Perceptions of physical activity in preschool-aged children in urban and rural samples in South Africa

Matthew Stone / STNMAT005

A dissertation submitted in fulfillment of requirements for the award of the degree of Master of Social Science

Faculty of the Humanities

University of Cape Town

2016

COMPULSORY DECLARATION

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Signature:_____ Date:_____

1. ABSTRACT

Physical activity has a well-established and beneficial role in physical, mental and social health. Early childhood is widely acknowledged as a formative and crucial stage of human development, both biologically and habitually. In South Africa, particularly, the direct health benefits of physical activity in this age group are under-emphasised in the policies and discourse around public health. There is evidence, however, that interventions in this age group can increase physical activity and decrease sedentary behaviour. In order to guide the development of such a programme, focus groups were conducted with parents and teachers across a range of socio-economic strata in various rural and urban communities in South Africa. These focus groups explored the perceptions surrounding physical activity, gross motor skills development and sedentary behaviour in children as well as identifying perceived barriers to physical activity. Physical activity was considered important for childhood development. Participants believed their children were physically active enough, although participants in higher socio-economic areas were concerned about the lure of technological devices. The perceived barriers in low socio-economic areas were predominantly the lack of safe spaces to play and resources, particularly human resources. It is recommended that training-focused programmes for teachers and activity based workshops are developed to promote physical activity taking into account these perceptions and barriers.

2. INTRODUCTION

Early childhood is widely acknowledged as a crucial phase in human development. Young children are not only still developing physically, but mentally and habitually (Matusik & Malecka-Tendera, 2011; Blythe, 2011). It is also well-established that increasing physical activity and reducing sedentary behaviour can be a powerful protective factor against a variety of physical (Warburton, Nicol & Bredin, 2006; Lee *et al*, 2012) and mental health issues (Paluski & Schwenk, 2000). This ranges from its role as a protective factor against overweight and obesity (Lau *et al*, 2007), to its importance in the development of gross motor skills (Colella & Morano, 2011; Wrotniak, Epstein, Dorn, Jones & Kondilisc, 2006; Graf *et al*, 2004; Williams et al, 2008) and an increasingly emphasised role in mental and social health (Blythe, 2011; Piek, Dawson, Smith & Gasson, 2008). There is little argument that increasing the physical activity and reducing the sedentary behaviour of the population will be a step forward for public health. One of the most effective and efficient times to effect such a change in physical and sedentary behaviour is during early childhood, before body type has been established or lifelong habits have been formed. (Engle et al, 2011; Walker *et al*, 2011). However, data suggest that the population is becoming less physically active (Mayosi *et al*, 2009).

In order to address and reverse these negative trends in South Africa, a cross-departmental team from the University of Cape Town intends to develop a programme focused on promoting physical activity in early childhood in urban and rural South African settings. To guide this programme's creation, both qualitative and quantitative research was conducted in order to assess the current state of physical activity and sedentary behaviour amongst preschool children in South Africa, and determine the best way to effect the desired change. This research was performed in multiple preschools and schools in the rural community of Agincourt in Mpumalanga and across the socio-economic spectrum in Cape Town in the Western Cape.

This dissertation contributes a qualitative element to this cross-departmental research, aimed at gaining insight into the contextual factors that surround physical activity and physically active play in these communities. The programme is intended to be a collaborative effort between the programme creators and the community itself. A programme that is imposed upon a community without the input of its members is more likely to fail than one that they are involved in, both in creation and implementation (Nixon et al, 2012; Fixen, Naoom, Blasé, Friedman & Wallace, 2005; Golley, Hendrie, Slater, & Corsini, 2010; O'Dwyer, Fairclough, Knowles, & Stratton, 2012). In this way, not only does this qualitative research provide the researchers with valuable insights, but also serves to introduce the community to the research itself. It sets a more positive stage for the intervention.

The research presented in this dissertation forms part of another study that was undertaken in conjunction and concurrently with it. The other study represents the quantitative element, focused on assessing the physical activity and sedentary behaviour of children in the same communities (as this study) through

accelerometry[1] (as an objective measure) and through observation. Gross motor skills were also assessed. These data will then be analysed to determine levels of physical activity and sedentary behaviour. The analysis of both the qualitative and quantitative data together will guide the eventual development of a programme aimed at promoting regular physical activity amongst young children in South Africa, assuming that the data support the development of such a programme.

The programme needs to take into account the current barriers to physical activity. Some of these may be entirely practical solutions, but others may not be as simple, obvious or even tangible as they seem. In a country that places heavy emphasis on developing numeracy and literacy skills in this age group (Department of Basic Education, 2013), the importance of physical activity may not be considered a priority in certain communities. Perhaps it is not the access to resources in poorer areas that is the problem, but rather the knowledge and training to use them. Perhaps playtime is being viewed as time wasted, rather than as a valuable learning experience or important physical activity. The research team felt that it needed to understand exactly what barriers it faces, or risk building the wrong solution to a misunderstood problem. Understanding the context has been shown as a significant factor in the success of physical activity interventions in preschool-aged children (Golley *et al*, 2010).

Thus the research question for this dissertation is:

What are the perceptions and beliefs of stakeholders within the community surrounding physical activity, physically active play, gross motor skill development and sedentary behaviour in preschool-aged children across South Africa, including perceived barriers and revalvent practical conterns?

[1] Accelerometry is the use of accelerometers to measure physical activity. They are small strap-on packs that you attach to a participant. The accelerometer then measures the amount and level of physical activity that the participant engages in.

3. LITERATURE REVIEW

3.1. THE IMPORTANCE OF PHYSICAL ACTIVITY

Widespread research has indicated that regular physical activity is a powerful protective factor against a variety of physical, emotional and mental problems (Lee *et al*, 2012). Physical inactivity, on the other hand, has recently been implicated as the fourth leading cause of death worldwide (Kohl *et al*, 2012). In Healthy People (2010), the United States Department of Health and Human Services declared physical activity to be one of the most telling indicators of health as a whole. The medical attitude towards physical activity is perhaps best summed up by a phrase in a review in the Canadian Medical Association Journal: "There appears to be a linear relation between physical activity and health status, such that a further increase in physical activity and fitness will lead to additional improvements in health status." (Warburton *et al*, 2006, pp 1).

Within South Africa, physical inactivity has been identified as one of the most significant risk factors attributing to the growing burden of non-communicable diseases (Mayosi *et al*, 2009). Thus, a focus on combating sedentary behaviour and promoting physical activity is considered an essential and primary part of any strategy aimed at promoting health outside of preventing communicable diseases. (Kohl *et al*, 2012).

More specifically than its general role in health, physical activity has been shown to have distinct positive effects in preschool-aged children. These include effects on physical (Williams *et al*, 2008), mental and social development during this period of life, as well as creating habits that track across the lifespan (Alhassan *et al*, 2012).

3.1.1. OBESITY

Perhaps the most obvious and well-known benefit of physical activity is its role in the prevention of overweight and obesity (Lau *et al*, 2007). Regular physical activity in early childhood has been found to be a protective factor against childhood obesity in multiple studies (Deshmukh-Taskar *et al*, 2006). This effect in itself is of great importance to physical health. The health risks associated with obesity are numerous and potentially lethal (Haslam & James, 2005). Obesity is fast becoming a worldwide epidemic (James, 2004; Kohl et al, 2012) with rates rapidly increasing over the last few decades (World Health Organisation, 2013). With a steady decrease in the need for physical activity (Pratt *et al*, 2012) and the growing prevalence, affordability and easy availability of high-caloric food, obesity is fast becoming one of the most catastrophic health problems worldwide and across the lifespan. The Global Burden of Disease Study, released by the Lancet (2012), illustrated that for the first time in recorded history, obesity is likely the cause of more deaths worldwide than malnutrition and starvation. The same study highlights that physical inactivity plays large role in this growing rate of obesity. Once considered a problem faced mainly by the developed world, it is becoming increasingly predominant in impoverished areas and developing nations (James, 2012; World Health Organisation, 2013).

This increase in overweight and obesity rates is pronounced in preschool-aged children (Cole, Bellizzi, Flegal & Dietz, 2000; Craig, Reilly & Bland, 2012). In South Africa, a national study into obesity (Armstrong, Lambert, Sharwood & Lambert, 2006) revealed levels of childhood obesity similar to those in developed countries, like the USA, 10 years prior. The SANHANES-1 study found that amongst South African preschool-aged children, 16.5% of girls were overweight and 7.1% were obese, and boys were 11.5% overweight and 4.7% obese (Shisana *et al*, 2013). Physical activity's protective factor against the development of overweight and obesity has been shown to be influential in preschool-aged children (Metallinos-Katsaras Freedson, Fulton & Sherry, 2007; Martinez-Gomez Eisenmann, Tucker, Heelan & Welk, 2011; Timmons *et al*, 2012) as well as preventing these problems further on in the lifespan (Moore *et al*, 2003).

This illustrates that overweight and obesity in preschool-aged children are not exclusively the problems of the developed world, nor only in middle to upper socio-economic groups. Although obesity rates are higher in developed countries, the obesity rates in developing countries are catching up (De Onis, Blossner & Borghi, 2013). Evidence from developed nations shows that the children of lower socio-economic families are at a slightly elevated risk of childhood obesity (Wang & Lobstein, 2006). Most developing countries have higher obesity rates in the higher socio-economic strata (Ebbeling, Pawlak & Ludwig, 2002), but there is a shift of obesity levels from higher socio-economic groups to lower ones, which tends to coincide with a nation's economic development (Wang & Lobstein, 2006).

Obesity in early childhood can cause a wide range of physical health problems, both later in life and during childhood itself (Craigie, Lake, Kelly, Adamson & Mathers, 2011). Physical issues include hypertension, dyslipidaemia, chronic inflammation, increased blood clotting tendency, endothelial dysfunction, and hyperinsulinaemia. Although they usually present later in life, these cardiovascular disease risk factors, known as collectively as insulin resistance syndrome, have been found in children as young as 5 years old (Ebbeling, Pawlak & Ludwig, 2002; Reilly *et al*, 2003). Research also highlights that there are significant psychological and social disbenefits of childhood obesity. Obese children are stereotyped as unhealthy, academically unsuccessful, socially inept, unhygienic, and lazy, both by other children and even by health-care providers (Ebbeling, *et al*, 2002). Children as young as age five have been shown to have a negative self-image based on being overweight (Ebbeling *et al*, 2002).

Additionally, overweight or obesity in early childhood increases the risk of adult obesity and thus the lifelong health problems associated with it (Deshmukh-Taskar *et al*, 2006; Singh, Mulder, Twisk, Van Mechelen & Chinapaw, 2008; Reilly, 2009; Craigie *et al*, 2011; Herman, Craig, Gauvin & Katzmarzyk, 2009; Ward, Vaughn & Story, 2013). It is not entirely clear how much of this is due to programming, the building of habits and lifestyle choices that cause obesity across the lifespan, and how much is due to biologically-based changes that occur at young ages because of an early positive energy balance that causes obesity over and above the programming (Davey Smith, 2007). The possibility has even been raised that obesity is "hard-wired" by the time of the "adiposity rebound", the period when Body Mass Index (BMI)

reaches its nadir during the preschool years (Reilly, 2009), which is affected strongly by obesity during this period. What seems most likely is that these factors go hand in hand. Overweight is achieved at a young age and remains throughout childhood, reinforcing the programming of obesogenic lifestyle and habits. The relationship between obesity and physical activity appears to be bidirectional. Obesity itself may promote obesogenic habits, such as its role in discouraging leisure time physical activity. (Atlantis, Barnes and Ball, 2008).

3.1.2. The double burden of under- and over-nutrition in South Africa

South Africa faces what is referred to as the double burden of under-nutrition and over-nutrition; which is the prevalence of both underweight and undernourished children, sometimes accompanied by stunting,[2] in the same communities where overweight and obesity are an issue. This double burden is particularly prevalent in children, with around a quarter of South African children between the ages of zero to three years old showing stunted growth (26.9% in boys and 25.9% in girls) (Shisana *et al*, 2013). It is particularly prevalent in rural areas, where it was found that underweight children or stunted children often had overweight mothers (Steyn, Labadarios, Maunder, Nel & Lombard, 2005).

Stunting during early childhood is associated with a range of difficulties both during childhood and in later life (Walker *et al*, 2007), including serving as a barrier to physical activity (Stodden *et al*, 2008). It has also been suggested that children who suffered stunting between one to three years old were more likely to become overweight in the future, due to poor diet choices (Steyn *et al*, 2005) as well as decreasing height over the lifespan (Stein *et al*, 2010). In adulthood, being shorter has been linked to an increased chance of overweight and obesity (Bosy-Westphal, Plachta-Danielzik, Dorhofer &. Muller 2009).

The high prevalence of under-nutrition and physical stunting in rural South African areas, which are often food insecure environments (Steyn *et al*, 2005) indicates an energy deficit in the children. There is a danger in recommending increased physical activity, which expends energy, to children who do not receive sufficient nutrition, and thus energy, to grow normally. The paradox is that habitual physical activity will serve as a protective behaviour against overweight and obesity, which they are more prone to later in life.

3.1.3. Physical activity and gross motor skill development

There are numerous physical benefits to a physically active lifestyle in children that are well-established by literature, over and above its effect in reducing overweight and obesity. Physically active play has been found to be a primary contributing behaviour to the development of gross motor skills in preschool-aged children (Colella & Morano, 2011; Wrotniak *et al*, 2006; Graf *et al*, 2004; Williams *et al*, 2008; Timmons *et al*, 2012) and older children (Haga, 2007). In return, gross motor skill development has been shown to further increase the amount of physically active play in children (Stodden *et al*, 2008; Wrotniak *et al*,

[2] Stunting refers to children who are significantly smaller than they should be for their age, defined by being more than two standard deviations shorter than the median height for their age. This median is based on the WHO global database on child growth and malnutrition (2006).

2006). This reciprocal relationship is seen as the foundation for the tracking of both physical activity and gross motor skills over the lifespan, and consequently the associated health benefits (Stodden *et al*, 2008). The correlation between physical activity and gross motors skill is well-established (Williams *et al*, 2008), although there is debate over the exact causal mechanisms behind this.

Athletic ability and sports skills are predominantly considered to rely on the development of gross motor skills and "physical literacy" through physical activity. This is commonly understood to be of vital importance in childhood, as posited by the Long-Term Athletic Development (LTAD) model (Ford *et al*, 2011). LTAD's claim that there are "windows of opportunities" when people are more sensitive to physical development, namely certain periods in childhood, have been challenged for being purely theoretical and unfounded in empirical evidence. (Ford *et al*, 2011). Despite this, newer research still emphasises the importance of development in early childhood (Lloyd & Oliver, 2012). Lloyd and Oliver's (2012) proposed Youth Physical Development model, which aimed to improve on the long-standing LTAD model, emphasised that strength and fine motor skills training are the most important areas to focus on in both male and female children in early childhood (two to four years of age).

Timmons, Naylor and Pfeiffer (2007) presented evidence that increased physical activity in preschool-aged children is associated with improved physical health status, but mentioned that direct dose-related relationships between physical activity and specific health outcomes in preschool children have not been shown to exist.

Although there is debate and research over the extent and exact nature of physical activity's relationship to the development of gross motor skills and its importance in athletic ability later in life, there is little argument about physical activity's role as a powerful positive factor in physical health overall.

3.1.4. COGNITIVE DEVELOPMENT

Although not as self-evident as its role in physical development, various studies have highlighted the effect of physical activity on cognitive development and mental health. As Blythe (2011, pp 18) states, "even thought and perception are an internalised simulation of action." We think in vision, sound, movement and language. It stands to reason that developing internal cognitive abilities might be tied to the development of motor abilities, and that physically active play may be vital for cognitive learning process, particularly in young children.

This idea has its foundation in neurodevelopment. The frontal lobe, the region of the cerebral cortex that is predominantly responsible for our "higher order" functioning like planning and problem solving, is also the last area to mature (Blythe, 2011). The first region of the cerebral cortex to mature, on the other hand, is the motor area, followed by the sensory area (Blythe, 2011). These are areas heavily associated with physical activity. Early childhood is a period when the brain goes through rapid corticalisation (the development of neural connections of these cortical areas), partly through conscious, controlled and coordinated movement

(Blythe, 2011). In this way, physically active play performs a strong role in brain development during early childhood. Research has shown that the gross motor skill developed in early childhood can significantly predict later cognitive performance (Piek *et al*, 2008).

In order to improve school readiness, young children need to have the opportunity for physically active play and movement in order to develop the correct posture, ability to sit still, stand up, read a line of text without skipping and other physical actions that are required by a school setting (Blythe, 2011). In the South African context, where early education is a major focus, physical activity and the development of motor skills in early childhood are significant for school readiness, specifically in mediating disadvantages in lower socio-economic areas.

In later childhood, regular physically active play has also been shown to have positive effects on academic results (Strong *et al*, 2005; Rasberry *et al*, 2011), as well as various positive effects on cognition (Hillman, Erickson & Kramer, 2008; Bailey, 2006). Meta-analyses have not identified any negative academic or cognitive effects linked to regular physical activity (Rasberry *et al*, 2011; Carson *et al*, 2015).

3.1.5. SOCIAL AND SELF-IMAGE DEVELOPMENT

Physically active play can often serve as a catalyst for the development of social skills (Blythe, 2011). This becomes especially important during school years, when sport, especially amongst boys in South Africa, has a huge part to play in the development of social hierarchy (Deevia, 2008). A lack of opportunity to develop gross motor skills further exacerbates the gap in sports participation between children from lower and higher socio-economic backgrounds.

Piek *et al* (2010) found that a lack of gross motor skills in children between four months and four years of age can predict anxiety and depression during school years, although this relationship is not necessarily causal. Physical activity has similarly been found to have a protective influence against depressive and anxiety disorders. (Paluska & Schwenk, 2000; Fox, 1999). It has been suggested that well-developed motor skill is strongly linked to self-image and self-worth in children, which in turn improves performance in other areas, including academics and social skills (Piek, Baynem & Barrett, 2006). This research, however, was focused on individual differences between children, with the aim of helping children with low motor skills in developed countries. Raising the mean level of motor skills may not increase mean levels of self-image and self-worth.

As a whole, however, these findings lend support to the conceptualisation of physical activity as a holistically healthy activity, specifically in childhood (Timmons *et al*, 2012).

3.2. SEDENTARY BEHAVIOUR

Sedentary behaviour refers to any waking period characterised by an energy expenditure of less than one and a half metabolic equivalents while sitting or reclining. Common examples include watching TV,

playing video games and other “screen time”. It is recommended that preschool-aged children spend less than one hour per day engaging in sedentary behaviours like these (Jones, Hinkley, Okely & Salmon, 2013); this is a separate risk factor from a general lack of physical activity. It is possible for a child to meet recommendations for physical activity, but engage in higher than recommended amounts of sedentary behaviour.

Sedentary behaviour has been found to have negative effects in both older children and adults (Biddle, Pearson, Ross & Braithwaite, 2010; LeBlanc *et al*, 2012), although these effects are strongly linked to its relationship with physical activity. These negative effects include an increased risk of overweight and obesity (LeBlanc *et al*, 2012). Despite this, many studies have failed to establish a correlation between amount of sedentary behaviour and obesity in the preschool-age group. (Collings *et al*, 2013; Chaput *et al*, 2011). In a review, Hinkley, Salmon, Okely & Trost (2010) concluded that there is a lack of consistent evidence on the relationship between amount of sedentary time spent per day and other potential physical activity correlates in preschool-aged children

3.3. CURRENT LEVELS OF PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR

It is recommended that preschool-aged children participate in at least three hours of physical activity per day (Jones & Okely, 2011; Jones *et al*, 2013), although certain studies have recommended two hours a day (Cardon & De Bourdeauhuij, 2008). Measuring levels of physical activity in preschool children can be difficult, however. Preschool children lack the cognitive ability to self-report their behaviours (Hinkley et al, 2012), and such other indirect methods such as parent reports have a tendency to overestimate activity levels. (Cliff, Reilly & Okely, 2009). Direct observation is difficult and costly, and, as activity in this age group is typically sporadic and intermittent, it needs to be conducted with brief registration intervals (Cardon & De Bourdeauhuij, 2008). For these reasons, accelerometer research is frequently the preferred method.

Much of this research comes from developed countries and reveals that preschool-aged children do not meet these recommendations. A Belgian study by Cardon and De Bourdeauhuij (2008) found that physical activity levels amongst 4-5 year olds were far below recommendations, with only 26% meeting the recommendations (set at two hours of physical activity per day in this study). The same study found that the children engaged in sedentary behaviour for 9.6 hours a day, far above recommended guidelines. Studies by Hinkley *et al* (2012) and Alhassan *et al* (2012) both achieved similar findings in preschool-aged children in Australia, both in physical activity and sedentary behaviour, as did an American study by Pate, Pfeiffer, Trost, Ziegler & Dowda (2011). In a systematic review including children from seven countries, Tucker (2008) concluded that only 54% of preschool-aged children participated in one hour or more of physical activity per day, which itself is below recommendations.

These findings run counter to the general image of highly active preschoolers who 'cannot sit still for a second'; preschool children are usually not as physically active as is commonly believed (Reilly, 2009). This is further supported by the increasing prevalence of obesity in this age group.

3.4. TRACKING OF PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR

Early childhood is a formative stage for habits and behaviours that track[3] across the lifespan (Telama, 2009; Malina, 2001). When evaluating the impact of physical activity in childhood, the degree to which it is tracked across the lifespan is as important as its short-term health benefits, as the positive health benefits of physical activity are significant throughout the lifespan (Lee et al, 2012).

Research has suggested a low to moderate correlation between physical activity as a child and as an adult (Alhassan *et al*, 2012; Telama, 2009; Malina, 2001; Pate *et al*, 1999; Wrotniak *et al* 2006). There is evidence that the tracking of physical activity is supported by its relationship to gross motor skills development. Williams *et al* (2008) showed that superior motor skill performance predicted higher levels of physical activity amongst children. This suggests that children who develop gross motor skills when young have a higher chance of maintaining levels of physical activity as they grow older. This is supported by studies showing the tracking of motor skills themselves (Piek *et al*, 2008).

Theoretically, according to the model proposed by Stodden *et al* (2008), physical activity and motor competence should reinforce each other in a positive spiral of engagement, which in turn is seen to develop physically active habits over the lifespan. Conversely, the lack of physical activity is likely to cause a negative spiral of disengagement, which will have the opposite effect. Likewise, if overweight or obesity, or physical stunting, is achieved in early childhood, this is likely to reduce physical activity and gross motor skills and influence the spiral of disengagement (Stodden et al, 2008).

Sedentary behaviours have been found to track similarly, but more reliably, than physical activity over the lifespan (Biddle *et al*, 2010; Jones *et al*, 2013). This illustrates the strength of the "habit-forming" element of both behaviours, and suggests that early childhood is important in meeting recommendations for both throughout the lifespan.

3.5. CORRELATES OF PHYSICAL ACTIVITY

Much of the research focusing on the correlates of physical activity is from developed countries. One of the most significant correlates of physical activity in early childhood is the level of physical activity of the parents (Hinkley, Crawford, Salmon, Okely & Hesketh, 2008; Oliver, Schofield, & Schluter, 2010; Loprinzi & Trost, 2010). This is true of a host of health-related behaviours (Loprinzi & Trost, 2010), as well as overweight and obesity (Sallis, Prochaska and Taylor, 2000). Childhood overweight and obesity

[3] Tracking refers to the tendency for an individual within a group to maintain their 'rank' or position over time.

itself is correlated with a lack of physical activity in preschool-aged children (Trost, Sirard, Dowda, Pfeiffer & Pate 2003) as well as with poor gross motor skills (Truter & Pienaar, 2011). Parental support (for physical activity) has been shown to have a significant effect on physical activity in children (Biddle & Goudas, 2009; Hinkley, Salmon, Okely, Crawford & Hesketh, 2011). This insight has led many previous interventions to focus on family-oriented strategies in order to promote physical activity in the children.

Certain studies have shown that preschool-aged boys tend to be more active than girls (Sallis, Prochaska and Taylor, 2000; Hinkley *et al*, 2008; Byun, Dowda & Pate, 2011; Hinkley *et al*, 2011) and that girls also tend to spend more sedentary time than boys (Byun, Dowda & Pate, 2011), but others have shown no difference (De Craemer *et al*, 2011).

Having access to facilities and programmes has been positively associated with more physical activity in preschool-aged children, and perceived barriers to such resources were negatively correlated with physical activity (Sallis, Prochaska and Taylor, 2000). Hume, Salmon and Ball (2004) emphasized the role that children's perception of their neighbourhood plays in influencing the frequency and intensity of physical activity. School environments that promote physical activity have also been shown to be positively associated with children's activity levels (Sallis et al, 2001). As simple a factor as the number of balls available for children to play with has been shown to have a direct result on the levels of physical activity by a study conducted in Australia (Zask, van Beurden, Barnett, Brooks & Dietrich, 2001). Social context and the perceptions of a neighbourhood have been shown to influence children's participation in physical activity (Anderssen & Wold, 1992; Saunders *et al*, 1997). Outdoor playtime has been shown to correlate with physical activity in preschool-aged children (Hinkley *et al*, 2008), and access to a yard or playground is correlated with increased outdoor playtime (Marino, Fletcher, Whitaker & Anderson, 2012). Parents have been reported to perceive that there is a relationship between the safety of a neighbourhood and an objective measurement of physical activity (Hinkley *et al*, 2010) although a direct relationship has not been established with objective measures of physical activity (Burdette & Whitaker, 2005).

Low socio-economic status (SES) has been shown to have a negative influence on levels of physical activity in developed countries (Coakley & White, 1992) and it has been found that children who come from low-SES families often have limited access to resources that encourage physical activity (Sallis *et al*, 1996). Wilson, Kirtland and Addy (2004) found associations between physical activity and the social problems that are frequently found in low-SES contexts, e.g. crime and perceptions of the neighbourhood as not being safe. While many studies have focused on how objective measures of resources and barriers to physical activity influence the physical activity within a community, few have looked at how the perceptions of barriers and resources similarly affect it. Research has suggested that low-SES and rural residents in developed countries are less physically active than their higher SES and urban counterparts (Parks, Housemann & Brownson, 2003; Kari *et al*, 2015), There is evidence that perceived aspects of a community could be as important as objective measures (Giles-Corti & Donovan, 2002). Research has also

suggested that cultural beliefs, regarding physical activity, diet and acceptable body size can have an effect (Draper, Davidowitz & Goedecke, 2015).

3.5.1. PERCEPTIONS SURROUNDING PHYSICAL ACTIVITY

In Australia, Hinkley *et al* (2011) conducted a similar study to this dissertation. Focus groups were conducted with parents (all participants were mothers) to discuss their perceptions of influences on their preschool-aged children's physical activity. The research raised four key themes: "Child fundamentals", "parent power", "people to share with" and "places to go and things to do".

Within "child fundamentals", parents expressed that preschool-aged children are naturally physically active. As a consequence of this, if the parents noticed a child who wasn't physically active, it meant that something was wrong, that they were not healthy. Parents expressed that boys tended to be more active than girls (along with the belief that boys need more activity than girls), although that some children were just more physically active according to their individual personality (regardless of sex). Certain parents noted that they would keep track and regulate their child's active time, e.g. if they felt the their child had been very physically active in the morning, they would organise less active activities in the evening.

The parents identified their own role ("parent power") as the strongest influence in their children's physical activity. This was also gendered, with mothers and fathers having differing roles. Mothers considered their role to be logistical, material and practical. An example of this is organising structured activities, like swimming lessons. Parents recognised that their involvement in such activities resulted in their children being more active, and that they implemented rules to promote physical activity and to limit the amount of screen time (sedentary behaviour). They did mention that they had rules regarding safety that sometimes may inhibit physical activity, but also that they understood that some risks were an important part of childhood (e.g. allowing your child to climb a tree despite the chance of them falling). Having space to play was seen as important for supporting their children's physical activity. Resources were seen as important, but not as vital. These resources and facilities were expressed to be available to their children, although there were concerns over the age-appropriateness of certain resources that they had access to.

