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*'An analysis of physical activity during break times in Irish primary schools'*

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(hons) Degree in Health Promotion

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## **Abstract**

School provides children with an ideal setting to engage in physical activity and to reach their recommended guidelines of physical activity. The primary school curriculum allows 40 minutes per day for breaks from the classroom environment. These breaks are divided into a 10 minute 'little break' and a 30 minute 'big break'.

Children's physical activity levels and types were observed in two primary schools in Waterford City using SOPLAY (McKenzie, Observational measures of children's physical activity, 2002). Interviews were conducted with primary school teachers to investigate their perceptions of the importance of physical activity during break times.

This study found that there was more of variety in the games that girls participated in comparison with boys during break time. Boys were found to be significantly more physically active than girls during break times. The study indicates that teachers play an important role in impacting a child's perception of physical activity. Teachers reported to be aware of the benefits of physical activity, however many barriers were reported hinder the amount of physical activity that students can engage in during break time.

Given the amount of time of time that students spend in school, schools should recognise the importance of providing opportunities for physical activity during the school day. This study suggests that there are barriers to physical activity such as safety, provision of equipment, lack of time and lack of space. Research suggests that the benefits of physical activity in children outweighs the negatives that may be associated with it. While the sole purpose of schools is not to promote physical activity, simple changes in practise and encouragement may reduce the number of children that are physically inactive.



# *Chapter 1*

## *Introduction*

## **Introduction**

Ireland has experienced a massive increase in the prevalence of childhood obesity and also children being overweight in recent years. Being overweight in childhood can have serious implications on health in later life. The Growing Up in Ireland (2011) study found that 26% of nine year olds in Ireland were defined as being overweight, of these 7% fell into the category of obese. Obesity has been directly linked with an imbalance in energy intake and energy expenditure, an overconsumption of calories and lack of physical activity (Dehghan, Akhtar-Danesh, and Merchant, 2005). In addition to weight control, physical activity can have other benefits to children. Participating in regular exercise can improve motor development, balance and flexibility, reduce mental stress and depression and it also encourages a more physically active lifestyle in later years (Sothorn, Loftin, Suskind, Udall, and Blecker, 1999). In order to improve the overall health and wellbeing of children it is recommended that they engage in 60 minutes of physical activity per day (The Department of Health and Children, 2009). Physical activity is defined as ‘any bodily movement produced by skeletal muscles that results in energy expenditure’ (Caspersen, Powell, and Christenson, 1985). Steinbeck (2001) categorises physical activity as any time during the day where the child is awake and is not completely sedentary. This can be a planned or unplanned activity. Although even moderate amounts of physical activity can have health benefits for high-risk children (e.g. obese), in order for children to achieve substantial health benefits the activity level must be of moderate to vigorous intensity (Janssen and LeBlanc, 2010).

The physical activity levels of students are of interest for many reasons. One in ten school aged children are overweight and a further one in ten are obese (Irish Universities Nutrition Alliance, 2006), it is important to establish a way to combat this. School provides children with an ideal

setting to engage in physical activity and to reach their recommended guidelines of physical activity. This in turn, can reduce the number of children that are overweight in Ireland and lead to a healthier lifestyle. School break times provide children with an opportunity to engage in physical activity during the school day. The Irish primary school curriculum allows 40 minutes per day for breaks from the classroom environment. These are divided into a 10 minute 'little break' and a 30 minute 'big break' (Government of Ireland, 1999), in addition to break times students have an opportunity to be physically active both before and after school. The minimum number of teaching days in an Irish primary school is set at 183 full school days. As children spend over 50% of their time at school, it is an ideal opportunity to teach children ways to adapt a physically active lifestyle (Department of Education and Science Primary Branch, 1995). By engaging in physical activity during school time children should easily reach their recommended amount of physical activity. However, The Health Behaviours in School Age Children (HBSC Ireland, 2012) survey found that more than half of primary school children did not achieve their recommended guidelines of physical activity.

There are many benefits for optimising the opportunity for children to participate in physical activity during break times and to encourage students that may not engage in regular physical activity to change this behaviour. 40% of schools in the south of the country have implemented 'no running' policies during break (Murray and Millar, 2005). It is important to understand the implications that these policies can have on the amount of physical activity that students engage in and how this may contribute to the rising numbers in overweight children. Break times should allow children to make their own decisions and play independently. However, this free play should be supervised by school personnel to ensure that students do not put themselves or others in danger (Evans, 2000).



The overall aim of this study is to examine the types of physical activity that students engage in during break times. This study will compare physical activity levels in boys and girls at play times. It will also identify the external environmental factors that affect the amount and types of physical activity that students engage in such as availability of equipment and restrictions of space. This study will carry out an investigation into attitudes of teachers in relation to the importance of physical activity during break times.

# *Chapter 2*

## *Literature Review*

## **Literature Review**

### **Introduction**

This literature review will discuss the term physical activity, in particular this chapter will identify the levels and types of physical activity that children engage in and the benefits of engaging in physical activity. Furthermore, this chapter will identify the gender differences that exist in participation of physical activity. A review will be carried out on sedentary behaviour and the effects of sedentary behaviour in children. This chapter will also discuss the effect that the school environment has on physical activity, perceptions of teachers in relation to physical activity and the factors within the school that influence the amount of physical activity that students engage in.

### **Physical Activity in Children**

It is recommended that Irish children engage in 60 minutes of physical activity per day (The Department of Health and Children, 2009). There are three main types of physical activity that are recommended for children. These include; 1) aerobic activity (this should make up the majority of a child's physical activity time) aerobic activity includes moderate intensity activity and vigorous intensity activity; 2) muscle strengthening and 3) bone strengthening activities (Strong, et al., 2005).

Sallis, Prochaska, and Taylor (2000) carried out a study to examine the factors that influence physical activity levels in children. The aim of this study was to identify areas which could aid the design for more effective intervention. This was achieved by carrying out a review of factors that influence physical activity. This study examined 40 children (ages 3-12). This study found

that variables associated with physical activity levels were gender, the influence of parents on their child's activity levels, psychological variables such as children's intention to be active and physical activity preferences, access to facilities and amount of time spent outdoors. These variables are directly related to the amount of physical activity that students engage in.

The Health Behaviour in School-aged Children (HSBC) is a cross-national research study. This study was conducted initially in 1982 and has been conducted every four years since. The study aims to gain an insight into the health and well-being of young people and create awareness about the health of young people. This study is carried out in 43 countries across Europe and North America, the study currently involves more than 200,000 children. The target group are 11, 13 and 15-year-old school-going children. The surveys for this study are school based and data is collected through self-reporting methods from teachers (HSBC, 2014). According to HSBC (2012) 70% of the 3<sup>rd</sup> and 4<sup>th</sup> class children surveyed reported participating in physical activity for 60 minutes 4 days per week or more, 7% of these students reported engaging in physical activity less than once per week.

Woods, Tannehill and Walsh (2011) carried out The Children's Sports and Physical Activity Study (CSPPA) on Irish children's physical activity. CSPPA was a cross-sectional study. This study used self-report surveys, objective measures of physical activity and interviews to assess participation of 9794 children between the ages of 10-18. According to this study only 19% of primary school children meet the recommended guidelines for physical activity. This study reported that one in four Irish children have a low level of aerobic fitness and a further one in four Irish children are obese. This study also found that children that met the Department of Health and Children's physical activity recommendation of at least 60 minutes of physical activity each day were the overall healthiest of all children participating in the study.

There is a wide range of literature available highlighting the health benefits of physical activity in children (Janssen and LeBlanc, 2010 ; Sothorn, Loftin, Suskind, Udall, and Blecker, 1999 ; Penedo and Dahn, 2005). There is cause for concern over the number of Irish children that are currently not achieving the recommended levels of physical activity. Much of the research that has been carried out is based on self-reporting methods, although these types of measures are convenient they are also prone to over-reporting in the amount of physical activity actually undertaken. In order to eliminate the risk of over-reporting, it is important for future research to use objective and observation methods to obtain levels of physical activity.

### **Physical Activity and Gender Differences**

Epidemiological studies have, on many occasions, reported that males are more physically active than females (Sallis, 1993 ; Ainsworth, Richardson, Jacob, and Leon, 1993). Boys tend to engage in significantly more physical activity during school break times than girls (Trost, et al., 2002 ; McKenzie, Marshall, Sallis, and Conway, 2000). The gap in physical activity between males and females increases with age (Trost and Pate, 2001 ; Woods et al., 2011). Trost, et al., (2002) carried out a study over seven elementary schools in the U.S. public system of Amherst Massachusetts. The purpose of this study was to evaluate age and gender differences in physical activity participation among children. This study was carried out on 185 males and 190 females with activity levels being recorded through the use of accelerometers over 7 days. This study found that boys were 44% more active than girls. A limitation of this study was that data was only collected over seven days and it does not give a comprehensive view of student's activity levels throughout the school year. In addition to this, students wore accelerometers so they were fully aware that their activity levels were being recorded therefore they may have altered their behaviour which may have led to inaccurate results.

McKenzie et al. (2000) used SOPLAY (System for Observing Play and Leisure Activity in Youth) to directly observe 24 middle schools in Southern California. SOPLAY uses momentary time sampling to record the physical activity levels of each individual as sedentary, walking or very active. This study found that boys engaged in 16% more physical activity than girls. McKenzie et al., found that few students use the opportunity to engage in physical activity during school. However, limitations also need to be recognised here, the presence of the observer can influence the natural running order and encourage students to engage in more activity than they usually would.

Research in Ireland shows that in Irish primary schools 27% of males but only 13% of females reach the recommended amount of physical activity. (Woods et al., 2011). Boys engage in more vigorous activity than girls and have a better ability to overcome barriers to physical activity, such as lack of time, tiredness, homework commitments and bad weather (Trost, et al., 2002 ; Van Mechelen, Twisk, Post, Snel, and Kemper, 2000). The Growing Up in Ireland study found that only 1 in 4 nine year olds are meeting recommendations on physical activity, with boys more likely to meet them than girls (Growing Up in Ireland, 2011). A recent study was carried out on 8568 children in Ireland to examine the association between screen time, physical activity and overweight and obesity. If children met the physical activity guidelines on 9 out of 14 days, they were categorised as engaging in high physical activity. This study found that girls engaged in considerably less physical activity than boys (47% vs 62%) (Lane, Harrison, and Murphy, 2014).

The International HSBC survey 2009/2010 which was conducted over 43 countries and regions found that there is a decline in the amount of physical activity that children engage in as they get older, this study shows that the most significant decline is in 15-year-old boys. This study also

identified that there are major differences between the amount of physical activity that each gender engages in with girls far less likely to engage in physical activity than boys (Currie, et al., 2012). The HSBC survey (2010) in Ireland also reported significant differences between genders with 60% of boys and 40% of girls reporting to exercise four or more times per week.

There is consistent evidence that boys are more physically active than girls. Boys engage in far more vigorous physical activity than girls and this contributes to boys having lower rates of obesity in childhood.

### **Sedentary Behaviour**

Sedentary behaviour is a term used for activity where energy expenditure is not raised past resting level (Pate, O'Neill, and Lobelo, 2008). Children spend the majority of their time engaging in sedentary behaviours such as watching television or playing video games (Colley, et al., 2011 ; Active Healthy Kids Canada, 2010), even for the children that do reach the recommended amount of physical activity there still remains 23 hours per day where they may be engaging in sedentary behaviour. Evidence shows that sedentary behaviours are associated with increased risk of cardiovascular disease, mortality and depression (Treuth, et al., 2007). According to Riddoch and Boreham (1995) it is important to optimise physical activity opportunities during school time as it reduces the amount of time children are sedentary, in addition by encouraging physical activity it reduces the risks of children perceiving sedentary behaviour as the norm and discourages them from engaging in this behaviour in adulthood.

A review carried out by Salmon, Tremblay, Marshall, and Hume, (2011) on 232 pieces of literature, found that school is a strong contributor to the amount of time that children spend engaging in sedentary activities due to the teaching model. This review also identified that there

is a link between children spending in excess of two hours per day engaging in sedentary behaviour on obesity levels, poor fitness levels, low self-esteem and poor academic performance.

Harrington, Dowd, Bourke, and Donnelly (2011) carried out a study to investigate the sedentary levels of school aged girls in the West of Ireland. This study was conducted using ActivPAL accelerometers. The study was carried out with 111 girls. According to this research, children are more likely to be sedentary during the school day than a day during the week when they are not in school. During school days' children are more inclined to be sedentary for a longer period of time. This study also found that breaks in physical activity were less during weekends than during weekdays.

It is clear that more research is needed in the area of sedentary behaviour (Salmon et al., 2011). The structure of classrooms and teaching methods mean that children spend the majority of their time at school sitting at their desk. It is important to encourage students to spend more time being physically active. Schools can achieve this by encouraging regular breaks in the time students spend in a sedentary position and incorporate physical activity into lessons. There is room for more research to be carried out in this area.

