Distance (km)/Location</i>	<i>Percent of Children Travelling by Car</i> [*]					
	<i>City/Suburbs</i> <small>*</small>	<i>Large Town</i>	<i>Small Town</i>	<i>Village</i>	<i>Country</i>	<i>All</i>
Up to 1km	31.80	31.06	44.00	53.94	16.61	29.43
1-2 km	28.21	49.73	35.13	33.22	23.80	29.64
3 km	17.40	11.70	5.25	5.34	16.64	13.60
4-5 km	11.65	5.55	6.67	1.98	20.62	13.15
More than 5 km	10.94	1.96	8.95	5.5	22.33	14.18

Columns sum to 100% - all pupils living in a particular location who travel to school by car

Participation of Children's Parents in Sport

Children were asked to indicate how often their parents/guardians take part in sports. The outcomes are summarised in Table 3-5. Fewer than 13% of children said that their mothers participate in sports on a daily basis. The corresponding percentage for fathers is just under 14%. Almost 42% of children indicated that their mothers hardly ever or never participate in sports. The corresponding figure for fathers is 29%.

Table 3-5 Frequency of Parents' Participation in Sports

<i>Frequency</i>	<i>Percentage of Children with Mothers Participating</i>	<i>Percentage of Children with Fathers Participating</i>
Everyday/Almost Every Day	12.89	13.97
Three or Four Times a Week	14.38	16.28
Once or Twice a Week	19.32	26.95
Once or Twice a Month	11.75	14.26
Hardly Ever/Never	41.66	28.54

Children were also asked to indicate the sport in which their parents participated most often. Almost 60% said that their mothers engage most frequently in Walking, while 12% said Swimming (Table 3-6). The most popular sport in the case of fathers is Soccer (27%), with Walking second (18%), and Golf third (16%).

Table 3-6 Main Sports in Which Parents Participate

<i>Sport*</i>	<i>Percentage of Children with Mothers Participating</i>	<i>Sport*</i>	<i>Percentage of Children with Fathers Participating</i>
Walking	59.13	Soccer	26.84
Swimming	11.51	Walking	18.39
Tennis	7.07	Golf	15.71
Running/jogging	5.95	Hurling	7.08
Aerobics	4.26	Running	6.93
Badminton	2.57	Swimming	5.55
Golf	2.29	Cycling	3.90
Soccer	2.15	Tennis	3.03
Camogie	1.08	Gaelic Football	2.86
Bowling	0.66	Fishing	1.25

Based on parents who, according to their children, participate in sports at least 'once or twice a month'

Conclusion

Just 35% of children walk to school every morning. In large cities and towns, just over a third of children who travel by car live within 1 km (0.62 miles) of their schools. It is, of course, acknowledged that many factors play a role in determining how children travel to school, including the time that is available for walking, the need to transport younger siblings, safety concerns and the convenience of dropping off children en route to work. However, the benefits of walking to school, for parents and for children, and indeed for the environment, should not be overlooked.

According to their children, 41% of mothers and 28% of fathers 'hardly ever or never' participate in sports. Among mothers who engage in exercise, Walking and Swimming are most popular, while, among fathers, Soccer, Walking and Golf are the sports in which they participate most often.

The relatively low levels of participation in exercise by mothers in particular are a matter of concern in that children need active role models to whom they can relate in matters of exercise and activity as well as in other important facets of their lives. One way in which parents and children could engage in exercise together would be to participate in 'family sports' such as Outdoor Activities, Cycling and Swimming.

Physical Education in Primary Schools

Chapter 4 addresses the provision of Physical Education (PE) in schools from the perspectives of children and their teachers.

Children's Perspectives on Physical Education Classes

Four issues are addressed in this section: the frequency of PE classes for children in fifth class, children's enjoyment of PE classes, children's participation in sports during PE classes, and children's activity levels during PE classes.

Frequency of PE Classes

Children responding to the Pupil Questionnaire were asked to indicate how often they have PE classes during a typical school week. Their responses are summarised in Table 4-1. Almost 55% of children have PE classes once a week, 35% have classes on two days each week, and 7% have classes on three days. Just under 1% of pupils have PE classes less often than once a fortnight.

Table 4-1 Frequency of PE Classes at School – All Pupils Children

<i>Frequency</i>	<i>Percent of Children</i>
Three or More Times a Week	7.31
Twice a Week	35.35
Once a Week	54.72
Once a Fortnight	1.73
Less Often	0.90

Table 4-2 provides a breakdown of the data in Table 3-1 by school type/size. The categories 'Three or more times per week' and 'Twice a week' were collapsed to form a new category, 'More than Once a Week', while the categories 'Once a fortnight' and 'Less often' were similarly collapsed to form a new category, 'Less than once a week'. Children in medium-sized mixed schools (100 to 300 children) are more likely than children in other schools to have PE classes more than once a week. A small proportion of children in some medium-sized mixed schools and small schools participate in PE lessons less than once a week.

The vast majority of children (98.5%) indicated that they take part in PE classes in school. The main reasons given by for not participating were physical disabilities and respiratory/breathing problems.

Table 4-2 Frequency of PE Classes at School, by Stratum

<i>Stratum*</i>	<i>Percent of Children</i>		
	<i>More than Once A Week</i>	<i>Once a Week</i>	<i>Less than Once a Week</i>
Large Schools – Boys Only	36.43	63.57	0.00
Large Schools – Girls Only	55.88	44.11	0.00
Large Schools – Mixed	21.40	77.89	0.70
Medium Schools – Boys Only	57.98	41.04	0.98
Medium Schools – Girls Only	32.99	62.15	4.86
Medium Schools – Mixed	63.97	29.63	6.58
Small Schools	20.69	72.41	6.90
All Schools	42.66	54.72	2.63

Large schools are defined as those with more than 300 pupils; medium schools are those with 100-300 pupils, while schools are those with fewer than 100 pupils

Children's Enjoyment of PE Classes

Children were asked to indicate their level of enjoyment of PE as a school subject. For 75% of all children, PE is the most enjoyable subject (Table 4-3). Boys (81%) are somewhat more likely than girls (63%) to say that they enjoy PE more than any other subject.

Table 4-3 Enjoyment of PE Classes by Pupils, by Gender

<i>Level of Enjoyment</i>	<i>Boys (%)</i>	<i>Girls (%)</i>	<i>All Children (%)</i>
PE is the subject I most enjoy	81.17	62.70	74.67
I enjoy a few subjects more than PE	14.95	30.50	20.42
I enjoy many subjects more than PE	2.65	5.15	3.53
PE is the subject I enjoy least	1.23	1.65	1.37

Children's Participation in Sports During Physical Education Classes

Children were asked to indicate the sports in which they participate most frequently during PE classes. Children reported that they participate most often in Soccer, Gaelic Football, Basketball, Swimming, Hurling and Dance (Table 4-4). Indeed, almost 47% of children play Soccer almost every week, while 37% play Gaelic Football. Swimming achieves a high ranking, although almost half of children (47%) 'never' receive instruction in Swimming during PE classes. The relatively high average frequency associated with Dance can be attributed to the fact that almost 60% of girls (but only 22% of boys) engage in Dance during PE lessons.

The outcome for Swimming is broadly in line with the results of the National Safety Council's (1997) study on swimming and water safety in schools. In that study, it was found that 45% of children across all class levels attended schools in which no instruction in Swimming was provided. In the current study, 39% of children indicated that they take part in Swimming classes at least once a month.

Table 4-4 Participation by Children in Various Sports during PE Classes - All Children

Sport*	Average Frequency	Percent of Children			
		Almost Every Week	Once or Twice a Month	Hardly Ever	Never
Soccer	2.93 (1.19)	46.75	21.89	10.16	21.19
Gaelic Football	2.74 (1.18)	36.55	25.47	14.19	23.97
Basketball	2.58 (1.16)	27.12	33.53	11.54	27.82
Swimming	2.11 (1.19)	18.78	19.96	14.23	47.03
Hurling	1.98 (1.20)	17.57	18.60	8.41	55.41
Dance	1.73 (1.10)	13.25	9.51	13.07	64.17
Athletics – Field	1.66 (0.87)	5.00	11.72	28.61	54.67
Athletics – Run (Track)	1.52 (0.85)	5.60	7.53	21.35	65.52
Gymnastics	1.45 (0.84)	5.46	6.90	16.27	71.37
Camogie	1.43 (0.93)	8.02	7.62	4.37	80.00
Tennis	1.39 (0.82)	5.07	6.21	11.74	76.97
Rugby	1.36 (0.83)	5.10	7.70	6.37	80.83
Olympic Handball	1.36 (0.77)	3.72	7.10	10.34	78.84
Hockey	1.36 (0.76)	2.03	11.09	8.22	78.66
Athletics – Cross C.	1.32 (0.69)	2.82	4.43	15.26	77.50
Other	2.28 (1.30)	28.08	19.56	6.59	45.77

Based on responses of pupils who indicated that they participated in PE lessons.

Among the 'other' sports in which children participated are Rounders, Volleyball, Golf, Cycling and Badminton. A small number of pupils also mentioned PE activities (e.g., Dodgeball, Tunnelball and Crab Soccer) rather than sports per se.

Some differences are apparent in the proportions of boys and girls participating in some sports during PE lessons. Table 4-5 provides information on participation on an 'almost every week' and 'once or twice a month' basis. Twice as many boys (56%) as girls (28%) participate in Soccer on an almost weekly basis. On the other hand, 28% of girls, but just 5% of boys, participate in Dance on the same basis. Girls also engage in Tennis and Gymnastics with a greater frequency than boys. Thirty-nine percent of boys and 32% of girls participate in Gaelic Football 'almost every week'.