"People to share with" encapsulated the belief that children were more physically active when playing with others, whether parents or children. Social gatherings were raised as being important for this. The parents mentioned that they had their own other responsibilities and desires that had an impact on this factor, including a lack of time available. This was also mentioned in other focus groups conducted alongside an intervention for preschool-aged children in Australia (Riethmuller, McKeen, Okely, Bell & de Silva Sanigorski, 2009). They found that parents expressed that their lack of time, finances and motivation were their key barriers to implementing physical activity programmes in that context.

Thus far, the majority of research into the correlations of physical activity, including the perceptions surrounding physical activity, has been based in developed countries. The degree to which these findings will be replicated in the South African context is unclear. Even within South Africa, it will be difficult to generalise findings across SES and cultural lines.

3.6. PREVIOUS INTERVENTIONS

Numerous studies have indicated that behaviour in the preschool years can be influenced successfully by an intervention and that this is an effective, affordable and manageable period to effect a change in obesogenic risk factors, such as diet and physical activity. (Herbst & Huysamen, 2000; Fitsgibbon et al, 2004; Trost, Fees & Dzewaltowski, 2008; Bayer *et al*, 2009; Bond, Wyatt, Lloyd & Taylor, 2009; De Silva *et al*, 2010; Ward, Vaughn, McWilliams & Hales, 2010; Alhassan *et al*, 2012).

Many have noted that committed parental and school involvement is a strong predictor in the success of such interventions (Nixon *et al*, 2012; De Bock, Genser, Raat, Fischer & Renz-Polster, 2013; Davison, Jurkowski, Li, Kranz & Lawson, 2013; Skouteris *et al*, 2011). An intervention by Davison *et al* (2013) in New York, which utilised community-based participatory research to develop and pilot-test a family-centered intervention for low-SES families, caused a significant increase in light physical activity in preschool-aged children, as well as other physical and obesogenic behavioural changes (such as obesity rate and television viewing). The study emphasised the importance of parental empowerment and participation in a successful long-term change from an intervention. Focus groups were conducted with parents (and primary caregivers) in order to gain insight into the obesogenic factors being researched, as well as to create the sense within families that they were a part of the research. Although conclusions on its efficacy were limited based on the absence of a control group, the intervention showed significant short-term results.

Similar findings were shown by an intervention in Germany by De Bock *et al* (2013), where a participatory intervention helped reduce reported levels of sedentary behaviour and accelerometer measures of physical activity, as well as perceived general health and quality of life, in preschool-aged children. This was compared against a control group that received intervention which did not involve family participation, and found that family participation in the intervention caused significantly better long-term (12 months) results in the children. As in Davison *et al* (2013), the increase in physical activity was predominantly represented by an increase in light physical activity, while moderate-to-vigorous physical activity (MVPA) remained unchanged. O'Dwyer *et al* (2012) attributed the involvement of parents as the key factor in the success of an intervention in England which was successful in decreasing sedentary behaviour and increasing physical activity in preschool-aged children.

Although these family-focused interventions have shown promise, a meta-analysis by Salmon, Booth, Phongsavan, Murphy, & Timperio (2007) suggested that school-based interventions in this age group

were more successful than home-based family interventions, although it did qualify this by reporting that most home-based interventions included were pilot studies. The follow-up periods in all studies were notably limited, often less than two years. Longitudinal research would be needed to investigate the success of these interventions in promoting physical activity over the lifetime. Separately, research tracking in physical activity and short-term effectiveness of interventions will not necessarily illuminate the most effective intervention method. A long-term follow up study would be needed for this.

The ToyBox-study group, a pan-European research group, emphasised the importance of multi-sector involvement to achieve successful behaviour change, rather than letting it be the responsibility of the government or of the non-governmental or media sectors alone (Summerbell *et al*, 2012). This was through their experience with an ongoing cost-effective kindergarten-based, family-involved intervention scheme to prevent obesity in early childhood (Manios, 2012). Finch *et al* (2013) examined the impact of interventions aimed at increasing the adoption of policies and practices to promote physical activity in centre-based childcare services in Australia, finding significant improvements in the number of policies adopted and maintained. This illustrates that not only can interventions within this age group achieve success in changing behaviours in the children, but similarly, interventions can successfully change school policies in order to promote physical activity, at least in the limited number of studies of the type.

Research has suggested that those from lower SES backgrounds benefited more from interventions during preschool age than those from higher SES backgrounds (Burger, 2010). In other words, it has a mediating and positive effect on inequality amongst the children. However, the opportunities (including facilities and resources) that are available have also been shown to have a determinant effect on the results of such interventions (Dawes & Biersteker, 2009), which limits interventions in low-SES areas.

Although there are many studies worldwide investigating the success of programmes and interventions promoting physical activity in school- and preschool-aged children, there is still a dearth of research in the South African context (Janssen & LeBlanc, 2010; Dawes & Biersteker, 2009). Most research is conducted in urban centres of developed countries. Furthermore, the theoretical framework for research is largely northern and western in nature (Penn, 2004).

4. RATIONALE FOR RESEARCH

There is overwhelming evidence that people in South Africa and worldwide need to increase the amount of physical activity and reduce the amount of sedentary behaviour in their daily lives. Without intervention, however, trends suggest that the average South African will do the opposite in the near future (Wang & Lobstein, 2006). It is clear that something needs to be done to address and reverse this trend.

As established by the literature, it is not only more feasible, but also more effective for any intervention aimed at promoting physical activity to be targeted towards those in early childhood. This is a formative time, both physiologically and habitually, and thus an intervention at this time is likely going to have the greatest long-term results (Alhassan et al, 2012; Bayer et al, 2009). Interventions have been found to have better long-term effects when they are implemented in early childhood as opposed to being implemented later in life (Carneiro & Heckman, 2003; Heckman & Masterov, 2004; Burger, 2010; Goldfield, Harvey, Grattan & Adamo, 2012). It is a time when children are readily able to learn and develop skills that promote physical activity in later life (e.g. sports-orientated motor skill) (Telama, 2009; Malina, 2001). Preschool and school also provide unique opportunities for behavioural change. It is a time when activity and nutrition are controlled by authority figures (such as parents and school teachers), and one that is ideally suited to behaviour control. (Goldfield et al, 2012). This means that not only is early childhood the most effective time for an intervention to change behaviour, it is also the most cost-effective and practical to administer (Matusik & Malecka-Tendera, 2011).

The first step in developing such an intervention is to properly understand the current situation as fully as is possible (Craig *et al*, 2008). This not only requires investigating the levels of physical activity of children as they currently stand across varying strata within South Africa, but also understanding the contextual elements that surround such activity. In a country that is as culturally diverse and socio-economically unequal as South Africa, this context is by no means easy to establish. It is expected that there will be differences between urban and rural children as well as between various socio-economic groups. A programme that does not take heed of these differences is unlikely to have a good chance of success. The creation of an intervention also has to bear in mind the practical concerns that will affect the applicability of the intervention. As much as an intervention would need to address the top-down goals, it would need to understand the bottom-up concerns in the areas it will be implemented. This is not a singular phase. Other, similarly focused, research will need to be conducted in various phases across the programme development as well as implementation in order to further guide and optimise the intervention.

The primary figures in preschool children's lives are their parents, or primary caregiver/guardian (hereafter referred to as parents), and their teachers. As discussed in the literature review, it has become clear from previous research that parental and school participation is vital for any long-term programme or

intervention intended to promote physical activity in preschool children (Nixon *et al*, 2012; De Bock *et al* 2013; Davison *et al*, 2013; Skouteris *et al*, 2009). Furthermore, parents and teachers hold invaluable knowledge and insight about their own context. It is therefore vitally important that they are consulted on the creation of any programme working with their children.

4.1. SPECIFIC AIMS AND OBJECTIVES

The aim of this dissertation was to provide formative data and insights for the development of a programme or intervention to promote physical activity and gross motor skill development in early childhood in rural and urban South African settings.

The objectives of this dissertation were as follows:

1. To qualitatively investigate and explore the perceptions and beliefs surrounding physical activity, physically active play, gross motor skill development and sedentary behaviour in preschool-aged children across South Africa, by talking to stakeholders in the communities.
2. To identify and understand the barriers which prevent physically activity and gross motor skill development as perceived by the communities concerned.
3. To gain practical insights to take into account when implementing a programme encouraging physical activity and the development of gross motor skills.

4.1.2. THE LARGER PROJECT

As described in the introduction, this dissertation has a role to play in a larger cross-departmental project (hereafter referred as the larger project). The overall aim of this larger project is to develop an intervention focused on promoting physical activity and gross motor skill development in order to optimise body composition in early childhood, one that is applicable to a range of contexts across South Africa (rural and urban, across the range of socio-economic levels).

This dissertation helps set the groundwork for the development of such an intervention. It is clear from international and local literature that some sort of intervention is needed and that the preschool years are the most effective time for it to be implemented. However, the intervention still needs to be designed according to what will be most successful in the South African context.

When available, the results from both of these studies will inform the development of the intervention, if the findings support the implementation of such a programme.

5. METHOD

The first task was to decide the best method to address the objectives of this dissertation. Focus groups were selected for a number of methodological and practical reasons.

Focus groups are well-suited as an exploratory research method, allowing participants to define issues and concerns in their own words, rather than in the words of the researchers (Gibbs, 1997). They allow for participants to give input from a 'bottom-up' perspective, without necessarily adhering to a particular theoretical framework. This can raise issues and perspectives that a theoretical top-down view might potentially overlook (Krueger & Casey, 2009). In contrast, a questionnaire, or similar method, prescribes a particular theoretical framework through the wording and choice of the questions. They are better suited to asking a very specific set of questions with discrete or continuous answers. It does not allow as much room for participants to express their own conception of their topic. Although this issue still exists with focus groups, it is less pervasive. Focus groups allow for more casual, conversational and unpressured conversation, which aims to foster more authentic responses. It is generally considered that in a structured or semi-structured interview with a researcher, especially in contexts where such a process is unfamiliar, there would be a greater chance of eliciting responses that the interviewee considers expected (Krueger & Casey, 2009). Furthermore, the current research specifically did not aim to gather a collection of individual opinions, but rather community beliefs and understanding, which focus groups are better suited to uncovering.

As the programme might potentially deal with having to change beliefs as well as behaviour, the research was not only concerned with what parents and teachers in these communities think and believe with regards to physical activity, but also why they think and believe what they do. Focus groups are better suited to discovering the roots of beliefs, specifically group beliefs, as opposed to surveys or one-on-one interviews (Kitzinger, 1995). The dynamic, back-and-forth nature of focus groups hoped to elicit more information and insights than individuals would provide if interviewed one-on-one.

Focus groups were considered more cost and time-efficient than one-on-one interviews or ethnography in gathering the beliefs of a community. They allowed the research team to talk to a greater number of participants and provided more information in a shorter period of time than other qualitative techniques would have (Gibbs, 1997). Although ethnography could have been another possible research method, it was one that would require far more time and resources, especially to be performed across multiple communities. The resources required for ethnographic study would have made it unfeasible.

5.1 DESIGN AND SETTING

The communities in which to conduct the focus groups (Agincourt, Mpumalanga, and communities in Cape Town) were chosen to represent, as accurately and practically as possible, different socio-economic levels and contexts within South Africa. Although this was bound by the practical limitations of the research, it

was important to investigate a rural low-SES setting, as well as a township and a fully urban setting, incorporating a range of SES levels. This gives a broad overview of the range of prominent environmental contexts and backgrounds within the country.

Because this study informs the design of an intervention, it was important to pay attention to the sampling procedure and its results. For example, the practical experience of orchestrating a focus group with parents and teachers in a particular area served as a guide to how one would implement an intervention programme with parents and teachers in that area. In low-SES regions, for example, the cost of transport to and from the focus group location might prevent participants from attending. In other settings, a lack of time available could be a prohibitive factor. In addition to the content of the focus groups, close attention was paid to practical considerations surrounding the organisation of the research.

In order to identify teachers and parents for focus groups, we worked closely with the preschools selected. These varied based on location and individual schools, but can be split roughly between the approach in Agincourt and the approach in Cape Town. For privacy purposes, the names of the schools and individuals are not mentioned.

Figure 1: A map showing the relative positions of Agincourt and Cape Town within South Africa.

5.1.1. AGINCOURT, MPUMALANGA

The community of Agincourt, Bushbuckridge in Mpumalanga was selected to represent a rural context within South Africa.

Agincourt has a population density of roughly 170 persons per km^2 living on household plots with subsistence agriculture. Unemployment is rife and roughly 60% of local men migrate to urban areas for work. Many households survive on social grants (Statistics SA, 2011).

The local population of Agincourt is predominantly black African, specifically Shangaan- or Tsonga-speaking. The relationship between Shangaan and Tsonga identity is complicated and interconnected, both linguistically and culturally (Niehaus, 2002). By their own simplification, in explaining to us, those we

talked to identified themselves as Shangaan. They referred to their spoken language as Shangaan, although their written language is Tsonga.

Agincourt was chosen above other similar regions for practical reasons. The MRC/Wits Rural Public Health and Health Transitions Research Unit (referred to as the Agincourt unit) has a permanent research centre located within Agincourt, and is a demographic surveillance site. As this research centre is already entrenched, integrated and trusted within the community, they helped facilitate the research. Stakeholders within the community - teachers, parents and local authorities - were already accustomed to researchers and could be consulted easily.

The Agincourt unit also assisted with the sampling process, recommending schools and providing the research team with the relevant contact details. Specifically, recruitment in this area was performed with assistance from the Learning, Information dissemination and Networking with the Community (LINC) office within the Agincourt unit. LINC works with researchers and the community in Agincourt in order to facilitate research processes in such a way that benefits both parties. Not only was this useful for the sampling process, but also necessary. It helped the team avoid causing issues politically within the community, or compromising any other research.

Five schools from Agincourt were selected to be a part of our study. In Agincourt, primary schools are free to attend, but preschools are not. For this reason, many of the preschool-aged children were already enrolled in grade R classes at schools. Two of the five schools were primary schools with grade R classes. The other three schools were independent preschools. The primary schools had more space and facilities available because they were larger, however these were not designated for preschool-aged children only. The preschools were smaller, but had a far smaller number of children from a narrower age-range.

Figure 2: One of the primary schools where focus groups were conducted with the parents and teachers of a grade R class.

5.1.2. Cape Town, Western Cape

Cape Town was chosen to represent urban contexts within South Africa. The focus groups were conducted in the school term following the focus groups conducted in Agincourt. As the research team was based at the University of Cape Town, there were practical reasons to conduct the urban research in Cape Town.

Four preschools were selected from Cape Town which had been involved in previous research projects. These were chosen from areas that roughly represent a cross-section of Cape Town's socio-economic levels. The first was an affluent preschool from Rondebosch, a high-SES area in Cape Town's southern suburbs. The families at this preschool were predominantly white, English-speaking and from the upper ends of the socio-economic spectrum. Two focus groups were conducted here, one with parents and one with teachers. Another similar preschool, the last one where focus groups took place, was from a middle- to upper-SES suburb called Mowbray, in the southern suburbs of Cape Town. The population here is 44% black African, 36% white, and 11% coloured, and the predominant language is English (Statistics SA, 2011).

The lowest SES focus group in Cape Town was a preschool from a township called Masiphumelele in the greater Cape Town area. Although townships are considered urban, because they form specifically around the employment opportunities provided by cities and have a high population density, townships also have rural elements at play, because of the underdeveloped infrastructure. Masiphumelele has a population of around 16 000, 90% of whom are black African (Statistics SA, 2011). The predominant first language of Masiphumelele is Xhosa, although English and Afrikaans are commonly spoken as second languages. The population density is extremely high, at approximately 40 598 people per km² (Statistics SA, 2011). Two focus groups were conducted in Masiphumelele, one with parents and teachers, and another with teachers only.

The remaining preschool was located in Tafelsig, which is part of the coloured[4] township of Mitchells Plain, a region of the Cape Flats. Although this area has a stronger economy than Masiphumelele, it is notorious for violent crime, specifically gang and drug violence. Tafelsig has a population of around 62 000, while Mitchells Plain has over 300 000 people and a population density of 7 000/km^2 (Statistics SA, 2011). The population is 90% coloured, and speak a unique regional mixture of English and Afrikaans. Only one focus group was conducted at this school, with a combination of parents and teachers. Unfortunately, there was a low turnout for this focus group owing partially due to violence on the day, which is why the focus groups for parents and teachers were combined.

It was initially planned to keep the focus groups with parents separate from the focus groups with teachers, but this distinction was not always clear. In rural areas especially, teachers were often parents of children in their own class; in fact, many teachers were parents who had taken up the role. In the Masiphumelele Township also, it was only discovered after the focus group that many of the parents we had been talking to also worked at the school as teachers. In the more affluent Cape Town suburbs these roles were more distinct.

5.1.3. Overview of focus groups

Overall 4 focus groups were conducted in Agincourt, and 6 in Cape Town, providing a total of 55 participants.

[4] In the South African context, coloured refers to a specific ethnic and cultural group that is ‘mixed race’. The term is considered neutral and non-derogatory.

Table 1:

Overview of Focus Groups, date, sample and number of participants

Focus Group	Date	Location	Parents / teachers	*n*
1	10 June 2014	Agincourt	Parents	7
2	13 June 2014	Agincourt	Parents	9
3	19 June 2014	Agincourt	Teachers	6
4	24 June 2014	Agincourt	Teachers	4
5	20 October 2014	Masiphumelele	Parents & Teachers	14
6	23 October 2014	Rondebosch	Teachers	2
7	05 November 2014	Mitchells Plain	Parents & Teachers	3
8	17 November 2014	Rondebosch	Parents	2
9	03 December 2014	Mowbray	Parents	2
10	08 December 2014	Masiphumelele	Teachers	6
			Total:	55

5.2. MATERIALS AND RESOURCES

Language issues influence most national research in South Africa, which has eleven official languages and a host of unofficial ones. In the five areas selected for conducting the focus groups, there were four different first languages: Shangaan, Xhosa, Afrikaans, and English. In order to accommodate this, a different approach was used in each area, depending on what was available and practical to administer. In Agincourt, Mpumalanga, a field worker conducted the focus groups in Shangaan with the research team present. In Masiphumelele, an interpreter accompanied the research team to assist in Xhosa when necessary, otherwise the focus group was conducted in English. The research team could conduct the rest of the focus groups in English without assistance. Although the first language in Mitchells Plain is Afrikaans, all participants also spoke English fluently.

5.2.1. AGINCOURT , MPUMALANGA – SHANGAAN FIELD WORKER

As the local language in Agincourt is Shangaan and no one in the research team was fluent in Shangaan, these focus groups were moderated by a local field worker who was fluent in the target language.

Rather than using the field worker as an interpreter, she moderated the focus group herself, with the research team present to advise. The aim of this was threefold:

1. Constantly switching between English and Shangaan would interrupt the flowing nature of the focus group. Especially with longer responses, the interpreter would have to wait until the participant finishes their reply before interpreting this to the English facilitator. This prevents conversation from emerging in the focus group.
2. It was difficult to find a well-trained Shangaan/English interpreter. Having the focus group entirely in Shangaan and allowing the field worker to then translate the transcript was more affordable, and more likely to be accurate, than interpreting speech in real time.
3. It was estimated that participants would be more comfortable and honest when communicating with a local resident rather than an outsider of a different culture and race. It was also thought to reduce the chance of any culturally biased misunderstanding or shaping of data.

The local field worker was thoroughly briefed on the purpose of the research and the aims of the focus groups, in order for her to be able to moderate the focus groups effectively and probe further with questions as needed. Although the fieldworker had received training in qualitative data collection methods, she did not have experience conducting focus groups.

This was a rather unorthodox method of overcoming the language barrier, and one that had mixed results. The benefits of having a local conduct the focus groups were readily apparent. Not only could the conversation flow more naturally than if it went through an interpreter, but every meeting in Agincourt had a particular format, one that was culturally specific. For example, every meeting started and ended with a hymn, sung together by all the attendees. One of the women present, usually the field worker, would lead the hymn. Clearly this was something that even the most experienced qualitative researcher would not have been able to do easily, being an outsider.

It seemed as if the parents and teachers felt more comfortable speaking with someone who was local, rather than a member of the research team. Race, language and socio-economic status all would have acted as barriers between the participants and the moderator. Although the research team was present, the participants were aware while conversing, with someone that they knew, that we could not overhear and listen to their conversation in real-time.

On the other hand, the disadvantages of using the field worker also became apparent. The moderator was inexperienced with running focus groups, and was not well-versed in the field of study. She had never conducted research regarding physical activity-oriented research in Agincourt before, nor had she been involved in any research focused on preschool-aged children. During transcription we noticed that many follow-up questions went unasked and many possible avenues of conversation went unexplored. Although the research team was present, their inability to speak Shangaan meant they could only recognize these moments after the focus group had ended.

Nevertheless, the tradeoff was considered worthwhile, as it would be unlikely that, even with additional questioning, an experienced moderator would have been able to gather more information than a local representative.

5.2.2. Masiphumelele, Cape Town – Xhosa interpreter

The most common first language in Masiphumelele is Xhosa, although English is a common second language. For this reason, the focus groups were conducted by a member of the research team with the aid of an interpreter, a fieldworker who had experience on research projects involving physical activity and health. Because many of the participants could speak English, the focus groups were conducted in a combination of English and Xhosa.

This allowed the participants to engage with the moderator, but with the ability to relay their comment using Xhosa if they felt they could not express it in English.

5.2.3. Dictaphone

All focus groups were recorded using a dictaphone, and an iPhone 5S voice recording as a backup and to cross-reference when audio was distorted. All participants provided consent to this recording, both written and verbal. The dictaphone was also placed on the table in clear view of all participants. Recording only began once the question line of the focus group began. No one outside of the research team had access to the original recordings, with the exception of Agincourt's, which were transcribed by the field worker.

5.2.4. Refreshments

Refreshments were provided at all the focus groups. These were arranged in line with the expectations of each area. The research team took their lead from the schools, and made sure to follow their recommendations. The importance of this was raised as an anecdote in Agincourt, where previously a researcher had provided extravagant and expensive refreshments for a meeting. When the local team held their next meeting, participants were displeased by the simple nature of the refreshments available.

With low-SES groups, specifically those with food insecurity, refreshments can also have an effect on the number and nature of the participants that arrive. In both Agincourt and Masiphumelele, there were participants who said nothing during focus groups (but did consume the refreshments). Other researchers mentioned that inevitably a certain number of participants show up "just for the food". In contrast, the focus groups in high-SES areas often left the refreshments untouched.

On talking to other researchers in Agincourt, as well as to the field worker, the importance of refreshments was explained to us. There were caterers who had informal deals with the Wits research team in the area, and provided catering for all the training and research meetings that were organised. For meetings of an hour or so, a few refreshments like fruit, white bread and juice were common, but for longer meetings there was the expectation for a full meal, including at least one type of meat, pap, and other sides. This was

accompanied by cans of soft drinks. The menu itself was telling of the diet in the area. The food provided by local caterers, which is also served at most functions or meetings, was low-cost and high in calories. This was the first observation of what became a common trend, that the diet in Agincourt was highly caloric.

5.3. PROCEDURE

The procedure varied dramatically depending on location, particularly between the Agincourt and Cape Town focus groups. The focus groups in Agincourt were conducted in June 2014 and those in Cape Town were conducted between July and November 2014.

5.3.1. AGINCOURT

Inviting parents and teachers to participate in focus groups in Agincourt was performed in consultation with the LINC team based in Agincourt, who helped to facilitate communication between the research team and schools. Principals of various independent preschools, and primary schools with Grade R classes, were contacted about the research by phone by a member of the LINC team in the months prior to the focus group. A meeting was set up to discuss the nature of the research with the Principal Investigator for the project (C. Draper), sometimes including one or two relevant teachers. The LINC team member acted as the interpreter and facilitated these meetings between the research team and the principal. Although the local language is Shangaan, English is sometimes spoken as a second language, with varying degrees of fluency.

Once the principals gave their approval for the focus group to go ahead, a meeting with the parents was organised. The principal provided consultation as to what times would suit the parents. The field worker acted as an interpreter for the meeting, which was conducted at the school itself, explaining the research to the parents. After fielding questions, consent and information forms (Appendix A) were given out to the parents in their home language. Parents were invited to sign up for a focus group, providing their name and phone number. They were informed that there would be food available at the focus group and that they would be reimbursed for travel expenses.

In the days preceding the focus group, the field worker called and confirmed the attendance of each parent and teacher. This was under advisement from the LINC team, who warned that otherwise one could expect low to zero attendance. Subsequent experience has indicated that this would likely have been the case. This method, however, provided high turnout rates for both teacher and parent focus groups.

There were four locations used for the focus groups in Agincourt. Two were conducted at the schools used for recruitment, one was at the Wits Agincourt offices, and the other was at a house that was frequently used for meetings by the Agincourt unit. All these locations were within roughly five kilometres of each other and were chosen for scheduling and convenience reasons. There were no indications that the location within Agincourt had a significant impact on the focus group results.

For the Agincourt focus groups, the field worker and two members of the research team were present. The research team was present in order to be available to help the field worker, to facilitate where possible and to add credibility to the study. This was under advisement by other researchers in Agincourt, who mentioned that many locals would not take studies or research as seriously without the presence of non-local, white, English-speaking, researchers. The focus groups began by verbally confirming that every participant understood the information sheet and consented to the focus group.

5.3.2. CAPE TOWN

Different methods were used at different Cape Town schools, based on how the school usually communicated with its parents and teachers.

At the high-SES schools in Rondebosch and Mowbray, email and take-home notice communication was commonplace. This was learnt by consulting with principals, as was done in Agincourt. However, in contrast to Agincourt, the schools recommended the number of meetings be kept to a minimum, because time was a major concern for both teachers and parents. The principals were also hesitant to give out contact information for parents without their permission. Instead, information sheets were given out alongside the weekly take-home notice that the school sent out. Parents were encouraged to return the signed form when they picked up their children. A few date options were set, and parents could select the ones that suited them. Only then would parents be contacted to confirm details. The focus groups took place at the preschools themselves, which had the facilities to handle them.

Masiphumelele proved to be the easiest community in which to organise focus groups. After the principal was contacted, she organised both the parents and teachers' focus groups herself, each with high turnouts. Masiphumelele is very small geographically, so it's common for the parents to live within walking distance of their child's preschool.

Mitchell's Plain was the most challenging area in which to organise a focus group. Of the schools contacted in the area, one replied. The principal provided the research team with a list of seven names and numbers of parents who had children of the appropriate age and who had expressed that they were interested in participating in a focus group. After phone calls to invite them and set up a date, four confirmed and only two attended the focus group. With only one teacher, it was decided to combine the parents' and teachers' focus groups into one. The principal herself proved very difficult to contact, which made future dealings with the school a problem.

The focus group sessions only began once all members arrived, the only exception being the parent's focus group in Mowbray when one parent arrived late.

The Cape Town focus groups consisted of one member of the research team, with the exception of Masiphumelele, where the interpreter was present as well as another member of the research team. These focus groups were conducted at the relevant schools, either at the end of the school day or over the lunch

break. The time of the focus group did not appear to have a significant effect on the results of the focus group.

Focus groups ran for 45 – 75 minutes, as per recommendations by Krueger and Casey (2009). This allowed enough time to work through the guide questions. Continuing longer would have meant needing to include a short break for participants. The focus groups were semi-structured (see below). A question line was developed in order to guide the focus groups, although open conversation was fostered around the topic wherever possible.