### **The Impact of Schools on Physical Activity**

Schools can provide students with education on the benefits associated with physical activity (Davis, McKenna, Lee, and Dietz, 2004). However due to the learning structure students remain sedentary for a large part of their time in school. According to Salmon, et al., (2011) school is likely to add to time spent being sedentary. The time that children spend doing their homework is also considered sedentary behaviour. Primary school children spend on average 20 minutes per day doing homework (Woods et al., 2010)



Jennings-Aburto, et al., (2009) carried out research to determine the amount of physical activity that students undertake while at school. This research was carried out in 12 schools in Mexico City. This study was conducted using an observation method for collecting data. This study reported that students did not reach the recommended daily amount of physical activity. They provided recommendations to improve the amount of physical activity undertaken at school. These included schools providing a set time during the day for students to engage in physical activity and improve the quality of physical education provided to students. The method of collecting data used in this study allowed for more accurate reporting however this type of method is time consuming.

Sallis, et al., (2001) carried out a study on the association between the school environment and physical activity levels. This study was conducted in 24 schools in San Diego County, California and included 1081 students. Physical activity was recorded through observation using SOPLAY. Sallis, et al., (2001) found that fewer than 6% of students chose to be physically active during break times. According to this study the school environment can have a major impact on the amount of physical activity that students engage in. An absence of support and structure in the school yard lead to a reduction in the amount of physical activity that students participate in. This study reports that school environments with high levels of supervision during break times encouraged students to be more physically active.

Sallis, et al., (1997) conducted an intervention to evaluate physical activity levels in fourth and fifth grade students in San Diego County, California in seven elementary schools. This study included 955 students. The seven schools involved were assigned three interventions: 1) A specialist-led intervention where a certified physical activity specialist implemented the programme 2) A teacher led intervention where teachers were trained fully to implement the

programme and 3) a control. Physical activity levels were measured by self-reporting, accelerometers and observation using the SOFIT method. This study found that students in the specialist-led group spent the most time being physically active during the school day. These students reached 40 minutes of physical activity per day. Students in the teacher-led group engaged in 33 minutes of physical activity per day. Those in the control group only reached 18 minutes of physical activity each day. This study found that a health related physical activity curriculum in schools can benefit the amount of time children spend being physically active. Limitations of this study include the small number of schools involved in the study as the study was restricted to a single school district.

### **Equipment and Yard Markings**

It is important for schools to make physical activity fun and to implement incentives and initiatives to encourage participation. In many schools' equipment during break times is limited. Verstraete, Cardon, De Clercq, and De Bourdeaudhuij (2006) carried out a study to investigate the impact of providing equipment to students during break time had on physical activity levels during both breaks of the school day. This study was conducted in Belgium using seven schools over a three-month period. Four of these schools in the study were intervention schools and the other three were control schools. Each of the intervention schools was provided with equipment and activity cards to show the different ways the equipment could be used during break times. Accelerometers were used to measure activity levels. This study found that students engaged in more physical activity when they were provided with equipment.

Playground interventions may improve the amount of physical activity that students engage in. Fairclough, Stratton, and Ridger (2010) designed a study to investigate the effect of a 12-month intervention had on children's moderate to vigorous physical activity during lunch. This study was carried out over 470 students in 26 schools in North West England; 11 of these schools acted as control groups. For this study 15 schools redesigned their playgrounds by providing markings for different games in the yard. These schools also provided children with physical structures such as goal posts and basketball nets. Each student in the study wore a heart monitor and 300 students also wore accelerometers. This study found that those in the intervention groups engaged in more physical activity than those in the control groups.

Mullan and Stratton (2005) aimed to examine if painting multicolour playground markings had a positive impact on physical activity levels in eight primary schools in North-east Wales and Northwest England; four of these schools acted as controls in the study. The intervention school yards were painted in bright colours. Physical activity levels were measured prior to the paintings and also after the paintings using short wave heart rate telemetry. This study found that there were significant differences in physical activity in children after the markings were painted in the yard. Time spent by children engaging in moderate to vigorous physical activity increased in intervention schools. This study showed that multi-colour markings in the yard can be an inexpensive and effective way to increase the amount of physical activity that students engage in.

Willenberg, et al., (2010) carried out a study on the link between playground characteristics and children's physical activity levels. This study included 23 schools in Melbourne, Australia. The study used SOPLAY to observe students physical activity levels and the playground environment such as equipment provided and supervision. This study found that students that were provided with equipment engaged in more vigorous physical activity (60% vs 52%), it also found that

students participated in more physical activity when supervision was present (62% vs 52%). According to Willenberg, et al., (2010) fixed play equipment had the greatest impact on moderate activity.

In general, providing students with equipment and playground markings can encourage participation in physical activity (Mullan and Stratton, 2005 ; Ridgers, Stratton, Fairclough, and Twisk, 2007). Verstraete et al., (2006) suggests that children should be involved in the design of the school playground and children should be provided with a choice on the equipment that they wish to use at break time. A recommendation from the HSE (2005) study suggests that the creation of activity zones may encourage students to be more physically active.

### **Types of Physical Activity That Students Engage In**

It is important to establish the types of games students engage in during break time in order to establish if physical activity takes place. There are many factors that impact the types of activity that takes places during break time. Research indicates that social relationships (Saillis et al., 2000), playground topography (HSE 2005) and availability of space (Boyle, Marshall, & Robeson, 2003) have an impact the types of play that students engage in during break times.

Humphreys and Smith (1987) carried out a study on the impact that the topography of the school yard has on the types of PA that students engage in during break times. This study was carried out in Northern England on 94 participants between the age of 7 and 9. The study was conducted by observing students during break time in the school yard. No equipment was provided to students by the school during break time. Students brought their own equipment into school to play with in the yard. This study found that older students were more likely to play rule governed sports during break time. Rough and tumble play accounted for 10% of school break time. Boys were more likely than girls to participate in rough and tumble play. This study found that

children were less likely to engage in rough and tumble play on the hard surface with this type of play only accounting for 3.7% of activity on this surface even though students spent the majority of their break there. This study found that soft grassy surfaces attracted rough and tumble play, this indicates that the topography of the school playground has an impact on the type of PA that students engage in.

McKenzie, Marshall, Sallis, and Conway (2000) conducted a study in the United States examining the types of physical activity that students participate in during break times. This study was carried out in 24 schools on grades six to eight. The research was carried out using SOPLAY. This study found that the most prominent physical activity code was 'no identifiable activity', this code accounted for 73% of girls and 37% of boys. Structured activities were observed during this study with basketball being the next most common activity recorded, this accounted for 13% of boys and 5.7% of girls.

Lever (1978) carried out research in Connecticut, United States on the differences in the types of games that boys and girls participate in at play time. This study was undertaken on fifth grade students between the ages of ten and eleven, 181 participants took part in the study. The study was conducted using a mixed method approach. Observations were carried out during break time on students physical activity behaviours, semi structured interviews were also conducted and physical activity diaries were kept. This research found that girls played cooperatively, whereas boys were more likely to play competitive games. This study found that girls commonly played tag, hopscotch or skipping. Girls were likely to play loosely structured games whereas boys were reported to participate in games with pre-set rules. Boys in this study were recorded playing basketball and footballs. The games that boys participated in generally involved large groups

playing together, however girls were reported to spend more time playing in smaller groups with a maximum of six people at a time.

Boys and girls have different styles of playing with boys tending to participate in more physical, competitive and rough and tumble games. Girls tend to spend time participating in more in sedentary games and socialising (Blatchford, Baines, & Pellegrini, 2003).

### **Teachers Influence on Physical Activity During School**

One of the main reasons that people engage in physical activity is for enjoyment (McLain, 2009). If children do not find physical activity fun, they are less likely to gain enjoyment from it (McDevitt, et al., 2012). Teachers can influence the amount of physical activity that students participate in and the enjoyment that they gain from it. When teaching physical education classes, a teacher that allows students make a decision on the activity will provide children with more motivation and increase enjoyment in the class as students feel that they have more responsibility over their own participation (Williams, 2011).

The Irish Primary School curriculum recommends 60 minutes per week on physical activity (Government of Ireland, 1999). The curriculum covers six strands; athletics, aquatics, dance, games, gymnastics and outdoor activities. The primary school curriculum allows for a two-hour discretionary period each week. This allows the teachers to choose how this time should be spent. If this time is used effectively it provides teachers with further opportunities to encourage students to engage in physical activity (McKenzie and Kahan, 2008).

McKenzie, LaMaster, Sallis, and Marshall, (1999) carried out a study on teachers' physical activity levels and the value they put on students' physical activity levels in school. This study was conducted with 18 teachers of 4<sup>th</sup> and 5<sup>th</sup> grade classes in South Carolina, USA. 18 teachers

reported their own leisure physical activity levels. An observation was then carried out during school time during four consecutive semesters. This study found that teachers that were more active in their personal lives encouraged students to engage in more physical activity than those that were less active. Teachers that lead a physically active lifestyle provided students with more physical fitness activities and spent more time promoting physical activity to students during school time. This study reports that teachers who are more physically active can encourage students to participate in more physical activity.

Cothrona, Kulinna, and Garn (2010) conducted a study on school teacher's ability to increase the levels of physical activity that students engage in. This study was carried out with 23 teachers in America. Interviews were conducted with the teachers twice during a yearlong program to determine factors that encourage and discourage them from carrying out more physical activity with students. The willingness of teachers to promote physical activity was determined by the level of care they had for their students and their own personal experiences regarding the importance of physical activity. This study found that institutional factors such as curriculum deadlines and assessment pressures discouraged teachers from carrying out more physical activity due to fears that they would not cover the core curriculum components if they spent more time on physical activity. This study provides an insight into the barriers of teachers' encouragement of physical activity.

### **Teacher's Perceptions on Physical Activity**

Research shows that the perceptions of parents, teachers and other caregivers can play an important role in reducing obesity and increasing the amount of physical activity that children engage in (Lopez-Dicastillo, Grande, & Callery, 2010). Studies have been carried out to examine the perceptions of parents with regards to children's levels of physical activity (Perez, et al.,

2011 ; Kriemler, et al., 2011). As children spend a large amount of time in school every day, the perceptions of teachers are important in understanding the physical activity patterns of students. Research on the perceptions of teachers of the importance of physical activity is limited (Huberty, Dinkel, Coleman, Beighle, & Apenteng, 2012).

Huberty et al., (2012) carried out a study on the perceptions of elementary school staff with regards to physical activity during the school day. This study was carried out among 12 randomly selected elementary school staff in the Midwestern United States. The study allowed for the inclusion of non-teaching staff that were responsible for supervision in the yard, a teacher from each grade beginning at third grade up to sixth grade, PE teachers and the school nurse. This study found that participants believed that physical activity was linked with better concentration and improved behaviour in the classroom. This study also found that while participants were aware of the importance of physical activity few were aware of the national guidelines of PA for children. Participants in this study believed that students should engage in more physical activity during school hours. However barriers were noted to this such as academic requirements and lack of time. Participants stated that the school curriculum lead to a reduction in the amount of time that could possibly be allocated to PA. Participants in this study looked upon physical activity favourably but felt that overcoming the barriers was a difficult challenge.

### **Policies and Physical Activity**

It is important to ensure that school policies encourage positive health behaviours among students (WHO, 2008). School break times are a time set aside to allow children to engage in free play with their classmates. Break times are one of the only times during the day where students are free to engage in self-directed play without adults conducting the games and



activities that they participate in. There are major benefits in optimising the opportunity for children to take part in physical activity during play where otherwise they may not have the opportunity to do so. While free play is very important, this must be done with the supervision of adults to reduce any risk of injury.

Marron (2008) carried out an analysis of active play time in Irish primary schools, up to this point there was no previous research carried out in this area in Ireland. Marron (2008) examined the environmental factors and policies that influence the amount of physical activity that students in Irish primary schools participate in. This study was carried out across three primary schools. Two of these schools were in Waterford City and the other school was in County Kilkenny. A questionnaire was conducted and distributed to Irish primary schools to evaluate the influence school practices and policies have on students participating in active play during break times. Marron (2008) also used a method called SOPLAY (System for Observing Play and Leisure Activity in Youth; McKenzie, 2006). This study recognised that differences existed between schools mainly depending on school size. The researcher found that smaller schools are more likely to have a higher focus on physical activity during play times. Marron (2008) identifies that larger schools have less of focus on physical activity due to a restriction in space. Marron (2008) also states that due to safety concerns schools are reluctant to provide students with equipment during break times. As the study was conducted over a small number of schools the results are not representative of all Irish primary schools. In addition, the physical presence of the observer in the yard may have impacted the behaviour of students.

The school yard experience is a compulsory part of school life for primary school children. For the majority of children, the experience of the school yard is enjoyable and enhances both physical and social health, the school yard has been reported to enhance learning opportunities in

the classroom. However, according to Mulryan-Kyne (2014) the school playground can be an unsafe place for some children. This study found that the school yard can be an opportunity for aggressive behaviour and bullying. This type of behaviour in the yard has, in many instances, lead to a reduction or elimination of time that students are allowed in the yard. This paper suggests that rather than eliminating these types of behaviours with policies that restrict the freedom of active play in children, it is essential to deal with them in a positive and productive way. This paper found that creating policies to limit the amount of injury that can occur in the yard is not effective and it is important to teach children a safe way to play while allowing for personal expression.

### **Summary and Rationale**

Physical activity has benefits for people of all ages (Warburton, Nicol, & Bredin, 2006). Research shows that schools are a key setting for promoting physical activity and enabling children to adapt a physically active lifestyle in which they can carry through to adulthood (British Heart Foundation National Centre, 2013). The literature shows that strategies are needed to promote physical activity during break times. There is evidence to show that the school yard environment has a direct influence on the amount of physical activity that students engage in. Providing students with equipment during break times and also adding playground markings and physical structures to the yard can have a positive impact on the amount of physical activity students engage in.