Level of Activity During PE Lessons

In order to obtain an indicator of levels of activity during PE classes, pupils were asked to state how they usually felt during classes, by selecting one of three options – 'Not out of breath, no sweating', 'Sometimes out of breath, sweating' and 'Often out of breath, sweating'. The results indicate that most pupils exert a moderate degree of effort, with 'sometimes out of breath, sweating' being the most common response. Almost twice as many boys as girls indicated this level of exertion.

Table 4-5 Participation by Children in Various Sports during PE Lessons – Boys and Girls

<i>Sport*</i>	<i>Percent of Boys</i>		<i>Percent of Girls</i>	
	<i>Almost Every Week</i>	<i>Once or Twice a Month</i>	<i>Almost Every Week</i>	<i>Once or Twice a Month</i>
Soccer	56.33	26.29	27.60	13.06
Gaelic Football	38.68	28.81	32.49	19.08
Basketball	21.16	33.10	38.05	34.31
Hurling	20.96	18.06	10.98	19.66
Swimming	17.51	21.11	21.25	17.73
Rugby	6.19	8.92	2.96	5.28
Olympic Handball	5.17	8.55	0.88	4.26
Athletics – Running	5.09	7.25	6.59	8.07
Athletics – Field	5.00	13.35	4.98	8.46
Dance	4.86	9.37	28.21	9.77
Tennis	3.77	4.01	7.65	10.57
Athletics – Cross C.	2.41	3.75	3.60	5.75
Camogie	0.42	1.60	22.48	19.08
Hockey	2.09	8.71	1.92	15.62
Gymnastics	2.02	3.61	12.00	13.12
Other	19.75	17.40	42.89	23.39

Based on responses of pupils who indicated that they participated in PE lessons.

Table 4-6 How Children Generally Feel When They Take Part in PE Lessons – Boys and Girls

<i>Feeling</i>	<i>Percent of Children</i>		
	<i>Boys</i>	<i>Girls</i>	<i>All Pupils</i>
Not out of breath, no sweating	18.99	16.57	18.14
Sometimes out of breath, sweating	66.44	75.70	69.70
Often out of breath, sweating	14.57	7.73	12.16

Teachers' Perspectives on Physical Education Classes

Teachers whose pupils participated in the survey were asked to respond to a number of questions about the teaching of Physical Education. The results in this section are reported in terms of percentages of children whose teachers have/do not have a particular attribute (for example, involvement in coaching). Similarly, average scores were computed across pupils whose teachers provided particular responses (for example, average duration of PE lessons). First, some background information on the teachers is presented.

Background Information

Seven out of ten children in fifth class (71%) are taught by female teachers. The majority of pupils at this class level have teachers with between 11 and 20 years of teaching experience (see Table 4-7).

Table 4-7 Percentages of Pupils whose Teachers Have Various Levels of Experience

<i>Range of Experience</i>	<i>Percent of Children</i>
1-5 years	13.74
6-10 years	3.02
11-15 years	34.09
16-20 years	37.25
21-30 years	11.91
31-40 years	0.00

The average class size is 30 children (Table 4-8). The average number of pupils in multi-grade classes is 26. When pupils in fifth class only are taken into account in computing class size, the averages sizes for single-grade and multi-grade classes are 31 and 13 respectively.

Table 4-8 Average Class Size

	<i>All Children – Mean (SD)</i>	<i>Children in Fifth Class Only –Mean (SD)</i>
Single-grade classes	30.60 (4.87)	30.60 (4.87)
Multi-grade Classes	26.21 (3.38)	12.58 (3.77)
All Classes	29.94 (4.93)	27.80 (8.05)

Teachers are involved in a range of sporting activities outside of school hours. Almost 50% of pupils are taught by teachers who themselves participate in sports, while 30% are taught by teachers who are engaged in coaching adults outside of school hours (Table 4-9). Indeed, these teachers have a substantial commitment to sport in that they spend an average of almost three hours per week on coaching activities.

Table 4-9 Involvement of Teachers in Sporting Activities Outside of School Hours

Activity	Percent of Children Whose Teachers Indicated Some Involvement	Mean Number of Hours (SD) Per Week Spent by Teachers Who Indicated Some Involvement
Taking part in sports as a participant (e.g., swimming, playing football)	49.19	4.71 (2.92)
Coaching children or adults	30.01	2.99 (2.81)
Attending sports meetings as a spectator	42.28	2.50 (1.33)
Officiating at sports meetings (e.g., refereeing)	10.43	1.09 (0.29)
Attending committee meetings of a sporting body	5.37	1.06 (0.23)

Involvement of Teachers in Inservice Training

Over 70% of children are taught by teachers who had not participated in inservice training in PE in the three years prior to the survey. Indeed, over one third of pupils are taught by teachers who have had no additional training since they completed their initial teacher training (Table 4-10). On the other hand, almost 40% of pupils are taught by teachers who have attended more than 30 hours of training in PE since initial teacher training.

Table 4-10 Involvement of Teachers in Inservice Training

	<i>Percent of Children Whose Teachers Attended Inservice Training in . . .</i>		
	<i>All Subjects in Past Three Years</i>	<i>Physical Education in Past Three Years</i>	<i>Physical Education Since Initial Teacher Training</i>
No hours	17.95	72.17	36.91
1-10 hours	7.33	7.09	7.78
11-20 hours	11.29	8.21	8.51
21-30 hours	5.04	8.06	8.50
More than 30 hours	58.39	4.47	38.29

Allocation of Time During Physical Education Lessons

Just 81.63% of children are taught PE by their class teachers. The remaining pupils are provided with instruction by other teachers, coaches employed by their schools, or specialist PE teachers. The average number of minutes per week allocated to PE lessons by teachers who teach PE is 61.74 minutes (SD=20.27) or slightly over an hour a week. This is in line with the recommend weekly time for

PE in the revised Primary School Curriculum (National Council for Curriculum and Assessment, 1999c).

To obtain benchmark data on the allocation of time during PE classes in advance of the implementation of the revised PE curriculum, teachers were asked to indicate the percentage of time allocated to various elements represented in the revised curriculum. As indicated in Table 4-11, the majority of instructional time during PE classes (55%) is allocated to Games. Although almost half of pupils do not attend swimming classes during PE lessons, 13% of instructional time across all pupils is allocated to Swimming. Outdoor Activities receive just under 3% of time, while Water Safety gets just over 1%.

Table 4-11 Percentage of Time Allocated by Teachers to Different Curricular Elements during PE Classes

Curricular Element	Average Percent of Time		
	All Classes	Classes with Swimming	Classes without Swimming
Games	55.39	44.89	69.01
Aquatics – Swimming	12.88	25.03	0.00
Gymnastics/Movement	9.88	5.34	12.51
Athletics	9.58	9.51	10.59
Dance	8.22	9.62	5.71
Outdoor Activities	2.98	6.23	1.88
Aquatics – Water Safety	1.08	1.79	0.48

Teachers who teach PE to their pupils in fifth class were asked to indicate whether or not they teach each of a number of strands, and whether or not they felt adequately prepared to teach the strand. The teachers were also asked to indicate whether or not facilities and equipment for teaching the strand were satisfactory.

Aquatic Sports and outdoor activities apart, there is a consistent difference between the proportion of children whose teachers teach a particular programme element, and the proportion of children whose teachers feel that they are confident enough to teach that element. For example, although 83% of children are provided with instruction in Games by their teachers, just 70% of pupils are taught by teachers who feel adequately prepared to teach Games. The relatively low proportions of pupils who are taught by teachers who feel prepared to teach elements of the PE programme such as Water Safety, Athletics and Outdoor Activities is a cause for concern. Clearly, these elements will need considerable emphasis in the preparation of teachers for the implementation of the revised PE curriculum.

Among teachers who teach PE, facilities are generally perceived to be satisfactory for Games, and, to a lesser extent, for Educational Dance and Gymnastics/Movement. Indeed, over 87% of children attend schools where facilities are regarded as being adequate for Games, while 66% attend schools in which facilities for Gymnastics/Movement are regarded as being adequate (Table 4-12). However, just 41% of children are in schools in which

Gymnastics/Movement is taught. This may be due to a perception on the part of teachers that they are not well prepared to teach this element of the PE programme, as well as concerns about children's safety.

Table 4-12 Teachers' Satisfaction with Facilities for Various Elements of the Physical Education Programme*

	<i>Percent of Children Whose Teachers Indicated that . .</i>			
<i>Element</i>	<i>Element Is Taught</i>	<i>Teacher Feels Prepared</i>	<i>Facilities Are Satisfactory</i>	<i>Equipment Is Satisfactory</i>
Games	88.82	69.66	87.17	80.66
Swimming	4.28	6.09	49.87	40.84
Water Safety	4.66	8.99	29.69	27.88
Athletics – Running	34.62	20.96	50.88	38.84
Athletics – Throwing	12.46	10.87	19.69	16.67
Athletics – Jumping	13.11	7.18	22.93	16.86
Educational Dance	30.18	25.89	61.06	48.30
Gymnastics/Movement	40.79	23.36	66.12	53.30
Outdoor Activities	5.89	12.52	12.76	9.24

Based on responses of teachers who indicated that they taught P.E.

Planning for Physical Education Lessons

Schools are advised to develop a school plan for each subject in the curriculum (Department of Education and Science, 1999). Just two-third of pupils (65%) attend schools in which there is a School Plan for teaching Physical Education. Among the issues that are almost invariably addressed in such plans are the content of PE programmes, the frequency of PE classes, and the duration of classes (Table 4-13). Issues that are dealt with less widely are acquisition and replacement of equipment, teaching Swimming and Water Safety, and organisation of sporting activities outside of school hours. Among the 'other' issues that were mentioned by teachers as receiving attention in school plans are use of the school hall, taking part in inter-school competitions, rules of games, and procedures for an annual visit to an adventure centre.