5.3.3. FOCUS GROUP GUIDE QUESTIONS

Although the focus groups were, by design, open-ended, guide questions were used as the starting point for conversation topics. If a lull formed in the conversation or if it steered too far away from the topic, the moderator moved to the next, or another, question. The guide questions are listed below, although they were sometimes phrased differently to make them fit more naturally in the focus group. Furthermore, questions were sometimes avoided if they had been answered previously in the focus group conversation. Essentially, the aim was to have answered every one of the questions by the end of the focus group.

Although procedure can be standardised, writing guide questions and conducting focus requires skill and experience in order to make the best of the process. For this reason, the guide questions for the focus groups were written with input from other researchers present in Agincourt (who had more experience with the local population), as well as via consultation with two collaborators from Australia, Dr Rachel Jones from the University of Wollongong and Dr Trina Hinkley from Deakin University, who had experience both in research around physical activity and in conducting focus groups.

On their recommendations, changes were made from the original draft. Many questions were simplified to avoid academic jargon. This included using the term “active play” rather than the term “physical activity”, which might not have been as understandable to the participants. Nevertheless, when the term was used, either to participants or to the field worker/interpreter, the concept was explained. When the guide questions were discussed with the Agincourt field worker, as well as the Masiphumelele interpreter, the key terms were highlighted and explained. More questions related to guiding a potential intervention were added, asking for input on how parents or teachers might want to be involved in such a programme.

In order not to limit the responses, the questions were edited to be more open-ended. This was quite a difficult balance. Close-ended question are more likely receive a limited range of answers. Open-ended and non-specific questions, on the other hand, will sometimes elicit no responses because of the lack of a reference point for participants. As an example of this, the question “What are the most important issues for preschool children in your community?” often required more follow-up conversation than specific ones like “What games do the children in the community usually play?” Answering the second question is simpler

than the first, especially in a social setting, because it requires less thought and is less likely to be challenged by another participant.

Starter guide questions

General

- What do you think are the most important issues for preschool children in your community? Prompt questions:
    - What do you think are the most important health issues for preschool children?
    - What do you think are the most important education issues for preschool children?
- What do the preschool children in the community do when given free time?

Physical activity

- How often do the children have active play?
- What are the children's favourite physical play activities/games?
- How important do you think it is for preschool children to be physically active?
- How important do you think it is for preschool children to play?
- Do you think that children learn by playing?
- Do you think the children in the community don't get to play enough, or do you think they play too much, or neither?
    - If they don't play enough, what do you think is stopping them?
    - If they play too much, what should they be doing?
    - Would you like it if they were encouraged to play more?
- How often do they play with their friends, without much supervision from adults?
- Do you feel that there are nice places for children to play in your community?
- How safe is it for young children to play outside in your community?
- *FOR TEACHERS*: Do you have any challenges promoting active play with children at your preschool / primary school?
- FOR PARENTS*:* Do you have any challenges promoting active play with your children? (Focus on their preschool / Grade R child, NOT their older child)
- *FOR TEACHERS*: If we were to develop a programme for preschools / primary schools (Grade R's) to encourage active play, what do you think we should include in that programme?
    - What do you think would work in your preschool / primary school?
    - How should the teachers be part of this programme?
    - What training would you like to receive as part of this programme?
    - What resources would you need for this programme?
- *FOR PARENTS*: If we were to develop a programme for preschools / primary schools (Grade R's) to encourage active play, what do you think should include in that programme?
    - How should parents be part of this programme?

- What do you think would work in your community?
- What training / workshops would you like to receive as part of this programme?

Gross motor skills

- What do you think about the physical skills of children in your community? (Skills such as running, jumping, hopping, catching, throwing, hitting a ball etc.)
    - How important do you think these skills are for preschool children?
    - Are children in your community taught these skills at preschool? Do you think this is sufficient?
    - What do you think could be done to improve these skills? (If perceived to be lacking)
    - *FOR TEACHERS*: Would you like to receive some training about how to develop these skills at your preschool / primary school?
    - *FOR PARENTS*: Would you like to receive some training about how to develop these skills at home?

Sedentary behaviour

- Do the children ever spend lots of time sitting still?
    - When they do, what are they doing?
    - How long do they sit still for doing this?
    - When do they do this?
    - Do you know why they do this?
    - What do you think about these behaviours?
        - Do you think some of these behaviours are important?
        - Do you think some of these behaviours are bad? (E.g. bad for their health)
        - How do you think you can reduce these behaviours (the ones that are bad)?
    - If so, what would you do to reduce it?

- Would you like it if your children were encouraged to play more?

Closing

- Is there anything else you'd like to add?

5.4. DATA ANALYSIS

Data analysis focused on two different, but interrelated types of information.

The first was practical information, which will be used in order to guide the proposed intervention. The intervention needs to respect the practical needs of the parents, teachers, and children involved. Practical considerations were noted and brought up in the design and implementation of the eventual programme. Concerns over time, materials or space available, for example, fell into this category. The second type of data concerned were the perceptions, understanding and attitudes regarding physical activity, sedentary behaviour, learning through play, and the general priority of physical activity in the community.

Data analysis began immediately after the first focus group. Agincourt focus groups recordings were transcribed in the days following the focus group. The field worker would translate and transcribe the recording by hand, as she was not an experience typist. The research team then typed up the transcripts on Microsoft Word. The research team read and discussed these transcripts with the field worker, to confirm details. In the Cape Town focus groups, the research team transcribed the recordings, listening to the recordings and typing them using Microsoft Word. For the Masiphumelele focus groups, only the English was transcribed. Within the focus group, the interpreter would interpret into English, allowing the interpretation to be transcribed rather than Xhosa.

The transcripts were analysed thematically using an adaption of the Krueger and Casey's (2009) classic method of categorising and coding (see Figure.3 below). Transcripts were coded in the Atlas.ti Qualitative Analysis software.

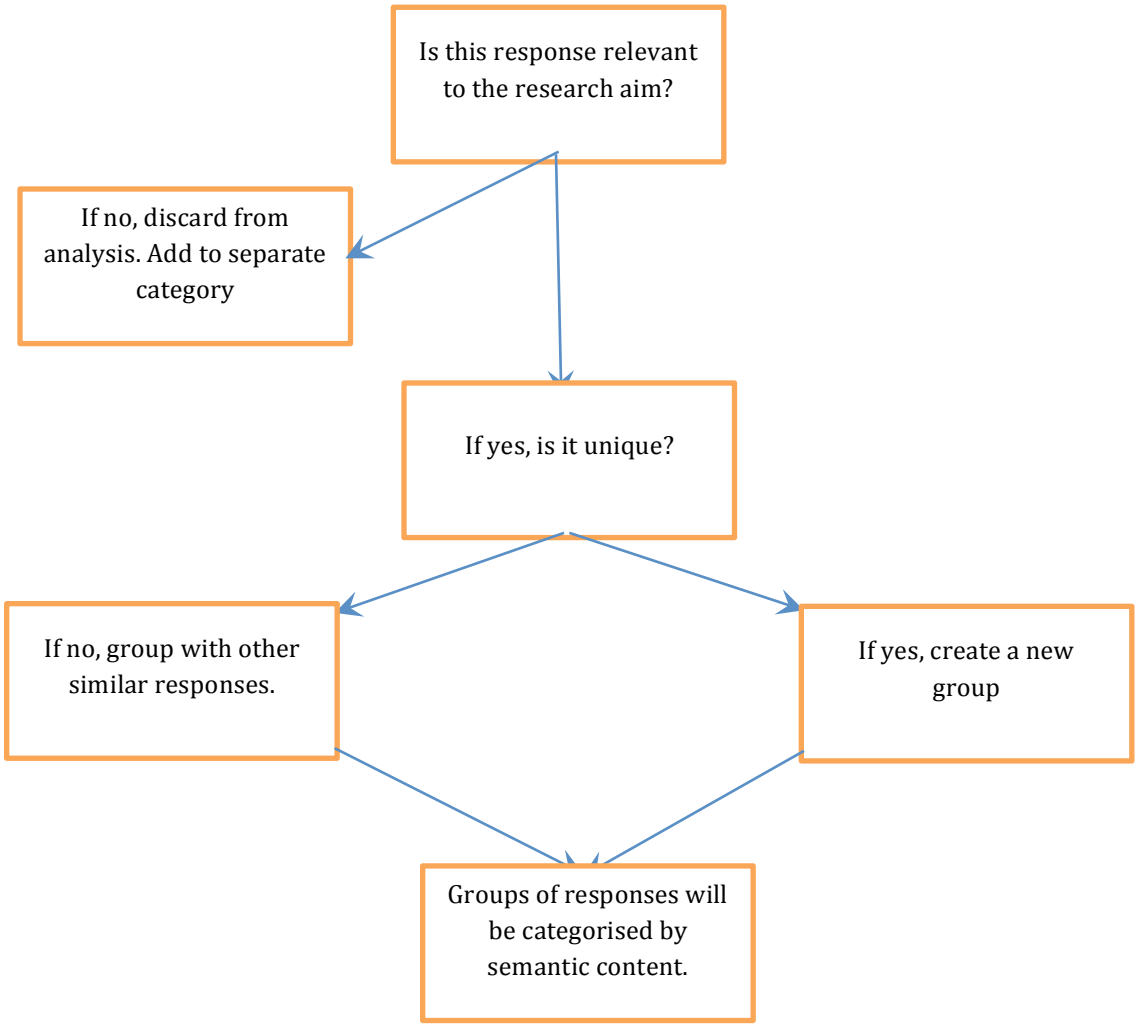

Figure 3: A Flowchart illustrating the coding process (adapted from Krueger & Casey, 2009)

Responses were grouped into multiple categories. As an example, if there were multiple affirmations that it is unsafe for the children to play outside because of crime, those responses were grouped together, and put into categories entitled “Barriers to physical activity”, “Concerns over safety” and “Crime”.

After all responses were coded into groups, groups were analysed. Although there is no strict formula for analysing a response, the following factors served as guidelines for analysing the content. (Krueger & Casey, 2009).

5.4.1. Frequency

If a certain sentiment, concern or consideration is repeated frequently, by multiple participants, it can signify its importance and/or relevance. For this reason, attention was paid to the frequency of a response. Verbal and non-verbal affirmations of agreement (e.g. nodding) also contributed towards this.

Frequency is not a guarantee of the importance of a category, especially in absence of the other factors. Frequency can be achieved as simply as a participant prompting a focus group for agreement, which could signify a lack of confidence in an opinion. Likewise, certain concerns and beliefs might go without saying. High frequency often indicates a topical or even controversial point, rather than a firmly entrenched one. As an example, in a focus group in Mowbray, Cape Town, technology came up during the conversation. Its frequency was high because two parents disagreed as to whether it was good or bad for the children. Conversely, diet was raised as an issue and both agreed with each other emphatically.

Despite this, if a specific theme was raised multiple times (three or more) at different points in the conversation by different participants within or across focus groups, it was given more weight analytically.

5.4.2. Specificity

Emphasis was given to responses that provided more information, especially when that information was specific, e.g. a response of “I don’t worry too much about my child’s physical activity” was not as valuable as “I don’t worry too much about my child’s physical activity, because I’m far more concerned about his language and maths and that’s where I put my priorities.” This was especially relevant to the practical categories that emerged. Responses that indicated why a certain approach will or will not work are far more valuable if they express the perceived reasons why said approach will or will not work.

Emotion

Attention was paid when responses were strongly emotional, passionate or enthusiastic. This was noted during the focus groups, either by the moderator or a member of the research team. Although these responses were not always given more weight than those that were less emotional, as this can differ based on the participant, responses that evoke such a response were noted, and this guided the analysis.

5.5. FIELD NOTES

The research team for this dissertation was based out of Cape Town. For this reason, the research team has a certain amount of local understanding of the dynamics at play in the Cape Town communities studied. Even Masiphumelele and Mitchells Plain, on the outskirts of the city, were culturally and linguistically familiar.

Agincourt is very different culturally, ethnically and economically from Cape Town.[5] It became clear through the research process how important the LINC team and the field worker were to the research. They provided counsel on practical considerations, such as where to hold focus groups and when to schedule them. This was affected by factors as unforeseen as payday (when parents were given their social grants), which had an effect on turnout. Immediately after being given their grants, parents tend to go to the market to do their long-term shopping. If a meeting had been organised on that particular day, it would likely have received a low turnout, especially from parents.

Ethnography was not a primary method of data collection, as the research team did not have the required time available to commit fully to an ethnographic study, let alone focus groups and ethnographic study. However, in order to further develop an understanding of the community, systematic observation formed a complementary section of data collection, specifically in Agincourt.

These systematic observations were collected through the two following means:

1) Research journal

Although only for a short time, the presence of the research team in Agincourt lent itself to extensive personal observation and note-taking, bearing in mind the aims of the dissertation. For example, notes were taken on the distances between schools and homes, how much traffic there was in the area, the weather, insects, or anything else that could potentially impact the community with regards to physical activity and play in preschool children. This experience culminated in a research journal, attached here as an appendix, but more importantly, put the results and insights gained from the focus groups into context. Researchers tend to be prone toward preconceived ideas of a rural low-SES context, one that is stereotypical and based on media or commonly held beliefs. Actual presence in the location helped to distil the truth of these.

Perhaps the most telling of these was the tendency to over-expect poverty. Even to a South African, an area described as a low-SES rural African village conjured images of extreme poverty and complete lack of infrastructure. Perhaps with the aim of not being or appearing naïve, researchers tend to expect the worst.

Driving through Agincourt, there were a number of personal observations that one might not expect in a low-SES rural setting. Families often lived in rather large brick houses, with space not being the premium it is in urban areas. These houses tended to be unfinished and “under construction”, with families only continuing with work when they next could afford to. This meant that children often played in construction sites, with sand and rocks (and the dangers associated with bare nails and sharp edges). These houses often had satellite dishes, suggesting that they previously or currently subscribed to Digital Satellite Television

[5] In the interests of disclosure, the author of this dissertation has a family home in close proximity to Agincourt, in Bushbuckridge on the border of Mpumalanga and Limpopo Province. Although this does suggest a knowledge of the geography of the area, it only lends itself to a very limited understanding and insight into the social and cultural understanding of the residents of Agincourt, because of the segregated nature of the area.

(DSTV: the local premium satellite television network). There was drinkable running water and electricity in many of the buildings (although at the time, load-shedding[6] was an issue).

There was a large number of cars on the roads, all kept clean. As Agincourt was exceptionally dusty, this was achieved through numerous car wash services. It was common to see groups of men socialising while washing their cars and enjoying a beer along the side of the road. The roads themselves were very poorly maintained, with potholes causing cars to swerve into the oncoming lane or onto the shoulder. Domestic livestock and other animals wandered on and off the road, seemingly oblivious to cars nearly colliding with them. This resulted in roadkill being commonplace. The dangers of this were compounded by a lack of streetlights, and a tendency for cars to drive faster than the speed limit.

Walking long distances, however, combined with the use of taxis appeared to be the most common way for the parents and teachers (who were both exclusively women) to get around. Despite overweight and obesity being a common problem for adult women in the area, which was visually apparent, it was common to see women walking a few kilometres in a day.

[6] Load-shedding refers to systematic power failures that occur when the country's power infrastructure cannot provide enough electricity to meet demands. These are scheduled blackout periods, which are usually scheduled and last for a few hours.

Figure 3: One of the dirt roads to Agincourt. The tarred roads were often worse quality, because of numerous potholes. This illustrates how far many of the residents walk in daily life.

Visiting the schools was important in developing an understanding of the barriers to physical activity. At first glance, many were far better resourced and equipped than expected. This did differ between schools, however, with some having better facilities than others.

Figure 4: Children playing at one of the preschools in Agincourt. This school had better facilities than most in Agincourt, in terms of outdoor play equipment.

Even after researching Agincourt, many of these observations were surprising. Where they were relevant, they have been included alongside findings and responses from the focus groups.

2) Feedback from the LINC team and field worker

The LINC team in Agincourt is well-established and includes members who have worked in the community for years. Insights, information and resources from the team were included in the rationale of this dissertation.

This information was gathered through conversation and the process of conducting the focus groups, rather than a formal briefing process. It included advice on when and where to conduct focus groups, how much to pay participants for transport and what to provide.

This observation (point 1 above), interviewing (the focus groups) and archival information (point 2 above) made up the core elements of the ethnographic portion of this dissertation.

5.6. ETHICAL CONSIDERATIONS

Approval for the larger study (including this qualitative study) was obtained from the Human Research Ethics Committee in the Faculty of Health Sciences at the University of Cape Town (HREC REF: 237/2012), the Human Research Ethics Committee (Medical) of the University of the Witswatersrand (REF: M140250), the UCT Faculty of Humanities, and the Mpumalanga Department of Education and Mpumalanga Department of Health (required for research conducted in Agincourt).

Every participant signed a consent form that detailed the research. This was provided in both English as well as their home language. These consent forms were also explained verbally at the focus groups. Names were never linked to content in the focus group transcriptions, and school names are never mentioned in this dissertation. It is highly unlikely for anything that a participant said to be linked to them.

6. RESULTS AND DISCUSSION

Before discussing the results of the focus groups, it is useful, at this point, to re-iterate the three main aims of this research.

1. To investigate and exploret teacher and parents' perceptions and beliefs surrounding physical activity, gross motor skills development and sedentary behaviour in preschools across South Africa.
2. To identify and understand the barriers which prevent physically active play and gross motor skills development, as perceived by the communities concerned.
3. To gain practical insights to take into account when implementing a programme encouraging physical activity.

In order to achieve these aims, attention was not only paid to the content of the focus groups, but the context around orchestrating them, as well as the limited ethnographic elements incorporated in the research. Particular attention was paid to how these three aspects varied across focus groups. The nature of the research did not lend itself to distinct results and discussion sections. Simply reporting what was expressed in one section and then discussing it in a separate one would lead to repetition and fragmentation. Instead, the results of the focus groups have been organized and laid out thematically, according to the aims set out above, in combination with a discussion of their significance.

Quotations from Agincourt are all translated quotations. Translated quotations from Masiphumelele are specified with an * (asterisk).

6.1. PERCEPTIONS AND BELIEFS SURROUNDING PHYSICALLY ACTIVE PLAY AND SEDENTARY BEHAVIOUR IN PRESCHOOLS

Participants in every focus group stated that physical activity and physically active play were important for preschool-aged children. This itself was an important finding. Although the degree to which physically active play presented as a priority varied from group to group, no focus group expressed that time spent playing, or time spent being physically active, was time wasted. Amongst the participants it was considered normal and important for children to have the chance to play actively, and the lack of such play was considered either a cause or indication of some sort of problem.

Generally, the emphasis placed on the importance of physically active play was roughly proportional to the SES of the area, with lower SES areas placing less emphasis on its importance than higher SES areas[7]. As

[7] As a reminder: Agincourt, Masiphumelele is low SES. Within Cape Town, Mitchell's Plain and Masiphumelele are low SES, Rondebosch and Mowbray are high SES.

SES level also was related to the urbanisation of the region, one could not separate this as a factor. This could also be the product of the lower turnout of participants in the higher SES areas, and therefore increased sampling bias. This is discussed in more length in the limitations section.

Low-SES, rural area participants were not worried that their children might not be physically active enough. On the contrary, they expressed that their children were always active. High SES, urban participants were more concerned about the levels of physical activity in children in general, however still felt that their children were physically active enough. This is in line with responses from developed countries. Although research has suggested that low-SES and rural residents in developed countries are less physically active than their higher SES and urban counterparts (Parks, Housemann & Brownson, 2003; Kari *et al*, 2015), self-report studies have found that rural and low-SES parents perceive their children to be more physically active than urban and high-SES parents perceived their children to be (Cottrell *et al*, 2015).

The importance placed on physical activity may have been more indicative of the other issues facing residents in a community than the perception of physical activity itself. Residents in lower SES areas have to deal with issues they consider more serious and pressing: issues that would take priority over physical activity in preschool-aged children. Agincourt and Masiphumelele, for example, are both food-insecure communities. Mitchells Plain has one of the highest rates of crime in South Africa (South African Police Service, 2014). Combined with the perception that the children are frequently physically active, there is less reason to be overly concerned that they are not getting enough physical activity and more reason to be concerned with other priorities.

In higher SES areas, the perception was expressed as: “children might not be physically active enough by default, but because of programmes and activities in place, our children achieve acceptable levels of physical activity”. Many of the examples of physical activity and physically active play mentioned by participants in the higher SES areas tended to be scheduled, including extra-curricular activities. Teachers even responded that they intentionally scheduled unstructured play in addition to structured play, in order to make sure children were getting the recommended variety of experience. This illustrates how mindful the participants in higher SES areas were with regards to levels of physical activity in comparison to participants from the lower SES areas.

Participants were asked about both physical activity and active play separately in the focus groups, to illustrate that they were not always the same. Physical activity was described as the children moving their bodies, with examples given, and active play was explained as children moving their bodies while playing. In Agincourt and Masiphumelele it was noticeable by the responses that active play amongst children was a more relatable concept than physical activity, or what is often referred to as exercise. In Rondebosch and Mowbray, the term physical activity itself was well understood, as well as active play, both as highly related (specifically in children) but not identical.

The reaction to the concepts could be at once based on language as well as familiarity with the concept. Participants from higher SES areas reacted to the terms physical activity and active play with understanding and familiarity. They had clearly heard these terms before; one parent would even use jargon used by child development professionals. She mentioned phrases like “gross motor skills”, “core strength” and “shoulder girdle improvement”. Terms like “physical activity”, “developmental milestones” and “motor skill” were clearly in use in the discourse surrounding their children. Although this was most prominent in Rondebosch and Mowbray, it was also true of the head teacher in Mitchells Plain, but not of the other participants.

The specific core perceptions and beliefs that surrounded physical activity and physically active play varied significantly from location to location, less so between teachers and parents. For this reason, the themes have been categorised primarily based on the location of the focus group. If the theme differed between parents and teachers, it is mentioned specifically. The following six categories emerged prominently as core themes out of the coding process described in the methods, using AtlasTi.

1. **High levels of perceived activity**
2. **Physically active play is important for physical, mental and social development**
3. **Physical activity is indicative of good health**
4. **Children learn by playing**
5. **Play is based on experience**
6. **The importance of diet**

The table below highlights the overarching differences between the perceptions based on area. These differences are explained in more detail further on.

Table 2:

Perception surrounding physical activity by location type

Low SES Rural	Township	Low SES Urban	High SES Urban
Physically active play is important for physical development.	Physically active play is important for physical and mental development.	Physically active play is important for physical and mental development.	Physically active play is important for physical, mental and social development.
If a child isn't physically active, they are probably ill.	If a child isn't physically active, they are probably ill.	Children are normally physically active.	Physical activity is important to being healthy. Children are regularly monitored for signs of illness.
The games they play tell you what career they are likely to have when they are adults.	Our children do not have the opportunities to play like the children in richer areas have.	Children develop through play.	Physically active play is vital in developing cognitively and socially, as well as developing motor skills.
Children's play copies what they see and experience.	Children's play copies what their parents do.	Children's play copies what they see and experience, including on TV.	Children's play copies what they see and experience, including on TV.
Sedentary behaviour is rare and usually a sign of ill health.	Sedentary behaviour is rare.	Children are active, but sometimes kept inside for safety reasons.	Sedentary behaviour is usually a result of technology, but we make sure our children get enough exercise.
The children eat "empty calories" at school. Some children are undernourished. There is a lack of nutritional education.	Diet was not raised as a theme.	Diet was not raised as a theme.	Unhealthy food, especially sugar, is considered a big problem for the children.

6.1.1. HIGH LEVELS OF ACTIVITY

All, but one of the participants (54 out of 55) in all the focus groups expressed that they thought their children were active enough (there was one exception in the parent's focus group in Mowbray). In low-SES areas, this tended to be expressed with the assumption that children are physically active by nature, to the point where it would be difficult for them not to be physically active. In high-SES areas, it was expressed that parents and teachers made sure their children participated in enough physical activity. There were usually measures in place - activities and/or rules set by parents and teachers - which would promote physical activity and prevent children from being sedentary for too long. This was a major difference between the areas. The higher the SES of the area, the more concern there was surrounding physical

inactivity and sedentary behaviour. In low-SES areas it was perceived that, if left alone, children would play and be physically active. In high-SES areas, it was a concern that certain children would not.

When asked the question "Do your children ever stay still for an extended period of time?" or a variation thereof, there was a marked difference in responses. In the higher SES areas of Rondebosch and Mowbray, there was note of concern, worry or, at the very least, an understanding of why the question was asked. The thought behind the question did not seem unfamiliar or strange.

(Responding to a question about whether the children watch TV) "My kids only have it for one hour. They can choose to have it for one hour on a Sunday afternoon. So they don't have a lot of that. They watch TV for half an hour to an hour at night. So that's time they sit still and both of them love books. So they'll sit still and look at books. So that'll be about half an hour to an hour at night."

– Mowbray parent

It's clear from this response that the parent has taken steps to prevent certain sedentary behaviours in their children, suggesting that this was not the first time this was considered a potential problem. Although participants considered the physical activity of children in their care, whether they were parents or teachers, they did express that children outside their care might not get enough physical activity. As an example, a parent from Rondebosch mentioned a friend of one of her children who spent extended periods of time playing games on a tablet.

Sampling bias could have had large role in this. The parents who made time to participate in a focus group on physical activity may have been likely to view physical activity as important in their children's lives and more likely to have strategies in place to promote it. The turnout of teachers, on the other hand, was less subject to sampling bias, although it was voluntary. Once a school had decided to participate, individual teachers did not have to go out of their way to be a part of the focus group. However, in front of colleagues, there could be tendency for teachers not to report that children under their care were not receiving enough physical activity.

In the lower SES areas, on the other hand, the concept of children not being physically active enough was reacted to with incredulity and bemusement.

(Moderator) "Do the children ever spend long periods of time sitting still and not moving?"

<laughter>

(Moderator) "Never?"

(Interpreter) "Never."

- excerpt from focus group with Masiphumelele teachers

The thought of the children sitting still for an extended period of time (outside of ill health) seemed to be considered highly unlikely by participants. The tendency of children to run around and play was seen as a fact of life. When probed further, participants were able to give examples when this wasn't the case, albeit only for short periods of time. Nevertheless it was clear that the parents and teachers in Agincourt and Masiphumelele, and to a lesser extent Mitchells Plain, did not consider the children to ever be sedentary for long periods of time or generally physically inactive. This response runs contrary to literature from high-SES which indicates that preschool-aged children are not meeting the recommended guidelines for physical activity; however, it is in line with research indicating that parents reports tend to overestimate physical activity in preschool-aged children (Cliff *et al*, 2009). The belief that preschool children enjoy enough physically active play is also in line with literature regarding the perceptions of parents and teachers (De Craemer *et al*, 2013).

There are a few factors that could be influencing the difference in reaction to this question. Although established guidelines recommend three hours of physical activity a day, those are not necessarily the same levels that parents and teachers consider normal. Parents and teachers may also not be able to accurately gauge how physically active their children are overall. Even if they seem like they are always "running around" and being physically active, children might not be as active as participants might imagine. It is notably tricky to perceive levels of physical activity in preschool-aged children through observation (Cardon & De Bourdeauhuij, 2008). On the other hand, this does not discount the possibility of the parents and teachers being correct. Physical activity levels in these areas might not be below recommendations. Further research conducted alongside this dissertation as part of the larger study should be able to give evidence on this.

The difference in the perception of children's levels of physical activity by SES is also significant. Higher SES areas are more likely to have technological devices that promote sedentary behaviour than lower SES areas, especially with the age group concerned. Smartphones, tablets and computers were mentioned in the focus groups in higher SES areas as reasons for sedentary behaviour (this is discussed in more length later under the "Barriers to Physical Activity" section). Parents in middle- and high- SES areas mentioned these as potential reasons why children do not participate in enough physical activity.