A review of international studies relating to the amount of physical activity students engage in during break times found that limited research has been carried out in Ireland in this area. It is important to understand the amount of physical activity that students engage in and identify areas

for improvement. There are many benefits for allowing children to engage in self-directed physical activity during break times without putting themselves at risk.

The overall aim of this study is to examine the levels and types of physical activity that primary school students engage in during break times. In addition, this study will compare physical activity levels in boys and girls at play times. It will also identify the external environmental factors that affect the amount and types of physical activity that students engage in such as policies, availability of equipment and restrictions of space. This study will also carry out an investigation into the perceptions of teachers in relation to the importance of physical activity during break times.

### **Research Questions**

1. What types of physical activity do children engage in during break times?
2. What are the gender differences in the playground?
3. What are teachers' opinions on physical activity in the yard?

# **Chapter 3**

## **Methodology**

## **Methodology**

### **Research design**

The purpose of this study was to measure physical activity levels of primary school children and measure teachers' perceptions of the importance of physical activity. It used a mixed-methods design with two parts; 1) cross sectional systematic observation to investigate students' activity levels in two Irish primary schools; 2) qualitative focus groups with teachers to explore the perceived importance of physical activity during break time.

### **Participants and Sampling**

#### **Pupils**

Convenience sampling was used for this study. One all-girls primary and one all-boys secondary school in Waterford City were recruited to take part in the study. Convenience sampling is a non-probability sampling technique where the participants are chosen due to the ease of access (Gravetter and Forzano, 2012).

Eligible participants in this study include 6<sup>th</sup> class students in each school. This year group was chosen primarily due to 6<sup>th</sup> class having the biggest yard in both schools, 6<sup>th</sup> class students also

had a separate yard in both schools. In this study there are approximately 53 girls and 54 boys. All 6<sup>th</sup> class students are invited to take part in the study.

The schools chosen were in close proximity to Waterford Institute of Technology to ensure that they were easy to access. An email was sent to the principals of Mount Sion Primary School and St. Ursula's Primary School, outlining the details of the research and what would be involved should the school agree to take part (Appendix A). The researcher then followed up with a phone call to each school once they expressed interest to arrange a meeting with the principals.

### **Teachers**

Four primary school teachers were recruited to take part in this study. All teachers in the school were invited to volunteer to take part in the study. From those volunteers, two participants were chosen at random to be interviewed.

### **Concepts**

There are nine main concepts related to yard activity at break-times.

1. **Physical Activity.** This is defined as any bodily movement produced by skeletal muscles that results in energy expenditure (Caspersen, et al., 1985). This will be measured by observation.
2. **Sedentary Behaviour.** This is defined as lying down, sitting or standing still (De Saint-Maurice, 2009). This will be recorded through observation.
3. **Walking.** Moderate activity which is the equivalent of brisk walking leaving the participant warm and slightly out of breath (Waring, Warburton, and Coy, 2007).

4. **Very Active.** Equivalent of slow jogging leaving one out of breath and sweaty (Waring, Warburten, and Coy, 2007).
5. **Availability of Space** refers to the accessibility (e.g. not locked or rented to others) and usability (e.g. is not excessively wet or windy) of the yard for students to engage in physical activity (McKenzie, 2006). This will be recorded using maps of the school yard which will be provided by the school principals.
6. **Equipment** includes anything which is provided by the school (e.g., balls). This does not include permanent equipment (e.g. goals) or that owned by students (McKenzie, 2006). This will be measured through observation.
7. **Organised Physical Activity** includes scheduled activity, with leadership by school personnel in the area (e.g. fitness stations) (McKenzie, 2006). This will be measured through observation.
8. **Supervised Area.** This is defined as any area that is supervised by designated school personnel (e.g., teachers). The supervisor must be in or adjacent to that specific area (i.e., available to direct students and respond to emergencies), but does not have to be instructing, officiating, or organizing activities (McKenzie, 2006). This will be measured by observation.
9. **Policies and Rules** that each school has in the yard during break times (e.g. no running). This will be recorded by obtaining a copy of the playground rules from each school.

## **Data Collection Measures**

### **School Yard Observations**

This study will use qualitative research. Structured observation will be used to identify the levels of physical activity that students engage in at break times. The researcher will use a validated method called SOPLAY (System for Observing Play and Leisure Activities in Youth) (McKenzie, 2006). This is a systematic observation method designed to obtain observational data on student numbers and the amount of PA they participate in during free play times. SOPLAY is based on momentary time sampling techniques (Paquette, Ocumpaugh, and Baker, 2007). This type of data collection gives an opportunity to understand the context in which physical activity occurs. SOPLAY data collection sheets (Appendix B) were used to record the temperature, the period of assessment, the contextual variables and activity of the children. This data will be collected over 3 consecutive days in each school, the data will be collected at little break and lunch time.

Using SOPLAY has many advantages as it is a direct measure for observing physical activity levels in children. It also allows for contextual variables to be recorded such as the environment and restrictions to physical activity in the yard. This method of recording is also non obstructive and non-invasive, therefore it allows normal playground functioning and limits threats to validity. The SOPLAY recording sheet is easy to use and also the results are easy to understand. There are also disadvantages that must be noted when using this system. The system of SOPLAY is very time consuming for the researcher and also due to the presence of the observer in the yard, students may behave differently to the way that they would if they were not under observation.



## **Interviews**

Interviews were conducted with four primary school teachers. The teachers in both schools were asked to volunteer to take part in the interviews after school. There has been very limited research conducted in Ireland on this topic. Hence, previously validated instruments do not exist. The researcher considered interviews a worthwhile method to identify teachers' opinions on physical activity during break time and the importance of physical activity at break times.

A topic guide designed by Copeland, Kendeigh, Saelens, Kalkwarf, and Sherman (2012) was used to guide the design of the interview questions for this study. The questions asked in the interviews were as follows (see Appendix C for topic guide)

- The amount of time students spend engaging in physical activity each day
- Duration of this time
- Importance of physical activity
- Benefits of physical activity at break
- Disadvantages of physical activity at break
- Barriers to physical activity
- Supervision practices in the yard
- Equipment availability in the yard
- Policies in the yard

- Practices to improve physical activity levels

### **Data Collection Procedures**

Plans for data collection were made with the principals and consent forms were made up for parents of the students (Appendix D) and teachers (Appendix E).

### **SOPLAY**

SOPLAY was used to collect data on the physical activity levels of students during break times. Direct observations were made in a 'target area' and PA levels was recorded. The target area was identified prior to beginning observation, this was a well-used and definable area. The SOPLAY system outlines that the 'target area' must be sectioned off for observation. However, as physical bollards would act as a hazard in the yard and also affect the natural running order, the current study created an adaption of this. The researcher used fixtures that are already in the yard to determine the 'target area' e.g. lines on the all-weather pitch and pillars in the school yard.

A counter which was hand held with three buttons was used for this research. The buttons represented sedentary, walking and very active behaviour (see Appendix F). A wristwatch, clipboard and SOPLAY recording sheets were also used to collect data. All relevant external factors such as temperature, weather, area restrictions etc. were recorded. The target area was scanned from left to right, the counter was used to record the amount of students in the area that were sedentary, walking and very active. Each student in the area will only be observed once (McKenzie, 2006). These observations will be recorded during 'little break' and at lunch time. The SOPLAY system suggests that data should be collected before and after schools in addition to break times, however both schools observed in the current study do not have areas set out for physical activity during this time.

### **Semi-structured interviews**

Semi-structured interviews were used to collect qualitative data for this study. Data was generated in the form of transcripts. Selected participants were interviewed to gain perspective on their views of physical activity among children in the school environment. Interviews took place in the 6<sup>th</sup> class classrooms of both schools. These classrooms were chosen specifically as the chairs in this room were bigger than those in the infant classrooms, this allowed participants to feel more comfortable while being interviewed. At the beginning of each interview, participants were asked to read and sign an Informed Consent Statement. Each interview was recorded.

This study was designed to use semi-structured protocol when interviewing individual participants. All interviews were conducted in person and lasted between 25 minutes to 1 hour each. The questionnaire was developed to provide participants an opportunity to offer interpretations of their experiences with physical activity in the school. The semi-structured interviews were developed with open-ended questions to allow the participants to focus on their own perceptions. As the interview progressed, participants were asked more challenging questions that required greater levels of reflection on personal experience. Semi-structured, qualitative interviews allowed the researcher to follow-up with additional questions that deviated from the topic guide when further clarification was needed.

### **Pilot Testing**

Pilot studies are a crucial element of a good study design (Lindquist, 1991). A pilot study was conducted in Mount Sion Primary School prior to beginning data collection. This pilot study allowed the participant to account for any issues that may arise during testing. The main issue that occurred during the pilot study was the novelty factor of the observer in the yard for

students. Many of the students asked questions about the reason that the observer was in the yard. However, when the researcher explained the purpose students were happy to continue playing.

According to Saunders, Lewis, and Thornhill (2007) , when conducting interviews, the validity and usefulness of the questions should be pilot tested. This helps to address issues like understanding of the questions, how the questionnaire reads and indeed basic spelling or grammatical type errors. To minimize the need to provide further clarification for participants and to improve the flow of the interview, a pilot interview was conducted with a teacher from Mount Sion Primary school. Changes were made in the topic guide to enhance the flow of the questions and also address areas that required further clarification or were difficult for the participants to understand.

### **Data Analysis**

All of the data collected from SOPLAY will be stored and analysed using SPSS (Statistical Package for Social Sciences; IBM Version 21).

### **Types of physical activity – Research Question 1**

The types of physical activity that students engage in were observed by the researcher. The findings of this were analysed descriptively.

### **Gender differences – Research Question 2**

Descriptive statistics were used to determine the gender differences in physical activity between both schools. An independent sample t-test was used to examine if there was a significant difference between the amount of physical activity that boys and girls engaged in during the

observation. The p-value must be 0.05 or lower in order for the difference to be considered significant.

### **Teachers' perceptions - Research question 3**

The script from the focus group was be transcribed from the recording of the focus group. Thematic coding was be used to this analyse data. This is a form of qualitative analysis which involves identifying key themes and categories and searching for similarities and contrasts in a transcript. Line by line coding was used to summarise key issues raised. Pre-determined codes were be used to categorise data from the interview. New codes were also developed for unexpected responses. All relevant data was listed under each code, the overarching codes were identified and used to summarise the data. A list of codes were compiled for meaning and frequency.

### **Ethical Considerations**

A research proposal was presented to dissertation supervisor at Waterford Institute of Technology in accordance with the institutions regulations. In order to recruit the schools to take part in the study, permission was sought from the principal. After the school consented to take part in the study permission for children to participate in the study was collected from parents. A letter was sent home to parents providing the details of the study, contact details of the researcher and their ability to withdraw their child from the study at any time. If the parents did not return the letter it reflected passive consent for their child to take part in the study

Teachers that took part in the focus group received an explanation of the full details of the study and will be provided with an opportunity to ask any questions that they may have. The teachers

were also provided with written consent forms. This outlined their option to withdraw from the study at any time should they decide to do without providing a reason.

## *Chapter 4*

# *Results*

## **Results**

### **Quantitative results: SOPLAY**

#### **Characteristics of the study schools**

Descriptive information that is relevant to physical activity during break times is outlined in Table 1 below. This includes a brief outline of the number of students present in the target area during observation, duration of break times, equipment provided, yard surface, dress codes and games observed during scans. The average temperature during observation was 7 degrees Celsius.

Table 1: Characteristics of each study school

	Boys School	Girls School
<b>Number of students in yard</b>	49	56
<b>Yard description from observation</b>	Purpose built all weather pitch sectioned off for different class groups	Irregular shaped yard built around convent, playground has markings painted for games such as hopscotch
<b>Small break duration</b>	15 minutes	15 minutes
<b>Big lunch duration</b>	30 minutes	30 minutes
<b>Eating time included in break times?</b>	No, children are given time beforehand to eat their lunch	Yes, children bring their 'little lunch' to the yard, 10 minutes is taken from play time for big lunch



<b>Dress code</b>	School uniform (pants, shirt, tie, jumper and black shoes), on PE days school tracksuit.	School uniform (skirt, shirt, tie, jumper and black shoes) and tracksuit on PE days.
<b>Equipment provided at break</b>	Occasionally footballs are provided	None
<b>Equipment observed</b>	None	None
<b>Areas of playground supervised</b>	88.9%	93.8%
<b>Activities organized</b>	None	None

Teachers and Special Needs Assistants supervised break times in both schools observed. The girls' school had a higher presence of supervisors during break time than the boys' school. The teachers that were supervising during break time were close to the target area of the yard and available to respond to emergencies. None were observed instructing organized activities.

#### **Types of Physical Activity During Break Times**

Table 2 below shows the main types of activities seen during break times. However, 'no identifiable activity' was the main activity recorded during each scan. Chasing games were observed in both schools each day. Students in the boy's school spent a lot of time making use of the lines on the all-weather pitch by playing 'Hot Lava'. This game involves the students imagining that the green area of the pitch is made of lava, and thus avoid touching the green area of the pitch by walking along the white lines to avoid becoming 'burned'. This game only involves walking along the lines and balancing without stepping on the green area, this game allowed for limited physical activity. More variety in games was observed in the girl's playground. Girls engaged in activities that made use of the playground markings for hopscotch.