Table 4-13 Percentage of Children Attending Schools where the School Plan (Plan Scoile) in PE Includes Particular Programme Elements

Element	Percent of Pupils*
Content of PE Programme	99.79
Frequency of PE Classes	92.19
Duration of PE Classes	92.25
Acquisition and Replacement of Equipment	70.63
Organisation of Dance Classes	70.28
Teaching Swimming	65.17
Organisation of Sport Activities Outside of School Hours	57.89
Teaching Water Safety	42.63
Other	6.18

*Refers to pupils in schools in which there is a School Plan for P. E.

Finally, teachers who taught PE were asked to indicate the sources of information they typically drew on in planning PE classes. Under 15% of pupils are in classes whose teachers frequently draw on the School Plan in preparing for PE lessons, while fewer than 1% are taught by teachers who refer to the 1971 curriculum document (*Curaclam na Bunscoile*) with the same frequency (Table 4-14). On the other hand, almost 35% of children are in classes whose teachers frequently refer to books on PE and/or coaching. Among the 'other' sources that are used by teachers in their planning are their own notes, advice from colleagues and specialist PE teachers.

Table 4-14 Sources of Information Used by Pupils' Teachers to Plan P.E. Lessons

Source of Information	Percent of Pupils*		
	Frequently	Sometimes	Never
School Plan (if available)	14.14	33.03	52.82
Primary School Curriculum/ Curaclam na Bunscoile (1971)	0.52	33.92	65.56
Books on Physical Education/Coaching	34.17	58.35	7.48
Notes from Courses	48.16	34.00	17.92
Other	22.20	0.00	77.80

*Based on responses of teachers who teach P.E.

Conclusion

Fifty-five percent of children have PE classes once a week, 35% have classes twice a week, and 7% have classes three times a week. If PE classes are to provide children with learning opportunities through the medium of movement and awaken their interest in a broad range of activities, then, it seems important for all children to take part in PE classes at least twice a week. This should not be too difficult to implement since 81% percent of boys and 63% of girls indicated that PE was the subject they enjoy most at school.

Just 81% of children are taught PE by their own teachers. The average amount of time allocated to PE classes by these teachers – about sixty minutes per week – is in line with the recommended time in the revised PE curriculum.

A feature of PE classes is the large proportion of teaching time spent on Games. Indeed, over half of all time allocated to PE is used to teach games, and this proportion is higher in schools that do not offer Swimming. The games in which boys participate 'almost every week' during classes are Soccer (56%) Gaelic Football (39%), Basketball (21%) Hurling (21%) and Swimming (18%). Girls participate with the same frequency in Basketball (33%), Gaelic Football (29%), Dance (28%), Soccer (26%) and Swimming (21%).

There is surprisingly little emphasis on Athletics during PE classes, even though our survey was carried out in May. The relatively low participation rates for Rugby are also remarkable, given the high profile that the sport enjoys in this country, though, as indicated in Chapter 4, Rugby clubs attract a relatively large proportion of boys (11%).

Almost 50% of children are taught by teachers who are themselves active in sports, while 30% are taught by teachers who coach children or adults outside of school. However, over 70% of pupils are taught by teachers who have not attended any in-career development in PE in the last three years. Teachers perceive themselves not to be adequately prepared to teach a range of PE activities including Athletics, Educational Dance, Gymnastics and Outdoor Activities. In the case of Gymnastics/Movement, just 23% of pupils are taught by teachers who feel prepared to teach this element of the PE programme.

Children's Involvement in Sport as a Leisure Activity

Allocation of Time to Out-of-School Activities

Children were asked to indicate the amount of time they spend on various out-of-school activities (a) during the school week; and (b) at weekends. For each activity, they were asked to mark one of five options: (5) more than 10 hours; (4) 6-10 hours; (3) 3-5 hours; (2) 1-2 hours; and (1) no time at all. Average frequencies for each activity are given in Table 5-1 for boys only, girls only, and boys and girls combined, while percentages of boys and girls participating in each activity with varying degrees of frequency are given in Tables 5-2 and 5-3 respectively. The two categories, 'more than 10 hours' and '6 to 10 hours' were combined for reporting purposes in Tables 5-2 and 5-3. It should be noted that the data were gathered in mid-May, when participation in sporting activities might be expected to be at a peak.

Children spend a considerable proportion of their leisure time outside of school watching television/video or playing electronic games. Three indicators of these activities appeared on the Pupil Questionnaire – watching non-sport programmes on television and video, playing computer games and watching sport on television and video. These activities rank first, second and fourth respectively for pupils during the school week and at weekends (Table 5-1). Boys engage in two of these activities more often than girls – watching sport on television/video, and playing computer games. The high ranking achieved by 'playing computer games' is noteworthy in that 10% of boys and 33% of girls spend no time at all playing computer games during the school week.

Activities such as doing homework, reading books for enjoyment, and participating in sports organised by clubs and schools all received lower rankings than either television viewing of non-sport programmes or playing computers games. Given that the survey took place in mid-May, when the evenings are longer and there are more opportunities for enjoying outdoor activities, it is perhaps surprising that more children do not pursue their sporting interests.

Table 5-1 Frequency of Engagement by Pupils in a Range of Activities Outside of School During the Week and at Weekends – Boys, Girls and All Pupils

Activity	Average Frequency*					
	Weekdays <i>(Mon-Fri combined)</i>			Weekends <i>(Sat-Sun Combined)</i>		
	Boys	Girls	All Pupils	Boys	Girls	All Pupils
Watching non-sport programmes on television or video	3.22 (1.11)	3.15 (1.02)	3.20 (1.08)	2.83 (0.95)	2.74 (0.90)	2.80 (0.94)
Playing computer/console games	2.86 (1.14)	2.01 (0.96)	2.57 (1.16)	2.62 (1.09)	1.80 (0.84)	2.33 (1.08)
Watching sport on television or video	2.78 (1.09)	1.90 (0.93)	2.47 (1.11)	2.50 (0.95)	1.70 (0.82)	2.22 (0.98)
Taking part in sports organised by a club (e.g., football, swimming)	2.35 (1.16)	2.10 (1.04)	2.26 (1.12)	2.13 (0.99)	1.70 (0.83)	1.98 (0.96)
Attending and watching a match or other sporting event	-	-	-	2.04 (0.87)	1.69 (0.79)	1.92 (0.86)
Reading books for enjoyment	1.99 (0.94)	2.43 (1.01)	2.15 (0.99)	1.70 (0.81)	2.02 (0.85)	1.81 (0.89)
Reading comics, magazines, newspapers	2.06 (0.87)	1.95 (0.76)	2.02 (0.84)	1.82 (0.74)	1.71 (0.74)	1.81 (0.74)
Doing homework (not in school)	2.51 (0.79)	2.65 (0.78)	2.56 (0.79)	1.31 (0.56)	1.39 (0.57)	1.33 (0.56)
Attending extra classes outside of school time (art, music, dance etc.)	1.34 (0.66)	1.90 (0.95)	1.54 (0.82)	1.20 (0.53)	1.56 (0.80)	1.32 (0.66)
Taking part in sports organised by the school	1.97 (0.95)	1.90 (0.89)	1.95 (0.93)	1.29 (0.68)	1.29 (0.64)	1.29 (0.67)

A high number indicates a high level of involvement – statistics are mean scores based on a five point scale – 1 (no time at all); 2 (1-2 hours); 3 (3-5 hours); 4 (6-10 hours) and 5 (more than 10 hours).

Table 5-2 Percentages of Boys and Girls Engaging in Various Activities during the School Week for Specified Periods of Time

	<i>Percent of Pupils Spending Various Amounts of Time Engaged in Activities During the School Week (Monday – Friday combined)</i>							
	<i>Boys</i>				<i>Girls</i>			
<i>Activity</i>	<i>More than 5 Hrs</i>	<i>3-5 Hrs</i>	<i>1-2 Hrs</i>	<i>No Time</i>	<i>More than 5 Hrs</i>	<i>3-5 Hrs</i>	<i>1-2 Hrs</i>	<i>No Time</i>
Watching non-sport programmes on television or video	37.59	34.38	24.14	3.89	34.92	34.93	28.25	1.90
Playing computer/console games	28.07	29.79	31.97	10.17	7.15	17.72	41.91	33.22
Doing homework (not in school)	10.25	33.00	52.25	4.50	14.92	36.45	46.70	1.93
Watching sport on television or video	21.93	36.76	29.93	11.38	5.31	13.23	42.18	38.28
Reading books for enjoyment	7.25	15.72	43.95	33.08	14.00	35.75	44.63	15.62
Reading comics, magazines or newspapers for enjoyment	7.08	16.00	51.36	25.56	3.06	15.53	54.15	25.25
Taking part in sports organised by a club (e.g., football, swimming)	16.12	27.13	27.82	28.92	9.28	24.10	31.60	35.01
Taking part in sports organised by the school	5.46	21.10	36.88	36.56	4.62	17.94	38.96	38.48
Attending extra classes outside of school time (art, music, dance etc.)	1.20	5.54	19.16	74.10	5.68	16.61	37.62	40.09
Attending and watching a match or other sporting event	--	--	--	--				

Table 5-3 Percentages of Boys and Girls Engaging in Various Activities at Weekends