Both parents and teachers in higher SES areas are more likely to have higher levels of education, as well as greater access to media. This makes them more likely to have read articles and watched television programmes which emphasise that sedentary behaviour and physical inactivity are unhealthy for children, even if only through their relationship with overweight and obesity. Even if their children themselves aren't physically inactive, the parents and teachers are aware that this problem may exist for other children.

6.1.2. PHYSICAL ACTIVITY AND ACTIVE PLAY ARE IMPORTANT FOR PHYSICAL, MENTAL AND SOCIAL DEVELOPMENT

All focus groups reported that they believed physical activity and active play were important for physical development. In the urban areas, the role of physical activity in mental development was also mentioned. In the higher SES areas, its role in social development was also emphasised. This illustrates how the priority and importance placed on physical activity were more heightened in higher SES areas than in lower SES areas.

In Agincourt, our rural and low-SES sample, **physical development** was mentioned as the reason why physical activity was important.

"To make their bodies strong by playing and their bones will be strong and it helps to their health."

– Agincourt parent

"If a child is doing active play, they also developing their muscles by moving around."

- Agincourt teacher

Both parents and teachers in Agincourt identified this as the primary motivator for children to be physically active. In an area where children are frequently undernourished and are significantly smaller than their urban or high-SES counterparts, it is unsurprising that physical development is considered a priority. The role of physical activity in strengthening the body was presented by participants as self-evident and common knowledge.

In the focus groups in low-SES urban areas, physically active play's involvement in mental development was also raised. In Masiphumelele and Mitchells Plain, it was mentioned that **physically active play helps children develop physically and mentally**. Participants mentioned how physical activity helped make the children smarter and more attentive in class.

"So she agrees with this one, they both agree that it is very important because it helps with their mental ability and their physical body development, and even in their classes. When they are given a task, or when they come inside, and they play outside then it's good for them, because when they come into the class they will share how they feel about what they did outside."

*– Masiphumelele teacher**

"It is very important, it makes them cleverer, it strengthens their muscles and it opens their minds."

*– Masiphumelele parent**

In the higher SES areas of Rondebosch and Mowbray, physically active play was viewed as important holistically, promoting **physical, mental and social development.**

"On various levels I think um I think a healthy body is a healthy mind and a happy person. I think in terms of all the benefits in terms of not just physical but also emotional because of the impact exercise has in terms of endorphin release and stuff like that. But also in terms of their development later, I mean to be able to write or sit at a desk, all that kinda of things require strong gross motor skills, as well as fine motor skills. So they, in terms of preparing them for school, it's very important and then socially which I think is the most important thing that preschool kids learn. To help them learn how to share and take turns and be a part of…"

– Rondebosch parent

The importance of physically active play was expressed most strongly by the focus group of Rondebosch teachers, who expressed that it was "vital" to learning. In general, the higher the SES of the area, the more emphasis the participants placed on physically active play.

"They learn through (physically active play), we know that's how they learn and they're not just playing you know. Adults see it as just playing, but it's not playing. It's learning about the world around you, it's learning about how to make a plan when something doesn't work and how to move your body in relation to everything around you. And your friends, social interaction, all those things. And if they're going to formal education too soon, they haven't built up an idea of the world around them, that is strong enough for them to be able to cope with abstract ideas, they haven't built up the vocabulary to cope in classroom so they struggle, because they have huge demands put on them."

- Rondebosch teacher

The teachers who participated in focus groups in higher SES areas were well-educated and well-trained professional "career" teachers. The parents of children at these schools, at least the ones who volunteered to attend focus groups, expressed a very active role in learning about how to best raise children. It was clear from these focus groups that every participant had given thought to the issues discussed, reading articles and other information about such topics. Parents even mentioned a competitiveness and goal-oriented culture that existed at these schools; one in which parents would regularly discuss the various strategies they employed to "give their child the best possible opportunities." This was in clear contrast to focus groups in lower-SES areas, where parents expressed more concern over the children behaving themselves and not causing trouble. It was often raised in lower SES areas that physical activity tired the children out, making them easier to deal with.

"I think we're aware, because we're a more structured preschool, and we do what you call a traditional preschool and we still do the activities in the classroom, they don't get a choice whether or not to do an

activity. Everybody does the activity in preparation for the skills they need at school. We're aware that they won't be able to cope with those activities if they haven't developed the gross motor skills to do that. So that is it. It's vitally important. If they're not strong enough and they haven't developed the core strength to sit on a chair, and write and cut or do anything like that then they are going struggle and they'll be tired, they won't have stamina."

- Rondebosch teacher

This illustrates a difference in the perception of child-rearing at this age expressed by participants depending on their SES level. Put simply, in high-SES areas, participants talked about how their children's lives tended to be planned and scheduled in order for them to achieve. In low-SES areas, on the other hand, concern was portrayed as more focused on keeping them safe, healthy and occupied. This illustrates the differing expectations that high-SES and low-SES parents have for children. Evidence has suggested that in general, that not only do children from higher SES families tend to reach developmental milestones quicker, but parents also expect them to do so (Hof, Laursen & Tof, 2002). Higher SES parents also tend to believe they have more power over the development of their children than lower SES parents, and they tend to value self-purpose in their children more than low-SES parents (who tend to value obedience and conformity more) (Hof *et al*, 2002). This highlights how early the benefits of socio-economic status begin to shape the future of children, with the collection of every small benefit that extra attention and financial resources provides.

6.1.3. PHYSICAL INACTIVITY IS INDICATIVE OF POOR HEALTH

In Agincourt particularly, it was conveyed strongly and frequently that **if a child wasn't physically active, they were probably ill**. This went hand-in-hand with the perception that preschool children normally "never sit still"; behaviour that did not adhere to this must indicate that there is a problem, likely physical illness.

"According to my opinion is that we can differentiate if a child is in good health or sick. You can learn or differentiate which play is your child likes most. I can see that if he is not playing what usually plays, then there is a problem with that child."

- Agincourt parent

"It helps them they must not get sick simply like coughing. If they running around even the blood can circulate simply in the bodies. When they play you can see that the child is in good health, but if a child sit down for a long time not playing you can also see that the child is sick."

- Agincourt parent

"That's where we can see if the children are healthy or not. If the other children play all the activities and you find one sitting alone not doing anything you can simply know that the child is not healthy."

- Agincourt teacher

The relationship between physical activity and health was identified, but this relationship was expressed as predominantly one-way. If one were sick, one wouldn't be well enough to be physically active. This was in contrast to the high-SES areas, where physical activity was expressed to be a healthy habit. Whether participants engaged in regular physical activity or not, they felt that they should.

The participants in higher SES areas expressed that they were frequently concerned over whether or not their children were achieving recommended milestones, including physical and cognitive milestones. It was clear that they kept close tabs on their children's performances on specific tasks or exercise. Keeping track of milestones appeared to be how parents and teachers in higher SES areas monitored the children's development. There was a resistance to this from certain parents, a tension they seemed to feel between the child's wellbeing and achieving milestones.

"I wished they played more and did less structured exercise. I wish we had bigger yards and our kids could climb over the fences and play with each other and build, the other day when I went to fetch Jake I saw him making mud cakes… you know in the neighbour's yard, next door. And that to me is what my kids should be doing, it is, so they're too young to… It's great all these things that they have um to teach him to have better ball sense but up to a point. Like the speech thing too. Like everybody's says to me they're supposed to say this and this in this way. And everybody says it, but to me personally she'll get there you know just chill..."

- Rondebosch parent

In Agincourt, on the other hand, physically active play appeared to be how parents kept track of their children's health. A distinction between mental, social or physical health was not conveyed. During visits to the school, some children who were referred to as ill looked as if they may be facing mental problems, while others may have had visual difficulties. While in a high-SES environment, participants communicated that these sorts of problems were quickly identified, the lack of training, knowledge and resources may have allowed them to go unnoticed in lower SES areas.

The Rondebosch teachers explained how they paid close attention to a child's behaviour, to determine whether a child was ill, needed glasses or perhaps was more shy than the other children. Although it wasn't expressed overtly that physical inactivity was indicative of being sick, it is likely that a child in Rondebosch or Mowbray who was unusually inactive or sedentary would be checked for sickness. Research has suggested that "tiredness" and sedentary behaviour (if unaccompanied by a sedentary activity) is used as a warning sign of ill health in higher SES families, although usually when accompanied by a fever or other symptoms (Ertmann, Reventlow, & Söderström, 2011).

The disparity in how physical inactivity was perceived between high-SES areas and low-SES areas was possibly related to physical inactivity and sedentary behaviour being more relatable concepts in higher SES areas.

6.1.4. CHILDREN LEARN BY PLAYING

Parents and teachers in Agincourt expressed that **one could tell what a child's future career was by watching how they played**.

"I think it is good for health cause when they grow up, to show that they want to be a teacher you will see them playing with writing. If they want to be a soldier, you will see them climbing the tree. Police playing with a gun and nurse they will play with bottles saying they prescribing the medication."

- Agincourt parent

"I just want to add on that, if a child plays you can even see their career while they are young. Others like to play soccer or playing by building houses; others do as if they are mother they cook for their children, so that's where you can see the career of that child."

-Agincourt teacher

This belief suggests emphasis on the importance of play in children's learning, albeit in an indirect way. It places more emphasis on children doing what they like, which then suggests what they are likely to do as a profession when they are older. The careers or professions mentioned (policeman, nurse, soldier etc.) reflected the limited employment options of the area and the unfamiliarity with full-time employment in general. Highly-skilled careers, engineers, lawyer or scientist, were not mentioned, as these are unlikely to be careers that the children see or experience in Agincourt. Considering that these explanations of the children's play come from the parents, this view of careers is more likely to stem from their understanding than the children's.

An individual's perception of career opportunity is strongly associated with their socio-economic status as well as race, both through their actual and perceived access to such opportunities (Bester, 2011; Weinger, 1998). Thus, the prospective careers low-SES participants perceived as possibilities for their children were likely to be limited in comparison to those from higher SES areas. This goes further than simply not being aware of career possibilities. Participants from low SES areas mentioned that their children did not have access to the same resources as high SES children, and that this had an effect on their future. This theme was continued in conversations about children learning the skills necessary for sports later on, where parents in Agincourt and Masiphumelele mentioned that they wanted their **children to have the opportunity to become professional sportsmen and women**.

This could be due to lack of viable career options in these areas, while the celebrity of sports stars (soccer stars in particular), especially those with impoverished backgrounds, illustrate a possible route to success,

fame and wealth (Lintner, 2010). Although these "rags to riches" stories are rare, they are well publicised. The lack of sports facilities, resources and training in comparison to higher SES areas is perceived as yet another barrier to their children from having the same shot at professional sports.

The term "fantasy play" was raised in Agincourt as an important part of learning (in Agincourt), in reference to children playing by pretending to be adults. This illustrates that even though physical activity itself wasn't overtly tied to mental development, play was considered important for learning through the fantasy play aspect. Taken as a whole, participants in Agincourt revealed a rather dualistic view of the mental and the physical. Physical activity was related to physical development and building muscle. Fantasy and imagination was related to mental development and learning. There was not a sense of a child's mental and physical development being interrelated, or that either had an influence on the other. This had an influence on how they understood the importance of play and physical activity. Both were considered important, but separately and for different reasons.

"So that's where children have to learn many this there according to the constitution of Grade R and preschool. At fantasy they act as if they are older people. They wear big dresses, big skirts, socks and the must also have the handbags as if they are older women and older fathers. They also learn how to bake or cook at fantasy. At fantasy corner they using these door that is made of mud, they just acting what their parents are doing at home. At book corner they have the books for children, and they choose the books that they want to use, they will open it and if that child is clever she/he can tell you what is happening in that book. At construction they will learn how to build. So in that way the children's class must always be clear and well parted so that it must look beautiful."

- Agincourt teacher

This theme raised a specific issue with regard to the barriers children face in lower SES areas. Focus groups in low-SES areas often drew comparisons between the facilities and resources available in what were perceived as higher SES communities, and how this affected the access children had to opportunities. The subtext was: if children learn by playing and develop through physically active play, and children in low-SES areas do not have access to the training and resources of high-SES areas, then children in lower SES areas are not going to learn or grow as much as those in higher SES areas.

This was expressed particularly strongly in Agincourt and Masiphumelele, but was also touched on in Mitchells Plain. In Agincourt, it was expressed that the government didn't care about them as much as it cared about the urban areas. Likewise, residents in Masiphumelele mentioned that the children in nearby, more developed and affluent, urban areas (namely Fish Hoek), had access to more resources and facilities. This will be discussed in more detail within the "Barriers to Physically Active Play" section.

It is the nature of fantasy to not necessarily require resources; however, the perception in lower SES areas was, nevertheless, that they were at a detriment because of their lack of resources. Participants from

Agincourt mentioned the need for a “fantasy corner” which had props that the children could employ in their fantasy play. It was implied that these sorts of resources would encourage more fantasy play, and therefore more learning. Books were also mentioned in this regard. Although fantasy itself doesn’t require resources, it is potentially limited by the experience of the children. In Agincourt, this experience is especially limited. This relates to another theme, discussed in more detail later, that children’s play is based on what they experience.

Fantasy play was also raised by the teachers in Rondebosch and in Mowbray by the parents (referred to as imaginary playing).

(On talking about how their children play) “Well my kids are a lot younger so their version of animals are cat and dog and no further. Yeah, playing, imaginary playing. There’s no sport in our house yet, they don’t do real sports they haven’t really been exposed to it um yeah, I mean every now and again we’ll get out a tennis racquet and hit a few balls around.”

- Mowbray parent

“Well the younger ones play, I think I'll let you talk about the younger ones. The four to five year olds, they generally play quite a lot of fantasy imaginative games and it depends on what their experience is. So if they do watch television they will want to play games like ninja turtles, or if they've watch Pirates of the Caribbean they will play those.”

- Rondebosch teacher

Fantasy play is common amongst preschool-aged children, and the idea that it is important for childhood development is widespread and deeply rooted. (Lillard et al, 2012). Stagnitti and Lewis (2015) have shown that fantasy play can have a dramatic effect on cognitive skills in preschool-aged children. However, these studies have not suggested that materials have an influence on fantasy play.

Similarly to the Agincourt focus group, teachers in Rondebosch, a higher SES area, also talked about how children’s play can suggest their later interests, although it wasn’t taken as far as foretelling a child’s career. They mentioned how certain social groups of children would have specific activities that they would participate in day-in and day-out. The specific example they mentioned was a group of “builders”. A few boys who, in the years they were there, reportedly would only play with building blocks or sand, making castles, towns and other structures. The teachers talked about how important this play was, not only for developing their motor skills, but also learning social skills from working together to build things. They did not express that they thought this group were likely to go on to become builders, or engineers; however, rather that this likely was a reflection of what they experience at home or on television. This sort of play wasn’t exclusive to the higher SES areas. Participants in lower SES areas mentioned their children playing with sand and building materials, though most of the schools in Agincourt and Masiphumelele did not have building blocks for the children to play with. Building play is associated with certain visual and spatial

reasoning in preschool-aged children (McCulp, O'Brien, Truglio, Alvarez & Huston, 1999). Resources, such as building blocks, that encourage such play are likely to provide a benefit to children who have access to them.

In addition to the importance of physically active play, the importance of this sort of "unsupervised" play, or at least unstructured play, has been well-established (Ginsburg, 2007). Parents in high-SES areas expressed a worry that children could be "overscheduled", and as a parent it was difficult to strike the balance between giving your children the best opportunities that one possibly can while still allowing them to be carefree and let "children be children".

"But I don't think that a child needs to be learning all the time when they're awake…. I think, it is your choice, but what I was saying earlier, rather than putting out lines to rule what children must not do, but to teach the children balance in their lives, which is what you're doing by helping them with learning that its not good to do it all the time."

- Mowbray parent

"Our lives are very structured in our family um so we do <name of child>, my oldest, is involved in physio and OT and so in the morning we do sort of gross motor exercises that are prescribed which sometimes she likes, sometimes she doesn't, because it's a chore. And then she has every afternoon except Friday she has an extra-mural which is usually physical. Which is about 45 minutes activity and then at home we'll do something, fine motor, and then she'll go play outside. But I don't know what she would choose to do. It's usually she goes and jumps on the trampoline for half an hour."

- Rondebosch parent

"Sometimes I feel even to the point, where they don't need to be so specialised yet. For example, my child's swimming, she's already learning strokes. My child does tennis, she's already learning to hit a tennis ball. Sometimes I just think it'd be nice if they just kicked a ball around or threw a ball around or just played with a group of kids and just learned some basic ball skills rather than being focused as an individual. And I think that even later it becomes so competitive that kids get specialised very early into an area whether it be rugby or hockey. And they get pushed. And I don't know that pushing young growing bodies and bones and muscles, very early on into a specialised sport is very good for injuries and things them."

- Rondebosch parent

"The other issue is that there's a lot of pressure on our kids… Not just to perform physically but to perform academically so and it gets more and more every year, I mean I sit at I take them to swimming on a Monday afternoon, and I sit at the swimming pool, and they could be in the pool for an hour potentially. But most kids are sitting on the side of the pool with homework, with whoever's there, whether it's granny or nanny or one of their parents, and they get to swim for 15 minutes before they get out, I think, because

they've got to focus on their homework as well. Um and I think there's a lot of academic pressure that's eating into time."

- Rondebosch parent

This is a similar issue that has been raised in literature in developed countries: the idea that there's too much pressure on children to achieve at an early age or that they are being "over-parented" (Ginsburg, 2007). Although this highly scheduled approach appears to be favourable for most children, there are some children who find this increased pressure a source of stress and anxiety that may even contribute to depression, school avoidance and somatic symptoms (Ginsburg, 2007). Parents who participated in these focus groups expressed that their children were not "overscheduled", but that the pressure and competition was a worry for them. In comparison to their own childhoods, which they (with the lens of nostalgia) described as far more carefree and unscheduled, they lamented that their children didn't get the opportunities to play freely with neighbours on the street. This change was attributed to the increased pressure on children to perform according to set milestones; the danger, or at least perceived dangers, associated with letting children play unsupervised (because of increased crime and traffic); and the proliferation of technology that could otherwise captivate their attention. These are discussed in more detail under "Barriers to physical activity."

This was in stark contrast with the issues facing the children in lower SES areas, where unscheduled unstructured play was expressed, and appeared, to be far more common. Scheduled extramural activity, of the kind that was common in higher SES areas, was less prevalent the lower the SES of the area. The parents and teachers in the lower SES areas also did not present themselves as involved or concerned with the nature of their children's play, but this is qualified by the sampling bias mentioned previously.

There is evidence that this free and unstructured play is distinctly important in its own right, but it has been noted that the amount of time that children in developed countries get to participate in free and unstructured play has declined (Goldstein, 2012). The reasons given for this change are related to a broader shift towards a more hurried lifestyle and increased focus on academics at a younger age. This is in line with the responses of the higher SES focus groups, who talked about how academic pressure starting earlier and an increasing amount of structured activities were preventing their children from "just being kids". This decrease in free and unstructured play appeared to only be a problem in the high SES areas, where the academic pressure was more pronounced, and extracurricular activities were common.

6.1.5. PLAY IS BASED ON EXPERIENCE

The understanding that **children copy what they see and experience**, either from their parents and teachers or through the media they consume, was expressed in both the high- and low-SES areas. In Agincourt, it was mentioned that the children copy adults with their behaviour and play, ranging from playing games that mimic the parents' chores, to reflecting abuse between parents.

"Children are very clever like during the time of ploughing they want to do what they saw you doing by using for spade. If you find them doing that just teach them how you do it because you don't know how clever they are."

- Agincourt parent

"Sometimes it depends on the friend that they have, some children are saying that their parents always fighting so they took it as a good thing."

- Agincourt parent

This theme was raised in most focus groups. In Mitchells Plain, it was only implied, with reference to how children tended to learn bad behaviours from the older children in the community. In the higher SES areas, however, television and other forms of media were quoted more frequently as the influencing factor in what children experience.

"The four to five year olds, they generally play quite a lot of fantasy imaginative games and it depends on what their experience is. So if they do watch television they will want to play games like ninja turtles, or if they've watch Pirates of the Caribbean they will play those."

- Rondebosch teacher

Children learn much of their behaviour through the imitation of those around them. Evidence suggests that this may even be a universal human trait in early childhood (Nielson & Tomaselli, 2010). "Overimitation" refers to the tendency of children to imitate the actions of adults even when more efficient methods are available or when the imitated method fails (Nielson & Tomaselli, 2010). This tendency extends to play as well (Goldman, 1998). Children will play by imitating adults, even if the action does not have any purpose or does not achieve said purpose.

The tendency of children to copy the behaviours of their parents is in line with the conception of an inclusive programme developed with parents and teachers. Both research and participants' reports suggest that an important factor in promoting healthy physical activity (and nutrition) habits in preschool-aged children is that adults in the community act as role models. As a consequence of this, parents and teachers' own beliefs correspond with the idea that they should be involved in behaviour change in their children. Although the adults do not necessarily exhibit behaviours that they want their children to imitate, they do believe that they should.

This raises the "chicken and egg" problem of effecting behaviour change within a community. As established in the literature review, early childhood is a practical and effective period to effect a change through an intervention (Herbst & Huysamen, 2000; Fitsgibbon *et al*, 2004; Trost, *et al*, 2008; Bayer *et al*, 2009; Bond *et al*, 2009; De Silva *et al*, 2010; Ward *et al*, 2010; Alhassan *et al*, 2012). Research has also

suggested that the parents' behaviour plays a significant role in the physical activity of their children (Hinkley *et al*, 2008; Oliver *et al*, 2010; Loprinzi & Trost, 2010). Observation and research investigating risk factors for non-communicable diseases (Shisana *et al*, 2013) suggest that many of the stakeholders in the children's lives themselves exhibit the obesogenic and/or otherwise unhealthy lifestyle and behaviours that the proposed programme would address. It serves to follow that these behaviours may very well be passed down through learned behaviour, outside of play (McVeigh, Norris & de Wet, 2004). The question remains as to how a programme promotes physical activity in children, if the influences from adults in their lives contradict it.

With regards to play specifically, parents in low-SES areas also attributed the children's anti-social behaviour as them copying the adults in the community, and particularly the parents.

"Sometimes it depends on the friend that they have, some children are saying their parents always fighting so they took it as good thing."

- Agincourt parent

Parents in higher SES areas expressed concern, varying between individuals, over the nature of the media that their children consumed. This illustrates that steps had been taken to protect children from experiences that could have negative consequences for their behaviour, although the primary motivator behind this was conveyed as stopping children from viewing content that is inappropriate for them in the traditional sense, namely violent or sexually graphic content.

Although the degree to which children copy the adults they observe directly is fairly well-established, the degree to which the content of media affects children is less so. There is evidence linking violent media to short-term increases in aggression and fearful behaviour (Browne & Hamilton-Giachritsis, 2005). Their research was, in part, prompted by concerns raised by parents over the violent media that their children consumed through video games, movies and other media. Research has tended to focus on negative and high-risk behaviours encouraged by media, rather than whether media that encourages positive behaviour (such as physical activity) has an effect on children's behaviour (Villani, 2001).

Contrary to those from lower SES areas, high-SES parents reflected on their own physical activity habits and whether they were healthy or unhealthy. It was unusual for any of the parents in lower SES areas to intentionally engage in regular, high intensity physical activity (or "exercise") outside of what was a part of daily life. In Agincourt, for example, long walks are a common part of life. The quality of the roads is poor and public transport is often unreliable. Subsistence farming, and the physical labour that goes along with it, is also common in Agincourt. It would be less usual for the parents or teachers to be active for activity's sake. In high-SES areas, physical activity was usually only a part of everyday life for recreational or health reasons. This has been supported by pedometer research in another rural South African setting, which indicated most adults engaged in recommended amounts of light physical activity within a week (Cook,

2012), which was attributable to walking. Rural women were significantly less active than men, in line with the obesity rates (which are significantly higher amongst rural women), and there was a relationship found between steps taken and obesity within the sample. Another study has found that increased physical activity in this population does not prevent obesity, but does protect against type 2 diabetes and cardiovascular disease (Dickie *et al*, 2014) This illustrates that, despite the high levels of light physical activity in the area, more physical activity will have a protective effect against obesity.

This is in line with the SLOTH (Sleep, Leisure-time, occupation, transport and home-oriented activities) model of physical activity (Pratt *et al*, 2004). Those from lower SES families tend to participate in most of their physical activity through occupation, transport and home-oriented activities, as was notably the case in Agincourt and Masiphumelele. On the other hand, time, and leisure time in particular, is when those of higher SES tend to participate in physical activity (Bauman *et al*, 2012). In higher SES areas, these activities like jogging, gym and cycling were mentioned as common habits amongst adults. Parents mentioned examples of cycling or going on short hikes with their children. These are activities that were not common amongst the participants present in the lower-SES focus groups; however, they were not unheard of in low-SES areas. A group of women in Agincourt had a soccer team that practised regularly in the area. Men would sometimes be seen jogging along the side of the road around Agincourt. It is incorrect to assume that these activities are not present in the rural context; however, they were clearly not as prevalent as they were in the urban context. In particular, physical activity for physical activity's sake appeared rare in adult women in the area, as evidenced by responses in the focus groups as well as general levels of physical activity reported. This may be related to a higher tolerance for larger body size in rural black African women, as opposed to urban women of this demographic, which itself has been associated with a higher rate of obesity (Draper, Davidowitz & Goedecke, 2015). In this study, black African women from Khayelitsha responded that they saw exercise as a method of weight loss, which they understood had health benefits, but also perceived as having negative associations of health within the community (Draper, *et al*, 2015).

Despite expressing the belief that their behaviour influences their children's behaviour, parents admitted, sometimes ashamedly, to their own habits and behaviours that they didn't think were a good influence on the children. Despite this, and although physical activity was considered important, there was not significant concern that the children weren't active enough.

6.1.6. THE IMPORTANCE OF DIET

As discussed in the literature review, diet and nutrition are complicated issues in South Africa, particularly in low-SES rural areas. In order to keep the groups focused on the issue of physical activity, there were no guide questions about nutrition or diet included. Nevertheless, in Agincourt, Rondebosch and Mowbray, diet was brought up frequently, without specific prompting, as an issue facing the children in their

communities. It became clear that, although high and low-SES areas have different contexts surrounding diet, the abundance of high-calorie, low nutrition "junk-food" was a major issue in both.

In Agincourt, we observed that children often ate "empty calories" in addition to their school feeding scheme lunches. These included potato or maize chips (generically called Nik-Naks, after the famous brand of South African maize snack) and sugar-sweetened beverages. These were often available at the primary school tuck-shops, which often consisted of a team of mothers who would visit the school to sell a selection of snack foods. Even at the preschools, these sorts of snacks seemed easily available before or after school time.

Data collected as part of the SANHANES-1 report supports this, which reported that 51.3% of school children across South Africa took "lunch money" to school. (Shisana *et al*, 2013) Specifically, 58% of children in rural informal settings took money to school (the highest of every setting researched, although the prevalence for rural formal settings was far lower, at 30.3%). Most of these children would take R5 or less (76.5%), and a few (16.2%) take between R5.50 and R10. The mean amount was R5.75. Teachers in Agincourt explained that most parents found it easier to give their children money for food, rather than to prepare lunch themselves. Parents didn't consider this food bad for the children. Paradoxically, they even mentioned that there was an element of status about children consuming these types of food. It was also considered cheaper and more convenient than fruit and vegetables.

According to SANHANES-1 data, overweight and obesity is a significant problem in the preschool-aged children in rural South Africa (Shisana *et al*, 2013), accompanied by malnutrition and obesogenic lifestyle habits. Overweight and obesity in adulthood is also a significant problem, specifically amongst women (Shisana *et al*, 2013), including in Agincourt. For these reasons, risk factors for obesity (such as stunted growth and obesogenic habits) are also an issue amongst the children in Agincourt. Many in the region live in food insecure environments (subsistence farming can make up a large portion of the general diet). From responses in the focus groups, and observation, there was an apparent lack of knowledge about proper nutrition in some of the parents and teachers. Those in the focus group expressed an interest in learning more about nutrition, specifically what would be appropriate for the preschool age group.