However, many students were observed to be inactive during this time as much of the time was spent lining up waiting for their turn. Dance and infrequent gymnastics was also observed during some scans in the girls' school.

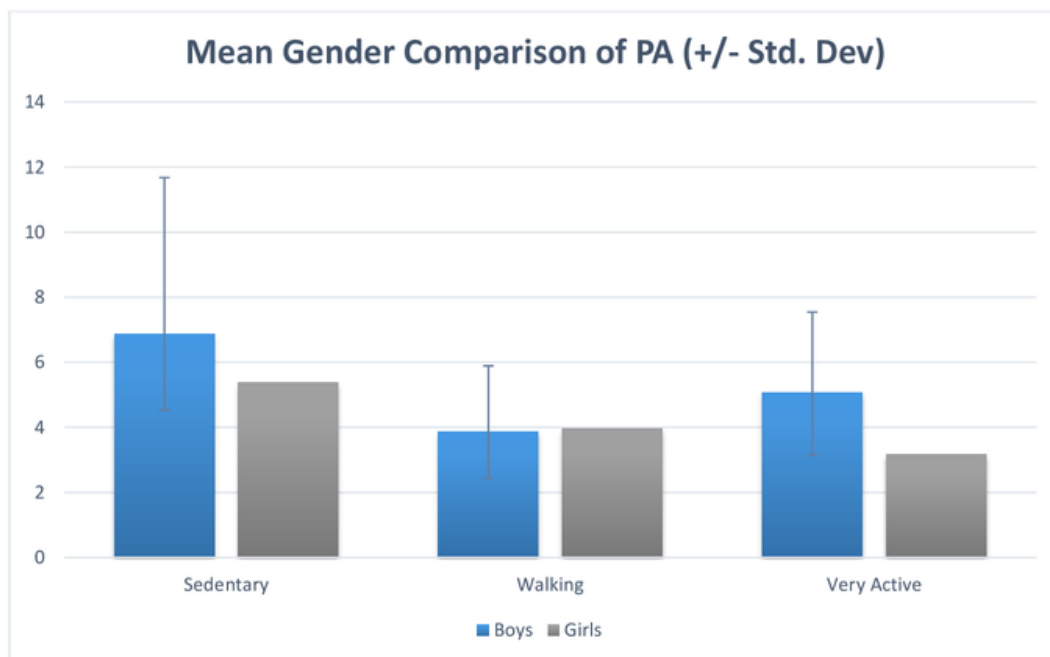
Table 2: Types of physical activity that students engage in during break times

Boys	Girls
<ul style="list-style-type: none"> <li>• Chase Games</li> <li>• Cops and Robbers</li> <li>• Hot Lava</li> </ul>	<ul style="list-style-type: none"> <li>• Chase Games</li> <li>• Hop Scotch</li> <li>• Dance</li> <li>• Duck Duck Goose</li> <li>• Handstands</li> </ul>

### Gender Differences in Break-time Activity Levels

Boys were more active than girls during break times. The average number of boys that were very active during break time was 5.08 (10.4%), whereas the average number of girls that were very active during break time was 3.17 (5.7%). This difference was statistically significant ( $p=.000$ ). The mean number of boys recorded walking during the scan was 3.86 (7.9%), while 3.97 (7%) of girls walked. This difference was not statistically significant ( $p>.05$ ). Boys displayed slightly more sedentary behaviour compared to girls, with a mean of 6.86 (14%) for boys against a mean of 5.39 (9.4%) for girls. A significant difference was not found in the difference in sedentary behaviour between girls and boys. Overall, boys were found to engage in more moderate to vigorous physical activity than girls during break times (See table 3)

Table 3: Gender comparison of physical activity during break time



## **Qualitative Results: Teachers' Perceptions of the Importance of Physical Activity in the Yard**

### **Description of interview participants**

Four primary school teachers from the study schools were interviewed about their perceptions of physical activity during break times. The average number of years that the participants were employed as teachers' in primary education was 7.5 years. Table 4 below provides a brief description of participants.

Table 4: Description of interview participants

Gender	Sex of school	Years teaching	Class year
Male 1	Boys	12	6 <sup>th</sup> class
Female 1	Boys	6	Senior infants
Female 2	Girls	9	5 <sup>th</sup> class
Female 3	Girls	3	1 <sup>st</sup> class

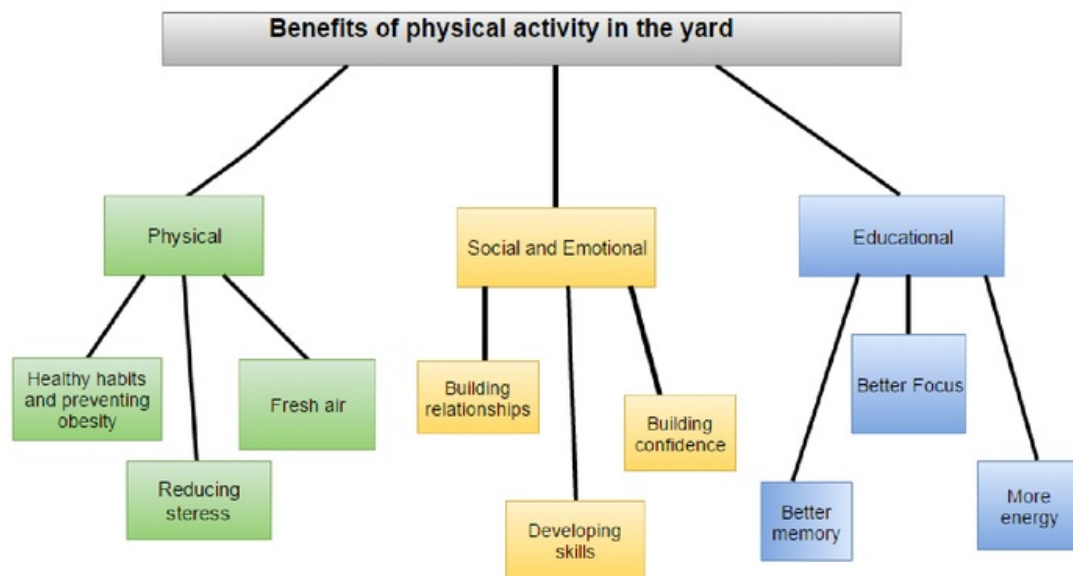
## Main Findings

Four key themes were identified in relation to physical activity in the yard and teachers' perceptions of physical activity. 1. The advantages of physical activity at break; 2. The disadvantages of physical activity at break; 3. The barriers to physical activity during break times and 4. The role of the teacher in the yard. These will be outlined below:

### 1. Teachers Perceptions of the Benefits of Physical Activity

Participants identified a number of benefits of students engaging in physical activity during break time. These benefits fell into three sub sections.1) Physical benefits,2) Social and emotional benefits and 3) educational benefits and they are outlined in Figure 1.

Figure 1: Benefits of physical activity during break time



## Physical Benefits

### Healthy Habits and Reducing Obesity

Participants noted numerous benefits for the child's physical health. Each participant mentioned obesity and developing healthy habits which they carry into adulthood as a major benefit of physical activity.

*'Obesity in Ireland is crazy at the moment, especially in kids. The best time to get them active is when they're young. Playing in the playground can teach them that being active can be fun'*

(Female 2)

*'If they [children] sit around and don't exercise when they are in school they will grow up thinking it's normal to be lazy and not exercise, that will cause even more obesity.'* (Female 3)

*'If children are active from a young age they're more inclined to keep it up as an adult'* (Male 1)

### **Reducing Stress**

Participants also stated that engaging in physical activity can reduce stress levels in students and can assist with calming a student down.

*'They [children] get stressed just like us, we might stress about money, they stress about why their friend isn't talking to them, it's a big deal for them. Playing in the yard allows them to get it all out, let loose and be themselves'* (Female 1)

*'Exercise releases endorphins, it makes them feel better'* (Male 1)

*'It might just be 15 minutes but it can help them to calm down and get all of their energy out in the yard so they're not as wound up in class'* (Female 3)

### **Fresh Air**

An additional important quality of engaging in physical activity during break time that was mentioned throughout each interview was 'fresh air'. Fresh air was identified as having a physical benefit, participants noted that by children being out in the fresh air they could escape germs that may be inside and remain healthy. Germs were seen as being more prevalent in the classroom than in the yard.

*'The fresh air really helps them to stay clear of germs'* (Female 1)

*'The amount of germs that can build up in a stuffy classroom. Being out in the fresh air running around can help to kill them'* (Female 2)

*'By getting out and breathing in fresh air they are less likely to get sick than when they're sitting in a classroom surrounded by other students' (Female 3)*

### **Social and Emotional Benefits of Physical Activity**

#### **Building Relationships**

Participants noticed that children had a greater opportunity to play and interact with other students when they were in the yard. Building friendships was mentioned throughout each interview.

*'The playground allows them to interact with others. They might not get the opportunity to do this in the classroom.'* (Male 1)

*'By playing they make new friends, even if they didn't know each other before they started playing after 10 minutes they could be the best of friends.'* (Female 2)

*'When children are playing games in the playground they make friends easier.'* (Female 1)

#### **Developing Skills**

Social and emotional benefits were seen as integrated with or consequences of the physical benefits. For instance, the teachers' felt that physical activity was important for developing skills, such as problem solving, coordination, creativity and they learn to work with others.

*'They can learn new skills like problem solving. They learn how to negotiate with others in the yard to come up with a game that they can play where everyone is happy'* (Female 3)

*'It helps with coordination, through games that they play in the playground they learn about their body and how to use different muscles'* (Female 2)

*'The playground is a place where kids can decide what they want to do or play. They can make up new games and really get creative' (Female 1)*

*'It teaches them how to work with others. They learn that they need to compromise when dealing with their friends' (Male 1)*

### **Building Confidence**

Many participants noted that children who were more physically active tend to become more confident than children that may not be as active. Without the opportunity to practice being physically active, children may be embarrassed or discouraged from engaging in activities.

*'Kids can get upset if they can't do something that their friends can do. Kids that are more physically active are more confident than others when it comes to exercise.'* (Male 1)

*'Running around and playing can help their confidence. When they catch someone in a game of chase it can make them feel way better about themselves.'* (Female 2)

### **Educational Benefits**

A major benefit that teachers' interviewed saw when it came to the benefits of physical activity was the impact that it can potentially have on the academic work of the student. Participants explained the ways in which physical activity can help with a child's education.

### **Better Memory**

Participants noticed that children that were more physically active had a better memory capacity than those who engage in little or no physical activity.



*'Physical activity helps children to remember things better. It can really improve their memory which then improves their school work.'* (Female 3)

*'When they are more physically active they tend to remember things better.'* (Female 1)

### **More Focused**

Participants also explained that the students that participate in physical activity focus better in class and remain alert.

*'The kids that are more active are more interested in what is going on in class, they engage and really listen to what is going on. Less active students seem more sluggish as the day goes on.'* (Female 2)

*'They're more switched on.'* (Male 1)

*'When children are active they seem to focus better in class.'* (Female 1)

### **More Energy**

Lastly, participants found that students that were physically active had more energy and were able to participate in class for the entire day.

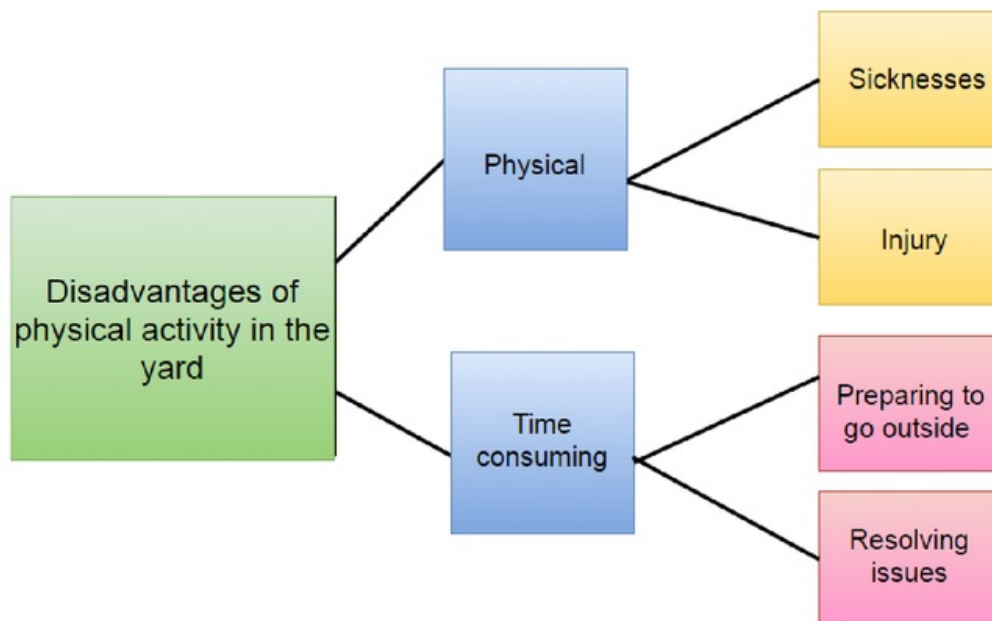
*'They seem to be able to keep going better than those that are less active. I notice with kids that don't do any activity they get sluggish and tired as the day goes on.'* (Female 2)

*'They're [active children] able to listen and stay alert for the entire day. They seem to have more energy'* (Male 1)

## **2. Teachers' Perceptions of the Disadvantages of Physical Activity in the Yard**

While participants listed many benefits of physical activity in the yard, they also noted some disadvantages to children participating in physical activity during break times. These disadvantages fell into two sections: 1. Physical issues that can come from being outside and 2. The amount of time spent preparing to go outside and resolving issues afterwards. Figure 2 below outlines these in more detail.