<i>Activity</i>	<i>Percent of Boys and Girls Spending Various Amounts of Time Engaged in Activities at Weekends</i>								
	<i>Boys</i>				<i>Girls</i>				
	<i>More than 5 Hrs</i>	<i>3-5 Hrs</i>	<i>1-2 Hrs</i>	<i>No Time</i>		<i>More than 5 Hrs</i>	<i>3-5 Hrs</i>	<i>1-2 Hrs</i>	<i>No Time</i>
Watching non-sport programmes on television or video	21.97	39.24	33.45	5.52	17.01	38.95	40.14	4.08	
Playing computer/console games	19.07	31.28	35.32	14.32	3.84	11.00	45.21	39.96	
Doing homework (not in school)	0.73	2.72	23.03	73.62	0.02	3.21	31.47	65.14	
Watching sport on television or video	12.84	33.18	41.32	12.66	2.86	1.16	37.21	48.32	
Reading books for enjoyment	2.78	10.79	39.95	47.08	6.08	18.11	46.00	29.81	
Reading comics, magazines or newspapers for enjoyment	2.60	10.04	53.45	33.90	2.35	9.58	52.77	35.29	
Taking part in sports organised by a club (e.g., football, swimming)	7.96	26.07	34.57	31.40	3.02	13.92	32.36	50.69	
Taking part in sports organised by the school	2.05	4.88	12.15	80.92	1.67	4.86	14.33	79.14	
Attending extra classes outside of school time (art, music, dance etc.)	0.68	3.36	10.49	85.46	2.54	11.19	25.56	60.71	
Attending and watching a match or other sporting event	5.06	21.23	45.54	28.17	1.89	11.73	38.63	47.75	

Children also engage in organised sports as a leisure time activity. During the school week, 71% of boys and 65% of girls spend at least some time in sports organised by a club. Indeed, 16% of boys and 9% of girls spend more than five hours involved in sports organised by clubs over the school week. At weekends, the picture is broadly similar. Sixty nine percent of boys and 49% of girls have some involvement with sports clubs, while a minority – 8% of boys and 3% of girls – reports at least five hours involvement. When these data were collapsed across weekdays and weekends, it was estimated that 24% of boys and 32% of girls do not participate at all in sports organised by clubs.

Almost 85% of children attend schools in which opportunities to participate in sports organised by the school outside of school hours are offered in fifth class (Table 5-4). Children in large schools and in medium-sized boys' and medium-sized mixed schools are more likely than children in medium-sized girls' schools and in small schools to be offered these opportunities.

Table 5-4 Percentages of Children Attending Schools in Which Sports Are Organised Outside of School Hours

	<i>Percentages of Children Attending Schools that Offer Sports for Pupils in Fifth Class, after School Hours</i>		
<i>School Type Attended by Pupils</i>	<i>Boys</i>	<i>Girls</i>	<i>All Pupils</i>
Large Boys	92.86	---	92.86
Large Mixed	100.00	100.00	100.00
Large Girls	---	89.35	89.35
Medium Boys	91.61	---	91.61
Medium Girls	---	57.24	57.24
Medium Mixed	85.61	57.09	85.31
Small	71.43	17.35	68.97
Total	89.12	75.82	84.48

Sports in Which Children Participate During Leisure Time

Children were asked to indicate, for each of several sports, those in which they participated (a) at school outside of school hours, and (b) at a sports club during their leisure time. As indicated in Table 5-5, more children participate in Gaelic Football than in any other sport organised by schools outside of school hours, with almost 40% of boys and 32% of girls taking part. Among boys, 23% participate in Hurling, 23% in Soccer, and 15% in Basketball. Among girls, 27% participate in Basketball, and 26% take part in Camogie (26%). Fourteen percent of boys and 13% of girls participate in Swimming. Among the 'other' sports in which children participate are Badminton, Golf, Gymnastics, Hockey, and Rounders.

Table 5-5 Percentages of Children in Fifth Class Who Participate in Various Sports Organised by the School Outside of School Hours

<i>Sport</i>	<i>Boys – Percent</i>	<i>Girls – Percent</i>	<i>All Children – Percent</i>
Gaelic Football	39.47	32.03	36.89
Hurling	22.87	13.06	19.49
Basketball	14.85	26.97	19.11
Soccer	22.63	9.41	18.07
Swimming	13.62	12.56	13.25
Camogie	1.35	26.05	10.16
Athletics – Track (Running)	6.27	3.40	5.28
Athletics – Cross-country	5.42	4.91	5.24
Athletics – Field Events (Throw/Jump)	6.21	2.52	4.93
Tennis	2.79	5.01	3.56
Karate	3.28	2.12	2.88
Rugby	3.42	0.34	2.34
Olympic Handball	2.19	0.92	1.75
Other	10.47	10.52	10.49

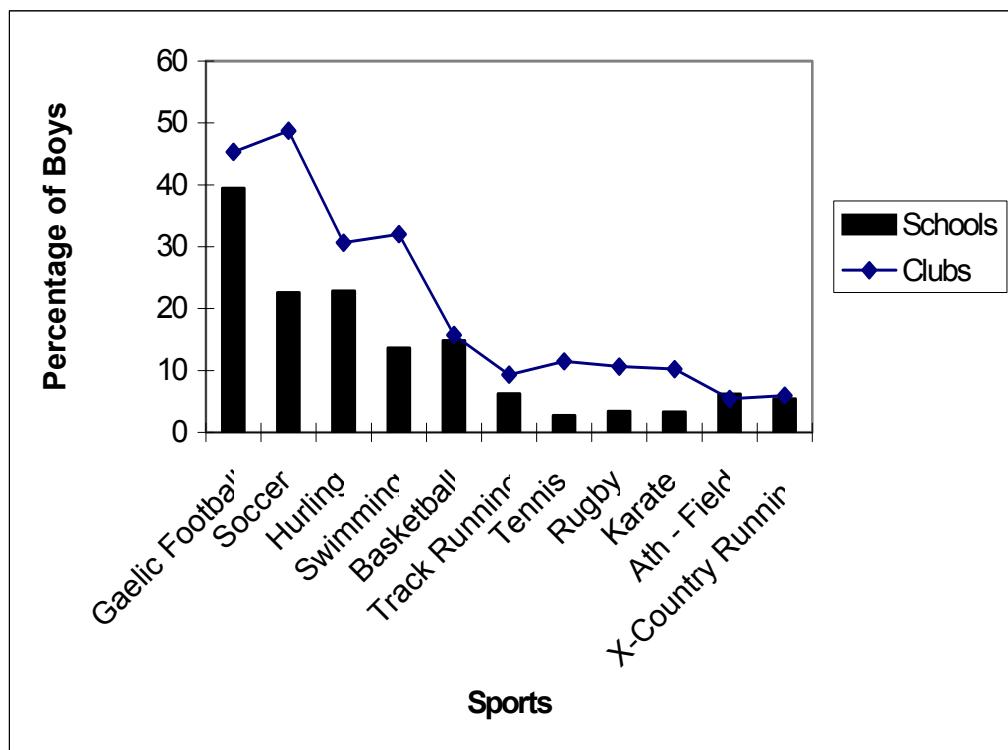
Children were also asked to indicate the sports organised by clubs in which they participated outside of school hours, though no distinction was made between sports offered by specialist clubs (for example, soccer clubs), and sports offered by other organisations (for example, Girl Guides may offer Basketball). The sports in which boys participate most frequently are Soccer (49%), Gaelic Football (45%), Swimming (32%) and Hurling (31%) (Table 5-6). The corresponding sports for girls are Swimming (42%), Basketball (21%), Gaelic Football (20%) and Camogie (20%). Eleven percent of boys participate in Rugby. Among the ‘other’ sports in which children participate are Badminton, Bowling, Boxing, Dance, Fishing, Golf, Gymnastics, Horse-riding, Martial Arts, Rounders and Sailing.

There are some noticeable similarities and differences between participation rates when the same sports are offered by schools (outside of school hours) and by clubs (see Figure 5-1, which is based on the responses of boys only). For example, 39% of boys play Gaelic Football as a leisure-time activity in school, while 49% do so at a club. On the other hand, just 23% of boys play Soccer at school, while 49% do so at a club outside of school. Rugby, the third major field game played in Ireland, is more dependent on clubs than on schools to encourage participation.

Table 5-6 Percentages of Children in Fifth Class Who Participate in Various Sports Organised by the Clubs Outside of School Hours

<i>Sport</i>	<i>Percentages of Children</i>		
	<i>Boys</i>	<i>Girls</i>	<i>All Pupils</i>
Soccer	48.78	15.69	37.47
Gaelic Football	45.33	19.71	36.49
Swimming	32.04	42.37	35.59
Hurling	30.67	3.87	21.54
Basketball	15.77	20.90	17.53
Tennis	11.49	16.90	13.34
Athletics – Track (Running)	9.30	11.51	10.05
Martial Arts (inc. Karate)	10.25	8.76	9.75
Camogie	1.40	20.16	7.85
Rugby	10.66	0.61	7.23
Athletics – Cross-Country Running	5.96	8.90	6.96
Athletics – Field Events (Throw/Jump)	5.43	5.83	5.57
Hockey	4.77	5.21	4.92
Olympic Handball	2.00	2.67	2.23
Volleyball	1.36	3.72	2.17
Other	9.05	20.97	13.06

Figure 5-1: Participation of Boys in Selected Sports Organised by Schools and Clubs, Outside of School Hours



Children's Reasons for Not Participating in Sports

Some children do not participate in sports organised by schools or clubs. During the school week, 37% of boys and 38% of girls do not participate in sports organised by their school, while one quarter of boys and one third of girls do not participate in sports organised by clubs (Table 5-7). At weekends, 30% of boys and 50% of girls do not participate in sports organised by clubs.

Table 5-7 Percentages of Children in Fifth Class Who Do Not Participate in Sports Organised by Schools and Clubs Outside of School Hours

No Participation	Schools		Clubs	
	Boys (%)	Girls (%)	Boys (%)	Girls (%)
Weekdays	36.58	38.48	28.92	35.01
Weekends	80.92	79.14	31.40	50.69

Children who had no involvement in sports organised by their schools outside of school hours were asked to select, from a list, the reasons why they did not participate. The pupils' responses are reported as percentages of boys, girls and all pupils who participated in the study.