"Like us we taking care of the children at preschool, their parents give their children corn flakes with milk every day more special those young mothers at this age, you find a child just because they eating those cornflakes everyday they will end up having allergies. They serve themselves. Even on their private parts it also affects them, because you find a child when they going to the toilet the worms come out because of the cornflakes every day. I mean we must always change the menu or our breakfast for our children."

-Agincourt parent

In higher SES areas, diet, in particular the amount of sugar and 'junk' food that children ate, was considered one of the most important health issues facing the children.

(On being asked what the most important health issues were for their children) "Food, food, um, yeah I think our kids, well certainly my kids, well some people's homes are different, but I find that my kids eat a lot of sweet things, more than I would like. It's so easily accessible, if you go to the shops, it's right at the till. Everything is always (gestures grabbing a snack) and it's so easy to just say 'get something small, take something small.' So for me it's to get the sugar out of my house."

- Rondebosch parent

"I think the biggest problem with obesity, which seems to be the big thing is food lifestyle, not physical activity lifestyle. You can run around as much as you like but if you're eating or drinking two litres of Coke every day you're going to have too much sugar intake."

- Mowbray parent

With physical activity as the topic of the focus group and research, high-SES parents often assumed that obesity was the major concern of the research. This was a significant point in high-SES areas, as illustrated by the quote by the Mowbray parent above. High-SES participants were aware of the obesity epidemic worldwide and weight loss was a concept that had everyday relevance in their lives. Physical activity, conceptualised and termed as "exercise" in this context, and diet were widely regarded as the primary factors influencing "fatness". Parents and teachers in high-SES areas were relatively well-versed (in comparison to those in low-SES areas) in nutrition and were openly concerned about what their, and others', children were consuming. The amount of sugar was a primary concern mentioned, and was expressed to be something that parents must monitor.

"I think it's more than (the fast food culture). In the office I work in, I work with a couple of guys from Atlantis and we were talking about dieting, not such dieting, but they looked at me and they said you don't seem to change. We were talking about certain things and then they decided to cut sugar out of their coffee, and their weight didn't change. So I asked what they drink at home? They said we drink coke, and I said do you know how much sugar there is in coke? And they each go through 2 litres a day and their parents have died of diabetes and every relation in the older set has got diabetes and they haven't been told that there's sugar in the coke they're drinking. How do they not know that?"

-Mowbray parent

However, despite the participants of the focus groups expressing themselves to be knowledgeable about proper nutrition, it was mentioned that other parents, particularly in less affluent areas, were not. Research suggests that there is a significant relationship between levels of SES and nutrition, in both adults and children (Popkin, 2006). Nutrition in low SES areas tends to be a complicated issue, especially when the region is food insecure. Healthy food was perceived to be more expensive by participants in Agincourt. This perception has also been found in a sample of black African women in Khayelitsha, which is a township near Cape Town (Draper *et al*, 2015). Data have shown that women in these peri-urban

environments (townships) tend to have a higher dietary fat intake and usually buy poor quality food, with a lack of nutritional variety (Micklesfield *et al*, 2013). Likewise, low SES tends to be associated with poor dietary quality, characterised by low food variety and diversity scores (Micklesfield *et al*, 2013).

Research from developed countries has shown that diet-focused interventions with parents can have a significant and positive effect on their children (Okely *et al*, 2010; William *et al*, 2013). Although the research presented in this thesis was focussed on physical activity, it became clear across SES groups that any programme aimed at focusing on the topics of physical activity, physically active play and sedentary behaviour would inevitably have to address nutrition and diet in some capacity.

6.2. BARRIERS TO PHYSICALLY ACTIVE PLAY AND GROSS MOTOR SKILL DEVELOPMENT

As discussed previously, participants generally indicated that they thought their children were physically active enough, although there were concerns in the higher SES areas. Despite this, they did identify that there were barriers preventing or limiting the children's physically active play. These barriers varied dramatically based on the area of the focus group.

Table 3 below shows the main perceived barriers to physically active play and gross motor skills development according to the participants within the focus groups.

Table 3:

Barriers to physical activity and gross motor skills development by location

Low SES Rural	Township	Low SES Urban	High SES Urban
There is a lack of safe space for children to play.	There is a lack of safe space for children to play.	There is a lack of safe space for children to play.	Children usually play in a private space.
Children do not have access to the same facilities as high-SES children.	Children do not have access to the same facilities as high-SES children.	Children often have to travel far for facilities, but this isn't the primary barrier.	We are privileged to have very good facilities.
Poverty is a root cause for many of the issues children face.	Poverty is a root cause for many of the issues children face.	Money is one of the primary barriers to the school.	Some extracurricular activities are expensive, but we can usually afford it.
Time is not the most significant issue for parents.	Time was a problem for some participants.	Time is a significant barrier for parents, who usually work.	Time is a significant barrier for parents. Extracurricular activities and domestic help mitigate this.
Many parents and teachers do not have the knowledge, training or energy to properly care for children.	Many parents and teachers do not have the knowledge, training or energy to properly care for children.	Teachers are self-sufficient and capable, despite lack of resources.	Teachers are well-trained and capable career teachers. Parents are well-educated.
Crime is a perceived as a real and significant danger to children.	Crime is a perceived as a real and significant danger to children.	Crime is a perceived as a real and significant danger to children.	Crime is perceived as a danger, but not a significant one.
Traffic was dangerous for unsupervised children.	Traffic was not mentioned.	Traffic was dangerous for unsupervised children.	Traffic was dangerous for unsupervised children.
Technology was not a barrier to physical activity, because of lack of access.	Technology was not a barrier to physical activity, because of lack of access.	Technology was not a barrier to physical activity, because of lack of access.	Technology was potentially the most significant barrier to physical activity in children.

6.2.1. SPACE, RESOURCES AND FACILITIES

In lower SES areas, the lack of space and resources were expressed as the most significant barriers to children's ability to play in a physically active manner that promoted gross motor skills development. Although participants expressed that children in these areas were physically active, they were concerned that their children didn't have access to the sorts of resources that children in higher SES areas have and, as a result, that their children would not benefit developmentally as much as those in higher SES areas.

When discussing the space, resources and facilities, a few key themes emerged.

6.2.1.1. A lack of safe spaces to play

One of the primary concerns mentioned by parents and teachers in low-SES areas was over not having a safe and secure place for the children to play. In Masiphumelele, this was readily apparent. The township was the most densely populated area (Statistics South Africa, 2011) researched, and even driving to the school was difficult because of all the people walking in the streets. Observationally, there appeared to be very few places where children could safely play, outside of the designated preschool play area. There is very little free space within Masiphumelele generally.

Figure 5: Although taken on a Saturday (when there were fewer cars and people on the street), the above photograph illustrates how little free space there is available within Masiphumelele.

Agincourt, on the other hand, was the most sparsely populated region in the research (Statistics South Africa, 2011). Observationally, space appeared to be plentiful. However, these areas weren't considered safe for preschool-aged children without supervision. Participants mentioned that children could get injured and no one would be present to check on them. The participants in Mitchells Plain also raised the lack of safe spaces to play as a major barrier to physically active play in their children, particularly that crime and traffic prevented them from letting the children play in the street. These beliefs were by no means

unfounded: Mitchells Plain has a high rate of violent crime in particular gang violence. These specific safety concerns are discussed later in the "Safety" section.

The higher SES areas never mentioned having spaces in the community where children of this age-group could play unsupervised. Children would only play in the park if accompanied, normally by a parent or nanny. It is common for middle- to upper- SES families in South Africa to have domestic help, sometimes a live-in domestic worker who helps with housework and with taking care of the children. While at school, children were supervised by teachers. However, the notable difference between the two areas was that families in higher-SES areas usually had a private space to play, a resource seldom as available in lower SES areas. It was mentioned that children in these areas tended to play in their gardens at home, with siblings if they had them. This has also been supported by research (Veitch Bagley, Ball & Salmon, 2006), which suggests that children in higher-SES communities tend to play on their families' properties (gardens, yards or lawns). The resource of having a privately owned space for children to play is unique to higher SES areas, or to a select few in low-SES areas and helps mitigate concerns over the safety of children when playing.

The participants in high-SES areas like Rondebosch and Mowbray tended to live in suburban houses, usually with large walls, electric gates and often electric fences. In Mitchells Plain, participants also lived in suburban houses, albeit ones that were usually less expensive and with less extensive security measures. In Masiphumelele, most of the housing is informal, often what are referred to as "shacks". These are small and usually have little in the way of a garden or yard. Properties in Agincourt range from similar "shacks" to larger houses, which may have fences, but seldom have large walls that keep children in or others out.

Outside of the availability of private spaces, high-SES children also participated in organised extra-mural activities. These were usually offered through the school and included a wide variety of activities, from dancing, basic sports skills or swimming lessons. These activities were usually designed with the aim of specifically developing gross motor skills in preschool-aged children. These activities also provided a safe and secure context for young children to engage in physically active play, without requiring a time commitment from the parents.

"My daughter was involved in something called Mighty Muscles which was a once a week, they went to the park, unfortunately it was fairly costly. And it was a group of kids that go together they do little obstacle courses, they kick around a ball, all supervised. And I felt that she was safe in that environment that the exercise was appropriate and the interaction was appropriate so it was a great program."

- Rondebosch parent

According to observation and responses by participants, children tended to play unsupervised in public more in low-SES areas than they were in high-SES areas, despite these parents and teachers expressing more worry over the safety of unsupervised play. It is possible that the concern over unsupervised play stems from this difference. Participants whose children played without supervision were more concerned about its safety than those whose children never played with supervision, who would have no reason to be concerned over it.

UNICEF (2012) identified that, in Africa, there tends to be a notion that children in urban centres are inevitably better off than those in rural areas. They were quick to highlight that urban living has many serious drawbacks, including a lack of safe and clean spaces to play and the dangers of traffic, especially in townships. Within our samples, the more urban (and the higher the SES of) the area, the less common it was to let children play outside unsupervised. However, the suburban areas also tended to have more opportunities for safe supervised spaces to play in, albeit ones that only higher SES parents can afford. It has also been argued that urban living has tended to result in more risk-averse parenting styles (Whitebread, 2012). These appeared to be interrelated. This development of private space and suburbanisation is related to urban living and the challenges it poses to child-rearing. In the higher SES urban areas, the development of extra-curricula activities (as well as nannies) is likely related to parents lacking time, but having the financial resources to pay for help. This is, at its heart, a defining characteristic of urban living: the division of labour. It is also one that disproportionately favours those of higher SES.

6.2.1.2. Lack of facilities

Participants in Agincourt and Masiphumelele, the two lowest SES areas researched, expressed that a lack of facilities prevented the children from playing the sports or games that children in higher SES areas played. Poverty was implicated as the reason for this.

"And another thing if maybe they have swimming pools where they can and swim. Our children in our community do not know how to swim because they don't have those facilities to learn at. They don't have even the soccer field where they can learn to play. Or netball for the girls. They also don't even know how to play tennis because of the poverty."

- Agincourt parent

Particular sports facilities were mentioned, such as tennis and volleyball courts. Participants in lower SES areas felt that their children were not receiving the same opportunities as children who had access to these sorts of facilities. This was particularly true in Masiphumelele, which was in close proximity to wealthier suburbs with more facilities. On this topic in particular, it seemed that participants, particularly the parents, sometimes generalised their responses to children outside of the preschool-aged range. When they spoke of children, they didn't only refer to their own (who were of preschool age). It was sometimes unclear whether they were speaking about their perceptions of physical activity in older children as well. This is discussed in more detail in the limitations section.

Figure 6: A comparison between the resources available in a school in Agincourt (left) and Rondebosch (right). In both these schools, facilities were available for the preschool-aged children. This was the best equipped playground of the Agincourt preschool.

Some schools in the area, included ones where we conducted focus groups, did have facilities. In Agincourt, there were soccer fields at a few of the primary schools as well as public ones, but these were often in a state of disrepair. This illustrates that one of the prominent issues for facilities, and other resources, in Agincourt is not only the presence of the facilities, but also the financial or human resources to maintain them. Whether attributable to lack of expertise, financial capabilities, vandalism or neglect, there were many examples of facilities in Agincourt that were not properly utilised because they had not been properly maintained. Alongside their need for facilities, participants were quick to highlight that the facilities alone would not be enough. This appeared to be more significant than the lack of facilities themselves.

"Even if they can bring those facilities if we don't have people who have knowledge about those games they will not use those facilities. Like here in Agincourt I have seen the tennis court but just because no one has knowledge for that it means it won't work. If maybe the government, or (the research team) can help us with those facilities it can be good."

- Agincourt parent

In Masiphumelele, participants mentioned that there was a sports centre and a park for children to use. The primary complaint mentioned with regards to these facilities was that they were designed for the older children, and the younger children were not accommodated for and would not be safe playing on them (because of both the nature of the facilities and because of the older children.)

"The sports centre, it's only open when there's a tournament. For the small kids, the preschool children, they don't have the facilities. They have to be taken to Fish Hoek. The only things that are available are for the older kids and older people. So for the small ones, they are not accommodated for."

- Masiphumelele parent

In Mitchells Plain, resources were not highlighted as a barrier to physical activity to the same degree as in Agincourt and Masiphumelele, despite also being a low-SES area. The teachers at the school itself expressed that it had the facilities they needed. They also expressed a sense of self-sufficiency and ingenuity. Through this the belief that they could make do with what they had.

"You say you might not have space, then we'd take them outside and find space. To run and jump and kick the ball. To me there's always a way out, you need to improvise something if you don't have that. To teach a child certain skills, you must improvise... You can't let the child leave the ECD if the child doesn't know how to climb a jungle gym or kick a ball. If you don't have a ball you make one out of paper mache or things like that."

- Mitchells Plain teacher

"Right, then I would say, let them go out for at least three quarters of an hour because when they're going to go out then it's going to go out then it's going to rain then there's no outside play. All the activities, the obstacle course, we can do that inside, that's okay inside."

- Mitchells Plain teacher

In the community, there were facilities mentioned, but it was noted that although they didn't identify a lack of facilities as a primary barrier to physically active play, more facilities certainly would help

"*There is places, but they're kinda far for us. Our children can't walk over there, you must rather to take them there. On Saturdays it will be okay, because it's every Saturday there is something on, there is sports on a Saturday. And on school holidays, that will be open there, that will be open there and here by the <name of institution> centre there. There will be games for the children to play, to come and play, they use that it used to be there. And they come around to pick up your children here by the parkade. And they bring them back."*

- Mitchells Plain teacher

"In this area they should have made also like a centre, where the children can go in the afternoon to go play there, basketball and netball, and things like that."

- Mitchells Plain parent

A teacher in Mitchells Plain also expressed an interesting observation. She mentioned that facilities should be shared with the community, in order to be accepted by the community. In her example, she mentioned that if other children are not allowed to use the facilities, they might vandalise the space.

"I think we have space. From this wall at the back to the next road. From that road to the next road is educare. But it's fenced off. So if I can get a sponsor, or a donor, to close that section and do a proper play park, then I would then allow the children more time there and when we close we get one of the street parents to take the key. So the street children can use that area as well, otherwise they going to vandalise it. And then she takes charge there until about 9 o'clock then she locks the gate. So resources and the money the funding is not there for that play park. It's there for the ECD and for the community."

- Mitchells Plain teacher

Although this was only expressed once in one focus group, it embodies the kind of insight that this research hoped to discover from these focus groups. It illustrates that although a programme might focus on a specific school, it would have to take into account the needs and reaction of the entire community concerned.

6.2.1.3. Financial resources

The available financial resources vary greatly between high- and low-SES areas, almost by definition. For this reason, the lack of financial resources was apparent in low-SES areas. Even in Mitchells Plain, where the teachers expressed a strong sense of self-sufficiency, that lack of finances was raised as a problem.

"I think we have space… the resources and the money the funding is not there for that play park. It's there used for the ECD (Early Childhood Development) and the community."

- Mitchells Plain teacher

"What I'm saying is not possible, is because of money, it can happen in a day even if you want to make a soccer field it's difficult. Our community is very poor that is why we can't afford."

- Agincourt parent

Financial concerns were also mentioned in high-SES areas, with regards to the extra-mural activities offered. Programmes such as "PlayBall", "Monkeynastics" and others were mentioned as activities where parents could leave their children for supervised physical play and the development of physical skills. These programmes were considered expensive even for the higher SES participants, and would not be accessible to low-SES urban dwellers.

6.2.1.4. Play resources

Participants at the focus groups in Agincourt and Masiphumelele highlighted the need for basic teaching resources, such as toys and furniture. With regards to toys, teachers and parents claimed that children often fought over toys because there were not enough to go around. They expressed a need for chairs and tables, to replace those that had been broken. Although these requests were seldom related to physical activity, parents and teachers would still ask.

Figure 7: The indoor teaching and play area at the preschool in Masiphumelele.

"Another thing is the poverty, the Grade R does not have classes. If maybe you can help us by giving us information or you help us by building the classes for Grade R. Our government always promise but they don't fulfil their promises. We (are) also asking for furniture because our classes does not have chairs and tables. Even the cupboard when you can put your things we don't have it. If it's raining they suffer. If maybe you can help us."

- Agincourt teacher

"I think if preschools can have more toys so that they must not play the whole day or learn the whole day."

- Agincourt parent

It's worth noting here, that when material resources were given to the lower SES areas, they would often disappear quickly or would deteriorate through lack of maintenance. The reasons for this were unclear, although it seems they were sometimes taken home by teachers and never returned. Furthermore, without the expertise required to maintain them, nor a feeling of responsibility over them, these resources would fall into disrepair.

"We haven't got enough resources, especially outside in the fields, we have the small ones. We haven't got the bicycles scooters, whatever, ropes, hula hoops. And even that table… we haven't got that table, and we haven't got enough space for it even if we could get it."

- Masiphumelele teacher

"I think the space is there. Probably resources, money and resources."

- Mitchells Plain teacher

It is clear that any programme to develop and promote physically active play would either have to provide its own resources, or be designed so that resources are not required.

6.2.1.5. Human resources

Probably the most important barrier to physical activity, physically active play and gross motor skills development in low-SES areas was the lack of well-trained and educated teachers and/or facilitators - people who could utilise and maintain resources, develop activities and games for the children, or even co-ordinate supervision so the children can play safely by themselves.

"I think it's more important to find some person to do this. Because I can get the training to teach them, but I won't have enough time. We need someone who is properly trained. There must be one person who needs to focus on it."

- Masiphumelele father

"If there can be people that can help around at times when they do the physical activities that would be great. Because they easily lose focus. Um so they're so used to them, even when they're talking. If someone that they don't know, that's not family, they pay attention to that person. So if, if maybe a facilitator would come, around the time they do the physical activities to help the other person that would help."

- Agincourt teacher

"Can I just mention that they don't have equipment, they don't have the space, they don't have the people to teach the kids the sports. They don't have everything, all the stuff that is needed for the kids to play or to do the physical activities is not available."

- Masiphumelele parent

Supervision itself was a major theme that emerged in lower-SES areas. This was strongly expressed in Agincourt and Masiphumelele, albeit often wrapped in the idea that there are no places to play because the spaces aren't safe. Although the lack of facilities and space expressed in these areas is a real concern, especially in Masiphumelele which is overpopulated, the only way it would be safe for children of this age group to be able to play in an area safely is with some form of supervision.

"That places they need to have security who are looking for those children and it is well fenced."

- Agincourt teacher

"They are playing alone, that's where danger can be. Because there's no adult there at that time."

- Masiphumelele teacher

This was not exclusively an issue of training or education, but also one of manpower. Classes in higher SES areas tend to be smaller, and it was common for a teacher to have a helper in the classroom. Likewise, parents in high-SES areas often had help from domestic workers, something extremely rare in lower-SES areas. Although grandparents reportedly played more of a role in child-rearing in lower SES areas than higher SES areas, it was mentioned that their age sometimes prevented them from properly caring for the children, or promoting and/or participating in physically active play.

"Another thing that they can train us is like I left my child with my mother and she is old, we don't even tell her what is for breakfast, lunch and supper. Our parents are old and when our children said they hungry ever if it's early in the morning the grandmother will give them the food that left last night and the food is cold they don't care cause they old and we didn't told them how to take care of them. But if you can also teach or mother it with also help our children to be creative."

- Agincourt parent

In Agincourt, participants worried that many parents and teachers in the community did not know how to look after their children properly. This was sometimes a criticism levelled at other parents in the community, but was sometimes expressed as an admission that included themselves. The teachers who participated in the focus groups usually only had limited education and training, which has been shown to have a strong influence on parental style (Hoff *et al*, 2002).

"Another thing is that the problem is that young girls also have a problem with children: They don't have that love for children. I remember when the preschools that I'm working at it's the community who has hired them because they know their behaviour. Most of the time ladies when the children ask to go to toilet or anything they shouting at them and say 'I'm tired. Go and sit down!' I remember one day the other teacher, the children came to her saying that the food that they eat is not enough and asking for more. Instead of talking to them nicely she got angry saying that they eat too much while it is their money that they paying. Its affect me until I said they have paid for this good give them more. That is why we said we want older people because they will take care of these kids."

- Agincourt parent

In contrast to the sense of self-sufficiency that was expressed in Mitchells Plain, many of the participants in Agincourt, and Masiphumelele to a lesser extent, expressed a sense of dependency. In Agincourt especially, it was often mentioned that "they", whether referencing government or large institutions, should fix the problems in the community.

"Poverty contributes. Even our municipality does not care about us. If our municipality was interested they would have to build us places where children can be able to play at. And at those places I think they will be playing safe."

- Agincourt parent

"According to my opinion is that if at the preschool they can hire people who are going to teach them many activities in our community. Even if that can bring those facilities if we don't have people who have knowledge about those games they will put those facilities in the classrooms, because they won't use it. Like here in Agincourt I have seen the tennis court, but just because no one has knowledge, it won't work. If maybe the government or <research team> can help us with those resources it can be good. But if we don't have people who have knowledge with those games they will take those resources and put them in the staff room."

- Agincourt parent

It is important to note that the focus groups invited participants to talk openly about any issues facing preschool-aged children, as well as how they could be solved. In a low-SES context, there are far more of these barriers present and therefore more for participants to mention. Nevertheless, in the higher SES focus groups, there was a sense of responsibility for overcoming these problems that wasn't apparent in the Agincourt focus groups. There was a greater sense of personal responsibility over the welfare of the children and the resources that they benefited from. This was exacerbated by the large number of children that Agincourt teachers had to care for, as well as the fact that most of them were older women who had little education or training in teaching.

"Most of our preschools have a shortage of teachers, and you find that it's only two teachers and the children are more than 100 and they won't be able to teach them right. Most of the time those who are working on preschools are older people and it's difficult for them to teach activities to young children."

- Agincourt teacher

6.2.2. TIME

Parental involvement has long been considered an influential factor in preschool-aged children's physically active play (Hinkley *et al*, 2011). The time available for parents, and their children, is therefore, potentially related to the levels and type of physical activity of the child. In general, the parents in the rural or quasi-urban area focus groups, namely Agincourt and Masiphumelele, mentioned having more time available than money. This group was almost exclusively women, mostly mothers, and most did not have full-time employment. If mothers were employed, then grandmothers would often take care of children. Notably, the one father (in Masiphumelele) who attended a focus group mentioned time is a barrier preventing him from playing with his child.

Aside from mentions of time constraints, this theme was reinforced by the high turnout at these focus groups. The mean turnout for focus groups in Agincourt and Masiphumelele was 10 participants, compared to a mean of 2.3 between Mitchells Plain, Rondebosch and Mowbray. Because sampling procedures and school sizes were different, this is not a statistically significant result. Nevertheless it does illustrate a marked difference in the number of participants turned out to participate.

In Rondebosch and Mowbray, the lack of time available to parents was made apparent before the focus groups began through the difficulty faced in getting parents to attend. The teachers attributed this to the time available. The parents who did find time to participate in the focus groups themselves expressed that they were only available because they either worked from home or worked part-time. Most families, it was claimed by teachers and parents, were dual SES, with both parents working full-time.

"I think the time for parents with kids is very limited in a lot of families."

- Rondebosch parent

This issue is likely more pervasive than what was expressed in the focus groups, as the sampling procedure was likely to exclude parents with more severe time constraints. As mentioned above, these time constraints were mentioned as being more of a problem for other parents, rather than those in the focus groups. In addition to the time challenges faced by the parents, their frequent mentions of their children's business illustrated that their time constraints may also be a problem. Time constraints in the lives of young children have previously been identified as barriers to physically active play (Trost et al, 1997).

This relates back to the SLOTH model of physical activity, where leisure time in particular was identified as the primary occasion for those of higher SES to participate in physical activity (Bauman, 2012). In higher SES areas, this would imply that a lack of leisure time would directly result in a lack of physical activity, as opposed to lower SES areas, where physical activity is more commonly a part of daily necessity (through transport etc.) In Mitchells Plain the situation was presented differently, and does not fit as neatly into the SLOTH model. As in the high SES areas, there was a very low turnout for the focus groups, for similar reasons. In Mitchells Plain, it was also common for both parents to be employed full-time. Even attempts to schedule the focus group around the specific work schedules of those invited did not increase the turnout. The turnout itself suggested that time was also a significant factor for parents in Mitchells Plain.

6.2.3. SAFETY

Broadly speaking, concerns of the safety of the children were present in all areas, but were particularly emphasised in the lower SES areas.

These were broken into roughly four categories

1. **Crime**

2. **Older children**
3. **Traffic**
4. **Accidents**
5. **Sickness**

6.2.3.1. Crime

A perception of crime was clearly present in the focus groups in Agincourt and Mitchells Plain. These concerns are by no means unfounded. Mitchells Plain particularly has one of the highest violent crime rates in the country and the highest rate of drug-related crime (South African Police Service, 2015). Agincourt has a high, and rapidly growing, rate of violence (Mosiane, 2009). These concerns were also present elsewhere, although less insistently or frequently mentioned.

In Agincourt, criminal dangers were expressed frequently as a danger with the specific examples of rape and kidnapping mentioned. These two dangers were raised repeatedly and insistently.

"We are supervising them because nowadays it is not safe for the children to play alone, people can come and kidnap them or rape them while you still inside the house."

- Agincourt parent

"It is because they still young if they play far away from home, nowadays it is so dangerous because someone can come and grab them not knowing who did and those things and where did he go."

- Agincourt parent

"It's not good, because if you leave them go away being alone you won't know what will happen to them. If you let them go far away you will find they meet with older people where they got raped or the kidnapped them."

- Agincourt teacher

"It's not safe for our children to go and play outside because there are people who are dangerous these days. They can call your children and promise to give some sweets meanwhile they want to kidnap them or rape them without (being) seen by anybody."

- Agincourt teacher

Despite the perceived dangers in the area, children could often be seen playing in the street, far more in the lower SES areas (both urban and rural) than in the higher SES urban areas. Although parents and teachers claimed that young children should not be left alone to play unsupervised because of safety dangers, children were often left alone to play unsupervised. This is not necessarily as dissonant as it appears. The reason why these dangers were expressed so acutely could be because the children do play unsupervised on the streets more often. This tendency makes the children more susceptible to criminal dangers than those in private space behind large walls in urban areas.

In Mitchells Plain, criminal violence was a central and repeated theme, both referenced as a barrier to physically active play and as an important issue facing the community as a whole. These responses included the police as a troubling and dangerous presence. Both a parent and teacher raised stories of either police brutality or the police unsettling the children with their presence, including several first-hand examples of their experience of this violence. They also mentioned murders that recently took place in the area. It was clear that crime was seen as a present and real threat in the community, because of this, it was considered far too dangerous for children to play outside unsupervised. This experience of crime being a barrier towards physical activity outdoor play has been identified by research. Perceptions of crime were found to affect physical activity in adult black South African women (Micklesfield *et al*, 2013), and American research also linked perception of the neighbourhood as being unsafe to decreased levels of physical activity in low-income urban children (Weir, Etelson & Brand, 2006).

