



Outdoor play - a serious business

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2018 Laurea



Laurea University of Applied Sciences

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Social Services
Bachelor's Thesis
November, 2018

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Year	2018	Pages	50
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A societal concern exists that children currently play less outdoors than any other generation before them. The lack of outside play is linked to various negative effects such as the rise in childhood obesity, a negative interference on children's development, and a decreased well-being. This review of the literature maps the current knowledge on the effects of outside play on children and gives some general guidelines on how to move forward in the future.

In this thesis relevant data is gathered in one place on the function and impact of outdoor play on the development and wellbeing of children. The most important findings are that nature and outdoor play work synergistically and enhance the effectiveness of outdoor play. Natural playscapes are therefore to be preferred over constructed ones. Outdoor play is often inhibited in its execution and intensity due to our cultural desire to limit risky behaviour, reducing the effectiveness of outdoor play. The outdoor play environment can function as an educational setting, and function as a second classroom, but currently often training and knowledge are lacking in the educational staff.

And perhaps the most important outcome of this study is that the view on outdoor play is currently distorted in research and society due to an excessive focus on physical activity, partially due to a desire to combat the obesity epidemic. Play is therefore seen as a means to increase physical activity and nothing more. It disregards the notion that outdoor play affects many aspects of the wellbeing, health and development of children. These views limit the research, the research outcomes, and in the end the policies and guidelines on outdoor play.

And finally, I present a list of general guidelines regarding the implementation of outdoor play based on the current literature.

Keywords: Outdoor play, physical activity, wellbeing, nature, early childhood education

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1 Introduction

1.1 Play

Play is an essential part of the human experience. Article 31 on the Universal rights of children adapted in 1989 by the United Nations High Commission for Human Rights states that children have the right to rest and leisure, but more importantly also to engage in play and recreational activities, and that governments should promote these activities (OHCHR 2018). We all recognize that play is an indispensable activity. The science shows an equal supportive view on the role of play. Play is vital to the healthy development of a child because it contributes to cognitive, physical, social and emotional wellbeing of children. (Milteer, Ginsburg and Mulligan 2012)(Hurwitz 2002) and is needed for the development of the child's brain (Frost 1998). Play is a necessity.

If everybody is in agreement on the importance of play, then why is there a need to study on play, or why should we promote play? Why should we want to study play? Recognition and acknowledgement of the importance of play is only a first step in implementing structural changes and policies that will promote play in our society. And although there seems to be this universal recognition on a theoretical level that play is important, on a more practical level this is not always evident. In my personal experience, I have noticed that people can be very reluctant to give play the important status it deserves, and I am not alone in these observations. Play is almost too playful to be taken seriously. In our society, we give a higher status to serious activities than to seemingly frivolous ones. This leads to people often being apologetic about promoting play in general, discuss the need for play, or to recognize play as a core activity for children that requires our full attention in a healthy society.

This is ironic because play might perhaps be one of the most important human activities. Very few other activities have such a large and pervasive effect on the wellbeing and development of people, and especially children. I will go through the definition of play and further discuss why play is so important. I will end up evaluating our cultural views on outdoor play. And I will discuss how we could use outdoor play to benefit our society. In the end we examine one practical example, the nature preschool or day-care, where outdoor play is put central as an activity.

As adults, we carry the great burden of responsibility. Sometimes we forget about some elements that define us, such as play. And perhaps after reading more you will come to the same conclusion as I have: play is serious business.

1.2 Definition of play

The dictionary defines play as “engage in activity for enjoyment and recreation rather than a serious or practical purpose”(Oxforddictionaries 2018). Although this sounds straightforward enough, there is something intrinsically wrong with this definition. Why do we invest so much time and effort into play if it had no “serious” or “practical” purpose? Are we as frivolous as a species, that we often spend more time on a non-serious and non-practical activity than “getting things done”. Are we simple-minded prisoners of our own pleasure centres?

One opinion or view rarely provides us with a true insight. In the field of evolutionary and behavioural biology they define play rather more pragmatically. Play is “that which is fun/enjoyable, but not other things like sex, eating, hunting, etc.” (Lents 2017).

This is a particularly interesting definition because it is a negative description. It describes play as an activity, and its essence is that it doesn't fit a list of activities. The items on that list have something in common. The activities to which play doesn't belong seem to have an obvious purpose, even to the layperson. And although this kind of definition seems to be one of avoiding defining play, it has a hint of truth to it. Anyone who sees play recognizes it for what it is at an instant. This is often even valid for cross-species experiences. We can recognize two dogs playing as play. A crow that is teasing a dog is not busy with some meaningful essential task that guarantees its survival. Shouldn't it be busy collecting food, finding a mate, surveying its territory, or any other action that enhances its survival? Animals display play just like humans. And what is even more miraculous is that we have no trouble recognizing it.

We can draw already several conclusions from these observations. The obvious and important conclusion from these anecdotal observations is that play is actually a really important activity, even though at first glance it doesn't seem to be that urgent or important. Play is deeply embedded in our evolutionary history. Any activity that is shared among many species is likely to have been present in an ancestral species, and ever since, it has been important enough to remain preserved. Evolution has a habit of eliminating wasteful structures and behavioural patterns when possible. The amount of time and effort we and other animals put into play indicates that play is important for our functioning. Play is abundant, it is old, it is important, and we recognize it when we see it.

Another conclusion we can make is, because we can recognize play for what it is, different rules apply in play than in other activities. We know instinctively that play occurs in some alternative world than other activities with its own set of rules. In behavioural studies they examined the wrestling of rats (Pellis and Pellis 2018). Rats like to wrestle with each other as a play behaviour. Inevitably one rat will be stronger than the other. Both partakers keep track

of who is winning and losing. If the stronger rat will not let the weaker rat win once in a while, the weaker rat will stop engaging in the play activity. There are more lessons to be drawn from this anecdotal example, but one of them is that the rats are aware that there are rules to this play activity and that they are only valid for this play activity. In a life or death situation there is no point in letting the opponent win. The same thing for mating. But for play it does make sense.