The main reasons why children do not participate in sports are that they 'prefer to do other things' (21%), their 'favourite sport is not offered' (17%), and 'not enough time' (11%). Surprisingly, twice as many boys (10%) as girls (5%) indicated a lack of interest in sports as the main reason for their non-participation. Boys (11%) were also more likely than girls (7%) to report lack of ability as a reason for non-involvement. Among the 'other' reasons for not participating in sports organised by schools after school hours are involvement in sporting activities at home or with a club, non-involvement of friends in sports, a preference for playing at home, and lack of opportunities for girls (see Table 5-8).

Table 5-8 Children's Reasons for Not Participating in Sports Offered by Their Schools Outside of School Hours

Reasons for Not Participating	Boys (%)	Girls (%)	All Children (%)
Prefer to do other things	23.38	16.21	21.10
Favourite sport is not offered.	19.10	13.63	17.36
Not enough time - too busy	11.82	10.73	11.47
Not good at any of the sports that are offered.	11.30	6.68	9.83
Not interested in sport	10.40	5.23	8.76
Respiratory/breathing problem (e.g., asthma)	3.36	1.96	2.92
Too expensive to take part	2.10	0.22	1.50
Physical disability	0.31	0.52	0.38
Other	6.79	5.64	6.43

Pupils who were not involved in sports organised by clubs outside of school hours were also asked to indicate the main reasons for non-involvement. The most common responses were 'prefer to do other things' (17% of all pupils), 'not enough time – too busy' (9%), not interested in sport (8%) and 'clubs don't

organise sport I'm interested in' (6%) (Table 5-9). Among the 'other' reasons offered by pupils for not participating in sports organised by clubs were 'distance from club', 'involvement in other activities', and 'availability of sport (e.g., Swimming) at school'.

Table 5-9 Pupils' Reasons for Not Participating in Sports Offered by Clubs

<i>Reasons for Not Participating*</i>	<i>Boys (%)</i>	<i>Girls (%)</i>	<i>All Children (%)</i>
Prefer to do other things	15.56	18.33	16.50
Not enough time - too busy	8.00	9.63	8.56
Not interested in sport	8.92	6.19	7.99
Clubs don't organise a sport I'm interested in	6.23	6.91	6.46
I am not good at any of the sports that are offered.	6.50	4.35	5.76
Respiratory/breathing problem (e.g., asthma)	3.66	1.69	2.98
Too expensive to take part	1.71	2.20	1.88
Physical disability	0.16	0.37	0.23
Other	3.71	2.88	3.43

Conclusion

Although the current survey was conducted in the month of May, when the evenings are long and many opportunities for engaging in sporting activities present themselves, children reported that they spend a large proportion of their leisure-time watching television and videos and engaging with electronic games. Relative to these largely sedentary activities, involvement in sports takes up a low proportion of children's leisure time.

Schools and clubs play a very important role in providing young people with opportunities to engage in sports from an early age. However, many children (and girls in particular) do not avail of the opportunities to participate in sports that are offered by these organisations. Among the reasons that children do not participate in activities organised by clubs are a preference to do other things, insufficient time, and a low level of interest in the activities that are offered. It is interesting that insufficient time is cited by children as a reason for not participating in sports, since many of them spend a large proportion of their leisure time watching television/videos or playing electronic games.

Although Soccer is the game in which children participate most often during PE classes at school, Gaelic Football is the most widely available after-school sporting activity offered by schools. At club level, roughly similar proportions of boys participate in Gaelic Football and Soccer.

Children's Dietary Patterns

Diet plays an important role in children's health, not only in terms of contributing to their current well-being, but also in determining their future health as adults. This chapter addresses four issues related to children's eating/drinking habits: dietary patterns and preferences; health and diet; eating habits at home and at school; and learning about food and nutrition.

Children's Dietary Patterns and Preferences

Information about children's preferences for various foods and drinks was obtained by providing respondents with a list and asking them to indicate how often they consumed each item, using the following scale: (5) several times a day; (4) about once a day; (3) three or four times a week; (2) once or twice a week; and (1) hardly ever/never. The results are summarised in Table 6-1. Although average frequencies are based on this 5-point scale, the categories, 'several times a day' and 'once a day' were collapsed into a new category, 'at least once a day', for reporting purposes.

The frequencies with which children consume sweets, chocolate bars, crisps and biscuits are remarkably high. Indeed, products in each of these categories are consumed by four out of five children at least three or four times a week. Consumption of fruit, on the other hand, is less prevalent, with just 52% of children eating an apple at least once a day, and 33% eating an orange. Collapsing responses across types of fruit, it was found that 16% of children hardly ever or never eat fruit (19% of boys and 8% of girls).

Consumption of vegetables is relatively low, with just 31% of children eating green vegetables at least once a day. One quarter of children indicated that they 'hardly ever or never' eat green vegetables.

Consumption of meat and meat products is consistently high. Chicken (other than nuggets) is eaten by 87% of children at least once or twice a week. The corresponding percentages for sausages, ham and beef are 82%, 77% and 75% respectively. When responses are collapsed across meat types, more girls (7.97%) than boys (4.08%) hardly ever or never ate meat.

Among the beverages that children consume, milk is the most popular; over 70% drink it at least once a day. However, fruit juices and soft drinks are only marginally less popular. Just 46% of pupils drink tea on a daily basis, while 12% drink coffee.

Table 6-1 Frequency with which Children Take Various Foods and Drinks

		<i>Percentage of Children</i>			
	Average Freq. (St. Dev)	At Least Once a Day	3-4 Times a Week	Once or Twice a Week	Hardly Ever/ Never
Sweets and Crisps					
Sweets	3.62 (1.16)	57.79	23.16	14.76	4.29
Chocolate Bars	3.59 (1.11)	58.76	22.04	15.52	3.68
Potato Crisps	3.54 (1.10)	55.75	25.37	14.83	4.05
Biscuits	3.47 (1.22)	53.96	22.94	15.54	7.56
Fruits					
Apples	3.21 (1.22)	51.68	17.49	19.33	11.49
Oranges	2.66 (1.28)	33.45	16.31	26.32	23.91
Bananas	2.64 (1.34)	32.53	17.59	21.97	27.90
Other Fresh Fruit	2.99 (1.28)	40.73	20.26	23.44	15.57
Vegetables					
Carrots	2.72 (1.26)	30.91	24.96	21.14	23.00
Green Vegetables	2.70 (1.28)	31.39	24.86	18.81	24.94
Meats					
Meat – sausages	2.50 (1.08)	18.89	26.18	36.81	18.12
Other Chicken	2.48 (0.98)	15.43	25.92	45.99	12.66
Meat – ham	2.47 (1.16)	22.10	19.62	35.94	22.34
Meat – beef	2.28 (1.05)	14.92	19.68	40.70	24.69
Meat – hamburgers	2.18 (1.08)	14.16	17.52	37.91	30.41
Meat – mince	2.13 (1.08)	13.57	13.97	40.81	31.64
Chicken Nuggets	2.02 (1.10)	13.59	12.15	34.07	40.19
Meat – lamb	1.93 (1.03)	10.21	12.06	36.33	41.40
Dairy Foods					
Yoghurt	3.15 (1.25)	45.78	22.53	18.59	13.10
Cheese	2.61 (1.35)	31.14	19.28	19.62	29.96
Other Foods					
Eggs	2.26 (1.19)	18.27	17.49	31.12	33.11
Chips	2.69 (1.05)	22.75	26.33	41.58	9.34
Pizza	2.39 (1.12)	18.02	17.95	42.70	21.33
Canned Beans	2.13 (1.16)	15.77	18.28	25.95	40.00
Beverages					
Milk	3.89 (1.27)	72.50	11.26	7.25	8.99
Soft Drinks	3.65 (1.25)	58.01	21.41	14.48	6.10
Fruit Juice	3.55 (1.24)	60.61	18.27	11.70	9.41
Tea	2.96 (1.56)	45.50	12.17	13.08	29.25
Coffee	1.59 (1.18)	12.16	4.20	8.49	75.13

5=several times a day; 4=about once a day; 3=three or four times a week; 2=once or twice a week; 1=hardly ever/never.

Table 6-2 Foods and Beverages Regarded by Children to be 'Good for My Health and Me'

Food	Percentage of Children Indicating Food/Beverage is 'Good for Me and My Health'		
	Boys	Girls	All Pupils
Snacks			
Ice-cream	44.48	39.43	42.71
Biscuits	35.44	19.98	30.02
Potato Crisps	24.78	14.24	21.10
Chocolate	19.49	18.12	19.01
Chocolate Cake	14.55	7.74	12.16
Sweets	12.31	6.95	10.43
Fruits			
Apples	99.39	99.74	99.52
Bananas	96.30	95.87	96.15
Oranges/Satsumas	92.28	97.06	93.96
Vegetables			
Cabbage	92.27	95.04	93.23
Carrots	95.31	96.66	95.78
Cauliflower	87.53	92.60	89.29
Meats			
Meat	78.76	85.31	81.04
Hamburgers	36.43	35.55	36.13
Dairy Foods			
Yoghurt	94.32	98.17	95.66
Butter	57.92	49.29	54.92
Other			
Brown Bread (Whole meal)	94.41	97.10	95.35
Cornflakes	94.92	96.01	95.29
White Bread	88.72	83.16	86.78
Canned Beans	71.88	66.58	70.03
Butter substitute	62.38	60.36	61.67
Chips	36.22	22.45	31.43
Sugar	20.38	15.22	18.58
Beverage			
Milk	96.37	96.35	96.37
Fruit Juices	93.70	97.10	94.89
Water – bottled	88.64	90.66	89.35
Water – tap	83.44	78.22	81.61
Soft drink – orange, lemon and lime	37.14	25.44	33.04
Coffee	23.64	12.04	19.57
Soft drink – Cola	20.29	8.92	16.30
Alcoholic drinks	8.89	5.11	7.56

Children were asked to indicate which foods on a list are, in their view, 'good for me and my health' or 'not good for me and my health'. The percentages of boys,

girls and all children selecting the first of these options, for each of several foods and drinks, is given in Table 6-2.