In Masiphumelele, similar concerns were raised, although not as frequently or emotively. Rape was mentioned specifically as a danger facing the children. It's worth noting that following the focus group, Masiphumelele faced serious rioting and violence, although it was mentioned by residents (outside of the focus group) that this was not usual.

**"(The parents) are scared (the children) might be raped."*

- Masiphumelele parent

Crime was also mentioned in Rondebosch and Mowbray, although it was spoken about as far more abstract concept. It was something that parents and teachers felt the children were adequately secure against. Although children weren't allowed to play unsupervised for safety reasons, and crime was considered a part of this, it didn't loom over the focus group as a danger in the same way it did in lower SES areas. The most serious example of crime raised was a cell phone being stolen at the park.

"Yeah, we've got all the basics in terms of safe water and sanitation and all those kinda things that other people don't have. Um I think possibly I wouldn't let me child walk down the street own, I wouldn't let her go to the park on her own. I certainly wouldn't let her swim by herself at home."

- Rondebosch parent

Research from developed countries, such as the UK and Australia, has supported that concerns over safety are not exclusively a perceived barrier in low-SES areas or developing countries, but are also of a concern in developed nations (Veitch *et al*, 2006; Brockman, Jago & Fox, 2011).

6.2.3.2. Older children

Space designated for children is important, but "children" can be a broad category. It was reported that when children of different ages played in the same area at the same time, the younger children were unable to play properly. Not only did older children reportedly push younger children around, and not let them use

facilities, but were said to sometimes actively bully or abuse them. A particular danger stated from unsupervised play was that of older children assaulting younger children.

"Sometimes if you find that those children are busy playing soccer when they older ones come there they just kick them or chase them."

- Agincourt teacher

Participants expressed that younger children needed their own space separate to play away from the older children. Older children reportedly did not let them younger children use facilities and equipment or play peacefully. It was also mentioned that older children would even hurt or sexually abuse younger children. The difference in age being a problem was mentioned across the focus groups, in lower SES areas and higher SES areas, although with varying degrees of severity. Any programme aimed to promote physical activity would have to take this into account. The narrower the age range included together, the better.

6.2.3.3. Traffic

Traffic was perceived as a serious danger to the children in Agincourt, Mitchells Plain and Rondebosch. The roads and transport infrastructure in Agincourt are very poorly maintained. There were numerous potholes; pedestrians walked across the road with no heed for the rules of traffic, and domestic animals often wandered onto the road. Many roads did not have streetlights. All this created a dangerous traffic environment for children.

"Even if we are supervising them always, but there is time where you have to check them and if you don't see them you have to look for them because you can find them playing at the road and a car hit them without being seen."

- Agincourt parent

In Mitchells Plain, traffic was mentioned frequently as being very dangerous for the children. Parents mentioned that cars tended to speed along the main roads, without caring if children were around. Observation of the area supported these responses, cars could be seen speeding and driving recklessly nearby children playing on the road.

"Yes, I don't even let me two boys, as soon as I fetch them here. They're behind lock and key because I can't let them run on the road at all."

- Mitchells Plain parent

It was clear from the responses in Mitchells Plain that concerns about safety, primarily crime and traffic, were considered a major barrier preventing parents from letting their children to play as freely as they would like. In Rondebosch, traffic was presented as something that made parents uncomfortable with their children being out on the street, unsupervised or not. Parents mentioned that they could walk to school, but

were sometimes worried of crossing busy roads. They claimed that drivers were not conscious of the young children in the area.

"Well the common, they've built a very nice cycle track for kids now that we can use um it would be nicer if we had cycle tracks that we could actually ride to school on, coz I feel nervous riding on main roads with the traffic.

(Another participant replies) It's fine, we go regularly because we just pass the one road.

We do as well but I feel nervous when we cross the big roads."

- Rondebosch parents

6.2.3.4. Accidents

Preschool-aged children are prone to hurting themselves and parents will inevitably worry about them. Concerns over accidents were raised in every focus group. However, the nature of some of these accidents varied between the urban to rural settings.

"There are places like parks that we mentioned tennis courts, those places there are securities who are looking at that places. If maybe they went to the soccer field like <name of place> soccer field. It's not safe because they can get injured and no one is looking at them."

- Agincourt parent

Although it is impossible to avoid the risk of accidents, the key factor that was expressed in mitigating it was supervision. Supervision was considered key to keeping them safe from the dangers of accidents. It was expressed that these accidents are a normal part of childhood; however, without supervision they can be dangerous. Higher SES participants considered accidents a normal and important part of childhood, albeit with the benefit of private spaces and supervision (even with domestic help). It was in Agincourt and Masiphumelele, where children tended to play without supervision, that the risk of accidental injury was more severe.

6.2.3.5. Sickness

Locals described Masiphumelele as cosmopolitan, with residents from different countries and different parts of South Africa. The danger of this, as mentioned in one focus group, is that it spreads illnesses from all sorts of different areas. This meant that children were at risk of sickness when playing with other children or when exposed to strangers. Tuberculosis, a common and life threatening illness in South Africa, was quoted as being one of them.

**"There are so many different people here, from different countries, we bring our diseases… all of them."*

- Masiphumelele parent

**"There is a lot of TB in the air."*

- Masiphumelele parent

Uncleanliness was seen as a problem in Masiphumelele, as well as mosquitos. Unlike Agincourt, Masiphumelele is not a malaria area, but parents nevertheless expressed worry over their children being bitten by mosquitos.

6.2.4. TECHNOLOGY

Across all the focus groups, there was a general consensus that children were generally physically active and did not sit still for very long at all. There was one example of sedentary behaviour that children exhibited when given the chance, particularly in the higher SES areas. One participant quite eloquently dubbed it the "lure of the screen": the tendency for children to play with technological devices, like smartphones, tablets and computers.

"If anything, I'd say the lure of the screen would be the biggest hindrance to, possibly to physical activity. Possibly the fact that it's more convenient to entertain one's children and easier if you're a child to just sit down and watch something and play with something, than it is to run around."

- Mowbray parent

In the past, television might have been singled out as the main contributor to sedentary behaviour. Parents mentioned that their children did sometimes watch TV, but that they tended to jump around and interact with the programmes they watched. Children's television shows generally encouraged this kind of movement. Characters on the show might often prompt children to jump, clap their hands and stamp their feet. Even if they didn't, children were described as playing along anyway.

Games on tablets, phones and computers, on the other hand, appeared to occupy all the attention of children when they played them. In addition to immersing the children, it was also expressed that children could play them for extremely long periods of time.

"I'm telling you I mean I've left him on occasion, I've let him play for hours. Because I was under the weather or because I needed to do stuff and I couldn't actually interact, I didn't have time to interact with him, and I let him and eventually I said look that's enough already, and he says 'Aaaaahhhh, but it's so short.' so it makes no difference if it's half an hour or if it's six it doesn't matter to him."

- Mowbray parent

"My kids are on the iPad a lot."

- Rondebosch parent

This is potentially the most telling difference between the barriers to physically active play in the current generation of preschool children and previous generations. These mobile games appear to be a sedentary activity that is engaging enough mentally to prevent children from playing physically for long periods of time, on a level that exceeds television or physical toys. Observation reinforced this point. Even when

preschool children were playing with toys or watching TV, they would still exhibit at least limited physical activity. Children playing games on tablets do not.

"I think if they're absorbed they, I means I've seen my son play with his LEGO on the floor for a long time. You know, and until its absorbing its fine. And then when it's… when the thing has to get thrown it starts to become physical."

- Mowbray parent

A parent in the Mowbray listed this 'lure of the screen' as the most important issue facing children in the community, although the concern wasn't specific to the impact of the sedentary behaviour and physical activity, but also worries over what sort of media they consume on the devices. Nevertheless, parents worried over the time that children spent engaging with technology, rather than physically playing outside. This proved to be a contested opinion in this focus group, and was challenged by another parent. She raised the point that the world was becoming increasingly technologically focused, and depriving children of access to such devices can put them at a disadvantage in the future. This does suggest that parents believe these devices are here to stay. Despite parents attempt to limit their children's time on them, these devices are only likely to increase in abundance and in how effectively they absorb the attention of children. This feedback from the higher SES focus groups suggest that the role of technology is going to be an increasingly important factor in sedentary behaviour in the future, and one that might need its own strategy in tackling.

As was mentioned previously under "Perceptions of physical activity", parents put rules in place governing the amount of time that their children were allowed to play on such devices. Downing, Hinkley & Hesketh (2015) have noted that these sorts of parental rules have been shown to lower the level of sedentary behaviour of preschool-aged children, and that it is an effective method of limiting screen-time. Parents did, however, mention how difficult it was to enforce them at times.

Although this was only expressed as a problem in the higher SES areas, the tendency of children to play with such devices was mentioned in lower SES areas as well.

"They'll steal your phone and play games. If you leave it like that, they'll go to their bedroom and play. They'll keep quiet when you looking for it."

- Masiphumelele parent

Hinkley et al (2012) have noted that these screen-based devices have had a dramatic impact on both the sedentary behaviour and physical activity of preschool children in Australia and Canada. It appears that, with the rapid proliferation of cheap smartphones, children in lower-SES areas will soon have more access to these devices. If tablets and smartphones become as ubiquitous in low SES areas as in high SES areas, it is possible that they will have a greater negative effect on physical activity and sedentary behaviour levels than it does in high SES environments. The effect of these devices in high SES areas was mitigated by the

resources available to high SES parents and teachers: extracurricular activities, private spaces for children to play, better educated teachers and parents, etc. Parents and teachers in low SES settings also communicated that they would love anything that would make it easier for their children to manage. In a similar way that high-calorie fast food was originally a risk factor for developed countries and higher SES areas and is gradually shifting to developing countries and lower SES areas, so too might these devices, as they represent a cheap and captivating form of entertainment. South Africa already has over 100% cellphone penetration and 39.8% smartphone penetration (the highest in Africa) (Google South Africa, 2014), which is estimated to increase have grown by 19 million from 2014 to 2015 (Goldstuck, 2015).

6.3. PRACTICAL AND OTHER CONSIDERATIONS

This research was conducted in part as the exploratory section of the programme development. For this reason, the focus groups aimed to not only answer questions, but also to generate insights and findings that the research team might not think to ask. It is the nature of focus groups to uncover insights that do not fit neatly into the prescribed framework of the research. One of their greatest strengths is that they are conversational in nature and thus allow participants control over what they want to speak about. For these reasons, there was information that was gathered that has not been sorted into the previously mentioned categories, but is still important to note for this research, or even for other research focused on a similar population.

6.3.1. THE ROLE OF GENDER IN CHILDCARE

As mentioned in the methods section, 54 out of the 55 participants were female. It was expected that these focus groups would have a majority of women rather than men, based on previous studies (Hinkley *et al*, 2010). In South Africa, the teaching profession (particularly for children in early childhood) is predominantly female (Department of Basic Education, 2015) and the primary caregiver for most families is predominantly the mother (UNICEF, 2003). Nevertheless, this turnout illustrated just how entirely skewed childcare is towards women in South Africa. This was reinforced by the fact that no participants expressed any sense of surprise over the turnout. Men were inconspicuously absent, as if the thought that fathers would participate in large numbers was not considered. Within the focus groups, there was little to no mention of men playing a role in the children's lives. Their lack of involvement was seldom raised specifically, but rather men simply did not seem to be involved in children's lives in any of the focus groups. The absence of male figures in South African children's lives, at least the absence of fathers, has been noted in literature (Richter & Morrell, 2006).

There was only one exception. In Masiphumelele, the lack of male teachers was raised as possible barrier to physical activity in children. This happened to be raised by the only man to attend a focus group. He voiced a concern that the female teachers did not know how to teach the children sports, because they were older women who had never played sports. Another parent agreed with him. It is important to note that this

response appears to be in reference to older children more than preschool-aged children, although the man was a father of a preschool-aged child.

"(via interpreter) She agrees with the gentleman next to her, that it is important for the kids at this school to learn, but the thing is, because the teachers here, they are all females they are ladies, so they don't have enough knowledge of the soccer. So they can teach them to this point, and then no further. So they child will have to find a way. Like this kid, they found a sponsor from the team at 10 from the team in Fish Hoek, and they help with her umm him with studies and give him a scholarship. If there would be a male teacher that could help the ladies, the lady teachers with this a soccer team, from the foundation from preschool, then it would be great, it would be helpful for the parents."

- Masiphumelele parent

Within Agincourt and Masiphumelele, the overrepresentation of women in primary childcare has a significant effect on physical activity amongst the children. Adult black African females are the population group within South Africa that has, by a large margin, the highest rate of overweight and obesity (56%) as well as a low rate of physical fitness in comparison to men (Shisana *et al*, 2013). With the transmission of these health-related and obesogenic behaviours from caregiver to child, the lack of male involvement in preschool-aged children's lives may have a negative impact on their physical activity, and specifically their gross motor skill development. As raised in Masiphumelele, and supported by Hinkley *et al* (2010), parents seemed to consider fathers and mothers to have different roles regarding physically active play in their children's lives. While parents see themselves as the administrators and facilitators of play (Hinkley *et al*, 2010), some studies outside of the South African context have shown that fathers tend to play physically with children of preschool age more often than mothers, and that the children prefer it (Kazura, 2000). This did not seem to be the case with the participants in the focus groups, but highlights that the lack of paternal involvement at this age may have an impact on the child's physical activity and gross motor skills development. Challenging this would be a tremendous task in itself, as the absence of fathers in South Africa is itself a complicated issue, especially with the prevalence of migrant labour. It is out of the scope of this dissertation, or the prospective intervention.

It was made clear through the focus groups and literature that any parent- or teacher-focused programme or intervention implemented in any of these areas will work primarily with women within the community.

6.3.2. PHYSICAL BEATING OF CHILDREN

Corporal punishment, the physical beating of children as punishment, was expressed as a common part of parenting in Agincourt, Masiphumelele and Mitchells Plain, but not in Mowbray and Rondebosch. Although it was expressed as normal, it was not considered good parenting. They felt that it was the wrong way to raise a child and that parents needed to be taught the patience to teach their children properly. They seemed to hope that the programme might help with that.

"But if you can promise to beat them they do the right thing."

- Agincourt parent

"The other thing is that you get to that place that you maybe taking your anger out on them. That's why you using something. So I just said, god, I don't want to kill this child. Sjoe they make me cross. But eventually I stopped beating them. And they stopped doing the naughty things."

- Mitchells Plain parent

"Parents workshop is very important because we as parents when a child need something from you if you don't have it tell them in a good way instead of bad way. And if you say it in a bad way our children are getting confused because they know that we are their parents. So if we can have workshops they can teach us how to live with them even if a child asks something to you, like when you want with them at shops if they ask you to buy them something just tell them in a good way that you don't have money that day but you will buy them whatever they need if you have money. So many parents are not telling them in good way instead they beat them. In that way children go confused."

- Agincourt parent

"We love the training, because it's difficult to control them like my kids sometimes I want to beat them because of their behaviour. So I will be happy of their training so that we must be patient to our children all the time."

- Agincourt parent

In Mitchells Plain, a parent mentioned that she learnt from church that one should beat your child with an instrument of some kind, rather than with your own hand.

"So I occupy them with a lot of things that I never do with my children. They are getting the best of … sometimes they get me cross and I want to give them a hiding. I want to use a belt. I don't know if I was in… church service or something. They say it's good to give your child a hiding with a wooden spoon, or you can use a belt. But don't take your hand coz its personal."

- Mitchells Plain parent

Research has found that corporal punishment is in widespread use in South Africa, and particularly amongst this age group. A report by Dawes *et al* (2004) indicated 57% of parents (with children under 18 years old) used corporal punishment, and 33% used corporal punishment with a belt or stick of some sort. Perhaps most telling, the most common age of children who were "smacked" was three years old and the

most common age of those who were beaten with a stick or belt was four years old. This study was conducted in 2003, however, and it is possible these rates have changed since then.

There was no mention of corporal punishment in Rondebosch and Mowbray.

6.3.3. DIFFERENCES BETWEEN PARENTS AND TEACHERS

There were not many differences in the themes raised by parents in their focus groups and those raised by teachers in theirs. The concerns, attitudes, beliefs and behaviours that were expressed by teachers in their focus group were similar to those expressed by parents from the same area. This was even the case in Agincourt, with groups of parents and teachers that were not from the same preschool. There were very few occasions when the parents and teachers contradicted each other within their focus group responses.

Thus, there were not significant differences in how parents and teachers perceived the importance of physical activity. Certain data collected outside of the focus groups contradicts this. Our field worker in Agincourt, who was local to the region, mentioned that, although the parents expressed a belief in the importance of physical activity, they are unlikely to be invested in a programme enough to promote it, outside of the focus group or training workshop. What she identified was the potential bias of parents overstating their belief in the importance of physical activity because they know what the research team is looking for. This concern will be raised later under limitations.

With regards to the barriers to physical activity, the agreement between parents and teachers in general suggests that the perceived barriers are location-specific rather than stakeholder-specific. Although some specific barriers mentioned were specific to certain contexts, for example, parents mentioned children playing with tablets and computers at home, but this was not allowed at school. Nevertheless, the overall concerns for the children were predominantly the same. The Rondebosch teachers, for example, mentioned that parents don't have enough time to spend with their children, a sentiment shared by the parents.

With regard to practical suggestions, that both parents and teachers raised similar practical considerations suggests that these are not only based on a particular agenda, but rather that they are practical considerations that are valid for both parents and teachers. The similarities in themes between these groups adds a certain amount of credence and reliability to the qualitative data collected, suggesting that responses were valid to the context as a whole, rather than just products of specific focus groups or a certain perspective. It could also be indicative of the strong crossover between the two groups, both demographically and with regards to their roles in relation to the children.

6.3.4. THE OPPORTUNITY COST

The opportunity cost refers to the loss of other alternatives, based off participation in an activity. In this scenario, the belief that the children participate in enough physical activity in low SES areas has an indirect implication. In areas where there are so many issues facing parents and teachers, the level of importance and priority placed on an intervention that aims to promote physical activity may be low. Even if the

observational and accelerometer data collected as part of the larger study indicate that the children have levels of physical activity that are below recommendation, it seems unlikely that the community would react as if it is a pressing issue. Between food insecurity, disease, crime, financial hardship and all the other issues facing impoverished communities, the physical activity of their preschool-aged children may have a hard time gaining prominence as a significant problem.

As an example of this, one teacher expressed that space in Agincourt at a preschool that would otherwise be available for children to play was often reserved for growing vegetables. The teachers and staff would grow a large vegetable garden at the school and would often give food to the parents of children there. Subsistence farming is commonplace in Agincourt, both in personal households and at schools. This space was a fenced-off area that could otherwise be used as a play area.

In Agincourt especially, it would appear that participation in interventions might very much depend on whether it had a direct positive impact on the community over and above the promotion of physical activity.

6.4. LIMITATIONS

The scope of this dissertation, using such vastly different environments across the country, made the research process difficult to standardise and opened it up to various limitations. Nevertheless, this process was vitally important in the context of the process of programme development. The primary limitations are discussed below.

6.4.1. PARTICIPANT BIAS AND POWER RELATIONSHIPS

Participants were told the research topic before volunteering to participate in the focus groups. This raises two major biases:

Firstly, those who volunteered to participate in a focus group about physical activity may have been more likely to place importance on physical activity than those who did not. Volunteer sampling inherently filters out participants who are unconcerned, either with the physical activity of their preschool children or those who are simply less concerned about issues in the lives of their children. This limitation appeared to be particularly prevalent in the higher SES and urban focus groups, as well as Mitchells Plain, where there was a lower turnout of participants. Considering that time pressure was mentioned as a significant issue for the parents in these areas, it follows that the parents who made time to volunteer for a focus group were those who were more likely to place importance on physical activity than those who did not volunteer. In the lower SES areas, this appeared to be less of a factor. In both Agincourt and Masiphumelele, the participant turnout was higher and represented the majority of the class/year that was invited. Although larger turnout could be evidence of more interest in the topic, there were many other factors at play (besides the transport money and refreshments).

The power relationships at play in the low-SES areas are likely to have had a dramatic result on the turnout. In both areas, schools used the focus groups as an opportunity to request aid from researchers, both directly and indirectly. This was even more apparent in Agincourt where, after focus groups, participants would often thank the research team for inviting them to participate in the focus group and then ask if the research team could provide the resources that the school needed for the children. This was followed by a petition to "our organisation" for resources. The research team was clearly seen as an opportunity for such help.

Race and perceived wealth played a large role in this. Mpumalanga, especially the region where Agincourt is located, is also home to private game reserves and tourist attractions. The contrast between the poor and wealthy areas is large and is conspicuously based along racial lines. According to a PROVIDE PROJECT report (Punt *et al*, 2005) the average annual household SES amongst rural black Africans in the province was R15 238, in stark contrast to the equivalent figure in white rural households in the province, which was R175 127. That means that, on average, white rural households earned approximately 11.5 times more than black African rural households in the province at the time of the research.

Many of the parents of Agincourt were reliant on government social grants as their primary source of income. Many of these parents in Agincourt had never "earned" their income through their own employment (Eastwood, Kirsten & Lipton, 2010). For this reason, when interacting those who are perceived to have plentiful resources, it appeared to be accepted, normal, and even a responsibility to ask for help. This was noticed across Agincourt, both inside and outside of the focus groups. Parents or teachers would take any opportunity to ask for assistance or charity from the research team. This might have had a significant influence on how these individuals presented their situation in the focus groups, causing them to overemphasise their poverty in order to warrant more charitable help, in whatever form that help might take. As an anecdote from another instance, when resources (including toys for the children) were given to a school as part of another section of the larger study, the teachers responded with "This is not enough." Participants in Agincourt expressed a strong sense of rural dependency,[8] and this appears to have affected the way they interact with those who they perceive to be possible benefactors.

In Masiphumelele, the situation is similar. According to the 2011 census results, 95% of black African households in Masiphumelele, earned less than R6 400 monthly and 54.9% earned less than R1 600 per month. In contrast, 78% of the white households in the neighbouring suburb of Noordhoek earned more than R6 400 per month, with most earning between R25 601 and R51 200 (Statistics South Africa, 2011). With such high levels of racial inequality in these regions, race plays a powerful part in how research teams are perceived.

[8] Heavy dependence on transfers from outside the rural area, accompanied by high unemployment (Eastwood, Kirsten & Lipton, 2010).

In contrast to this, the parents and teachers in Rondebosch, Mowbray and even Mitchells Plain seemed inclined to portray themselves in as much a positive a light as possible. In the Rondebosch and Mowbray focus groups, participants frequently mentioned how fortunate and privileged they were. In the context of South Africa, and its wealth discrepancy, they seemed to want to communicate that they understood the level of poverty that existed elsewhere in the country. In Mitchells Plain, on the other hand, there was a strong expression of self-sufficiency and pride. Although teachers mentioned that finances were an issue, they maintained that they were managing to do the best by their children without the resources available to other areas.

It seemed as if those in Agincourt wanted to highlight how negative their situation was; those in Rondebosch and Mowbray wanted to show an understanding of their own privilege; and those in Mitchells Plain wanted to show how well they were doing despite their difficulties. These varying attitudes towards how to portray themselves to the research team may have had a significant effect on the kinds of responses we received.

This is related to a second bias created by openly declaring the focus group topic. The research topic itself implicitly suggests that the team believes that physically active play is an important issue for preschool children. Thus for a participant to express that they did not consider physical activity important, they must indirectly challenge the research team's authority. This is a concern across all the focus groups, but with the power dynamics already mentioned and the reliance on authority for both their family SES, through social grants, as well as for the school resources, this bias was likely to be stronger in the lower SES areas. Aside from participants' usual reluctance to challenge authority, a well-established observation within the social sciences as far back as Milgram *et al*'s (1963) and Zimbardo *et al*'s (1973) infamous experiments, it is possible that participants perceived that disagreeing with the research topic might prevent them from gaining access to resources that research or the proposed programme might offer them.

Despite limitations created by the open disclosure of the research topic, it was central to an inclusive methodology. To circumvent these limitations would require a level of secrecy that would not be in line with the aims of parent and teacher participation.

6.4.2. LANGUAGE

The Agincourt focus groups were conducted in Shangaan. The Masiphumelele focus groups were conducted in Xhosa and English. The Mitchells Plain focus group was conducted in English, with Afrikaans mixed in. The Rondebosch and Mowbray focus groups were solely conducted in English.

This means that when analysing differences between responses from focus groups in different areas, we are also analysing differences between responses in multiple languages. The fluency of English in the focus groups tended to be directly proportional to SES level of the area. When looking at the importance placed on physical activity, for example, which appeared to be directly proportional to SES level, this could be

confounded by a common third variable: proficiency in English. Even with an interpreter, native language interaction between the researcher and participants is potentially likely to garner deeper and more insightful understanding of the participants' responses. This limits the degree to which the focus groups can be accurately compared.

This limitation is more acute with regard to the perceptions and beliefs surrounding physically active play and gross motor skills development than it is around barriers or practical considerations. Translations, especially those that are not performed by professional translators, are not accurate enough to analyse from a narrative or linguistic point of view. The exact words used and the significance of particular phrases are dependent on the translator or interpreter. Even taken literally, at face value, a certain amount of error is unavoidable. As an example, the word "beating" carries a strong connotation in English and usually implies an aggressive act more dramatic than the words "hitting" or "smacking", especially in reference to children. The act of child beating is synonymous with child abuse. The decision to use that word sits with the translator or interpreter rather than with the participant, and can have a dramatic impact on the analysis.

6.4.3. Differences in turnout rates

Although the difference in turnout rates for teacher's focus groups was more related to the number of teachers at the preschool concerned, as almost all teachers who were invited tended to join, the turnout rates for parents was in itself an indicator of the parent participation for an intervention in that area. That it was difficult to organise an hour-long focus group in these areas suggests that it might be even more difficult to get parents to attend an intervention programme or workshop.

Most of the parents in areas with higher SES areas tended to work either full or part-time, which meant they were less available to participate in research. Time tends to be more "valuable" to employed parents in comparison to unemployed parents. This is supported by responses within the focus groups, which suggested that lack of time was a major factor for parents in the community. In Agincourt, on the other hand, unemployment is rife and mothers specifically are unlikely to hold full-time employment positions. Furthermore, a local field worker and an established research team helped coordinate the focus, which could have added social pressure for parents to attend focus groups. Locals to Agincourt are "research-savvy", because of the large amount of research that occurs in the community. This research often has a positive result for the community, especially programmes that might involve resources or training. The benefits to participating in this research are far more real and well understood to locals of Agincourt in comparison to other areas. The food insecurity and poverty also might have prompted parents to attend in order to gain a free meal and possibly other perks. Mitchells Plain experienced violence on the day of the focus group which was mentioned as having a negative effect on turnout.

6.4.4. Generalising to other children

Although the focus group was intended to focus exclusively on preschool-aged children, both parents and teachers often tended to generalise their responses to older children as well. All participants had been

selected so that their children (whether as a teacher or as a parent) were of preschool age. They tended to answer about their own children first, but would also speak of other children. It was difficult to differentiate whether these perceptions of other children were based on children of preschool age or older. When playing sport was mentioned, for example, it suggested that the children might have been older than five years.

To a certain extent, this is attributable to inexperienced moderation during focus groups (neglecting to keep the participants coming back to the topic at hand), but it also does illustrate that participants, particularly the parents, did not follow the same strict age criteria in framing their comments as set forth here. Children of various ages tended to play together, both at home and at school. Many of the issues facing preschool-aged children were also considered issues facing children in general. In retrospect, tightening the topic more around preschool-age children might have limited the responses given, which would have caused limitations in itself.