How do biologists recognize play? It is a rather relevant question. A human you can ask for motivation. You can relate to them. This isn't always the case with animals, especially when you go further away from your own roots. Could you recognize a lizard playing? Scientists may disagree about the exact content of the rules that define play in animals, but the system is the same. Any behaviour is analysed according to a set of predefined rules. An example of this is for instance the system created by animal behaviourist Gordon Burghardt (Lents 2017). In his system there is a set of 5 rules, and if a behaviour adheres to each and every one of them, then the behaviour is defined as play. Unfortunately, it is impossible to shortly summarize the list because the definitions are extremely precise because they need to deal with all situations that are encountered. The core elements of the 5 rules, however, are that play behaviour is not directly contributing to current survival. Play behaviour is spontaneous. Play behaviour differs from normal (ethotypic) behaviour in at least one aspect. Play behaviour is repeated, but not in a stereotypic form. And play is initiated when an animal is in a so-called "relaxed field" (no stress, well fed, no competition). This summary does no justice to the full list, but it gives some indications on where biologists place play. It's not part of the regular serious behaviours, it is spontaneous, and it is not a reaction to stress. The same set of rules could easily be used to identify human play behaviour.

The notion that play has its own set of rules, that only exist in play and not in other activities has been around for a while. In the 1938 a Dutch anthropologist, John Huizinga published a book called *Homo Ludens*, in which he presented a radically new understanding of play as an activity that exists only for its own sake. According to Huizinga, an activity is play if it is fully absorbing, includes elements of uncertainty, involves a sense of illusion or exaggeration, but most importantly, true play has to exist outside of ordinary life. That is, even though absorbed by the activity, the player is always conscious of the fact that the play is not real and that its consequences will not affect their lives outside the play." (Gordon 2010.)

The insights we have gotten so far from biology and Huizinga further emphasize on how wrong the dictionary definition really is. From an evolutionary perspective no pervasive behaviour can exist that serves no purpose (Lents 2017). Any such behaviour would have a negative selective pressure. The more time spent on a behaviour the more important it will be. The higher the behaviour is placed in a hierarchy the more important it will be. Huizinga found play as a pervasive cultural activity in all cultures he examined all over the world (Gordon

2010). Play is unlikely to be the result of cultural modifiers of behaviour. Studies showed that the extent of cultural influence on play is limited to specifying details of play behaviour, such as a delay the onset of certain play patterns during the development of the child or the nature of particular games.

The definition of play has led us to a principal point that should be part of our thinking. It is fair to claim, from a scientific perspective, that play must have a purpose. Moreover, the omnipresence of play in the human experience indicates that it must also be a prominent purpose or function. In other words, children were “designed” to play (Gray 2011). The amount of effort spent on playing suggests that play is a deadly serious business and somehow connected to our wellbeing, development and survival, perhaps in ways we do not fully comprehend yet. We may ask ourselves the question, whether we still put play on the prominent place it deserves in our society. And this might be not even the proper question, although it is a start. A case could be made for stating that we have the moral duty to continuously and incessantly ask ourselves whether we are still placing play on the prominent position it deserves to be in our society. This type of statement requires action, and perhaps we have arrived at a situation where action is required.

2 Theoretical framework for outdoor play

An important question in what kind of theoretical framework we should put play and more specifically outdoor play. It is necessary to go through some classical thought on this topic, even though in hindsight, as we will see, it may turn out to be unsuitable or unproductive. However, the current scientific literature does often use the classical theories as a framework. And classical thought on play might be part of the problem on why we play less, because it doesn't place the theory in a biological framework to which we ultimately also belong as a species.

2.1 Play and development: Piaget vs Vygotsky

There are two names that are mentioned most prominently in the scientific literature on play: Piaget and Vygotsky. Jean Piaget, the Swiss psychologist known for his work on child development had quite particular ideas on play, and his opinions were initially formed by studying his own children. Piaget didn't quite see play as the main process in development, but rather as a subservient process at the best. Play was used to assimilate what was already learned through other processes. He organized play into a hierarchy, with three types of play, which corresponded to different mental stages. In his system play with rules was the highest

form of play, and this kind of play was the most beneficial to child development (Lillard, 2015). These ideas are far from dead. We still see this reflected in for instance the curriculum of Montessori schools where absolute free play is frowned upon as a pedagogical tool (Lillard 2013). Although some of his ideas may seem outdated, they haven't been removed from the fabric of scientific research and thought, or from the pedagogical toolset.

Lev Semyonovich Vygotsky was a Russian psychologist who disagreed on many issues with Piaget. Vygotsky focused his research mainly on one type of play, the so-called symbolic play. While Piaget thought symbolic play, where items and people can assume other identities, had little to no influence on the development of children, Vygotsky thought it was crucial to the development of children. He thought that symbolic play was vital to developing abstract thought and to gain perspective on other people's thoughts. (Lillard 2015.)

Although there has been a lot of research on the possible effects of pretend play, it is still unclear whether it has a beneficial effect on the development of children. And interestingly enough, certain groups of children actually display less pretend play or delayed pretend play, such as children on the autistic spectrum, and deaf and blind children. (Lillard 2015.) This is seen as an indication that pretend play is not a necessity.

One should remain somewhat sceptical of the claim that research cannot measure the beneficial effects of pretend play, because usually in the same line it is claimed that pretend play has no developmental benefits for the child, it is also frequently mentioned that pretend play is important in building social relationships. From my perspective, all that facilitates or promotes the development of social skills in an utterly and extremely social being like we are, is expected to be of immense worth, perhaps even invaluable.