While 97% of children believe that milk is good for them, just one third (33%) believe that non-cola soft drinks are good, while a sixth (16%) believe colas are good. In general, boys and girls are in agreement on the benefits that various foods are likely to impart.

Children were asked to list any foods or drinks they did not like. Those mentioned most frequently are listed in Table 6-3. Vegetables figure prominently on the list, with almost one quarter of pupils (23%) indicating that they do not like cabbage and 13% indicating a dislike for sprouts. Among beverages, coffee was least liked (27% of pupils), while apple and orange drinks were each disliked by 10% of pupils.

Table 6-3 Foods and Drinks that Children Don't Like

<i>Foods that Children Don't Like</i>	<i>Percent of Children</i>	<i>Drinks that Children Don't Like</i>	<i>Percent of Children</i>
Cabbage	23.06	Coffee	26.81
Sprouts	13.06	Orange Juice	10.19
Fish	12.38	Apple Drink	10.00
Mixed Vegetables	10.63	Tea	8.69
Peas	10.56	Cola	8.31
Onions	10.50	Lemon/Lime Soft Drink	8.25
Broccoli	9.00	Milk	7.63
Carrots	8.38	Soft Drinks (non-cola)	5.25
Cauliflower	8.38	Spring Water	5.13
Turnips	7.69	Diluted Drinks	4.69
Mushrooms	6.75	Carbonated Water	4.44
Meat	6.38	Cranberry Juice	3.38
Beans	6.00	Tomato Juice	2.38
Potatoes	5.96	Milkshakes	1.69
Cheese	5.19	Prune Juice	1.25
Tomatoes	4.03	Carrot Juice	1.19
Eggs	3.88		

Health and Diet

Children completing the 'Pupil Diet and Activity Questionnaire' were asked a series of questions about their general health and well-being as it related to their eating and drinking habits. Included were questions about weight loss, food allergies and the use of vitamin supplements.

Losing Weight

Children were asked if they had ever tried to lose weight, and whether they were trying to lose weight at the time of the survey. Just 18% answered in the affirmative (17% of boys and 20% of girls). The most frequently employed weight loss methods among boys and girls are 'exercise' and 'cutting out sweets', while 'fasting' and 'eating less food' were also mentioned. Twelve percent of children

(10% of boys and 15% of girls) said that they were attempting to lose weight at the time of the study.

Allergies and Other Factors Affecting Children's Eating Habits

Eleven percent of children indicated that they are allergic to certain foods or drinks. Approximately the same proportions of boys and girls fall into this category. Across all children, 7% said that they have allergies that prevented them from taking certain foods and drinks, while a further 4% provided a range of reasons including diabetes, asthma, heart problems, kidney problems and skin problems (eczema). Among the foods and drinks that pupils could not take for health reasons are milk/dairy products, chocolate, mushrooms and nuts.

Use of Vitamin Supplements

Roughly one half of pupils (53%) indicated that they take vitamin supplements such as vitamin tablets or syrups (49% of boys and 56% of girls).

Eating and Drinking at Home and at School

To obtain more precise information about the foods and beverages that children typically take at home and at school, pupils were asked to indicate how often they took selected foods and drinks at six different times during the day, from breakfast in the morning until supper time. In this section, the foods and drinks that pupils take on two occasions during the school day – breakfast and lunch at school – are described.

Breakfast

All but 5% of children eat cereal for breakfast at least once or twice a week. Seventy-one percent eat cornflakes at least once a week (Table 6-4), while 79% eat a different dry cereal with the same frequency. Porridge is relatively unpopular, with almost three-quarters of children hardly ever or never eating it.

Among the other breakfast foods that children reported eating are toast (59% on at least three or four days a week), white bread (46%), brown bread (31%), and yogurt (27%). Among the breakfast foods that are taken relatively infrequently by children are pancakes (76% hardly ever or never eat them), rashers/bacon (58%), eggs (58%) and sausages (54%).

The most popular breakfast drinks are fruit juices (65% take fruit juice on at least 3-4 days per week), tea (45%), milk (32%) and tap water (37%).

Table 6-4 Frequency with Which Children Take Various Foods/Beverages for Breakfast

Food/Drink	Avg. Freq. (St. Dev)	Percent of Pupils			
		Every day	3-4 days a week	1-2 days a week	Hardly ever /never
Cereals					
Cereal – Cornflakes	2.61 (1.25)	37.41	14.41	19.50	28.67
Cereal – Porridge	1.45 (0.86)	6.13	6.45	13.35	74.07
Cereal – Other Dry	2.82 (1.19)	42.24	18.34	18.62	20.80
Other Food					
Toast	2.79 (1.11)	37.05	21.70	24.74	16.51
Bread – White	2.42 (1.27)	32.33	13.54	17.55	36.58
Bread – Brown	2.01 (1.15)	17.68	13.53	21.13	47.66
Eggs	1.67 (0.93)	7.72	9.12	25.13	58.03
Sausages	1.75 (0.97)	8.49	11.81	26.09	53.61
Rashers/Bacon	1.68 (0.96)	8.49	9.73	23.52	58.26
Pancakes	1.39 (0.80)	4.88	5.46	13.25	76.42
Yoghurt	1.85 (1.13)	15.59	11.04	15.76	57.62
Drinks					
Milk	3.04 (1.20)	18.84	13.20	12.84	55.12
Fruit Juice	2.93 (1.16)	46.11	19.37	16.08	18.43
Tea	2.42 (1.30)	34.68	10.50	16.65	38.17
Water (tap)	2.17 (1.28)	26.90	10.50	14.92	47.68
Soft drink	1.78 (1.14)	15.28	10.01	11.83	62.88
Water (bottle)	1.82 (1.14)	15.80	10.06	14.11	60.04
Coffee	1.31 (0.79)	5.95	2.88	7.60	83.57

*4=everyday; 3=three or four days a week; 2=one or two days a week; 1=hardly ever/never.

School Lunch

In Ireland, children normally bring their lunch to school. In the case of disadvantaged schools, sandwiches, buns and milk may be provided. Other schools may operate a scheme that enables children to receive milk for lunch every day. This typically involves the payment of a fixed fee once each term by the children's parents.

The foods that children eat for lunch at school can be divided into two groups: foods that are healthy, such as fruit and sandwiches, and those that should be taken less frequently such as sweets, chocolate bars and biscuits. While 45% of children in fifth class take fresh fruit for lunch at least three or four times a week, 32% don't take any fruit (Table 6-5). Consumption of chocolate bars, sweets and biscuits is very high. For example, 68% of children eat a chocolate bar for lunch at least once a week. Just 26% reported taking crisps on a regular basis (three or four times a week), though this may be related to school policy rather than an intention on the children to avoid taking foods that are high in saturated fat.

Table 6-5 Frequency with Which Children Take Various Foods/Beverages for Lunch Break at School

	Avg. Freq [*] (Std)	Every day	3-4 days a week	1-2 days a week	Hardly ever/ Never
Food					
Fruit (e.g., orange, apple)	2.42 (1.22)	29.50	15.18	23.16	32.16
Chocolate bar	2.39 (1.24)	29.46	14.84	20.63	35.08
Meat sandwich/roll	2.13 (1.24)	23.53	13.35	15.63	47.48
Sweets	2.13 (1.16)	20.32	14.15	24.18	41.34
Biscuits	1.92 (1.07)	12.84	14.69	24.22	48.25
Potato crisps	1.87 (1.13)	16.02	9.86	18.85	55.27
Yoghurt	1.89 (1.12)	15.83	10.48	20.86	52.83
Cheese sandwich/roll	1.74 (1.08)	13.15	9.39	15.42	62.03
High fat snacks (not crisps)	1.71 (1.04)	11.00	10.41	17.37	61.22
Jam sandwich/roll	1.64 (1.04)	11.59	7.89	13.50	67.02
Cheese (not in a sandwich)	1.33 (0.80)	5.72	3.70	8.48	82.10
Fruit scone	1.35 (0.78)	5.15	3.29	12.87	78.68
Vegetables	1.33 (0.81)	5.77	4.02	8.10	82.11
Cake	1.40 (0.79)	4.82	4.87	16.11	74.20
Drinks					
Fruit juice	2.44 (1.28)	33.01	13.94	17.01	36.04
Soft drink (e.g., 7-Up, Cola)	2.29 (1.26)	28.47	12.98	17.43	41.12
Milk	1.82 (1.20)	19.60	5.82	12.01	62.57
Water (tap)	1.73 (1.14)	16.07	6.82	11.02	66.08

*4=everyday; 3=three or four days a week; 2=one or two days a week; 1=hardly ever/never.

Learning about Food and Nutrition

Children learn about food and nutrition from a variety of sources including parents (96% of pupils), teachers (79%), television (62%), school books (43%) and library books (39%) (Table 6-6). Friends are perceived by 57% of children to be an important source of information about food. These data confirm the importance of the home (including the extended family) and the school (including teachers and teaching materials) in providing children with information about food and nutrition. However, television is also a major source of information. The data in Table 6-2 suggest that children have reasonably good information about the foods and drinks that are beneficial for them. The difficulty appears to arise in acting on this information.

Table 6-6 Children's Main Sources of Information about Foods that are Good or Bad for Them

Source	Percent of Children
Parents	95.69
Teachers	78.61
Doctor	68.13
Television	61.70
Friends	56.72
Grandparent(s)	42.90
School books	43.46
Library books	39.20
Aunts/Uncles	35.17

Over two thirds of pupils (68%) attend classes in which formal lessons on healthy eating (nutrition) are presented by the teacher. Where such lessons are presented, the average number of hours of instruction per year is 3.79 hours (SD = 3.74).