7. RECOMMENDATIONS

Despite the limitations inherent to the research, the focus groups were successful in exploring a range of perceptions and issues surrounding physical activity, physically active play and sedentary behaviour in preschool-aged children amongst the parents and teachers in the various locations researched, as well as identifying perceived barriers.

Although the focus groups from all areas expressed that they felt their children participated in enough physical activity and physically active play, substantial literature suggests that this may not be the case (Tucker et al, 2008; Cardon & De Bourdeauhuij, 2008; Hinkley et al, 2012; Alhassan et al, 2012). Even for children that are physically active, increasing the amount of physical activity per day has been shown to have positive effects (Warburton et al, 2006). Likewise, instruction that facilitates the development of gross motor skills is beneficial over and above meeting recommended levels of physical activity (Stodden et al, 2008; Wrotniak et al, 2006). Participants within this research study expressed their interest in such a programme, across the varying levels of SES and different areas, provided that it would help their children and that it was practical for them to attend.

One of the key themes to emerge from the responses across all the focus groups was that the resourcefulness, expertise and available time of adult caregivers, whether in the form of a teacher or parent (or another primary caregiver), had the most significant influence on not only the children's physically active play, but also their wellbeing in general. Resources and facilities are important, but even they rely on such human resources in order to be used safely and effectively, and maintained in order to be sustainable. This focus on human resources would suggest some form of parent and teacher-focused workshops would be the most suitable for such a programme.

For teachers, this workshop would focus on upskilling teachers, particularly those in lower SES regions who are generally unskilled and not formally educated in childcare. This workshop should be organised with the schools and form a recurring part of the calendar (be it annually, biannually, quarterly etc.), rather than a once-off event, in order to create a long-term change in behaviour. For parents, this workshop could take the form of an activity day to spend with the children. This will allow parents to bring their children along and participate in the activities with them, promoting physical activity with not only the children, but also with the parents.

7.1. THE CONTENT OF THE WORKSHOP

Physical activity can be promoted with facilities and resources, yet it can also be achieved with structured games or activities involving a bare minimum of resources. Hopscotch is an example of such a game.

Involving only what is required to mark the ground and something to throw, hopscotch teaches a variety of gross motor skills (including coordination) and is physically active. There are numerous examples of such games and activities, and a workshop could invite parents and teachers to participate in such a workshop with their children. The specifics of these activities will be informed by the recommendations of the Sports Science Institute of South Africa and the results of the other research conducted as part of the programme development.

As was mentioned repeatedly in the focus groups, preschool-aged children enjoy physically active play. The barriers quoted that prevented it were usually external barriers, rather than a lack of interest or energy (except in cases of illness and exhaustion). If the activities are designed so that they are fun and enjoyable for the children, then their participation does not appear to be a problem. The parents, on the other hand, are likely to be a more difficult group to involve, discuessed below.

7.2. ENSURING PARTICIPATION

Participation rates in this study have suggested that teacher turnout is not a major issue. These focus groups can be facilitated through their schools and be implemented as part of the school curriculum. Schools were usually interested to include any programme that was beneficial for children, as long as it was practically and financially feasible. In contrast, parent turnout rate has been shown to be more temperamental, as evidenced by the turnout rate for this research. Parent direct and active participation has been shown to have a significant effect on the success of such programmes (Monasta *et al*, 2010; Bond *et al*, 2009; Showell *et al*, 2013) as opposed to sporadic and indirect participation, which suggests that concerted efforts should be made to ensure their participation. Parent participation in rural and township scenarios can be high, if the necessary steps are taken. These include having the training in a convenient location, providing refreshments and paying for transport fare.

Based on the turnout rates in the urban areas, parents participation might be more of a challenge. Time appeared to be a significant barrier to parent participation in urban settings. In subsequent conversations with teachers and parents regarding the focus groups held, they identified that not being able to bring children along to the meeting could have been a significant barrier to parents. For this reason, the workshops should be designed to include both the parent and the child. Additionally, the physical activity and gross motor skill development involved in participation with the workshop will be of benefit to the children (as well as the parents and teachers). However, it is likely that different approaches to this workshop will need to be piloted in this context, including ones that are more time-convenient for parents who are employed full-time. Parent participation in urban areas is likely to be the most significant challenge in programme development in this context.

These workshops should be limited to children of the particular preschool age-group, and their parents and teachers. As mentioned in the focus group, older children often hampered the preschoolers' ability to play freely.

7.3. NUTRITION

It was clear from responses within the focus groups that nutrition and diet were a significant and related concern across the SES spectrum. Although the proposed programme would be focused on physically active play and gross motor skill development, it does provide the opportunity for even basic nutritional advice. Participants in Agincourt expressed that they wanted to know about what they should be feeding their children; they mentioned that they did not think the snacks (like Nik-Naks) were bad for their children. Likewise in the high SES areas, the amount of sugar consumed was mentioned as a problem for some families (although not the ones in the focus group). It would appear that even without specifically addressing this issue, the programme would inevitably face questions regarding nutrition and diet.

7.4. IMPLEMENTATION ACROSS SA

Although the barriers to physical activity and gross motor skill development vary across SES and region in South Africa, this does not necessarily mean that the programme has to be different in each. A parent/teacher skill-based intervention could circumnavigate barriers across all settings, to a certain degree. It would, however, prioritise low SES regions over high SES regions in its design, where there is a greater need of skills. It is likely that such an intervention could have more of an impact in low SES areas. Higher SES families already have access to resources, skills and programmes that promote the same goals as this intervention. Focusing the programme to best address the needs of lower SES urban and rural environments allows the programme to have the greatest chance of helping a larger number of children than if it were focused on higher SES areas.

Although such a workshop would be applicable and practical within a high SES context, it does not adequately address what was expressed frequently as a primary barrier to physical activity: the sedentary behaviour and physical inactivity associated with the "lure of the screen".

7.4. THE ENORMITY OF THE CHALLENGE

In the face of current national and international trends, the challenge of effecting a positive change in physical activity within preschool-aged children in South Africa is enormous. In higher SES settings, lifestyles are becoming increasingly sedentary through rapidly advancing technology, including devices designed to captivate and hold children's attention (Ofcom, 2013). In the UK, Ofcom's research report (2013) on media usage amongst children found that 28% of children aged three to four years old used a tablet computer at home. Although this is likely far higher than families in South Africa, even in amongst

the higher SES families, it does illustrate how quickly such devices are becoming commonplace amongst this age group (the first iPad was launched in 2010).

Within lower SES areas, the challenges are different, but perhaps even greater. The lack of gross motor skills development is amongst the multitude of factors in early childhood that put low SES children at an early disadvantage in later childhood and life (Dawes & Biersteker, 2009). Although advances have been made in addressing the chronic poverty that detriments low SES preschool-aged children over the last two decades, there remains much to be done before it can be claimed that their basic human rights are being met (Atmore, 2013). The proposed intervention would represent a pilot study, the early stages of what would need to become a multi-sector public health strategy in order to achieve long-term wide-ranging national results (Summerbell *et al*, 2012).

8. CONCLUSION

Participants across the socio-economic spectrum believed that their preschool-aged children participated in enough physical activity. Although those in higher SES areas were concerned over levels of physical activity, they were mindful of making sure that their children are physically active. This result needs to be understood as a perception of physical activity - a subjective understanding - rather than an objective measurement. It has been strongly established that parents and teachers may overestimate levels of physical activity (Cliff *et al*, 2009). For this reason, the objective levels of physical activity amongst preschool-aged children were investigated by a separate piece of research, using accelerometers and observation, alongside this dissertation.

Physical activity and physically active play were seen as important for development, although perception of the holistic nature of its benefits was related to level of SES. Lower SES focus groups expressed that physical activity was important for physical development, with higher SES areas linking it to mental and social development as well. Other practical benefits of physical activity were raised, including its tendency to tire out children and make them easier to manage. This result itself is positive with regards to the spirit of the research. It suggests that programmes focused on promoting physically active play would be supported, at least in principle. This is especially important in connection with the tendency of parents and teachers to overestimate their children's activity. The focus groups strived, and failed, to identify significant negative beliefs and perceptions regarding physical activity, which illustrates that a programme would not face active resistance from the communities investigated.

With regards to the factors that were considered barriers to physically active play, these varied dramatically based on SES level and area, which was in line with research expectations. The primary barriers to physically active play in low-SES areas were a lack of safe spaces to play and a lack of training, supervision, resources and facilities. The human resources were highlighted as the most vital of these factors, having a significant influence on the others. For this reason, and because of the practicality of application, the recommendations based from this study focused on addressing human resources and training.

The primary barriers to physically active play in the context of high-SES areas were considered to be the lure of technology and a lack of parental time available. Technology was highlighted as the most significant issue, not only for its current impact on sedentary behaviour (and physical activity), but also because it is a barrier that trends suggest will grow more significant in the future. The growing affordability of technology as well as economic development may result in this barrier slowly shifting from being a risk factor for higher SES families to being an issue for lower SES families, as evidenced by the growing number of smartphones within such communities (Goldstuck, 2015).

Diet was considered an important issue related to physical activity in low- and in high-SES areas. In both, participants expressed that there was a lack of understanding regarding nutrition, and especially nutrition in preschool-aged children. The easy availability and low cost of high-calorie 'junk-food' with low nutritional value was raised as a concern by high-SES parents, although it was identified by the research team as a potential issue with low-SES areas.

These findings suggested that teacher training-based and parent activity-based workshops were potentially the best solutions in order to feasibly and effectively promote physical activity across South Africa. These workshops would focus on facilitating and teaching games and activities designed to promote the development of gross motor skills through physically active play. Specific considerations would have to be made per area, based on highly localised concerns, but the overall approach would be applicable across SES levels. This approach would prioritise at-risk low-SES areas over higher SES areas. This workshop would also present an opportunity to provide guidance around basic nutrition, which was expressed as lacking in various settings. It would also provide recommendations on how to constrict sedentary behaviour, specifically through the use of technology, in preschool aged children in order to comply with the recommended limit of one hour of use a day (Hinkley *et al*, 2012). Tackling the issues being raised by "the lure of the screen", however, will likely require its own long-term strategy in order to address its growing proliferation amongst the age group.

The findings from this dissertation highlight how important exploratory research is in programme development. The results clearly identified specific considerations that will have a significant impact on the design and implementation of the programme. Based on this, we would recommend that any programme development process, especially a programme that needs to be implemented across socio-economic, racial and/or cultural lines, include exploratory research of this sort. Although these focus groups by no means gave a complete understanding of the issues specific to each area and school, they will prevent the development of an entirely inappropriate programme or intervention.

This is particularly applicable in the case of Agincourt, and rural South Africa in general. Researchers and programme developers' perceptions of such areas may be based on previous research coupled with assumptions. It can be easy to assume to understand the barriers facing such a location, through demographic statistics, without paying attention to the particular nuance of each area. As an example, there may be an element of overestimating the lack of certain 'luxuries', specifically technological ones. As an example, cell phones were commonplace in Agincourt. Many households had televisions. Some schools had a severe lack of facilities, but others did not. Conversely, other issues may exist that a research study may never expect. An example of this was the perception of space: in Agincourt, it would appear that free space was plentiful, at least in comparison to an urban setting. However, it quickly became apparent that just because there is space does not mean that it is available or safe for young people to play there.

Likewise, a blanket overestimation of poverty, without understanding its specifics, can be as detrimental to programme design as an underestimation of poverty. Even without the implementation of focus groups, the extended presence of the researchers and their observation was a vital part of guiding the programme development. Additionally, these findings contribute towards the literature focused on physical activity in preschool-aged children will hopefully help guide future programmes in South Africa, and perhaps across Africa more broadly.

More research is needed, across a wider range of contexts, in order to understand more reliably how generalisable these results are across South Africa. Furthermore, there are certain areas identified by this research that call for further attention. Parental understanding of nutrition, specifically nutrition in young children, emerged as a significant issue, and one that should be explored further. The effect of technological devices on preschool-aged children appears set to become a major and important area of research in the near future. Although there has been much research on television screen-time, the advent of increasingly interactive and intuitive devices could cause a distinctly different issue for development amongst future preschoolers.

This research represents only the cursory beginnings of a long road, and highlights the scale of the challenges facing a proposed intervention. These results will be synthesised in conjunction with the findings from the other studies conducted as part of the programme development. Similar research will then have to be conducted alongside the implementation of a pilot study in order to explore its reception and efficacy. Alongside further programme implementation, focus groups may be used in part to provide insight into its success and feasibility, as well as allow participants the opportunity to share their perception of the programme and how it could improve.

9. REFERENCES:

Alhassan, S., Nwaokelemeh, O., Mendoza, A., Shitole, S., Whitt-Glover, M. C. & Yancey, A. C. (2012). Design and baseline characteristics of the short bouts of exercise for pre-schoolers (STEP) study. *BMC Public Health, 12*, 582.

Anderssen, N. & Wold, B. (1992). Parental and peer influences on leisure-time physical activity in young adolescents. *Research Quarterly for Exercise and Sport, 63*, 341–348.

Armstrong, M. E. G., Lambert, M. I., Sharwood, K. A. & Lambert, E. V. (2006). Obesity and overweight in South African primary school children – the Health of the Nation Study. *South African Medical Journal, 96*, 439-444.

Atlantis, E., Barnes, E. H. & Ball, K. (2008). Weight status and perception barriers to healthy physical activity and diet behaviour. *International Journal of Obesity*, 32, 343–352; DOI:10.1038/sj.ijo.0803707

Atmore, E. (2013). Early childhood development in South Africa – progress since the end of apartheid. *International Journal of Early Years Education, 21*, 2-3.

Bailey, R. (2006). Physical Education & Sport in Schools: A Review of Benefits and Outcomes. *Journal of School Health, 76, 8*, 397-401.

Bauman, A. E., Reis, R. S., Sallis, J. F., Wells, J. C., Loos, R. J. F. & Martin, B. W. (2012). Correlates of physical activity: why are some people physically active and others not? *The Lancet, 380, 9838*, 258–271.

Bayer, O., von Kries, R., Strauss, A. Mitschek, C., Michael Toschke, A. M., Hose, A. & Koletzko, B. V. (2009). Short- and mid-term effects of a setting based prevention program to reduce obesity risk factors in children: A cluster-randomized trial. *Clinical Nutrition, 28*, 122-128.

Berg, L. (2008). *Reconciling employment creation and childcare services through early childhood development: A comparison of selected models of provision*. Research Report No. 77.

Bester, J. (2011). The perception of career barriers amongst South African university students. Unpublished Masters thesis, Stellenbosch University retrieved from https://ir1.sun.ac.za/bitstream/handle/10019.1/6719/bester_perception_2011.pdf?sequence=2&isAllowed=y

Biddle, S. J. H. & Goudas, M. (2008). Analysis of Children's Physical Activity and its Association with Adult Encouragement and Social Cognitive Variables. *Journal of School Health, 66, 2*, 75-78.

Biddle, S. J. H., Pearson, N., Ross, G. M. & Braithwaite, R. (2010). Tracking of sedentary behaviours of young people: A systematic review. *Preventative Medicine 51*, 345-351.

Biddle S. J. H., Atkina, A. J., Cavill, N. & Foster, C. (2012). Correlates of physical activity in youth: a review of quantitative systematic reviews. *International Review of Sport and Exercise Psychology, 4*, 1, 25-49.

Blythe, S. G. (2011). The Right to Move Assessing Neuromotor Readiness for Learning Why physical development in the early years supports educational success? *The Right to Move: Assessing Neuro-Motor Readiness for Learning*, 16-39.

Bond, M., Wyatt, K., Lloyd, J. & Taylor, R. (2009). Systematic review of the effectiveness of weight management schemes for the under fives. *International Association for the Study of Obesity 12*, 242–253.

Bosy-Westphal, A., Plachta-Danielzik, S., Dorhofer, R., &. Muller, M. J. (2009). Short stature and obesity: positive association in adults but inverse association in children and adolescents. *British Journal of Nutrition, 102*, 453–461.

Brockman, R., Jago, R., & Fox, K. R. (2011). Children's active play: self-reported motivators, barriers and facilitators. *BMC Public Health, 11*, 461. DOI:10.1186/1471-2458-11-461

Browne, K. D. & Hamilton-Giachritsis C. (2005). The influence of violent media on children and adolescents: a public-health approach. *The Lancet, 365*, 702–710.

Burdette, H. L. & Whitaker, R. C. (2005). A National Study of Neighborhood Safety, Outdoor Play, Television Viewing, and Obesity in Preschool Children. *Pediatrics, 116*, 657-662.

Burger, K. (2010). How does early childhood care and education affect cognitive development? An international review of the effects of early interventions for children from different social backgrounds. *Early Childhood Research Quarterly, 25*, 140-165.

Byun, W., Dowda, M. & Pate, R. R. (2011). Correlates of Objectively Measured Sedentary Behavior in US Preschool Children. *Pediatrics, 128*, 937-948.

Cardon , G. M. & De Bourdeauhuij, I. M. (2008) Are preschool children active enough? Objectively measured physical activity levels. *Research Quarterly for Exercise and Sport, 79, 3*, 326-32.

Carpenter, K. M., Hasin, D. S., Allison, D. B. & Faith, M. S. (2000). Relationships Between Obesity and DSM-IV Major Depressive Disorder, Suicide Ideation, and Suicide Attempts:Results From a General Population Study. *American Journal of Public Health, 90, 2*, 251-257.

Carneiro, P. & Heckman, J. (2003).. *Human Capital Policy*. National Bureau of Economic Research Working Paper No. 9495.

Carson, V., Huntera, S., Kuzika, N., Wiebe, S. A. Spence, J. C., Friedman, A., Tremblay, M. S., … Hinkey, T. (2015). Systematic review of physical activity and cognitive development in early childhood. *Journal of Science and Medicine in Sport*. http://dx.doi.org/10.1016/j.jsams.2015.07.011

Chaput, J. P., Lambert, M., Mathieu, M-E., Tremblay, S., O' Loughlin, J. & Tremblay, A. (2011). Physical activity vs. sedentary time: independent associations with adiposity in children. *Pediatric Obesity 7*, 251–258.

Cliff, D. P., Reilly, J. J. & Okely, A. D. (2009). Methodological considerations in using accelerometers to assess habitual physical activity in children aged 0–5 years. *Journal of Science and Medicine in Sport, 12*, 557–567.

Coakley J. & White, A. (1992). Making decisions: gender and sport participation among British adolescents. *Sociology of Sport Journal, 9*, 20–35.

Cottrell, L., Zatezalo, J., Bonasso, A., Lattin, J., Shawley, S., Murphy, E., Lilly, C. & Neal, W. A. (2015). The relationship between children's physical activity and family SES in rural settings: A cross-sectional study. *Preventive Medicine Reports, 2*, 99–104.

Cole, T. J., Bellizzi, M. C., Flegal, K. M. & Dietz, W. H. (2000). Establishing a standard definition for child overweight and obesity worldwide: international survey. *BMJ, 320*, 1240-1246.

Colella, D. & Morano, M. (2011). Gross motor development and physical activity in kindergarten age children. *International Journal of Pediatric Obesity, 6*, 22-36.

Collings, P.J., Brage, S., Ridgway, C. L., Harvey, N. C., Godfrey, K. M., Inskip, H. M., Cooper, C., Wareham, N. J. & Ekelund, U. (2013). Physical activity intensity, sedentary time, and body composition in preschoolers. *American Journal of Clinical Nutrition, 97*, 1020–1028.

Cook, I. (2012). Voluntary physical activity: measurement & relationship to selected health parameters in rural black South Africans resident in the Limpopo Province, South Africa. Thesis for: PhD (Exercise Science)., Advisor: Lambert EV, Alberts M.

Craig, E., Reilly, J. &, R. (2012). Body fatness or anthropometry for assessment of unhealthy weight status? Comparison between methods in South African children and adolescents. *Public Health Nutrition*. DOI:10.1017/S1368980012004338

Craig, P., Dieppe, P., Macintyre, S., Michie, S., Nazareth, I. & Petticrew, M. (2008). Developing & evaluating complex interventions: the new Medical Research Council guidance. *BMJ, 337*, a1655.

Craigie, A. M., Lake, A. A., Kelly, S. A., Adamson, A. J. & Mathers, J. C. (2011). Tracking of obesity-related behaviours from childhood to adulthood: A systematic review. *Maturitas, 70, 3*, 266-284.

Davey Smith, G. (2007). Life-course approaches to inequalities in adult chronic disease risk. *Proceedings of the Nutrition Society, 66*, 216-236.

Davison, K. K., Jurkowski, J. M., Li, K., Kranz, S. & Lawson, H. A. (2012) A childhood obesity intervention developed by families for families: results from a pilot study. *International Journal of Behavioral Nutrition and Physical Activity, 10, 3* DOI: 10.1186/1479-5868-10-3

Dawes, A. & Kafaar, Z., De Sas Kropiwnicki, Z., Pather, R. & Richter, L. (2004). Partner violence, attitudes to child discipline & use of corporal punishment: a South African national survey

Dawes, A. & Biersteker, L. (2009). *Improving the Quality of ECD Interventions through Results-Based Monitoring and Evaluation: The Sobambisana Early Childhood Development Initiative.* Paper presented at the Pan-African Early childhood Development Conference, Johannesburg, 20-23 July.

De Bock, F., Genser, B., Raat, H., Fischer, J. E. & Renz-Polster, H. (2013). A Participatory Physical Activity Intervention in Preschools: A Cluster Randomized Controlled Trial. *American Journal of Preventive Medicine, 45, 1*, 64–74.

De Craemer, M., De Decker, E., De Bourdeaudhuij, I., Vereecken, C., Deforche, B., Manios,Y., & Cardon, G. (2011). Correlates of energy balance-related behaviours in preschool children: a systematic review. *Obesity Reviews, 13, 1*, 13–28.

De Onis, M., Blossner, M. & Borghi, E. (2013). Global prevalence and trends of overweight and obesity among preschool children. *The American Journal of Clinical Nutrition, 92*, 1257-1264

De Silva-Sanigorski, A. M., Bell, A. C., Kremer, P., Nichols, M., Crellin, M., Smith, M., Sharp, S., … Swinburn, B. A. (2010). Reducing obesity in early childhood: results from Romp & Chomp, an Australian community-wide intervention program. *American Journal of Clinical Nutrition, 91*, 831-840.

Deevia, B. (2008). 'Six packs and big muscles, and stuff like that'. Primary school aged South African boys, black 1 and white, on sport. *British Journal of Sociology of Education, 29, 1, 3-14.*

Deshmukh-Taskar, P. Nicklas, T. A., Morales, M, Yang, S-J, Zakeri, I & Berenson G. S. (2006). Tracking of overweight status from childhood to young adulthood: the Bogalusa Heart Study. *European Journal of Clinical Nutrition, 60*, 48–57.

Department of Basic Education, Republic of South Africa. (2013). *Report on the Annual National Assessment of 2013: Grades 1 to 6 & 9.*

Department of Basic Education, Republic of South Africa. (2015). *Education Statistics in South Africa 2013.*

Dickie, K., Micklesfield, L. K., Chantler, S. Lambert, E. V. & Goedecke, J. H. (2014). Meeting physical activity guidelines is associated with reduced risk for cardiovascular disease in black South African women; a 5.5-year follow-up study. *BMC Public Health, 14*, 498.

Downing, K. L., Hinkley, T. & Hesketh, K. D. (2015). Associations of Parental Rules and Socioeconomic Position With Preschool Children's Sedentary Behaviour and Screen Time. Journal of Physical Activity and Health, 2015, 12, 515 -521.

Draper, C. E., Davidowitz K. J. & Goedecke, J. H. (2015). Perceptions relating to body size, weight loss and weight-loss interventions in black South African women: a qualitative study. *Public Health and Nutrition, 26*, 1-9.

Eastwood, R., Kirsten, J. & Lipton, M. (2010). Premature Deagriculturalisation? Land Inequality and Rural Dependency in Limpopo Province, South Africa. *Journal of Development Studies, 42, 8*, 1325–1349.

Ebbeling, C. B., Pawlak, D. B. & Ludwig, D. S. (2002). Childhood obesity: public-health crisis, common sense cure. *Lancet, 360*, 473–82

Engle, P. L., Fernald, L. C. H., Alderman, H., Behrman, J., O'Gara, C., Yousafzai, A., de Mello, C., … the Global Child Development Steering Group. (2011). Strategies for reducing inequalities and improving developmental outcomes for young children in low-SES and middle-SES countries. *The Lancet, published online September 23, 2011, DOI:10.1016/S0140-6736(11)60889-1.*

Ertmann, R. K., Reventlow, S., & Söderström, M. (2011) Is my child sick? Parents' management of signs of illness and experiences of the medical encounter: Parents of recurrently sick children urge for more cooperation. *Scandinavian Journal of Primary Health Care, 29*, 1.

Finch, M., Wolfenden, L., Falkiner, M., Edenden, D., Pond, N., Hardy, L., Milat, A. J. & Wiggers, J. (2012). Impact of a population based intervention to increase the adoption of multiple physical activity practices in centre based childcare services: a quasi experimental, effectiveness study. *International Journal of Behavioral Nutrition and Physical Activity, 9*, 101

Fitzgibbon, F. L., Stolley, M. R., Schiffer, M. L., Van Horn, L. Kauferchristoffel, K., & Dyer, A. (2004). Two year follow up results for Hip-hop to Health Jr: A randomised controlled trial for overweight prevention in preschool minority children. The Journal of Pediatrics, 618-626.

Fixen, D. L., Naoom, S. F., Blasé, K. A., Friedman, R.M. & Wallace F. (2005). *Implementation Research: A Synthesis of the Literature*. University of South Florida.

Ford, P., De Ste Criox, M., Lloyd, R., Meyers, R., Moosavi, M., Oliver, J., Till, K. & Williams, C. (2011). The Long-Term Athletic Development Model: Physiological evidence and application. *Journal of Sports Science, 29, 4*, 389-402.

Fox, K. (1999). The influence of physical activity on mental well-being. *Public Health Nutrition: 2*, 3, 411–418.

Gibbs, A. (1997). Focus groups. *Social Research Update, 19*.

Giles-Corti, B. & Donovan,R.J. (2002). Socioeconomic status differences in recreational physical activity levels and real and perceived access to a supportive physical environment. *Preventive Medicine, 35*, 601–611.

Ginsburg, K. R. (2007). The Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds. Pediatrics, 119, 182 – 191. DOI: 10.1542/peds.2006-2697

Goldfield, G. S., Harvey, A., Grattan, K. & Adamo, K. B. (2012). Physical Activity Promotion in the Preschool Years: A Critical Period to Intervene. *International Journal of Environmental Research and Public Health, 9*, 1326-1342; doi:10.3390/ijerph9041326

Goldman, L. R. (1998). *Child's Play: Myth, Mimesis and Make-Believe*. Maple Press.

Goldstuck, A. (2015). *The South African Social Media Landscape 2015*. World Wide Worx.

Goldstein, J. (2012) *Play in Children's Development, Health and Well-being*, Brussels.

Golley, R. K., Hendrie, G. A., Slater, A. & Corsini, N. (2010). Interventions that involve parents to improve children's weight-related nutrition intake and activity patterns – what nutrition and activity targets and behaviour change techniques are associated with intervention effectiveness? *Obesity Reviews 12*, 114–130

Google South Africa (2015). Our Mobile Planet: South Africa. Retrieved from ThinkWithGoogle.com

Graf, C. Koch, B., Kretschmann-Kandel, E., Falkowski, G., Christ, H., Coburger, S., Lehmacher, … Dorde, S. (2004). Correlation between BMI, leisure habits and motor abilities in childhood (CHILT-Project). *International Journal of Obesity, 28*, 22–26.