If pretend play is indeed connected to development of social skills, then perhaps the question should be whether social skill development is also delayed in autistic, deaf and blind children. And even this question would ignore the more important one of what is cause and effect. A perfectly valid question would be to ask if they could even be both an effect of an underlying cause. Research on humans remains complicated and elusive for the simple fact that it is unethical to experiment on them, and there are many contributing factors to human behaviour. It is perilous in this kind of multidimensional research to jump to conclusions on cause and effect. Even when correlations are discovered, they are merely correlations, and speculations based on correlations are often ineffectual and can lead us astray from the truth swiftly.

2.2 Types of play

As one may imagine the theoretical view on play one has will greatly affect how they further define play, and this is also true for recognizing types of play. In the definition of types of

play it is important to keep in mind that the different types of play will be used by children, and even adults, of all ages, but that their use may build up in intensity and peak at a certain age, and then decline in use. Or that their use may show some kind of wave function throughout time.

In the literature on child development, 5 types of play are universally recognized (Lillard 2015; Ethier 2017). Sensorimotor play is one of the first types of play to be exhibited by the infant. This includes behaviour such as mouthing, hitting and shaking objects, and visual examination of objects. Physical and locomotor play is defined by gross motoric movements with increased metabolic rates and it manifests itself in two forms. There is the rhythmic stereotypy behaviour, which includes quick and recurrent movements of extremities, head, and upper body, which starts at around half a year in age. At around the age of 1 exercise play becomes apparent which includes activities such as hopping, jumping, swinging, running and climbing. Rough and tumble play can be described as play fighting, and from a theoretical viewpoint it is often described as animalistic, but that sounds to me as a prejudice, instead of a scientific principle. Rough and tumble play seems to be most prevalent in boys and usually involves most of the body. (Lillard, 2015.) It is very much a social type of play.

In rats it has been shown that the rough and tumble type of play is a prerequisite to certain developmental and structural changes in the brain, namely those that are involved in social skills. What is particularly interesting in rat behaviour is that rats that haven't experienced play fighting will overreact in certain social situation, for example when meeting a new rat. This is important, because emotional overreactions inhibit functional responses. (Pellis, Pellis, and Bell 2010). From this perspective it may become apparent that rough and tumble play could perform an equally important task in the human emotional development, because it enhances individual resilience, and the ability to cope with novel situations.

The fourth type of play is exploratory play categorized by investigative play with objects and it is driven by inquisitiveness into the new and poorly understood things. This type of play is often under dispute because it overlaps with sensorimotor play, and, if it has an end goal, with other types of play (Lillard 2015). In the end it is important to realize that categorization is always artificial in science. Scientists create categories as a means to an end. Categories help to make sense of the world and observations and allow to construct hypotheses and theories. In complex behaviour that is not well understood, or is examined with an inadequate dogma, overlap can be expected.

The fifth category of play is construction play, objects are put together to build something new. Part of construction play is also tool building, and tool building is an important part of the human experience. However, some researchers, for instance the famous Piaget, believed that construction play wasn't even proper play. It was just "building" something with an end

goal in mind. (Lillard 2015). However, currently the general idea is that construction play will help children develop their ability to solve construction puzzles or problems and enhances their logical abilities.

And lastly, there is symbolic play, in which an object of situation represents another one. This form of play is cross cultural, albeit that it might emerge later in cultures that do not promote it. There are three subtypes of symbolic play. An object can be substituted for another. An object can have properties it doesn't actually have. And a child can pretend for something or someone to be there that isn't actually there. (Lillard 2015; Ethier 2017). Symbolic play is heavily represented in play research.

When examining the theoretical background of the development of play it is tempting to ponder on the usefulness of it regarding outdoor play. Children go through developmental stages and will have different needs at different ages. Most outdoor environments, barring the most extreme such as a flat concrete surface with no distinguishing landmark, will support all these types of play. And I only state this with the aim of being cautious because considering the power of human imagination, children will most likely even find a way in a simple concrete play area to fulfil their needs. Perhaps it is not always even the physical environment that is the limiter to the behaviour of children. We have already seen a few examples where theory dictates the actions of caretakers. In the theory behind Montessori education free play is frowned upon because of some assigned moral values (Lillard 2013). Every culture promotes their own values, and we should expect that cultural values affect the appreciation and execution of play to some degree. And perhaps our cultural values have shifted to such a large extent in the modern era that we lost some sight on potentially valuable features of play, and perhaps we have been promoting some aspects that are counterproductive to the function of play.

When examining outdoor play as a concept, perhaps we must examine it from the perspective of society, and not from a pure theoretical viewpoint. But before we do that we need to revisit why play is so important. When reading the literature, you almost get the impression that it is impossible to establish whether play influences the development of the individual and why we should pay any attention to it. And to further explore the central question of why of play, we must delve back into the biological world.

2.3 Play and early childhood education

We can borrow the current evolutionary understanding of play one more time to define further the meaning and purpose of play and perhaps use it to connect it to goals and motives in the field of social services and science. One key element of play is that although play might

be set “outside” real life, it greatly affects real life. This is coincidentally also a central tenet in evolutionary biology. Although the main theme of play as an activity is to set it outside real life and its consequences, the activity itself affects the individual and its life significantly.