School Policy on Healthy Eating

Teachers responding to the Teacher Questionnaire were asked whether their school had a policy on particular foods/drinks that may not be taken. Seventy-four percent of children attend schools in which there is a policy on this matter. As indicated in Table 6-7, almost two-thirds of children attend schools which have policies on what specific foods that may or may not be taken., while about one half attend schools with policies on drinks that should (or should not) be taken.

Table 6-7 Percentage of Children in Schools with a Policy on Eating/Drinking Specific Products

Policy Area	Percent of Children
Specific foods that should be eaten (e.g., fruit, 'nutritious' food)	62.03
Specific foods that may not be eaten (e.g., crisps)	64.40
Specific beverages that should be taken (e.g., milk)	50.38
Specific beverages that may not be taken (e.g., soft drinks)	46.81

In response to a separate question, teachers were asked whether they implemented a policy on what children should eat or drink for lunch. Almost three quarters (74%) of children are taught by teachers who implement such a policy. As indicated in Table 6-8, the percentages of children whose teachers implement particular policies regarding the foods/drinks that may be taken for lunch are broadly similar to the percentages of pupils attending schools with guidelines on these matters (see Table 6-7). The data in both tables indicate that approximately one-third of children are not affected by school policy on what they may eat or drink for lunch.

Table 6-8 Percentage of Pupils in Classes whose Teachers Implement a Policy Regarding Specific Foods/Beverages that Pupils May Take for Lunch

Policy Area	Percent of Pupils
Specific foods that should be eaten (e.g., fruit, 'nutritious' food)	65.74
Specific foods that may not be eaten (e.g., crisps, chocolate)	65.50
Specific beverages that should be taken (e.g., milk)	57.17
Specific beverages that may not be taken (e.g., soft drinks)	49.68

Just under 5% of children attend schools in which they can purchase food or drinks. Among the products that are available are chocolate bars, crisps, colas, and fruit drinks.

Conclusion

Children in fifth class are keenly aware of the foods and beverages that are good for their health, and those that should be taken in moderation. They draw on a variety of sources in compiling this information, including parents, teachers, television, schoolbooks and library books. Despite this awareness, data on the frequency with which children consume particular foods and drinks (sweets, chocolate bars, crisps, biscuits and soft drinks in particular) is a cause of considerable concern. For example, almost 60% of children eat at least one chocolate bar every day, while 58% consume a soft drink.

Clearly, both parents and schools have critical roles to play in determining what children eat and drink. There is a clear need for parents to encourage children to develop good eating habits and follow a balanced diet. This can be achieved by making children aware of choices when they arise, and, perhaps, rewarding them for making appropriate choices. Schools can play a similar role, by teaching about nutrition, by implementing healthy-eating policies, and by rewarding children for making sensible choices.

Summary and Recommendations

Concerns about the exercise and eating habits of primary-school children prompted the current study, which examined the dietary and activity patterns of children in fifth class in primary schools. Almost 1800 children in 65 schools completed a questionnaire that sought information about their participation in physical education classes, engagement in leisure-time activities, and dietary patterns. In addition, the children's teachers completed a questionnaire designed to obtain information about the delivery of Physical Education (PE) classes in schools and their own involvement in various sporting activities.

This summary chapter is divided into five sections, which mirror the five chapters in the Report. These are: (i) research on children's diet and activity patterns; (ii) children's activity patterns and the home environment; (iii) Physical Education programmes in schools; (iv) children's leisure-time activities; (v) children's dietary habits and preferences.

Research on Children's Dietary and Activity Patterns

A review of Irish and international research on children's dietary and activity patterns provided a context for the current study and led to the following broad conclusions:

- (i) Participation by children in physical activities involving moderate to vigorous exercise increases the likelihood of such participation in adulthood;
- (ii) Physical activity in childhood alters the risk factors for diseases such as coronary heart disease, obesity and osteoporosis;
- (iii) Children in primary school require 20 minutes of moderate to vigorous exercise three times per week – i.e., sustained exercise in which they are out of breath and perspiring. Just over half of Irish children experience this level of exercise, with boys more likely to do so than girls (Friel et al., 1999);
- (iv) Relative to their counterparts in continental European countries, Irish children consume relatively large quantities of high sugar/high fat foods each day, including crisps, sweets, chocolate and soft drinks (Friel et al., 1999);
- (v) International research suggests that the proportion of children's energy coming from saturated fat and sugary foods is substantially higher than it should be;
- (vi) According to international research, low-SES children are less likely to engage in 'vigorous' activity on a regular basis, and are more likely to eat foods deemed 'unhealthy'.

A second broad area of research reviewed concerns the teaching of PE in primary schools in Ireland. The findings include are the following:

- (i) There are consistent difficulties with the implementation of the PE curriculum in Irish schools;
- (ii) Lack of equipment and facilities is viewed by teachers as a significant impediment to implementation;
- (iii) Many pupils attend schools that do not have a school plan for PE¹;
- (iv) Thirty-five percent of pupils attend a school without an area suitable for indoor activity.

Children's Activity Patterns and the Home Environment

A range of approaches have been used to ascertain children's involvement in physical activities and their dietary patterns. These include self-report measures, observation schedules, and physiological measures. The approach adopted in the current study was to ask pupils and their teachers to complete questionnaires that asked about dietary patterns, and children's participation in exercise at home, at school and in the community. This section summarises children's responses to questions relating to the influence of family factors on their activity patterns. It was found that:

- (i) Just over 45% of children travel to school every day by car, while 35% walk, and 16% travel by bus. Four percent cycle to school. Almost one-third of children living in cities and large towns who travel to school by car live no more than 1km (0.62 miles) from their schools.
- (ii) Over 40% of mothers and 28% of fathers hardly ever/never participate in sports; mothers engage more frequently in Walking than in any other sport, while fathers take part most frequently in Soccer.

The matter of walking to and from school is an issue that needs to be addressed, not only because walking can provide children and parents with regular exercise, but also because of its potential to reduce vehicular traffic in cities and towns at peak times. Dublin Corporation's 'Walking Bus' programme is particularly relevant in this regard.

It is important for parents to model participation in sporting activities. The non-participation of over 40% of mothers and 28% of fathers in any type of sporting activity is likely to impact on children's attitudes towards sport, and their own involvement in sporting activities, not only during primary school, but also in secondary school, where participation in sporting activities by children (especially girls) tends to decline significantly. It would be worthwhile to examine the extent to which children participate in sports with their parents. Participation in family sports (e.g., Outdoor Activities, Cycling, Swimming, Tennis) may provide positive health benefits for parents and children, as well as ensuring that children themselves develop a life-long involvement in sport.

¹ A school plan is a written document that describes policies and a programme of work in PE for pupils in a school.

Physical Education in Schools

In the current study, information on PE in schools was obtained from two sources: pupils in fifth class and their teachers.

Physical Education: Pupils' Perspectives

According to the responses provided by children to a range of questionnaire items:

- (i) Children are extremely positive about their enjoyment of PE classes. Over 80% of boys and 60% of girls say that it is their favourite subject;
- (ii) There is general satisfaction among teachers with the facilities that are available for PE. For example, 87% of children are taught by teachers who are satisfied with facilities for teaching games. Sixty-six percent of children are taught by teachers who are satisfied with the facilities for Gymnastics/Movement.
- (iii) Over one half of children (55%) have PE classes on just one occasion each week, while over a third have PE classes twice a week; pupils in medium-sized and small schools (those with fewer than 100 pupils) have PE less often than pupils in larger schools;
- (iv) The activities that are offered most frequently during PE classes are Soccer, Gaelic Football, Basketball, Swimming, Hurling and Dance.
- (v) Just 15% of boys and 8% of girls report that they generally feel 'out of breath and sweating' when they take part in PE lessons (i.e., vigorous activity). On the other hand, 70% of children indicate that they are sometimes 'out of breath and sweating' during PE lessons, indicating moderate levels of activity.

Physical Education: Teachers' Perspectives

Response to questions put to teachers of pupils in Fifth class indicate that:

- (i) Almost 50% of pupils are taught by teachers who themselves participate in sporting activities, while 30% are taught by teachers who are engaged in coaching adults or children outside of school;
- (ii) Over 70% of pupils are taught by teachers who had not participated in inservice training in PE in the three years prior to the survey, while 37% of pupils are taught by teachers who had not attended inservice training in PE since initial teacher training;
- (iii) Fifty-five percent of instructional time during PE lessons across all fifth classes is allocated to Games, while 13% is allocated to Swimming, 10% to Athletics, 10% to Gymnastics/Movement and 9% to Dance; 70% of instructional time is given to Games in classes that do not have a Swimming programme;
- (iv) Just 23% of pupils are taught by teachers who feel prepared to teach Gymnastics/Movement. The corresponding percentages for Athletics (Running), Water Safety and Gymnastics are 21%, 9% and 23% respectively. The majority of pupils are taught by teachers who feel that the facilities in their schools are adequate for teaching games (87% of pupils), Gymnastics/Movement (66%) and Educational Dance (61%). Facilities for teaching Swimming,

Athletics and Outdoor Activities are deemed to be inadequate in many schools.

(v) Fewer than two-thirds of pupils attend schools in which there is a School Plan for PE, suggesting that co-operative planning may not be a widespread activity.

These findings are particularly relevant in light of the forthcoming implementation of the revised PE curriculum. The matter of facilities/equipment is one that needs to be addressed, particularly in light of the increased emphasis on Gymnastics, Athletics, and the provision of coaching in a greater variety of Games. Teacher expertise also needs to be addressed through in-career training programmes on PE and ongoing support for teachers.