Haga, M. (2007). The relationship between physical fitness and motor competence in children. *Child: care, health and development, 34, 3,* 329–334.

Haney C, Banks C, Zimbardo P (1973). *A study of prisoners and guards in a simulated prison. Naval Research Review*, September: 1–17 Washington (D.C.): Office of Naval Research. p.11.

Haslam, D. W. & James P. T. (2005). Obesity. *The Lancet, 366*, 1197 – 1209.

Hillman, C. H., Erickson, K. I. & Kramer, A. F. (2008). Be smart, exercise your heart: exercise effects on brain and cognition. *American Journal of Public Health, 93,* 313–317.

Heckman, J. J. & Masterov, D. V. (2004). *The Productivity Argument for Investing in Young Children*. Working paper 5, Invest in Kids Working Group, Committee for Economic Development.

Herbst, I. & Huysamen, G. K. (2000). The construction and validation of developmental scales for environmentally disadvantaged preschool children. *South African Journal of Psychology, 30,* 3, 19-25.

Herman, K. M., Craig, C. L., Gauvin, L. & Katzmarzyk, P. T. (2009). Tracking of obesity and physical activity from childhood to adulthood: The Physical Activity Longitudinal Study. *International Journal of Pediatric Obesity, 4*, 281 288.

Hinkley, T., Crawford, D., Salmon, J., Okely, A. D. & Hesketh, K. (2008). Preschool Children and Physical Activity: A Review of Correlates. *American Journal of Preventative Medicine, 34, 5*, 434-441.

Hinkley, T., Salmon, J., Okely, A. D. & Trost, S.G.(2010). Correlates of sedentary behaviours in preschool children: a review. *International Journal of Behavioural Nutrition and Physical Activity, 7*, 66.

Hinkley, T., Salmon, J., Okely, A. D., Crawford, D. & Hesketh, K. (2011). Influences on Preschool Children's Physical Activity Exploration Through Focus Groups. *Family Community Health, 34, 1*, 39–50.

Hinkley, T., O'Connel, E. O., Okely, A. D., Crawford, D., Hesketh, K. & Salmon, J. (2012). Assessing Volume of Accelerometry Data for Reliability in Preschool Children. *Medicine & Science in Sport & Exercise*, 2436-2441.

Hinkley, T., Salmon, J., Okely, A. D., Crawford D. & Hesketh, K. (2012). Preschoolers' physical activity, screen time, and compliance with recommendations. *Medicine and Science in Sports and Exercise, 44, 3,* 458-465.

Hoff, E., Laursen, B., & Tardif, T. (2002). Socioeconomic status and parenting. *Handbook of parenting Volume 2: Biology and ecology of parenting, 8, 2*, 231-52.

Hume, C., Salmon, J. & Ball, K. (2004). Children's perceptions of their home and neighborhood environments, and their association with objectively measured physical activity: a qualitative and quantitative study. *Health Education Research, 20, 1*.

Irwin, L. G., Siddiqi, A. & Hertzman, C. (2007). *Early Child Development: A Powerful Equalizer*. Final Report for the World Health Organization's Commission on the Social Determinants of Health

Janssen, I. & 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*, 7, 40.

James, P. T. (2004). Obesity: The Worldwide epidemic. *Obesity, 22*, 276-280.

James, P. T., Leach, R., Kalamara, E. & Shayeghi, M. (2012). The Worldwide Obesity Epidemic. *Obesity Research, 9*, 228 – 233.

Jones, R. A. & Okely, A. D. (2011) Physcial activity recommendation for early childhood. *Encyclopedia on Early Childhood Development.*

Jones, R. A., Hinkley, T., Okely, D. & Salmon, J. (2013). Physical Activity and Sedentary Behaviour in Childhood. A Systematic Review. *American Journal of Preventive Medicine, 44, 6,* 651-658.

Kahn, E. B., Ramsey, L. T., Brownson, R. C., Heath, G. W., Howzed, E., Powell, K. E., Stone, E. J., , Rajab, M. W. & Corso, P. (2002). The Effectiveness of Interventions to Increase Physical Activity: A Systematic Review. *American Journal of Preventive Medicine, 22, 4S,* 73-107.

Kari, J. T., Pehkonen, J., Hirvensalo, M., Yang, X., Hutri-Kähönen, N., Raitakari, O. T. & Tammelin, T. H. (2015). SES and Physical Activity among Adults: Evidence from Self-Reported and Pedometer-Based Physical Activity Measurements. *PLoS ONE 10, 8,* e0135651. doi:10.1371/journal.pone.0135651

Kazura, K. (2000). Fathers' qualitative and quantitative involvement: An investigation of attachment, play, and social interactions. *Journal of Men's Studies, 9,* 41-45.

Kitzinger, J. (1995). Qualitative Research. Introducing Focus Groups. *British Medical Journal, 311*, 299-302.

Kohl, H. W., Craig, C. L., Lambert, E. V., Inoue, S., Alkandari, J. R., Leetongin, G & Kahlmeir, S. (2012). The pandemic of physical inactivity: global action for public health. *The Lancet, 380, 9838, 294-305. DOI:10.1016/S0140-6736(12)60898-8*

Krueger, R. A. & Casey, M. A. (2009). *Focus Groups: A Practical Guide for Applied Research 4th Edition*. Sage Publications Inc. California.

Lau, D. C. W., Douketis, J. D., Morrison, K. M., Hramiak, I. M., Sharma, A. M. & Ur, E. (2007). 2006 Canadian clinical practice guidelines on the management and prevention of obesity in adults and children. *Canadian Medical Association Journal, 176, 8,* S1-S13. Retrieved online at http://www.cmaj.ca/content/176/8/S1.full.pdf+html on the 24/04/2014

LeBlanc, A. G., Spence, J. C., Carson, V., Connor Gorber, S., Dillman, C., Janssen, I., Kho, M. E., … Tremblay, M. S. (2012). Systematic review of sedentary behaviour and health indicators in the early years (aged 0 - 4 years). *Applied Physiology, Nutrition and Metabolism, 37*, 753–772.

Lee, I., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N. & Katzmarzyk, P. T. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The Lancet, 380, 9838, 219-229.* DOI: 10.1016/S0140-6736(12)61031-9

Lillard, A. S., Lerner, M. D., Hopkins, E. J., Dore, R. A., Smith, E. D. & Palmquist, C. M. (2012). The Impact of Pretend Play on Children's Development: A Review of the Evidence. *Psychological Bulletin*. Advance online publication. doi: 10.1037/a0029321

Lintner, S. (2010). Sports and Poverty: Misrepresentations and Truths in the Youth Mentality. Unpublished paper retrieved from http://www.furman.edu/academics/pvs/research/Documents/Stephen%20Lintner-Sports%20and%20Poverty.doc

Lloyd, R. S. & Oliver, J. L. (2012). The Youth Physical Development Model: A New Approach to Long-Term Athletic Development. *Strength and Conditioning Journal, 34*, 3, 61-69.

Lobstein, T., Baur, L. & Uauy, R. (2004). Obesity in children and young people: a crisis in public health. *Obesity Reviews, 5*, 4-85.

Loprinzi, P. D. & Trost, S. G. (2010). Parental influences on physical activity behavior in preschool children. *Preventive Medicine, 50*, 129–133.

Manios, Y., Grammatikaki, E., Androutsos, O., Chinapaw, M. J. M., Gibson, E. L., Buijs, G., Iotova, V., … de Bourdeaudhuij, I. (2012). A systematic approach for the development of a kindergarten-based intervention for the prevention of obesity in preschool age children: the ToyBox-study. *Obesity Reviews, 13, 1*, 3–12

Matinez-Gomez, D., Eisenmann, J. C., Tucker, J., Heelan, K. A. & Welk, G. J. (2011). Associations between moderate-to-vigorous physical activity and central body fat in 3–8-year-old children. *International Journal of Pediatric Obesity, 6*, 611 – 614.

Mayosi, B. M., Fisher, A. J., Lalloo, U. G., Sitas, F., Tollman, S. M. & Bradshaw, D. (2009). The burden of non-communicable diseases in South Africa. *The Lancet, 374, 937-947.* DOI:10.1016/S0140-6736(09)61087-4

Malina, R. M. (2001). Physical Activity and Fitness: Pathways from Childhood to Adulthood. *American Journal of Human Biology, 13,* 162-172.

Marino, A. J., Fletcher, E. N., Whitaker, R. C. & Anderson, S. E. (2012). Amount and environmental predictors of outdoor playtime at home and school: A cross-sectional analysis of a national sample of preschool-aged children attending Head Start. *Health & Place, 18*, 1224–1230.

Matusik, P. & Malecka-Tendera, E. (2011). Overweight prevention strategies in preschool children. *International Journal of Pediatric Obesity, 6, 2*, 2–5.

McCulp, A. D., O'Brien, M., Truglio, R. T., Alvarez, M. & Huston, A. C. (1999). Children's Play Preferences, Construction Play with Blocks, and Visual-spatial Skills: Are they Related? *International Journal of Behavioral Development, 23, 4*, 855-872.

McVeigh, J. A., Norris, S. A. & de Wet, T. (2004). The relationship between socio-economic status and physical activity patterns in South African children. *Acta Paediatrica, 93*, 982-988.

Metallinos-Katsaras, E. S., Freedson, P. S., Fulton, J. E. & Sherry, B. (2007). The Association Between an Objective Measure of Physical Activity and Weight Status in Preschoolers. *Obesity, 15, 3*, 686-695.

Micklesfield, L. K., Lambert, E. V., Hume, D. J., Chantler, S., Pienaar, P. R., Dickie, K., Goedecke, J. H. and Puoane, T. (2013).. Socio-cultural, environmental and behavioural determinants of obesity in black South African women. *Cardiovascular Journal of Africa, 24, 9*, 369–375. http://doi.org/10.5830/CVJA-2013-069

Milgram S (1963). Behavioral study of obedience. *Journal of Abnormal Social Psychology 67*: 371–378. doi: 10.1037/h0040525

Moore, L. L, Gao, Di., Bradlee, M. L., Cupples, L. A., Sundarajan-Ramamurti, A., Proctor, Munro H. H., … Ellison, R. C. (2003). Does early physical activity predict body fat change throughout childhood? *Preventive Medicine, 37*, 10–17.

Monasta, L., Batty, G. D., Macaluso, A., Ronfani, L., Lutje, V. & Bavcar, A. (2010). Interventions for the prevention of overweight and obesity in preschool children: a systematic review of randomized controlled trials. *Obesity Reviews, 12, 5*, 107–118.

Mosine, M. (2009). Mortality and violence in Agincourt, a rural area of South Africa. Unpublished thesis from M.MSc. (Med.), Faculty of Health Sciences, University of the Witwatersrand, 2009.

Motl R. W., Dishman, R. K., Saunders, R. P., Dowda, M., & Pate, R. R. (2007). Perceptions of Physical and Social Environment Variables and Self-Efficacy as Correlates of Self-Reported Physical Activity Among Adolescent Girls. *Journal of Pediatric Psychology, 32*, 1, 6–12.

Niehaus, I. (2002) Ethnicity and the boundaries of belonging: reconfiguring Shangaan identity in the South African lowveld. *African Affairs, 101*, 405, 557-583.

Nielson, M. & Tomaselli, K. (2010). Overimitation in Kalahari Bushman Children and the Origins of Human Cultural Cognition. *Psychological Science, 21, 5*, 729–736.

Nixon, C. A., Moore, H. J., Douthwaite, W., Gibson, E. L., Vogele, C. Kreichauf, S., Wildgruber, A., … Summerbell, C.D. (2012). Identifying effective behavioural models and behaviour change strategies underpinning preschool- and school-based obesity prevention interventions aimed at 4-6-year-olds: a systematic review. *Obesity reviews, 13*, 1, 106-117.

O'Dwyer, M. V., Fairclough, S. J., Knowles, Z. & Stratton, G. (2012). Effect of a family focused active play intervention on sedentary time and physical activity in preschool children. *International Journal of Behavioral Nutrition and Physical Activity, 9*, 117.

Ofcom (2013). Children and Parents: Media Use and Attitudes Report. Research document.

Okely, A. D., Collins, C. E., Morgan, P. J., Jones, R. A., Warren, J. M., Cliff, D. P., Burrows, T. L., … Baur, L. A. (2010). Multi-Site Randomized Controlled Trial of a Child-Centered Physical Activity Program, a Parent-Centered Dietary-Modification Program, or Both in Overweight Children: The HIKCUPS Study. *Journal of Pediatrics, 157*, 388-394.

Oliver, M., Schofield, G. M. & Schluter, P. J. (2010). Parent influences on preschoolers' objectively assessed physical activity. Journal of Science and Medicine in Sport, 13, 403–409.

Paluska, S. A. & Schwenk, T. L. (2000). Physical Activity and Mental Health. *Sports Medicine, 29*, 3, 167-180.

Parks, S. E., Housemann, R. A., & Brownson, R. C. (2003). Differential correlates of physical activity in urban and rural adults of various socioeconomic backgrounds in the United States. *Journal of Epidemiology and Community Health, 57, 1*, 29-35.

Pate, R., Trost, S., Dowda, M., Ott, A., Ward, D., Saunders, R. & Felton, G. (1999). Tracking of physical activity, physical inactivity and health-related physical fitness in rural youth. *Pediatric Exercise Science, 11*, 364–376.

Pate, R. R., Pfeiffer, K. A., Trost, S. G., Ziegler, P. & Dowda, M. (2011). Physical Activity Among Children Attending Preschools. *Pediatrics, 114, 5*, 1258-1263.

Penn, H. (2004). *Childcare and Early Childhood Development Programmes and Policies: Their relationship to eradicating child poverty*. Chip Report No. 8

Piek, J. P. Dawson, L., Smith, L. M. & Gasson, N. (2008). The role of early fine and gross motor development on later motor and cognitive ability. *Human Movement Science, 27*, 668–681

Piek, J. P. Baynam, G. B. & Barrett, N. C. (2006). The relationship between fine and gross motor ability, self-perceptions and self-worth in children and adolescents. *Human Movement Science, 25*, 65–75.

Popkin, B. M. (2006). Global nutrition dynamics: the world is shifting rapidly toward a diet linked with noncommunicable diseases. *American Journal of Clinical Nutrition, 84, 2*, 289-298.

Pratt, M. Macera, C. A.,. Sallis, J. F., O'Donnell, M. & Frank, L. D. (2004). Economic interventions to promote physical activity: Application of the SLOTH model. *American Journal of Preventive Medicine, 27, 3*, 136–145.

Pratt, M., Sarimiento, O. L., Montes, F., Ogilvie, D., Marcus, B. H., Perez, L. G. & Brownson, R. C. (2012). The implications of megatrends in information and communication technology and transportation for changes in global physical activity. *The Lancet, 380*, 9838, 282-293. DOI: 10.1016/S0140-6736(12)60736-3

Puoane, T., Steyn, K., Bradshaw, D., Laubscher R., Fourie, J., Lambert, V. Mbananga. N. (2002). Obesity in South Africa: The South African Demographic and Health Survey. *Obesity Research, 10, 10,* October 2002.

Punt, C., Pauw, K., van Schoor, M., Nyhodo, B., McDonald, S., Chant, L. & Valente, C. (2005). A profile of Mpumalanga: Demographics, poverty, inequality and unemployment. *Background Paper, 1, 8*.

Rasberry, C. N., Lee, S. M., Robin, L., Laris, B. A., Russel, L. A., Coyle, K. K. & Nihiser, A. J. (2011). The association between school-based physical activity, including physical education, and academic performance: A systematic review of the literature. *Preventive Medicine, 52*, 10–20.

Reilly, J. J. (2009). Physical activity, sedentary behaviour and energy balance in the preschool child: opportunities for early obesity prevention. *Proceedings of the Nutrition Society, 67*, 317-325.

Reilly, J. J., Kelly, L., Montgomery, C., Williamson, A., Fisher, A., McColl, J. H., Lo Conte, R., … Grant, S. (2006). Physical activity to prevent obesity in young children: cluster randomised controlled trial. *BMJ*, DOI:10.1136/bmj.38979.623773.55

Reilly, J. J., Methven, E., McDowell, J. C., Hacking, B., Alexander, D., Stewart, L. & Kelnar, C. J. H. (2003). Health consequences of obesity. *Arch Dis Child, 88,* 748–752.

Richter, L. & Morrell, R. (2006). *Baba: Men and fatherhood in South Africa*. HSRC Press, Cape Town, 8000, South Africa.

Riethmuller, A., McKeen, K., Okely, A. D., Bell, C. & de Silva Sanigorski, A. (2009). Developing an active play resource for a range of Australian early childhood settings: Formative findings and recommendations. *Australasian Journal of Early Childhood, 34, 1*, 43-53.

Ross, R. Dagnone, D., Jones, P. J. H., Smith, H., Paddags, A., Hudson, R. & Janssen, I. (2000). Reduction in Obesity and Related Comorbid Conditions after Diet-Induced Weight Loss or Exercise-Induced Weight Loss in MenA Randomized, Controlled Trial. Annals of Internal Medicine. 2000 Jul;133(2):92-103.

Royal College of Psychiatrists' Faculty of Child and Adolescent Psychiatry Annual Residential Conference, 17-19 September 2008, Britannia Adelphi Hotel, Liverpool.

Sallis, J.F., Hovell, M.F. & Hofstetter, C.R. (1992). Predictors of adoption and maintenance of vigorous physical activity in men and women. *Preventive Medicine, 21*, 237–251.

Sallis J, Zakarian J, Hovell M, & Hofstetter C. (1996). Ethnic, socio-economic, and sex differences in physical activity among adolescents. *Journal of Clinical Epidemiology, 49*, 125–34.

Sallis, J. F., Prochaska, J. J. & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medical & Science in Sports & Exercise, 32, 5*, 963–975.

Sallis, J. F., Conway, T. L., Prochaska, J. J., McKenzie, T. L., Marshall, S. J. & Brown, M. (2001). The association of school environments with youth physical activity. *American Journal of Public Health, 91,* 618–620.

Salmon, J., Booth, M. L., Phongsavan, P., Murphy, N. & Timperio, A. (2007) Promoting Physical Activity Participation among Children and Adolescents. Epidemiology Review, 29, 1, 144-159 doi:10.1093/epirev/mxm010

Saunders, R. P., Pate, R. R., Felton, G., Dowda, M., Weinrich, M. C., Ward, D. S., Parsons, M. A. & Baranowski, T. (1997). Development of questionnaires to measure psychosocial influences on children's physical activity. *Preventive Medicine, 26*, 241–247.

Serpentino, C. (2011). "The moving body": a sustainable project to improve children's physical activity at kindergarten. *International Journal of Pediatric Obesity, 6 , 2*, 60–62.

Shisana O, Labadarios D, Rehle T, Simbayi L, Zuma K, Dhansay A, Reddy P, Parker W, Hoosain E, Naidoo P, Hongoro C, Mchiza Z, Steyn NP, Dwane N, Makoae M, Maluleke T, Ramlagan S, Zungu N, Evans MG, Jacobs L, Faber M, & SANHANES-1 Team (2013). *South African National Health and Nutrition Examination Survey (SANHANES-1)*. Cape Town: HSRC Press.

Showell, N. N., Fawole, O., Segal, J., Wilson, R. F., Cheskin, L. J. & Bleich, S. N. (2013). A systematic review of home-based childhood obesity prevention studies. PEDIATRICS. *American Academy of Pediatrics, 132, 1*, 193–200.

Singh, A. S., Mulder, C., Twisk, J. W. R., Van Mechelen, W. & Chinapaw, M. J. M. (2008). Tracking of childhood overweight into adulthood: a systematic review of the literature. *Obesity Reviews, 9*, 474-488.

Skouteris, H., McCabe, M., Swinburn, B., Newgreen, V., Sacher, P. & Chadwick, P. (2011). Parental influence and obesity prevention in pre-schoolers: a systematic review of interventions. O*besity Reviews, 12*, 315–328.

South African Police Service (2015). *Crime Statistic of Republic of South Africa*. Retrieved from http://www.saps.gov.za/resource_centre/publications/statistics/crimestats/2015/crime_stats.php

Stagnitti, K. & Lewis, F. M. (2015). Quality of pre-school children's pretend play and subsequent development of semantic organization and narrative re-telling skills. *International Journal of Speech and Language Pathology, 17, 2*, 148-58. doi: 10.3109/17549507.2014.941934.

Statistics South Africa (2011). Census 2011: Statistical Release (Revised). Retrieved online from http://www.statssa.gov.za/publications/P03014/P030142011.pdf.

Stein, A. D., Wang, M., Martorell, R., Norris, S.A., Adair, L. S., Bas, I., Sachdev, H. S., … Victoria, C. G. (2010). Growth Patterns in Early Childhood and Final Attained Stature: Data from Five Birth Cohorts from Low- And Middle-SES Countries. *American Journal of Human Biology, 22*, 353-359.

Steyn, N. P., Labadarios, D., Maunder, E., Nel, J. & Lombard, C. (2005). Secondary anthropometric data analysis of the National Food Consumption Survey in South Africa: The double burden. *Nutrition, 21, 1*, 4-13. DOI:10.1016/j.nut.2004.09.003

Stodden, D. F., Goodway, J. D., Lagendorfer, S. J., Robertson, M. A., Rudisill, M. E., Garcia, C., & Garcia, L. E. (2008). A Developmental Perspective on the Role of Motor Skill Competence in Physical Activity: An Emergent Relationship. *Quest, 60*, 290-306.

Strong, W., Malina, R. M., Blimkie, C. J. R., Daniels, S. R., Dishman, R. K., Gutin, B., Hergenroeder, A.C., … Trudeau, F. (2005). Evidence Based Physical Activity for School-age Youth. *The Journal of Pediatrics*, 146, 6, June, 732-737.

Summerbell, C. D., Moore, J., Vögele, C., Kreichauf, S., Wildgruber, A., Manios, Y., Douthwaite, W., … Gibson, E. L. (2012). Evidence-based recommendations for the development of obesity prevention programs targeted at preschool children. *Obesity Reviews, 13, 1,* 129–132.

Telama, R. (2009). Tracking of Physical Activity from Childhood to Adulthood: A Review. *Obes Facts, 3*, 187-185.

Timmons, B. W., Naylor, P. & Pfeiffer, K. A. (2007). Physical activity for preschool children — how much and how? *Applied Physiology of Nutritional Metabolism, 32*, 122–134.

Timmons, B. W., Leblanc, A. G., Carson, V., Connor Gorber, S., Dilman, C., Janssen, I., Kho. M. E., Spence, J. C., Stearns, J. A. & Tremblay, M. S. (2012) Systematic review of physical activity and health in the early years (aged 0-4 years). *Applied Physiology Nutritional Metabolism, 37, 4*, 773-92. doi: 10.1139/h2012-070.

Trost, S. G., Fees, B. & Dzewaltowski, D. (2008). Feasibility and Efficacy of a "Move and Learn" Physical Activity Curriculum in Preschool Children. *Journal of Physical Activity and Health, 5*, 88-103.

Trost, S. G. Pate, R. R., Saunders, R., Ward, D. S., Dowda, M. & Felton, G. (1997). A Prospective Study of the Determinants of Physical Activity in Rural Fifth-Grade Children. *Preventative Medicine, 26*, 257–263.

Trost, S. G., Sirard, J. R., Dowda, M., Pfeiffer, K. A. & Pate, R. R. (2003). Physical activity in overweight and nonoverweight preschool children. *International Journal of Obesity, 27*, 834–839.

Truter, L. & Pienaar, A. E. (2011). The relationship of overweight and obesity to the motor performance of children living in South Africa. *South African Family Practice, 54, 5*, 429-435.

Tucker, P. (2008). The physical activity levels of preschool-aged children: A systematic review. *Early Childhood Research Quarterly, 23, 4*, 47–558.

UNICEF (2003). *Africa's Orphaned Generations*. New York: UNICEF

UNICEF (2012). *Cities and Children. The Challenge of Urbanisation in Tanzania*. UNICEF Tanzania.

U.S. Department of Health and Human Services. (2010). *Healthy people 2010: conference edition.* Washington, DC: U.S. Department of Health and Human Services.

Veitch, J., Bagley, S., Ball, K. & Salmon, J. (2006). Where do children usually play? A qualitative study of parents' perceptions of influences on children's active free-play. *Health & Place, 12, 4*, 383–393.

Villani, S. (2001). Impact of Media on Children and Adolescents: A 10-Year Review of the Research. *The Lancet, 40, 4*, 392–401.

Walker, S. O., Chang, S. M., Powell, C. A., Simonoff, E. & Grantham-MacGregor, S. M. (2007). Early Childhood Stunting Is Associated with Poor Psychological Functioning in Late Adolescence and Effects Are Reduced by Psychosocial Stimulation. *The Journal of Nutrition*, 2464-2469.

Walker, S. P., Wachs, T. D., Grantham-McGregor, S. Black, M. M., Nelson, C. A., Huffman, S. L., Baker-Henningham, H., … Richter, L. (2011). Inequality in early childhood: risk and protective factors for early child development. *The Lancet, published online on September 23, 2011, DOI:10:1016/S0140-6736(11)60555-2.*

Wang, Y. & Lobstein, T. (2006). Worldwide trends in childhood overweight and obesity *International Journal of Pediatric Obesity, 1*, 11-25.

Warburton, D. E. R., Nicol, C. W. & Bredin, S. S. D. (2006). Health benefits of physical activity: the evidence. Canadian Medical Association Journal, 174, 6, 801-809.

Ward, D. S., Vaughn, A., McWilliams, C. & Hales, D. (2010). Interventions for Increasing Physical Activity at Child Care. *Medicine and Science in Sports Exercise, 42, 3,* 526–534.

Ward, D. S., Vaughn, A. & Story, M. (2013). Expert and Stakeholder Consensus on Priorities for Obesity Prevention Research in Early Care and Education Settings. *Childhood Obesity, 9*, 2, 116-124.

Weinger, S. (1998). Children Living in Poverty: Their Perception of Career Opportunities. Families in Society: *The Journal of Contemporary Social Services, 79*, 3, 320-330.

Weir, L. A., Etelson, D. & Brand, D. A. (2006). Parents' perceptions of neighborhood safety and children's physical activity. *Preventive Medicine, 43, 3*, 212–217.

Whitebread, D. (2012). *The Importance of Play*. Written for Toy Industries of Europe.

Williams, H. G., Pfeiffer, K. A., O'Neill, J. R., Dowda, M., McIver, K. L., Brown, W. H. & Pate, R. R. (2008).. Motor Skill Performance and Physical Activity in Preschool Children. *Obesity, 16*, 1421–1426.

Williams C. L., Bollella M. C., Strobino B. A., Spark A., Nicklas T. A., Tolosi L. B. & Pittman B. P. (2013). "Healthy-Start": Outcome of an Intervention to Promote a Heart Healthy Diet in Preschool

Children. Journal of the American College of Nutrition, 21, 1, 62-71, DOI: 10.1080/07315724.2002.10719195

Wilson, D. K., Kirtland, K. A. & Addy, C. L. (2004). Socioeconomic Status and Perceptions of Access and Safety for Physical Activity. *Annals of Behavioral Medicine, 28, 1*, 20-28.

World Health Organization. *Obesity and overweight*. Available at: http://www.who.int/mediacentre/factsheets/fs311/en/(March 2013, accessed 14 April 2013)

Wrotniak, B. H., Epstein, L. H., Dorn, J. M., Jones, K. E. & Kondilisc, V. A (2006). The Relationship Between Motor Proficiency and Physical Activity in Children. *Pediatrics, 118, 6*, 1758-1765 DOI: 10.1542/peds.2006-0742

Zask, A., van Beurden, E., Barnett, L., Brooks, L.O. & Dietrich, U.C. (2001). Active school playgrounds-myth or reality? Results of the 'Move It Groove It' project. *Preventive Medicine, 33*, 402–408.