We need to organize play according to its function before we go any further. Although play is an activity that cannot be placed in any of the regular activities, such as sex, eating, hunting, it does have underlying important functions for the individual that is engaged in play. In biology play is seen as a tool to establish and maintain social rank. Play is used for learning social rules. Play is used as a practice for “regular” activities, such as sex, eating, hunting, hiding, stalking etc., Play is important to practice motor coordination. Play acts as social bonding activities. Play can manage stress. Play can be used for developing certain cognitive and creative skills. (Lents 2017)

This list is not a complete list. However, this perspective of play shows that play is essential to the development and maintenance of all “regular” activities. And perhaps there was an “aha” moment when perusing these observations derived from a biological perspective. This list isn’t that far off from for instance a list of goals in early childhood education. The language needs to be adjusted here and there to fit the jargon but otherwise there are perfectly correlated. From a general paediatric perspective, for instance, play is crucial to development of children because it contributes to their cognitive, physical, social, and emotional well-being (Milteer, Ginsburg, and Mulligan 2012).

In a Finnish day-care setting play is used to help children develop their social skills, examine their social standing with their peers, to learn social rules, to improve and assess motor coordination, to explore children’s creative urges, and finally, play is used to give children a break from the more stressful activities. Play could be described as a core tool in early childhood education and care in Finland, where one of the key concepts is an integrated approach to care, education and teaching through the so-called educare model and within this model learning through play is seen as essential (OPH 2018a). Perhaps the execution of the goals isn’t perfect yet, but it is clear that the intent is there to use play as a tool.

In 2016 a new curriculum was introduced for the first 6 grades in all Finnish schools. It changed the focus of the curriculum in an interesting way, and one core concept is that students must be given opportunities to learn, which is done by providing opportunities for experimentation, exploration, active learning, physical activity and play (OPH 2018b). In summary, in Finland play is not only put central in early childhood education, also the school environment reserves a prominent place for play.

2.4 Free play and outdoor play

This thesis is about outdoor play and outdoor play is usually associated with so-called free play. Free play is a cross-cultural and dominant activity in the lives of all children. The motivation for free play is entirely internal, and the play in itself is the goal (Brussoni et al. 2012). Children spent a lot of time doing it. Participating in organized sports, for instance, wouldn't be considered to be free play. The rules for organized sports are externally imposed, while free play operates only by internal rules. From an evolutionary perspective, it could be said that children are designed to play (Gray 2011) and most of this play is free play. Interestingly, in hunter-gatherer societies the play of children is a pervasive activity, almost literally from dusk till dawn, even during teenage years, and it is seen as a way to prepare for successful adult life (P. Gray 2009). Most of this play will be free play. Free play, although it operates on internal rules, can therefore be rather effective.

There are three main types of Free play: physical activity, pretend play and object play (Brussoni et al. 2012). In our western society outdoor play is often associated with free play. And interestingly, among the older generations there is a sort of melancholy present, where there is an expression of concern about seeing the newer generations partaking less and less in outdoor free play. Scientific research actually supports this notion (Burdette and Whitaker 2005). Children do spend less, and less time outside involved in free play.

3 Outdoor play

Outdoor play has come into the limelight in recent times due to the childhood obesity epidemic worries that persist in our society and research. Outdoor play has been associated with physical activity and screen time in an inverse relationship. Increasing the amount of outdoor play is therefore often seen as a way to decrease obesity and screen time. The current trend of children spending less, and less time outside could be described as an outdoor play deprivation.

3.1 Play deprivation

Play deprivation can be destructive to children and their development. The effects of play deprivation in general are hard to measure in humans, due to ethical concerns. In extreme cases, such as abandoned orphans in Romania, therapeutic play intervention showed significant effects on the children, creating a switch from gross motoric skills to fine ones, improved understanding of the world, increase in creativity, and becoming more engaged and social (Brown and Webb 2005). Reintroduction of play can therefore encourage developmental

recovery in children. Deprivation of outdoor play will manifest itself on a spectrum. The effects of deprivation might not always be obvious and clear. Some effects might not even be attributed to the deprivation of outdoor play.

There isn't a single reason why the amount of outdoor play time has reduced over the years. Several factors have contributed to the trend, such as a transformation to a hurried lifestyle, shifts in the distribution of family structures, less siblings to play with, and a shift in focus towards academic and enrichment activities (Milteer, Ginsburg, and Mulligan 2012; Tucker 2008). Another trend is the increase in so-called screen time where children and adults spend more time glued to their phone, tablet, computer or television (LeBlanc et al. 2015). The overall result is a decrease in outdoor activities, including outdoor play, which had some unforeseen consequences, such as an increase in childhood obesity (Coleman and Dymont 2013; Tucker 2008). Wellbeing and health might be on the decrease for the first time in recent history. And when this kind of negative trend concerns children it is particularly worrisome. The obesity epidemic among children is perhaps the single most important reason why people started to look more intensively at physical activity levels in the current generation of children. The obesity epidemic in children was a signal for society: something is wrong with how our children are living.

3.2 Obesity and health

Childhood obesity is a pressing health issue that has taken the form of epidemic proportions all over the world and not just in western nations. It might form one of the more challenging health issues that face our society, mainly because obesity can negate so many of the beneficial advances in healthcare that have contributed to the increase in life expectancy and quality in recent decades. We are currently at a turning point in our health care system. No longer is the general condition of the whole population improving each year, like it was for many decades. Childhood obesity is particularly worrisome because obese children are highly likely to remain obese as adults and will remain at an increased risk level for chronic diseases. (World Health Organization 2016). Early intervention policies are therefore unquestionably warranted in the case of childhood obesity.

Europe follows the global trend in increase childhood obesity. In the Netherlands there was recently a call for increasing the physical education lessons from twice per week to thrice a week in response to the lessons learned about the inactivity in the Dutch youth, however immediately the message was added that this is simply not enough to fight childhood obesity (Mantel 2018). It is easy to put the responsibility of societal problems in the educational system, but this is hardly ever fair or satisfactory.