Children's Involvement in Sport as a Leisure Activity

The involvement of pupils in sports and other leisure activities outside of school hours was addressed in a series of questions in the Pupil Questionnaire. It was found that:

- (i) Television/video viewing is the most common leisure activity in which boys and girls engage, both at weekends and during the school week. Other activities in which there are high levels of engagement are playing computer/console games (especially among boys), doing homework, and taking part in sporting activities organised by schools or clubs.
- (ii) Seventy-one percent of boys and 45% of girls take part in sports organised by clubs, either on weekdays or during the weekend.
- (iii) The most common sports played by boys, which are organised by schools outside of school hours, are Gaelic Football (39%), Hurling (23%), Soccer (23%) and Basketball (14%). Girls are involved most often in Gaelic Football (37%), Basketball (19%) and Camogie (18%).
- (iv) The most common sports in which boys participate outside of school, and which are organised by sports clubs, are Soccer (49%), Gaelic Football (45%), Swimming (32%) and Hurling 31%. The corresponding sports for girls are Swimming (42%), Basketball (21%) and Camogie (20%). Eleven percent of boys and 1% of girls play Rugby organised by clubs.
- (v) Where pupils do not participate in sports outside of school hours, the most common reasons given are a preference to do other things (21% of pupils), unavailability of a favourite sport (17.36%), insufficient time (11%), and lack of ability at sport (10%).

Clearly, both schools and clubs play a major role in providing sporting opportunities to pupils outside of school hours. Nevertheless, a substantial proportion of pupils (about 35% of boys and 40% of girls), do not take part in any sports outside of school hours. It is important that this group be given encouragement to become involved in a sport.

Children's Dietary Patterns

A major focus of the current study was on children's dietary patterns. The following findings emerged:

- (i) At the time of the study, almost 12% of children (10% of boys and 15% of girls) indicated that they were dieting in order to lose weight.
- (ii) The consumption of fruit falls below the recommended daily intake for many children. While 52% of children eat an apple at least once a day, 19% of boys and 8% of girls hardly ever or never eat fruit. In this regard, a new British government initiative, which will provide free fruit each day for 4-6 year olds (*Irish Times*, November 16, 2000) would appear to be a step in the right direction.
- (iii) The frequency with which children eat various snack foods is remarkably high, with sweets, biscuits, chocolate bars and crisps being consumed by large proportions of children every day.
- (iv) Although children are generally aware of which foods are good for their health, they appear not to use this information in deciding what to eat.
- (v) Parents and teachers are perceived by children to be the most important providers of information about the health benefits of various foods. Doctors and friends are also important sources of information. It is noteworthy that 61% of children obtain dietary information from television. Much of this information undoubtedly comes from advertising.
- (vi) Roughly two-thirds of children attend schools in which rules on taking particular foods/drinks during lunchtime are specified.
- (vii) Over two-thirds of children (68%) attend classes where the teacher presents formal lessons on nutrition.
- (viii) Just over 10% of children indicated that they suffer from allergies. Among the foods which these children could not take were chocolate, milk/dairy products, mushrooms and nuts.

Recommendations

In this section, we provide a set of recommendations that may be of use to parents, teachers and others in the community wishing to guide the development of children in the areas of diet and activity. These recommendations are based on international research and on the findings of the current study.

Physical Activity

1. Where possible, children should be encouraged to walk to school. Children in urban areas often live within walking distance of their school, yet travel by car.
2. Children should have PE classes at school at least twice a week. Two thirty-minute sessions are preferable to one sixty-minute session. Within each thirty-minute session, children should be active for a minimum of 20 minutes.
3. While children should continue to be involved in a broad range of games during PE classes, PE programme should be widened to

4. There is a clear need for in-career development in PE for teachers, not only in the context of implementation of the revised Primary School Curriculum, but also in the longer term. This is particularly important in light of the finding that just 81% of children are taught PE by their own class teachers, and that some of these teachers lack confidence when it comes to teaching elements of the curriculum such as Gymnastics/Movement.
5. Children's own class teachers should normally teach the PE programme. It is a matter of concern that 19% of children are not taught PE by their class teachers.
6. Girls need to be encouraged to engage in moderate to vigorous exercise more frequently. The relatively low involvement of girls in the activities of sports clubs indicates that they do not get the same opportunities as boys to engage in moderate to vigorous exercise.
7. Parents should encourage their children to be physically active by being physically active with them. Participation in family sports (e.g., Outdoor Activities, Cycling, Swimming, Tennis) can promote the concept of the 'Sporting Family', and may result in a life-long commitment to a healthy lifestyle by all family members.
8. Parents should monitor the engagement of children in viewing television/videos, and in playing electronic games to ensure that adequate time is available for physical exercise and other important activities.

Diet

9. Schools and parents should work together to influence what children eat for lunch. Fruit is a particularly appropriate food for school lunches because it is nutritious, inexpensive, readily available and portable.
10. Schools should help children distinguish between a 'healthy diet' and an 'unhealthy diet', by providing all children with information about food and nutrition.
11. Schools should promote healthy eating, by discouraging children from eating 'unhealthy' foods (e.g., crisps, chocolate bars).
12. Parents and their children should be made more aware of the availability and benefits of health-promoting foods and beverages, including fruit and vegetables (4-5 portions per day), low-fat milk and fruit juices.
13. Children should be informed of the dangers of dieting to lose weight.

References

Armstrong, N. (1991). Health-related physical activity. In N. Armstrong and A. Sparks (Eds.), *Issues in physical education*. London: Cassell Educational.

Armstrong, N., Balding, J., Gentle, P.M & Kirby, B. (1990). Patterns of physical activity among 11 to 16 year old British children. *British Medical Journal*, 301, 203-205.

Armstrong, N., & Bray, S. (1991). Physical activity patterns determined by continuous heart rate monitoring. *Archives of Disease in Childhood*, 66, 245-147.

Armstrong, N., McManus, A., & Welsman, J. (1994). Children's aerobic fitness. *British Journal of Physical Education*, 25, 9-11.

Armstrong, N., McManus, A., Welsman, J., & Kirby, B. (1996). Physical activity patterns and aerobic fitness among prepubescents. *European Physical Education Review*, 2(1), 19-29.

Berlin, J.A., & Colditz, G.A. (1990). A meta-analysis of physical activity in the prevention of coronary heart disease. *American Journal of Epidemiology*, 132, 612-628.

Burke, A., & Fontes, P. (1986). Educational beliefs and practices of sixth-class teachers in Irish primary schools. *Irish Journal of Education*, 20, 51-77.

Currie, C., Hurrelmann, K., Settertobulte, W., Smith, R., & Todd, J. (2000). *Health and health behaviour among young people. Report on health behaviour in school-aged children*. Denmark: World Health Organisation Regional Office for Europe.

Department of Education. (1971). *Primary school curriculum – Part II (Curaclam na Bunscoile. Cuid II)*. Dublin: Stationery Office.

Department of Education. Curriculum Unit. (1979). *Tuairisc ar theagasc an chorpoideachais sna bunscoileanna*. Dublin: Author.

Department of Education and Science. (1999). *Developing a school plan: Guidelines for primary schools*. Dublin: Author.

Fentem, P.H., Bassey, E.J., & Turnbull, N.B. (1988). *The new case for exercise*. London: Sports Council and Health Education Authority.

Fontes, P., & Kellaghan, T. (1977). *The new primary curriculum: Its implementation and effects*. Dublin: Educational Research Centre.

Friel, S., Nic Gabhainn, S., & Kelleher, C. (1999). *The national health and lifestyle surveys: Results from SLÁN (Survey of Lifestyles, Attitudes and Nutrition) and HBSC (Health Behaviour in School-Aged Children)*. Dublin: Health Promotion

Unit, Department of Health and Children, and Galway: Centre for Health Promotion Studies, National University of Ireland, Galway.

Great Britain. (1992). *Health of the nation. White Paper*. London: HMSO.

Hovell, M.F., Bursick, J.H., Sharkey, R., & McClure, J. (1978). An evaluation of elementary students' voluntary physical activity during recess. *Research Quarterly for Exercise and Sports*, 49, 460-470.

Keating, N. (1982). An overview of in-school and out-of-school sports programmes for Irish 6-12 year olds. Unpublished survey. (Cited in McGuinness & Shelly, 1996).

McGuinness, S., & Shelly, B. (1996). Physical education in the primary school: An evaluation of programme implementation. *Oideas*, 44, 46-64.

National Council for Curriculum and Assessment. (1999a). *Primary school curriculum – Physical education. Content*. Dublin: Stationery Office.

National Council for Curriculum and Assessment. (1999b). *Primary school curriculum – Physical education. Teacher guidelines*. Dublin: Stationery Office.

National Council for Curriculum and Assessment. (1999c). *Primary school curriculum. Introduction*. Dublin: Stationery Office.

National Safety Council. (1997). *Provision of instruction in swimming and water safety in Irish primary schools during 1995/96*. Dublin: Educational Research Centre.

Review Body on the Primary Curriculum. (1990). *Report*. Dublin: National Council for Curriculum and Assessment.

Rowe, N., & Champion, C. (2000). *Young people and sport: National survey, 1999*. London: Sport England.

Salis, J.F., & Patrick, K. (1994). Physical activity guidelines for adolescents: A consensus statement. *Paediatric Exercise Science*, 6, 302-314.

Shepherd, R.J., Equier, J.C., & Lavelle, H. (1989). Habitual physical activity: Effects of sex, milieu, season and required activity. *Journal of Sports Medicine*, 55-56.

Simmons-Morton et al. (1990). Children's frequency of participation in moderate to vigorous activities. *Research Quarterly for Exercise and Sport*, 61, 307-314.

Sleap, M., & Warburton, P. (1990). *Physical activity patterns of primary school children*. London: Health Education Authority.

Sternfield, B. (1992). Cancer and protective effect of physical activity: The epidemiological evidence. *Medicine and Science in Sports and Exercise*, 24, 1195-1209.

Telama, R., Viikari, J., & Valimaki, I. (1985). Atherosclerosis precursors in Finnish children and adolescents. *Acta Paediatrica Scandinavica. Supplementum*, 169-180.