Figure 2: Disadvantages of physical activity in the yard



### Physical Issues

#### Children Getting Sick

Participants explained that children becoming unwell due to being active while outside is a major disadvantage of being outside during break times.

*'When it's cold they come back in with runny noses' (Female 1)*

*'Once one person gets sick it spreads easily, that's a negative of being outside.'* (Female 3)

*'I worry about undiagnosed medical problems, we might not know if a child has an underlying condition and taking part in loads of physical activity could do real damage.'* (Male 1)

### **Children Getting Injured**

Another disadvantage noted by participants is the potential for children to become injured while playing at break times.

*'Injury would be my biggest concern, children having cut knees is part of growing up but we have had a lot of cases over the years where bones have been broken.'* (Female 1)

*'If they're running around in the yard they're more likely to fall and hurt themselves.'* (Female 3)

*'Injury can lead to massive problems for not just the children but the school too, even before it has led to legal action so I see that as a disadvantage anyway.'* (Female 2)

### **Time Consuming**

#### **Preparing to Go Outside**

Participants noted that going out to the yard can be very time consuming. Teachers explained that it takes time to get the students ready to go outside, to get them to put on their coats and to line up. This was especially common in teachers of younger classes.

*'Getting organised takes time, I have to give them 5 minutes just to put on their coats and line up.'* (Female 1)

*'To allow them to have their full break time out in the playground I have to take a few minutes out of teaching time to get them ready.'* (Male 1)

*'You spend so much time getting ready to go out that it feels like they're only out and the bell goes'* (Female 3)

### **Resolving Issues From the Yard**

Less frequently, participants mentioned that the amount of time that they have to take after break times to resolve conflict that may have occurred during break time. This was most common in older classes.

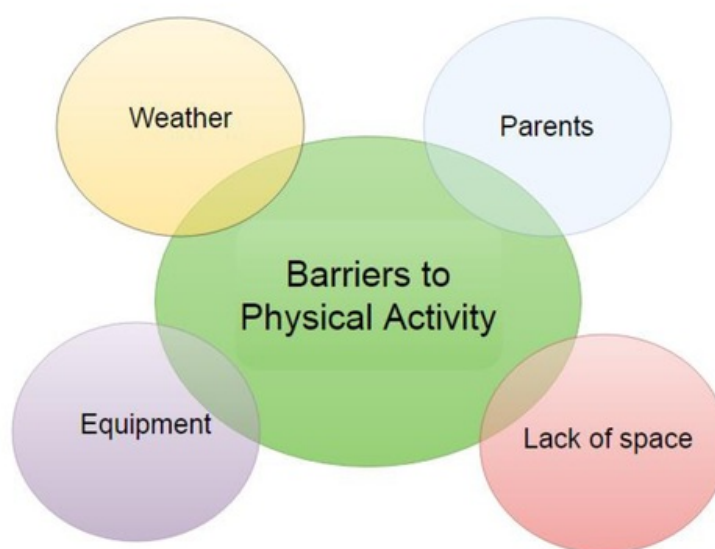
*'If there was a row in the yard, we have to take time out of class time to sort it out.'* (Female 2)

*'Kids argue in the yard and this has to be talked about when we go back into the classroom, I could be spending this time teaching.'* (Female 3)

### **3. Barriers to Physical Activity in the Yard**

Participants explained that there were many barriers that can limit physical activity in the yard and these are summarised in Figure 3 below.

Figure 3: Barriers to physical activity at break times



### **Weather**

Adverse weather conditions, including rain, ice and snow, were mentioned by all participants as a common and important barrier to children being physically active during break time.

*'We don't leave them go out when the weather is it bad, like if it's raining or the ground is dangerous.'* (Female 3)

*'They don't get to go out on wet days, in times of ice or snow. They usually miss the first break because leaving them out is lethal. They'll just stay in and watch a film on the interactive white board.'* (Female 1)

*'In damp weather, I don't think they should be out.'* (Female 2)

## **Parents**

Participants also noted that parents play an important role in deciding if their child goes out and participates in active play at break times, as a parent can request for their child to be kept in for a variety of reasons.

*'Parents think the cold weather gives the child a cold so sometimes they will ask for the child to be kept in at break. We have to take that into consideration.'* (Female 3)

*'Some parents get annoyed when we bring the kids out in the cold, they blame that for the reason that the kids get sick.'* (Male 1)

*'If parents send their children to school without a jacket or warm clothes, leaving them out is cruel, so I would usually keep them in in this case.'* (Female 1)

## **Lack of Equipment**

Teachers explained that by refusing to provide equipment to the children at break times, the potential of physical activity is limited. The reasons provided for deciding not to provide equipment included safety concerns and preventing arguments.

*'We don't allow them to have any equipment in the yard, we don't give them any and they're not allowed to bring any from home either. It's safer like that.'*

*'They're not allowed to have anything in the yard, we have some games painted on the ground that they can play but giving them things would mean that they end up fighting over who has what and for how long.'* (Female 3)

*'We used to give them a ball to play with and they used to run around an awful lot more back then but it was just chaos, there was 30 students running after one ball, it was too dangerous.'*

(Female 1)

*'If they had equipment they would have more games to play and they might exercise more but I think it would cause more accidents.'* (Male 1)

### **Lack of Space**

Teachers' also explained that lack of space was a barrier to the amount of physical activity that students engage in during break time.

*'Well you have 60 students in a small enough space so running fast can cause injury, we have to tell them to slow down, they're only allowed to jog in the yard... ... If there was more space they would run around more.'* (Female 2)

*'They are limited to where they can go so they might get bored running around the same small area all during break time.'* (Female 1)

*'Ideally every class should have their own yard, then there would be more room to be more active, but we just don't have any way for that to happen.'* (Male 1)

### **4. Teachers' Perceived Roles in the Yard**

Participants described the role that they felt teachers play in the yard. These roles varied depending on the participant. One teacher felt that their main role was to act as a facilitator and encourage students to be physically active in the yard, but more often teachers described their role as purely supervisory and felt that their main responsibility was to keep the students safe

during break time. Most teachers were against too many teacher-led activities during break times.

### **Facilitators**

From those interviewed one teacher saw their role as a facilitator. This individual felt that their role was to encourage students to participate in physically activity throughout break times.

*'If I see a child on their own, I'll encourage some of the other children to play with them so that's he not just sitting and getting no exercise.'* (Male 1)

*'Some children don't always want to take part in some of the games that are being played I'll always ask them to try it out'* (Female 2)

*'I interact with them if I can so they can see an adult having fun and moving too.'* (Female 1)

### **Supervisor**

The majority of teachers' interviewed felt that their responsibility while in the playground was to keep children safe and they saw their role as a supervisor, whose purpose was the watch over the children only.

*'When I'm on supervision in the yard my aim is to make sure children don't get hurt, I keep an eye on everything and make sure it's a safe place.'* (Female 1)

*'We're there to watch them and keep them safe.'* (Female 2)

*'I stand at the side and if they need me then they come up to me.'* (Female 3)



*'I don't interact with them much when they're on break for supervision reasons really. It's hard to notice everything that's going on if you're paying too much attention to a group of children you miss what's going on with others.'* (Male 1)

### **Opinions on Running Activities During Break Times**

Of these interviewed, one person was willing to run activities for students during break times to encourage them to be more physically active. Others felt that break time should not be teacher lead as it provided a unique opportunity during the school for students to participate in self-directed learning.

*'I'd happily run activities during break times, but the whole school would need to get on board so it's not the same people giving up their lunch every day.'* (Male 1)

*'I don't like to have too much teacher direction on the playground, the playground is their own time.'* (Female 2)

*'I tell them what to do all day but when they're outside I let them choose what they want to do themselves.'* (Female 1)

# *Chapter 5*

## *Discussion*

### **Discussion**

The purpose of this research was to investigate the physical activity levels of primary school children during break times. This study also examined primary school teachers' perceptions of the importance of physical activity during break times. Children's physical activity levels were

examined in two primary schools in Waterford City using SOPLAY (System for Observing Play and Leisure Activity in Youth) (McKenzie, 2002) and teachers' perceptions on the importance of physical activity in the yard was recorded through interviews.

### **Policies and Practices Effecting Physical Activity During Break Time**

In the current study it is clear that policies and practices have an impact on the amount of physical activity that students engage in during break times.

#### **I. Eating time**

Time spent eating lunch was included in the break time of the girls' school observed. After consuming lunch, children have the opportunity to play for 10 minutes out of the allotted 15 minutes at small break and 20 minutes out of the allotted 30 minutes at big break.

Eating time was not included in break times in the boys' school. This allowed them to play for the full 15 minutes at small break and a further 30 minutes at big break. Both schools ate their lunch in the classroom.

However students in the boys school gained more time to play and perhaps be physically active than girls as they were provided the entire break to engage in active play.

#### **II. School dress code**

School's policy to uniform can have an impact on the physical activity levels that students engage in (Woods, Tannehill, Quinlan, Moyna, & Walsh, 2010). In both of the schools observed, students wore school tracksuits once a week on days that they had PE class. Girls wore skirts on

other school days. This can be very restrictive on the amount of physical activity that girls engage in as wearing skirts limit the types of physical activity that they can participate in (Parrish, Yeatman, Iverson, & Russell, 2010). Boys wore pants on normal school days and this allowed more freedom to participate in different times of physical activity.

### III. Segregation of classes

Each of the schools observed in this study, divided students up into class groups during break times, perhaps to assist with supervision. As the yard is sectioned off, students have limited amount of space to engage in physical activity. Research carried out by Fairclough, Ridgers, and Welk (2012) states that the space provided can be associated with students' engagement in physical activity during break times. In the current study all classes were in the yard at the same time, this was the case in both schools that were studied. The total schoolyard areas were relatively small, which might have limited MVPA.

### IV. Supervision

Supervision can influence the amount of physical activity that students participate in (Hyndman, Telford, Finch, & Benson, 2012). In the current study all target areas were supervised. Teacher's ability to speak positively about physical activity was found to be effective in encouraging students to participate in activity during break times (Sleap, Warburton, & Waring, 2000). The current study did not measure teacher's encouragement of students to engage in physical activity during break times. McKenzie, Marshall, Sallis, and Conway (2000) reported that boys were found to be prompted more to engage in physical activity during break times than girls by teachers that are supervising the yard.

### **Children's Physical Activity Behaviour in the Playground at Break Time**

School playgrounds provide students with a space for social interaction, creativity and physical activity (Wood & Martin, 2010). Verstraete, Cardon, De Clercq, and De Bourdeaudhuij (2006) commented that providing students with equipment encouraged students to participate in higher levels of physical activity. In each of the schools observed, students were not provided with any equipment during break times, school policy in the boys schools stated that footballs would be provided occasionally however this did not occur during the observation days. This may have limited the amount of physical activity that students engaged in during break time. According to Shackell, Butler, Doyle, and Ball (2008) it is important to cater for both genders when providing equipment in the yard. Provision of footballs may not appeal to girls as much as boys as they may not find the game as stimulating or they may not have been as socialised to football as boys. According to Pellegrini (2005) boys are more likely to participate in games that encourage competitive behaviours than girls. Humphreys and Smith (1987) found that boys were more likely to engage in aggressive play than girls, therefore it is necessary to provide equipment to girls that limits aggression. According to a study carried out by Jago and Baranowski (2004) increases in girls physical activity levels were recorded when they were provided with jump ropes. A study carried out by Dishman and Buckworth (1996) showed that redesigning playground equipment in the school environment has the ability to increase children's moderate to vigorous physical activity, particularly for less active children.

A study carried out by Fairclough, Stratton, and Ridger (2010) found that playground markings improved the levels of physical activity that children engaged in. Playground markings were observed in the girl's school. However this was reported to hinder the amount of physical activity that students participated in as the markings did not allow for all students to be active at

the same time. Students were reported to spend a lot of time standing and waiting for their turn rather than being active. Providing markings in this case did not appear to be effective in improving physical activity, as the number of playground markings was not adequate for the amount of students in the yard at that time. While having playground markings did entice students to use them, it would be more effective to have a greater amount of markings dispersed around the yard to ensure students do not spend a large amount of break time standing in a queue awaiting their turn. Observation of the boys' school did not show any playground markings for specific games. They were observed to use the lines of the all-weather pitch to create their own games, thus provided freedom for creativity.

Research shows that boys and girls differ in the choice of activities that they participate in during break times (Level, 1978; Humphreys and Smith, 1987; Boyle et al., 2003). In the current study both genders were observed playing chase games. Boys were more likely to play games with pre-set rules than girls. In the current study girls were found to be more creative with the games, such as dance, also girls were observed to play a greater variety of games than boys, similarly this was reported in a study carried out by Renold (2006). Girls were observed to spend more of their time at break in smaller groups than boys and displayed more of an emotional connection with their peers through talking, similar results were recorded in a study carried out by Boyle et al., (2003).