Changes in childhood education policies will be not enough to combat childhood obesity effectively, and this is backed up by scientific studies, giving the clear signal that the responsibility cannot lie with day-care and school alone. One study, for instance, showed that parents do act as a role model for their children and affect the activity levels in their children, albeit that there are some particular quirks in this effect (McMurray et al. 2016). They found that the strongest relationship between obesity levels in children, and so-called moderate-to-vigorous physical activity levels by the parents, occurred during the weekends. In other words, if parents are active during the weekends instead of weekdays, it will have a greater effect on the obesity levels of their children. This is perhaps not particularly surprising in a sense since children spends most of their time during weekdays away from their parents. They will spend more time together during the weekends.

In Finland, there are similar results with comparing activity- and obesity levels in parents and children, with the interesting finding that the parent-child relationship is much stronger correlated to inactivity than vigorous activity (Fogelholm et al. 1999). This has important implication in practice. A parent that sets a bad example by having a low activity level, has a far greater effect on their children than a parent setting a good example. The active parent will of course have a positive effect on the children, but the inactive parent will have a far greater negative effect by setting a negative example, than the active parents will setting a good example. These kinds of seemingly minute details can be very important for setting up policies and guidelines.

Another important issue is that parents often assess the activity levels and health of their child incorrectly (Burdette and Whitaker 2005). For instance, pre-schoolers are generally seen as very active. However, a large systematic review on the activity levels of pre-schoolers, a group generally thought to be very active, showed that only 54% of them showed adequate activity levels despite that those involved thought they were active (Tucker 2008). Our perception of reality is apparently off when it comes to judging activity.

The same is true for the assessment of children's weight. Parents commonly do not perceive their overweight child as overweight, even if they are. They maintain a different standard than the health care professional regarding health assessment. What is even more troublesome is that parents often are offended when their child is labelled as overweight or obese, making it hard for health- and social care workers to make the connection of being overweight to activity levels in a child to those involved. And lastly, there is this idea present in some parents that weight gain during early childhood is often perceived as a sign of successful nurturing (Burdette and Whitaker 2005). Putting all of these factors together makes it clear that we cannot always rely on the parents to undertake first action, simply because their views might be distorted to such a degree that they do not align with the standards in the health care system.

This will of course have consequences for setting up policies. A central message is that parents cannot set aside the responsibility for inactivity and obesity in their children to other institutions such as schools or the government (and vice versa). Parents do affect directly the health of their children and can make a difference. And interestingly the most effective thing they can do is not setting a great example, but simply not setting a bad example. This would be important information for practical purposes. A general policy that is aimed at increased physical activity among children would benefit more from an effort spend towards diminishing negative role models than a similar effort to raise the quality of role model in general.

Education of the parents should also be a focus point in any policy. Parents really need to be informed on the reality and dangers of being overweight and having reduced activity levels. Health care professionals may need to receive training to deal with parents that have an inaccurate view on the health status of their child. It is an uncomfortable and sensitive topic and we can't afford as a society to lose a single parent in this effort to reduce obesity levels. Childhood obesity is a primary example of a societal challenge where health- and social care workers work closely together with each other and with parents towards a common goal: reducing the overall negative health effects for society and individuals of childhood obesity.

3.3 Activity levels

In the popular opinion the decrease in activity levels among children and the general population is commonly associated with the increase in time spend looking at a screen, ranging from phone, tablet, computer, gaming console and television. In a global study children averaged 8.6 hours of sedentary time a day and a little over half the children failed to meet the so-called screen time guidelines (LeBlanc et al. 2015). Sedentary behaviour refers to the type of behaviour that requires a (specified) low energy expenditure and usually involves activities in a sitting or lying position and the criteria were standardized a few years ago in a letter to the editor (Network 2012). This important letter is often cited because it was an important one for the researchers interested in this topic. Before this letter, it was difficult to compare studies on activity levels because different criteria were used. The new standards allowed for comparisons and this greatly facilitated the research on this topic by unifying the scientific community on at least one important aspect.

In the global study on activity levels, Finnish children (average age 10.5) performed similar to the average global values, albeit that the percentage of obese and overweight children is slightly below the global average (LeBlanc et al. 2015). Some interesting correlations were found regarding sedentary time in the Finnish school population. Sedentary time correlates positively with body fat percentage, access to a computer, and not meeting the standard

physical activity guidelines. These physical activity guidelines state that children should be outdoors 2 hours before and 2 hours after school.

A similar picture emerges when examining the correlations of the same children to screen time. Screen time positively correlates to waist circumference and an “unhealthy eating pattern score”(LeBlanc et al. 2015). This kind of study doesn’t show what is the cause and effect, or even if the cause is incorporated in the study, but higher levels of screen time are associated with being overweight and having dietary issues.

Another message that can be derived from this study is that it is unlikely that there can be a unified global policy regarding childhood obesity. The correlations that were found in the study varied slightly when comparing nations (LeBlanc et al. 2015). This indicates that perhaps different traditions and cultural values are at play, and every policy and guideline that will be created will have to be re-examined and adjusted for each country.

In a study conducted among Finnish children with an average age of 12 years it was discovered that there is physical activity is directly associated with academic achievement and that screen time was inversely correlated (Syväoja et al. 2013). Keeping in mind that this study relied on self-reporting, the fact that such an outcome emerges from this kind of data is rather worrisome. Most people tend to underreport behaviour that is perceived as negative.