### **Gender Differences In Children's Physical Activity Levels at Break Times**

Previous research carried out indicates that boys are more physically active than girls. This is evident in the 2010 HBSE study which found that more boys were participating in physical activity up to 4 times per week than girls. The current study also found that boys were significantly more active than girls.

### **Moderate to Vigorous Physical Activity**

In the current study there were gender differences in the amount of time spent in MVPA, boys were found to engage in more MVPA than girls. This finding is consistent with findings that are reported in chapter 2 of this research (Troost, et al., 2002 ; McKenzie, Marshall, Sallis, and Conway, 2000). Research indicates that boys are more active than girls across a number of settings (Woods et al., 2011 ;Troost, et al., 2002 ; Van Mechelen, Twisk, Post, Snel, and Kemper, 2000).

Boys were found to be more active at both break times. Blatchford et al. (2003) indicated that boys were significantly more likely to be involved in physical games, and girls more in conversation, sedentary play, hopscotch and verbal games. Paechter and Clark (2007) suggested that physical activity in the schoolyard was determined by the social norms among children that boys should be active and participate in competitive sports, which might also explain why girls were found to engage in less MVPA and more in sedentary behaviour in the yard in comparison to boys (Bailey, et al., 2012 ; Hilland, Ridgers, Stratton, and Fairclough, 2011)

The difference in the time each gender spend being physically active and time spent being sedentary may be linked with the surface of the playground. Dymont, Bell and Lucas (2009) found the highest percentage of students engaged in MVPA in green areas, similar to the all-weather pitches provided in the boy's school. Solid surfaces were provided in the girls' schools which may limit the potential for physical activity.

### **Walking**

The current study found that girls were more likely to walk than boys, this is consistent with findings from Vašíčková, Groffik, Frömel, Chmelík, and Wasowicz (2013). Although the current study did not find a significant difference between the amounts of girls that walk in comparison

to boys, a study carried out by Panter, Jones, Van Sluijs , and Griffin (2011) found that walking to school and in the school yard every day can significantly increase physical activity levels. Encouraging students to engage in this activity can have both long and short term health benefits.

### **Sedentary Behaviour**

British Heart Foundation (2012) recommend that children engage in less than 2 hours per day of sedentary behaviour during day light hours. According to Riddoch and Boreham (1995) it is important to utilize physical activity opportunities during school time as it reduces the amount of time children are sedentary. According to Allafi et al., (2013) there is not a significant different in the amount of sedentary activity that boys and girls participate in. Similarly, this was found in the current study, a significant difference was not recorded in the number of boys and girls that engage in sedentary activity.

### **Teachers' Perceptions of Physical Activity During Break Times**

#### **Benefits of Physical Activity**

Teachers interviewed noted numerous benefits to children engaging in physical activity. These benefits included improved health, preventing obesity, skill development, reducing stress and improved mood. Participants were aware of both the physical and psychological benefits of physical activity during break times. Similarly, Harrison (2014) found that teachers are aware of the physical and emotional benefits of physical activity.

Participants identified that children who participated in physical activity appeared to have improved concentration, were happier and more interested in learning. These findings suggest that teachers see a benefit to children in children's ability to concentrate in the class and also children's overall level of happiness. This was consistent with research by Huberty, et al., (2012) that suggests that teachers view physical activity in a positive manner.



Participants in the current study suggested that engagement in physical activity can help children to interact and make new friends. Research indicates that involvement in physical activity can assist with a child's social development (Caspersen, Powell, and Christensen, 1985). Participants in the current study also noted that engagement in physical activity can help children to develop skills. The school environment provides an opportunity to influence students' perceptions positively towards physical activity. A child that gains confidence from skills developed through physical activity in school and who is exposed to a positive experience of physical activity in school is more likely to lead a physically active lifestyle into adulthood (Andersen, et al., 2006)

Participants identified both long term and short term benefits to students engaging in physical activity. Short-term benefits included students having improved concentration and being more relaxed. Long-term benefits included obesity prevention and improved educational outcomes. Many of the short-term benefits that teachers identified assisted both themselves and the children (e.g. students are more relaxed).

#### **Disadvantages of PA in the Yard**

While participants noted numerous benefits to children engaging in physical activity in the yard, it is important to note that disadvantages of engagement in physical activity during break time were identified during the study. Participants in the study identified physical threat as a disadvantage to physical activity, children getting injured during break time was a common disadvantage identified by participants in the current study. Kinch and Schweinhart (2012) also identified issues of student safety as a cause for concern of students engaging in physical activity during break time, furthermore this study identified lawsuits for injured students as a disadvantage for engagement in pa during break time. Participants in the current study also identified the potential for legal action as a disadvantage. Safety concerns and liability were also

identified as a disadvantage to physical activity by school principals in a study carried out by Zimmerman, Kramer, and Trowbridge (2013)

The amount of time spent preparing to go outside for break time was identified as a disadvantage to physical activity during break time in the current study. Participants explained that preparing to go outside for break and resolving issues from the yard absorbed time that should be otherwise spent teaching. Similar findings were identified in a study carried out by Kelly, Ballard, Lee, and Ammerman (2009)

### **Barriers to PA in the Yard**

Participants identified both internal and external barriers to engagement of physical activity during break time. External barriers (e.g. weather) have been identified in other studies as a hindrance to the amount of physical activity that students can engage in. Students do not have an option to go outside and partake in physical activity during times of inclement weather. This finding is consistent with other research in the area, increased rainfall was found to be associated with a decrease in children's levels of physical activity (Fees, Trost, Bopp, & Dziewaltowski, 2009). According to Harrison, et al., (2011) schools can overcome this barrier to physical activity by implementing policies to provide students to participate in physical activity in an indoor setting during times of bad weather.

Participants noted that lack of space and lack of equipment can act as a barrier in the amount of physical activity that students engage in. This is consistent with other research carried out in the area. Studies show that children are more active when they have access to sports equipment and open play areas (Hardman, 2008; Jenkinson and Benson, 2009). Participants in the current study

also identified lack of space as a barrier to the amount of physical activity that students could engage in. Cardon, Labarque, Smits, and Bourdeaudhuij (2009) found that the more space available to children the more likely that they are to participate in physical activity. Similarly Belansky, et al., (2009) found that lack of space was a barrier to the amount of physical activity that students could engage in.

### **Teachers' Perceived Roles in the Playground**

Participants in the current study mainly identified their role in the playground as purely supervisor. Participants felt that their main role was to keep students safe during play time and ensure the number of injuries are limited. This findings consistent with that of Copeland, Kendeigh, Saelens, Kalkwarf, and Sherman (2012). Participants in the current study did not see their role as a facilitator while in the yard. One teacher in this study identified that when teachers take the lead in encouraging physical activity in the yard and engaging children through active play, children may begin to build or expand on personal views of the importance of physical activity. This finding is consistent with that of Hyndman, Telford, Finch, and Benson (2012). Participants also noted that they will encourage students to play with other students in the yard if they are sitting or alone, participants identified that students are more likely to be physically active if they are encourage to do so by a teacher. Teachers play an important role in the activity levels of a students, teachers' attitudes and beliefs can influence the physical activity behaviours of the children (Centers for Disease Control and Prevention, 2010).

### **Opportunities to Promote Physical Activity During Break Time**

There are opportunities to improve the levels of PA during break times. In the current study participants were reluctant to get involved in organised activities during break times, while one

participant was willing to run activities during break time, others felt that break times should allow students to engage in self-directed free play.

Interventions reported in Chapter 2 of this study were found to be effective in promoting physical activity in the yard (Verstraete, Cardon, De Clercq, and De Bourdeaudhuij, 2006 ; Fairclough, Stratton, and Ridger, 2010 ; Mullan and Stratton, 2005 ; Willenberg, et al., 2010). According to Tomporowski, McCullick, Pendleton, and Pesce (2015) children must enjoy exercise to ensure that they continue to engage in physical activity.

Schools should ensure that physical activity during break time is as enjoyable as possible for the students, this can be done in many ways. By providing equipment to students during break times schools can encourage students to participate in different forms of PA (Verstraete, Cardon, De Clercq, and De Bourdeaudhuij, 2006). The provision of markings in the yard can also be beneficial in encouraging students to engage in physical activity, it is important to ensure these markings are evenly distributed across the school playground to encourage students to utilize all space provided (Stratton and Leonard, 2002). Teachers encouraging students to engage in physical activity can also be effective in raising the number of students that are physically active during break times (Connolly & McKenzie, 1995).

## **Conclusion**

Break time takes up a sizeable and memorable part of break time for primary school children. The school setting provides an ideal opportunity for children to reach their recommended amount of physical activity. It is clear from this study that differences exist between physical activity of boys and girls. Ensuring physical activity is appealing to both genders and providing appropriate equipment for girls is necessary in overcoming this gender imbalance. It is important to provide students with as much encouragement as possible to participate in physical activity. This study

suggests that there is a lack of equipment and space for students to engage in active play during break time despite childhood being a crucial time to encourage children to become physically active and develop habits that will allow them to be physically active into adulthood. The study also suggests that teachers play an important role in impacting a child's perception of physical activity. Teachers' facilitating physical activity in the yard and engaging with students through active play can encourage students to participate in physical activity. Teachers can also increase students' views on the importance of physical activity. This finding may assist with developing positive perceptions of physical activity among children.

#### **Limitations**

There were limitations to this study that need to be considered when evaluating the findings.

These are identified as follows:

This study was limited to two primary schools in Waterford City. The small sample size means that findings are not generalisable to the broader population and may not be truly representative of all Irish primary schools.

The observations were carried out over three consecutive days in February in each school, therefore they do not allow for seasonal variability and does not reflect the full school year.

McKenzie (2000) suggested that student's activity should be video recorded during break times to ensure accuracy in the study. However, this was not possible due to ethical considerations.

The researcher was present in each yard for three days consecutively at break times. Although the researcher was not hindering physical activity in any way by the observation position, the children were aware of the presence. This could impact the natural running order of the students during break times. Children asked questions about the reason that the researcher was present.

Supervisors were also aware of the presence of the researcher in the yard, this may encourage them to instruct students to be more physically active due to the presence of the researcher.

This study relied on self-reporting of teachers' behaviours at break times and it is assumed that the questions in the interviews were answered honestly and accurately. However as the study did not record actual behaviours the possibility of bias must be considered.

### **Recommendations**

The following recommendations are based on the results of the current study and also on the literature reviewed while undertaking this study.

The current study suggests that lack of space and equipment provided in the school yard may hinder the amount of physical activity that students participate in. Schools should provide maximum opportunities for PA and should assist schools in minimising the barriers mentioned. The Department of Education and Science should set out guidelines for the promotion of PA during break times.

Break time should be enjoyable and memorable for students. School playground design should be given a large amount of consideration (Shackell, Butler, Doyle, & Ball, 2008). Schools should consider playground design and provision of equipment to promote physical activity. Schools should consider reducing the amount of hard surfaces in the school yard with an aim of developing more green areas with soft surfaces that allow for more opportunity for PA. This in turn can assist with reducing the number of accidents in the school yard. Schools should also consider policies on eating times with an attempt to maximise the time students spend engaging in physical activity during break time.

With regards to promoting physical activity during break times further research is recommended.

Recommendations for future research are:

- Establish the impact that teachers' encouragement can have on student's engagement in physical activity through direct observation.
- Teachers noted that focus on academics and limited time had an impact on the amount of physical activity that students could engage in. Future studies may examine the academic benefit to incorporating physical activity into the curriculum.

- Studies may explore children's perceptions of physical activity in the school yard. Participants in this study indicated that physical activity appeared to assist in focusing children and increasing their concentration in the classroom. Exploring children's perceptions of wellbeing in schools that successfully incorporate physical activity into the curriculum could provide information that shapes curriculum development initiatives that connect wellbeing to engagement in learning activities.

#### References

- Active Healthy Kids Canada. (2010). *Healthy habits start earlier than you think - Report Card on Physical Activity for Children and Youth*. Toronto: Active Healthy Kids Canada.
- Ainsworth, B. E., Richardson, M., Jacob, D. R., and Leon, A. S. (1993). Gender Differences in Physical Activity. *Women in Sport and Physical Activity Journal*.
- Allafi, A., Al-Haifi, A. R., Al-Fayez, M. A., Al-Athari, B. I., Al-Ajmi, F. A., Al-Hazzaa, H. M., . . . Ahmed, F. (2013). Physical activity, sedentary behaviours and dietary habits among Kuwaiti adolescents: gender differences. *Public Health Nutrition*.