Observations in Finnish day-cares showed similarly worrisome trends. Most of the time children were engaged in sedentary activities, and in general, the children were more active outdoors than indoors (Soini et al. 2014). Children were only engaged in moderately vigorous physical activity during 2% of their time. Indoor activities were particularly discouraging for higher levels of physical activity because the nature of these activities often clashes with day-care rules. To achieve vigorous physical activity levels, children would have to run, jump or climb, and these particular activities are often discouraged for safety reasons (Soini et al. 2014; Gubbels, Van Kann, and Jansen 2012). Physical activity was stimulated when the rooms were larger (Gubbels, Van Kann, and Jansen 2012). The typical Finnish day-care has a larger room that allows for these kinds of activities, but these rooms are usually only used for organized physical activity such as physical education, or performances. A redesign of day-cares incorporating more elements that are permissive to vigorous physical activity could significantly raise activity levels during day time of children.

Even in the outdoor playground environment sedentary activities are omnipresent, even though we don’t always recognize them as such. The sandbox is for instance the focal point of most playgrounds and attractive to children because it is always accessible(Soini et al. 2014). Playing in the sandbox, however, is mostly sedentary behaviour (Gubbels, Van Kann, and Jansen 2012). Discouraging guidelines and rules from staff can even turn equipment that normally can lead to vigorous physical activity, such as tricycles, into sedentary stations,

resulting in children using these to merely sit on (Gubbels, Van Kann, and Jansen 2012). Even a perfectly designed playground will not be able to achieve its goals when the rules are not in line with the intent of the space.

When comparing Finnish and Dutch day-cares an interesting observation was made. Being outdoors had a more positive affect on the levels of physical activity for the Dutch children than the Finnish children (Soini et al. 2016). Dutch children are more active outside than Finnish children in day-care settings because the outdoor play in the Netherlands is typically unstructured, while in Finland outdoor activities are more often also organized or started by a teacher. This leads to the interesting observation that children tend to be more active when there are no adults around or involved in the play, which has also been seen in a study on school children, although here mostly girls shows this effect (Cardon et al. 2008). Girls tend to hang around teachers more than boys at this age, and when teachers who are supervising are inactive, they have a negative influence on activity levels of the girls who copy the teacher's behaviour. Even when counting in weather differences between Finland and the Netherlands, the Dutch pre-schoolers tended to be more active in general, and these kinds of comparisons would be interesting to gain knowledge on how to set up physical activity interventions in specific countries or locations. Many of the factors that control physical activity on the playground are modifiable to a certain extent (Cardon et al. 2008). Playground policies, rules and organization could be adjusted at a short notice to stimulate activity levels in children.

3.4 Other influencers of activity

Increased screen time is of course not the only type of behaviour that decreased the activity levels in children. Children spend more time than ever in an indoor environment. Indoor environments are more inviting to inactivity than outdoor environments (Gray et al. 2015; Soini et al. 2016). Sometimes this literally means that children go from one indoor environment to another by means of an indoor environment, the car (Kernan and Devine 2010). Sedentary time is in this manner enforced even if the goal is to go from an activity to another activity. A practical example of this is when parents find it important to put their children in organized hobby activities, and children end up driving with their parents from one activity to another. Under normal circumstances this wouldn't be a problem. However, the balance between active and sedentary time is already dangerously leaning towards sedentary time, and the extra time spend in a car can tip the balance even further towards too much sedentary time. And even if the goal is an indoor activity, on average outdoor environments are still more inviting to physical activity than an indoor environment (Gray et al. 2015). These examples do indicate that perhaps, as a society, we have shifted our cultural perspective of what is the norm. And we have seen so far, the outcome of this norm shift results in more sedentary time and

time spend in indoor environments. Indoor environments are safe, comfortable and accessible.

In conclusion, outdoor play seems to be a principal concept in the whole discussion of sedentary time vs activity levels. Outdoor play has a range of effects on the development and health of the child, and possibly, outdoor play could also be used in solutions to a myriad of problems we are currently facing. This includes childhood obesity, but we shouldn't necessarily limit ourselves to this.

4 Outdoor play, wellbeing and nature

The most obvious connection that can be made to outdoor play is spending time in nature. Even in urban settings there are pockets of nature, and nature is perhaps the most effective outdoor environment there is to stimulate play, health and wellbeing of children.

4.1 Wellbeing

Being in and around nature has been shown to increase the wellbeing of people (Seymour 2016). On the opposite spectrum of nature lies urbanization. Many of the common health risks, such as obesity, are associated with the increase in urbanization and the life style that comes with it. Naturally this principal finding can be extended to the wellbeing of children. If children would spend more time outdoors in a "natural" environment, they could receive the beneficial effects associated with being in nature.

An important part of the feeling of wellbeing that comes with spending time in nature comes from the feeling of connectedness we have with nature (Wilson 1986). This could be described as a qualitative experience. On a more practical level we could emulate these feelings with educational approaches. The feeling of connection to nature is strangely enough not achieved through activities in nature, where the focus is on the knowledge and identification of nature, but mostly through interactions that contain elements of contact, emotion, compassion, meaning and beauty (Lumber, Richardson, and Sheffield 2017). Nature can also present a more stimulating environment for exploration and play (Kyttä 2004; Burdette and Whitaker 2005). Outdoor play for children would be a meaningful activity to increase the feeling of connectedness to nature, because play contains most of those latter elements that fortify the feelings of emotion, meaning, beauty and contact. And by extrapolation, this increased feeling of connectedness could create a heightened feeling of wellbeing. In short, play in nature could be a natural way to increase appreciation of nature. In a society where we are moving towards the principles of sustainability, and where we want to foster environmental awareness, this would be a welcome development.