- Andersen, L. B., Harro, M., Sardinha, L. B., Froberg, K., Ekelund, U., Brage, S., and Anderssen, S. A. (2006). Physical activity and clustered cardiovascular risk in children: a cross-sectional study (The European Youth Heart Study). *The Lancet*, 299–304.
- Bailey, S. J., Fairclough, L. A., Savory, S. J., Denton, D., Pang, C. S., Deane, C. S., and Kerr, C. J. (2012). Accelerometry-assessed sedentary behaviour and physical activity levels during the segmented school day in 10-14-year-old children: the HAPPY study. *European Journal of Paediatrics*, 1805-1813.
- Belansky, E. S., Cutforth, N., Delong, E., Ross, C., Scarbro, S., Gilbert, L., . . . Marshall, J. A. (2009). Early impact of the federally mandated local wellness policy on physical activity in rural, low-income elementary schools in Colorado. *Journal of Public Health Policy*, 141-160.
- Blatchford, P., Baines, E., and Pellegrini, A. (2003). The social context of school playground games: Sex and ethnic differences, and changes over time after entry to junior school. *British Journal of Developmental Psychology*, 481-505.
- Boyle, E., Marshall, N., and Robeson, W. (2003). Gender at play. *The American Behavioural Scientist*, 1326-1345.
- British Heart Foundation National Centre. (2013). *Children: Practical strategies for promoting physical activity*. Loughborough: British Heart Foundation National Centre.
- British Heart Foundation. (2012). *Sedentary behaviour*. Loughborough: British Heart Foundation.
- Cardon, G., Labarque, V., Smits, D., and Bourdeaudhuij, I. D. (2009). Promoting physical activity at the pre-school playground: The effects of providing markings and play equipment. *Preventive Medicine*, 335-340.
- Caspersen, C. J., Powell, K. E., and Christenson, G. M. (1985). Physical Activity, Exercise, and Physical Fitness: Definitions and Distinctions for Health-Related Research. *Journal of Public Health Reports*, 126-131.
- Centers for Disease Control and Prevention. (2010). *The Association Between School-Based Physical Activity, Including Physical Education, and Academic Performance*. Atlanta: Department of Health and Human Services.
- Colley, R., Garriguet, D., Janssen, I., Craig, C., Clarke, J., and Tremblay, M. S. (2011). Physical activity of Canadian children and youth: Accelerometer results from the 2007-2009 Canadian Health Measures Survey. *Health Reports*.
- Connolly, P., and McKenzie, T. (1995). Effects of games intervention on the physical activity levels of children at recess. *Researcher Quarterly for exercise and sport*
- Copeland, K. A., Kendeigh, C. A., Saelens, B. E., Kalkwarf, H. J., and Sherman, S. N. (2012). Physical activity in child-care centres: do teachers hold the key to the playground? *Health Education Research*, 81–100.
- Cothrona, D. J., Kulinna, P. H., and Garn, A. C. (2010). Classroom teachers and physical activity integration. *Teaching and Teacher Education*, 1381–1388.
- Currie, C., Zanotti, C., Morgan, A., Currie, D., de Looze, M., Roberts, C., . . . Barnekow, V. (2012). *Social determinants of health and well-being among young people*. Copenhagen: HSBC.
- Davis, M., McKenna, M. L., Lee, S. M., and Dietz, W. H. (2004). *The role of schools in preventing childhood obesity*. North Carolina: National Association of State Boards of Education.

- De Saint-Maurice, P. (2009). Validation of the SOPLAY direct observation tool with an objective accelerometer-based physical activity monitor. *Iowa State University*.
- Dehghan, M., Akhtar-Danesh, N., and Merchant, A. T. (2005). Childhood obesity, prevalence and prevention. *Nutrition Journal*, 4(24).
- Department of Education and Science Primary Branch. (1995). *Time in School*. Dublin: Department of Education and Science.
- Department of Education and Skills. (2015). *Data on Individual Schools*. Athlone: Department of Education and Skills.
- Dishman, R. K., and Buckworth, J. (1996). Increasing physical activity: a quantitative synthesis. *Medicine and Science in Sports and Exercise*, 706-719.
- Dymont, J. E., Bell, A. C., and Lucas, A. J. (2009). The relationship between school ground design and intensity of physical activity. *Children's Geographies*, 261-276.
- Evans, J. (2000). Where do children play? *Children Australia*, 35-40.
- Fairclough, S. J., Ridgers, N. D., and Welk, G. (2012). Correlates of children's moderate and vigorous physical activity during weekdays and weekends. *Journal of physical activity and health*, 129-137.
- Fairclough, S., Stratton, G., and Ridger, N. (2010). Twelve-month effects of a playground intervention on children's morning and lunchtime recess physical activity levels. *Journal of physical activity and health*, 167-175.
- Fees, B., Trost, S., Bopp, M., and Dziewaltowski, D. A. (2009). Physical activity programming in family child care homes: providers' perceptions of practices and barriers. *Journal of Nutrition Education and Behaviour*, 268-273.
- Government of Ireland. (1999). *Primary school curriculum introduction*. Dublin: The stationary house.
- Gravetter, F. J., and Forzano, L. B. (2012). *Research Methods for Behavioral Sciences 4th edition*. Canada: Wadsworth, CENGAGE Learning.
- Growing Up in Ireland. (2011). *National Longitudinal Study of Children: The lives of 9-year olds*. Dublin: Department of Health and Children.
- Hardman, K. (2008). Physical education in schools: a global perspective. *Kinesiology*, 5-28.
- Harrington, D. M., Dowd, K. P., Bourke, A. K., and Donnelly, A. E. (2011). Cross-Sectional analysis of levels and patterns of objectively measured sedentary time in adolescent females. *International Journal of Behavioral Nutrition and Physical Activity*.
- Harrison, A. (2014). 'Elementary school teachers' perceptions of the role of physical activity in schools' (Master's Thesis). University of Tennessee.
- Hilland, T. A., Ridgers, N. D., Stratton, G., and Fairclough, S. J. (2011). Associations between selected demographic, biological, school environmental and physical education based correlates, and adolescent physical activity. *Paediatric Exercise Science*, 61-71.
- HSBC. (2012). *The Irish Health Behavior in School-aged Children: Study 2010*. Galway: National University of Ireland.
- HSBC. (2014, November 10). *Health Behavior in School-aged children (HSBC) Ireland*. Retrieved from NUI Galway: [http://www.nuigalway.ie/hbsc/hbsc\\_ireland\\_background.html](http://www.nuigalway.ie/hbsc/hbsc_ireland_background.html)
- HSE. (2005). *An evaluation on the games and playground markings project*. Midland Area: Health Service Executive.

- Huberty, J., Dinkel, D., Coleman, J., Beighle, A., and Apenteng, B. (2012). The role of schools in children's physical activity participation: staff perceptions. *Health education research*, 986-995.
- Humphreys, A., and Smith, P. (1987). Rough and Tumble, friendship and dominance in school children: Evidence for continuity and change with age. *Child Development*, 210-212.
- Hyndman, B., Telford, A., Finch, C. F., and Benson, A. C. (2012). Moving Physical Activity Beyond the School Classroom: A Socioecological Insight for Teachers of the facilitators and barriers to students' non-curricular physical activity. *Australian Journal of Teacher Education*.
- Irish Universities Nutrition Alliance. (2006). *National Children's Food Survey*. Retrieved from Irish Universities Nutrition Alliance: <http://www.iuna.net/>
- Jago, R., and Baranowski, T. (2004). Non-curricular approaches for increasing physical activity in youth: A review. *Preventive Medicine*, 157-163.
- Janssen, I., and LeBlanc, A. G. (2010). Review Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity*, 1-16.
- Janssen, I., and LeBlanc, A. G. (2010). Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity*.
- Jenkinson, K. A., and Benson, A. C. (2010). Barriers to Providing Physical Education and Physical Activity in Victorian State Secondary Schools. *Australian Journal of Teacher Education*.
- Jennings-Aburto, N., Nava, F., Bonvecchio, A., Safdie, M., González-Casanova, I., Gust, T., and Rivera, J. (2009). Physical activity during the school day in public primary schools in Mexico City. *Sco Flo Public Health*, 141-147.
- Kelly, R., Ballard, K., Lee, G., and Ammerman, A. (2009). Implementation of a School-Based State Policy to Increase Physical Activity. *Journal of School Health*, 231-238.
- Kinch, A., and Schweinhart, L. J. (2012). *Achieving high-quality child care: How ten programs deliver excellence parents can afford*. Washington: National Association for the Education of Young Children.
- Kriemler, S., Meyer, U., Martin, E., van Sluijs, E. M., Andersen, L. B., and Martin, B. W. (2011). Effect of school-based interventions on physical activity and fitness in children and adolescents: A review of reviews and systematic update. *British Journal of Sports Medicine*, 923-930.
- Lane, A., Harrison, M., and Murphy, N. (2014). Screen Time Increases Risk of Overweight and Obesity in Active and Inactive 9-Year-Old Irish Children: A Cross Sectional Analysis. *Journal of Physical Activity and Health*, 985-991.
- Lever, J. (1978). Sex differences in the complexity of children's play and games. *American Sociological Review*, 471-483.
- Lindquist, R. (1991). Don't forget the pilot work! *Heart Lung*, 91-92.
- Lopez-Dicastillo, O., Grande, G., and Callery, P. (2010). Parents' contrasting views on diet versus activity of children: Implications for health promotion and obesity prevention. *Patient Education and Counselling*, 117-123.

- Marron, S. (2008). 'An analysis of active play in Irish primary schools.' (Master's Thesis) Waterford Institute of Technology.
- McDevitt, T. M., Ormrod, J. E., Cupit, G., Chandler, M., and Aloa, V. (2012). *Child Development and Education*. Child Development and Education: Pearson.
- McKenzie, T. (2002). Observational measures of children's physical activity. *Journal of School Health*, 224-228.
- McKenzie, T. L. (2006). *SOPLAY System for observing Play and Leisure Activity in Youth*. Retrieved on December 3, 2015 from [http://activelivingresearch.org/sites/default/files/SOPLAY\\_Protocols.pdf](http://activelivingresearch.org/sites/default/files/SOPLAY_Protocols.pdf)
- McKenzie, T. L., LaMaster, K. J., Sallis, J. F., and Marshall, S. J. (1999). Classroom teachers' leisure physical activity and their conduct of physical education. *Journal of Teaching in Physical Education*, 126-132.
- McKenzie, T. L., Marshall, S. J., Sallis, J. F., and Conway, T. L. (2000). Leisure-time physical activity in school environments: An observational study using SOPLAY. *Preventive Medicine*, 70-77.
- McKenzie, T., and Kahan, D. (2008). Physical activity, public health and elementary schools. *The Elementary School Journal*, 171-180.
- McKenzie, T., Marshall, M., Sallis, J., and Conway, T. (2000). Leisure time physical activity in school environments. An observational study using SOPLAY. *Preventative Medicine*, 70-77.
- McLain, Z. D. (2009). Enjoyment and Physical Activity Levels With and Without Disabilities in Physical Education. *Oregon State University*.
- Mullan, E., and Stratton, G. (2005). The effect of multicolor playground markings on children's physical activity levels during recess. *Preventive Medicine*, 41, 828-833.
- Mulryan-Kyne, C. (2014). The school playground experience: opportunities and challenges for children and school staff. *Educational Studies*, 377-395.
- Murray, D., and Millar, N. (2005). *Physical activity in primary schools-Facilities and practices: Our children, their future, why weight?* Health Service Executive.
- Paechter, C., and Clark, S. (2007). Learning gender in primary school playgrounds: Findings from the Tomboy Identities Study. *Pedagogy, Culture and Society*, 317-331.
- Panter, J., Jones, A., Van Sluijs, E., and Griffin, S. (2011). The influence of distance to school on the associations between active commuting and physical activity. *Paediatric exercise science Journal*, 72-86.
- Paquette, L., Ocumpaugh, J., and Baker, R. S. (2007). Simulating Multi-Subject Momentary Time Sampling. *Proceedings of the 8th International Conference on Educational Data Mining*.
- Parrish, A., Yeatman, H., Iverson, D., and Russell, K. (2010). Using interviews and peer pairs to better understand how school environments affect young children's playground physical activity levels: a qualitative study. *Health Education Research*, 269-280.
- Pate, R. R., O'Neill, J. R., and Lobelo, F. (2008). The evolving definition of 'sedentary'. *Exercise and Sport Science reviews*, 666-675.
- Pellegrini, A. D. (2005). *Recess: Its role in development and education*. Mahwah: Erlbaum.

- Penedo, F. J., and Dahn, J. R. (2005). Exercise and well-being: a review of mental and physical health benefits associated with physical activity. *Behavioural medicine*, 189-193.
- Perez, A., Hoelscher, D. M., Springer, A. E., Brown, H. S., Kelder, S. H., Barroso, C. S., and Castrucci, B. C. (2011). Physical Activity, Watching Television, and the Risk of Obesity in Students, Texas, 2004-2005. *Preventing Chronic Disease*.
- Renold, E. (2006). 'All They've Got on Their Brains is Football.' Sport, Masculinity and the Gendered Practices of Playground Relations. *Sport, Education and Society*, 5-23.
- Riddoch, C. J., and Boreham, C. A. (1995). The health-related physical activity of children. *Journal of Sports Medicine*, 86-102.
- Ridgers, N. D., Stratton, G., Fairclough, S. J., and Twisk, J. W. (2007). Long-term effects of a playground markings and physical structures on children's recess physical activity levels. *Preventive Medicine*, 393-397.
- Sallis, J. F. (1993). Epidemiology of physical activity and fitness in children and adolescents. *Critical Reviews in Food Science and Nutrition*, 403-408.
- Sallis, J. F., McKenzie, T. L., Alcaraz, J. E., Kolody, B., Faucette, N., and Hovell, M. (1997). The Effects of a 2-Year Physical Education Program (SPARK) on Physical Activity and Fitness in Elementary School Students. *American Journal of Public Health*, 1328-1344.
- Sallis, J. F., Prochaska, J. J., and Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Journal of the American College of Sports and Medicine*, 963-975.
- Sallis, J., Bauman, A., and Pratt, M. (1998). Environmental and policy interventions to promote physical activity. *American Journal of Preventive Medicine*, 379-379.
- Sallis, J., Conway, T., Prochaska, J., McKenzie, T., Marshall, M., and Brown, M. (2001). The association of school environment with youth physical activity. *International Journal of Behavioral Nutrition and Physical Activity*.
- Salmon, J., Tremblay, M. S., Marshall, S. J., and Hume, C. (2011). Health risks, correlates and interventions to reduce sedentary behavior in young people. *American Journal of Preventive Medicine*, 197-206.
- Saunders, M., Lewis, P., and Thornhill, A. (2007). *Research Methods for Business Students (4th Edition)*. Essex.
- Shackell, A., Butler, N., Doyle, P., and Ball, D. (2008). *Design for Play: A guide to creating successful play spaces*. Nottingham: Department for children, schools and families.
- Sleep, M., Warburton, P., and Waring, M. (2000). 'Couch Potato Kids: Lazy Layabouts – The Role of Primary Schools in Relation to Physical Activity among Children in Primary Schools'. *Primary School Physical Education: Research into Practice*, 31–50.
- Sothorn, M. S., Loftin, M., Suskind, R. M., Udall, J. N., and Blecker, U. (1999). The health benefits of physical activity in children and adolescents: implications for chronic disease prevention. *European Journal of Paediatrics*, 271-274.
- Sothorn, M. S., Loftin, M., Suskind, R. M., Udall, J. N., and Blecker, U. (1999). The health benefits of physical activity in children and adolescents: implications for chronic disease prevention. *European Journal of Pediatrics*, 271-274.

- Steinbeck, K. (2001). The importance of physical activity in the prevention of overweight and obesity in childhood: a review and an opinion. *Obesity Reviews*, 117-130.
- Stratton, G., and Leonard, J. (2002). The effects of playground markings on the energy expenditure of 5-7 year old school children. *Paediatric Exercise Science*, 170-180.
- Strong, W. B., Malina, R. M., Blimkie, C. J., Daniels, S. R., Dishman, R. K., Gutin, B., . . . Trudeau, F. (2005). Evidence Based Physical Activity for School-age Youth. *The Journal of Pediatrics*, 732-737.
- The Department of Health and Children. (2009). *The National Guidelines on Physical Activity for Ireland*. Dublin: Health Service Executive.
- Tomporowski, P. D., McCullick, B., Pendleton, D. M., and Pesce, C. (2015). Exercise and children's cognition: The role of exercise characteristics and a place for metacognition. *Journal of Sport and Health Science*, 47-55.
- Treuth, M. S., Catellier, D. J., Schmitz, K. H., Pate, R. R., Elder, J. P., McMurray, R. G., . . . Webber, L. (2007). Weekend and weekday patterns of physical activity in overweight and normal-weight adolescent girls. *Obesity (Silver Spring)*, 1782-1788.
- Trost, S. G., and Pate, R. R. (2001). Physical activity in children and youth; current issues, future directions. *Exercise and Sport Sciences Reviews*, 350-355.
- Trost, S. G., Kerr, L. M., and Pate, R. R. (2001). *Physical activity and determinants of physical activity in obese and non-obese children*. Journal of the International Association for the Study of Obesity, 822-829.
- Trost, S. G., Pate, R. R., Freedson, P. S., Taylor, W. C., Dowda, M., and Sirard, J. (2002). Age and gender differences in objectively measured physical activity in youth. *Medicine and Science in Sports Exercise*, 350-355.
- Van Mechelen, W., Twisk, J., Post, B., Snel, J., and Kemper, H. (2000). Physical activity of young people. The Amsterdam longitudinal growth and health study. *Medicine and Science in Sports and Exercise*, 1610-1616.
- Vašičková, J., Groffik, D., Frömel, K., Chmelík, F., and Wasowicz, W. (2013). Determining gender differences in adolescent physical activity levels using IPAQ long form and pedometers. *Annals of Agricultural and Environmental Medicine*, 749-755.
- Verstraete, S. J., Cardon, G. M., De Clercq, D. L., and De Bourdeaudhuij, I. M. (2006). Increasing children's physical activity levels during recess periods in elementary schools: the effects of providing game equipment. *The European Journal of Public Health*, 415-419.
- Warburton, D. E., Nicol, C. W., and Bredin, S. S. (2006). Health benefits of physical activity: the evidence. *Canadian Medical Association Journal*.
- Waring, M., Warburton, P., and Coy, M. (2007). Observation of Children's Physical Activity levels in primary school: Is the school an ideal setting for meeting government activity targets? *European Physical Education Review*, 25-40.
- WHO. (2008). *School Policy Framework: Implementation of the WHO global strategy on diet physical activity and health*. Geneva: World Health Organisation.
- Willenberg, L. J., Ashbolt, R., Holland, D., Gibbs, L., MacDougall, C., Garrard, J., . . . Waters, E. (2010). Increasing school playground physical activity: A mixed methods study combining environmental measures and children's perspectives. *Journal of Science and Medicine in Sport*, 210-216.

- Williams, K. Williams C. (2011). *Five key ingredients for improving student motivation*. Research in Higher Education Journal. 1-23.
- Wood, L., and Martin, K. (2010). *What makes a good play area for children?* Western Australia: Centre for the Built Environment and Health, University of Western Australia.
- Woods, C. B., Tannehill, D., Quinlan, A., Moyna, N., and Walsh, J. (2010). *The Children's Sport Participation and Physical Activity Study (CSPPA)*. Dublin: The Irish Sports Council.
- Woods, C. B., Tannehill, D., Quinlan, A., Moyna, N., and Walsh, J. (2010). *Children's Sport Participation and Physical Activity Study (CSPPA)*. Dublin: The Irish Sports Council.
- Woods, C. B., Walsh, J., and Tannehill, D. (2011). *The Children's Sport Participation and Physical Activity Study (CSPPA) – Volunteer Study*. Dublin: University and The Irish Sports Council.
- Zimmerman, S., Kramer, K., and Trowbridge, M. J. (2013). Overcoming Legal Liability Concerns for School-Based Physical Activity Promotion. *American Journal of Public Health*, 1962–1967.

# *Appendices*



## Appendix A

### School Recruitment Letter



Waterford Institute of Technology  
INSTITIÚID TEICNEOLAÍOCHTA PHORT LAIRGE

Dear Principal,

I am currently competing an undergraduate degree in Health Promotion Waterford Institute of Technology. I am currently recruiting participants from both boys' and girls' primary schools in Waterford City to take part in a research study for my final year thesis.

The research will consist of the following:

1. An observation of physical activity levels during little break and lunch times. This will be non-obstructive and non-intrusive.
2. A focus group with teachers' opinions of student's engagement in physical activity during break times.

I would greatly appreciate your participation in this study. I have attempted to outline below some answers to further questions that you may have.

#### **What is the research for?**

To analyse physical activity levels of children during break time, compare physical activity levels between boys and girls and gain an insight into teachers' opinions on the importance of physical activity in the yard.

#### **When will the research take place?**

I hope to conduct this research at the end of January/ start of February.

#### **How will the information be used?**

Waterford Institute of Technology will protect all information about the students and teachers. Their identity or personal information will not be revealed or published. The study findings will be presented in an Undergraduate Thesis, academic publications, conference papers and other scientific publications.

**What do I need to do to be involved?**

You need to consent to the research being conducted in your school, the school do not need to do anything else for this study. I will have consent letters for both parents and teachers prior to beginning the observation and focus group.

Thank you for taking the time to consider this research proposal, I look forward to meeting with you soon.

Yours Sincerely,

Tara Power

Mobile: 086-0853229

Email: tara.power19@gmail.com

## Appendix B

### SOPLAY Recording Sheet

School ID: _____			
Date: ____/____/____			
D8	D9	D10	D11

## SOPLAY

(System for Observing Play and Leisure Activity in Youth)

Obs. ID #: \_\_\_\_\_ Reliability: 0. No 1. Yes Temp: \_\_\_\_\_ F Period: 1. BS 2. L1s1 L1s2 3. L2s1 L2s2 4. L3s1 L3s2 5. AS1 6. AS2 7. AS3

START TIME	AREA	CONDITION					GIRLS				BOYS			
		A	U	S	O	E	S	W	V	Act.	S	W	V	Act.
____:____	1	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	____	____	____	____	____	____	____	____
____:____	2	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	____	____	____	____	____	____	____	____
____:____	3	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	____	____	____	____	____	____	____	____
____:____	4	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	____	____	____	____	____	____	____	____
____:____	5	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	____	____	____	____	____	____	____	____
____:____	6	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	____	____	____	____	____	____	____	____
____:____	7	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	____	____	____	____	____	____	____	____
____:____	8	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	0.N 1.Y	____	____	____	____	____	____	____	____

Activity Codes: 0=No identifiable activity 1=Aerobics 2=Baseball/Softball 3=Basketball 4=Dance 5=Football 6=Gymnastics 7=Martial Arts  
8=Racquet sports 9=Soccer 10=Swimming 11=Volleyball 12=Weight Training 13=Other playground games 14=None of the above

SOPLAY Recording Form 1/10/95 SHL

## **Appendix C**

### **Topic Guide**

- 1) How many times per day/week do children engage in physical activity?
  - How long do these bouts last?
- 2) In your opinion, what is the role of physical activity or active play in school?
  - How important do you think it is for the children?
- 3) What types of physical activity do students engage in during break times?
  - Tell me about the games students play during break?
- 4) What do you think are the benefits of students engaging in physical activity during break times?  
(Probe: a learning tool, exposure to nature, calming tool, health promotion, preventing illness)
- 5) What do you think some of the possible disadvantages of being physically active at break times?  
(Probe: getting sick, less control over the children or perhaps supervision)
- 6) What situations keep children from using the playground?
  - What types of weather keep children from going outside or using your playground?
- 7) What type of equipment are students provided with (if any) during break times?  
(Probe: positive and negatives of providing equipment)
- 8) Can you think of any policies in the yard that may hinder the amount of physical activity that students can engage in?  
(Probe: opinions on no running, boundaries)
- 9) What actions do you think could be taken to encourage students to engage in more physical activity in the yard?
  - When supervising do you encourage students to to be physically active?

10) How would you feel about running activities during break times to encourage students to be more physically active?

## **Appendix D**

### **Information letters and consent forms**



Waterford Institute of Technology  
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

### **Information about physical activity observation**

Dear parent/guardian,

I am currently competing an undergraduate degree in Health Promotion at Waterford Institute of Technology. I am currently recruiting participants from both boys' and girls' primary schools in Waterford City to take part in a research study for my final year thesis.

The research itself will consist of an observation of physical activity levels during little break and lunch times.

I would greatly appreciate your child's participation in this study. I have attempted to outline below some answers to further questions that you may have.

**What is the research for?**

To record the physical activity levels of children during break time and compare physical activity levels between boys and girls.

**What will happen if I allow my child participate in this study?**

The researcher will observe the physical activity levels students during break times. There will be **no interaction** with your child by the researcher during this study.

**How will my child's information be used?**

Waterford Institute of Technology will protect all information about your child. Their identity or personal information will not be revealed or published. The study findings will be presented in an Undergraduate Thesis and may also be presented in academic publications, conference papers and other scientific publications as appropriate.

**What do I need to do?**

There are two options available to you and your child.

**Option 1**

If you are happy for your child to be involved in this research you **do not have to do anything**.

Please note participation in this research is voluntary, participants are free to withdraw from this study at any time without providing a reason and without consequence.

---

**Option 2**

If you **do not wish for your child** to participate in this study, please sign below and return it to the school.

I **do not wish** for my child to participate in this study.

Students name: \_\_\_\_\_

Your name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

**Thank you for taking the time to read this and please don't hesitate to contact me if you have any further questions.**

Tara Power

Number: 086-0853229

Email: [tara.power19@gmail.com](mailto:tara.power19@gmail.com)

## **Appendix E**

### **Interviews**



Waterford Institute of Technology  
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

### **Informed Consent for Interviews**

You are being invited to take part in this research study on physical activity levels of students during break times. Your participation in this study will involve taking part in a focus group on teachers' opinions of student's engagement in physical activity during break times.

Waterford Institute of Technology will protect all information about you and your part in this study. Your identity or personal information will not be revealed or published or used in future studies. The study findings will be presented in an Undergraduate Thesis and may also be

presented in academic publications, conference papers and other scientific publications as appropriate.

Please note participation in this research is voluntary, you are free to withdraw from this study at any time without providing a reason and without consequence.

If you are happy to take part in this study, please fill out the details below:

I have read and understood all the information provided and I consent to take part in this research study

Signature of participant: \_\_\_\_\_

Signature of researcher: \_\_\_\_\_

Date: \_\_\_\_\_

#### **Appendix F**

##### **An example of the counter used for SOPLAY**



Counter used in SOPLAY data collection.



<http://www.countersales.co.uk/products/tally-counters/tally-counters-abs-multi-bank-tally-counter/hand-held-three-bank-yellow-tally-counter.html>

Counter Sales UK.