The quality of the experience isn't the only thing that determines our feelings of wellbeing in nature. The time we spend in nature also determines our wellbeing. For instance, the beneficial effects of combatting high blood pressure and depression become measurable on a population level after only spending 30 minutes in nature per week (Shanahan et al., 2016). Various nature-based therapies have been developed and tested around the world and in general they are effective (Annerstedt and Währborg 2011). An interesting point in this systematic review is that outdoor play areas for children are not included in this study. Although it is not uncommon that the world of adults and children is separated in our society and scientific studies, it is from a general philosophical and utilitarian perspective perhaps unwise to do this as a standard. Lessons learned in childhood or in adulthood are often transferrable to each other. Connectedness to nature seems to be important for young and old alike.

In conclusion, the wellbeing that is derived from nature will be determined by both qualitative and quantitative characteristics. Outdoor play in a natural environment will contribute to both aspects.

4.2 Nature as a stress buffer

Perhaps one of the most important benefits a natural environment can bring to the lives of children is reduction in stress. Having access to nearby nature has been shown to be able to significantly reduce the psychological impact of stressful events in children and maintains higher levels of self-esteem, where the effect was directly correlated to the amount of natural elements that were present (Wells and Evans 2003). A similar dose-dependent effect of nature on the wellbeing and health has been described also in adult urban populations (Shanahan et al. 2016). Although the primary focus of this kind of research is on adults, the studies on children make it crystal clear that also for them the presence of nature can help them to cope with stress. Children are not good at recognizing stress or vocalizing their worries about it, and any means that can improve their stress levels would be welcome. Access to nature would be a cheap and universal way to help children reduce their stress levels, that doesn't require active intervention.

It is not exactly clear how nature helps children to cope better with stressful experiences. One possibility is that in rural environments the greater incidence of natural elements coincides with a community with stronger social interactions. Another possibility could be that the presence of nature diminishes the effect of "directed attention fatigue"; the concept where nature can replenish a person's cognitive resources by permitting neural inhibitory mechanisms to have a respite (Kaplan 1995). Children also experience so-called controllable and uncontrollable stress. During uncontrollable stress, a stressor is simply beyond the control of the child, and can be reduced only by distraction strategies (Altshuler and Ruble 1989). This could also be a possible mechanism in how nature helps coping with stress, by providing

a high-quality distraction environment, that allows children to pursue their own distraction strategies.

Even though the mechanism may be unclear on how nature reduces stress in children, any mechanism that helps children in their vulnerable position cope with stress in a positive manner is a valuable tool.

4.3 Playscape and natural playing environments

We might have to separate being outdoors in playgrounds and in “proper” natural environments, because the nature of interaction in the natural environment is qualitatively different for children than those in playgrounds (Fjørtoft 2013). The one key element of the natural landscape is that it lends itself to exploration, in contrast to the typical playground which is often a flat environment with a fixed predictable layout. Moreover, the traditional playground can often be too challenging or the opposite, not challenging enough, depending on the target group for which it is designed. In natural environments it is easier to find difficulty gradients. These are permissive to children to always find the right level of stimulation. In between the classic playground and nature lies the playscape.

A playscape is traditionally defined as a playful landscape, where playful elements tend to be integrated into a landscape as smoothly as possible, and the main function of this adapted environment is to produce enjoyment. The goal of the playscape is to connect children to water, dirt, trees and loose elements normally found in nature by means of an intentional design (Wight et al. 2016). Naturally, other types of landscapes can create enjoyment and wellbeing as well, it is just that in a playscape this is accomplished through play elements. Traditionally the playscape definition was narrower in its use and was only used to indicate play environments that mostly used natural elements, but the definition has been widened over time. The main goals of a playscape are to encourage interaction, wellbeing and enjoyment through play and nature. Another benefit of the playscape is that it may stimulate inquisitive and explorative thoughts on nature that are needed for the development of environmentally responsible behaviours (Wight et al. 2016). The playscape therefore acts as a simulation of the natural environment, with the intent to get the best of both worlds.

Natural playscapes have a different effect on the development of children than regular playgrounds. The motoric abilities, specifically balance and coordination skills, of children playing in natural playscapes showed a significant improvement over those children mainly playing in regular playgrounds (Fjørtoft 2001; Burdette and Whitaker 2005). The natural environment lends itself better to developing motoric skills, in part due to the specific nature of natural

surfaces, the topography of a natural landscape, and the presence of vegetation (Fjørtoft 2013). It creates a higher quality of experience for children in their play activities.

4.4 Free play

The need of children for exploration also touches on another important aspect of outdoor play, namely the need for unstructured outdoor play, or free play (Burdette and Whitaker 2005). While there is still room for structured outdoor play in the schedule for children, time for unstructured play is diminishing, for instance due to increase in time spent on screen time.

Also, here there are some implications for policy makers. The phrasing might matter when stimulating outdoor activities, because in research, health promotion and health care the main focus is on how physical activity affects physical fitness and obesity (Burdette and Whitaker 2005). However, as mentioned before physical activity in an outdoor environment contributes to much more than just physical fitness and a healthy weight maintenance. There are also cognitive, creative, learning and social benefits to outdoor play.

Words do matter. Many organized activities in school are specifically labelled as a structured activity. Labelling them as a “play” activity might overcome some psychological hindrances for both the children and staff, allowing for structured play to become more freeform, and hence more effective. The aim is that these activities will focus on all the beneficial effects of outdoor play, and not just physical activity. It might not be easy to grade “ability to play freely” on a report card, but perhaps that is the direction where we should be heading. If you extrapolate this concept, then perhaps we should even evaluate activities during recess time and this evaluation might be equally as important as for instance mathematics.

4.5 Outdoor play and the future

The implications outdoor play deprivation for our society are manifold, and perhaps most alarming is that levels of access to natural environment is also often correlated to the socio-economic status (Wells and Evans 2003). Housing should be planned in such a way that allows for the incorporation of nature since nature can directly boost the resilience of children and generally promote their health and development. From this perspective it would also seem logical to plan playgrounds in a similar fashion, incorporating as much nature as possible. A concrete playground with many varied playing elements might be able to satisfy the activity demands, but it could never replace the benefits that natural elements can give us for free.

When comparing the variety in so-called positive affordances, which are defined as the physical opportunities and dangers which a child encounters while playing in a specific setting, then more positive affordances were present in a rural setting in Finland than in a city environment (Kytta 2004). A rural environment will on average contain more natural elements, and will show more variety in these, than an urban setting. An important part of positive affordance is mobility. Children should be able to move around within an environment, which means that a landscape should be compartmentalized and varied. Natural landscapes are typically compartmentalized by zones of vegetation and topography.

A study investigating the effectiveness of a natural landscape vs a typical kindergarten playground found that children playing for 2 hours a day in the natural landscape had significantly improved their motoric abilities compared to the control group (Fjürtoft 2013). The children subdivided the landscape into different areas where each zone was named and had a specific playing function. The natural landscape lend itself particularly well to functional play, which includes activities such as jumping, running and climbing, but other types of play were also used.

Although this was a very limited study the conclusion is of great interest. The playground, an environment designed by humans for play, is less effective at play than nature, an environment shaped by evolution. It somehow makes sense though, since our physiology and needs are also shaped by the same evolutionary process. In theory, designing the perfect playground becomes child's play, with this information in mind. We could simply put a fence around a nature area and we have the perfect playground. Unfortunately, nature tends to be associated with uncertainty and risk (Wight et al. 2016). And this has implications for how our society perceives the suitability of nature as a playing ground. We prefer the constructed and intentionally designed playground, mainly for the reason of control and risk management, and perhaps also to maintain cultural traditions, which ironically are rather recent ones.

A paradigm shift in our thinking and understanding of play might be in order. Play is essential to the health and development of children. The optimal environment for play is outdoors. The best play environment is nature. These three simple sentences go against all the current developments in our society. Consider the following statements. Play is something to be done when there are no serious activities. We spend more and more time indoors. We play indoors or at best at a constructed playground outside.

It seems simple enough to make changes, however, current cultural values and traditions dictate the present developments. They would need to change first, and it would require a paradigm shift in how we perceive outdoor play.

5 Outside play and early childhood education

Outdoor play can be used constructively in early childhood education. Practical studies have shown that a wide range of early childhood education goals can be incorporated into outdoor play activities, resulting in additional opportunities for creative play, problem solving, investigation, experimentation and collaboration between peers (Bento and Costa 2018; Bento and Dias 2017). Outdoor play doesn't have to be "wasted time" or a time filler. Educational policies can actively be incorporated into the outdoor play regime of a day-care facility. This goes beyond the conventional notion that outdoor play is principally there for allowing movement and the release of energy (Nedovic and Morrissey 2013). This is a theme that seems to be recurring throughout this thesis: Outdoor play is just much more than just allowing for physical activity. And when you combine this with another finding, that the professionals focus too much on risk management regarding outside play when organizing this type of activity (Bento and Dias 2017), a situation has developed which is unfertile for stimulating physical activity in children. And we should never forget that stimulating physical activity is prudent, but it cannot be the only goal in outdoor play.

Even if we accept that the goal of increasing physical activity is recommendable, and at least better than nothing, there are other issues. For instance, it became apparent in an Australian study among early childhood educators and caretakers that these professionals did indeed view physical activity as important for pre-schoolers, but that the central policies, practices and regulations limited their ability to implement physical activities, and they lacked the training to enable the implementation and incorporation of more physical activities (Coleman and Dymont 2013). Willingness to stimulate physical activity in children is simply not enough. Most educators are aware of some of their limitations, and they feel they need more training in this area.

At the same time, educators are not always aware of all their limitations. An important hindrance to implementing more physical activities is that caretakers often wrongly estimate the activity levels of children, or of certain activities, and often children do not meet the official guidelines (Tucker 2008; Soini et al. 2016). The training of educators should also focus on areas where the staff fails to recognize their limitations. This is perhaps also a principle that should be promoted more as a general principle. It is a common phenomenon that we have good intentions, but we fail to recognize that we lack knowledge or skills. The extreme form of this is also known as the Dunning-Kruger effect, where especially incompetent people assess their own skills as higher than they are. One could imagine that with the extended and ongoing austerity measures in European economies regarding education, the competence level of graduates has been affected negatively. It is therefore a problem we need to be aware of. We cannot simply assume a priori that an educator of early childhood or a teacher

in school will have all the skills and knowledge to implement change or whether they can recognize themselves lacking skill.

A valid question is whether we have enough knowledge as a community to implement change in the playground. Sometimes it works, but sometimes it doesn't. A systematic review of many research articles showed that playground interventions in preschools, where play equipment was provided, physical activity was promoted by teachers on the playground, or other changes were made in the playground, had no conclusive effect on the activity levels of the children (Broekhuizen, Scholten, and de Vries 2014). Interestingly, there was some measurable effect in studies where they looked at primary schools, albeit that the effects were small. These results are discouraging to say the least.

There are many problems with these kinds of studies. Often, they lack control groups, or are merely observational, but the biggest issue is that these studies only measure physical activity. It could therefore well be, that there were other positive effects during these playground interventions, but they were never assessed. What is becoming clear is that the interplay between complex human behaviours, needs, psychology, peers and a complex environment prevents any simple straightforward analysis. Any policy that seeks improvement in the playground, might also not be that straightforward. In the end we simply need more knowledge and research on this topic.

Attaining further knowledge, research and skills will only be the first minor step in a complex and long process. We need to come to an agreement as a society in which direction we really want to go with our children concerning outdoor play. Is it acceptable to continue the way we are doing? Do we want to stimulate physical activity? Perhaps we prefer that more room is given for free play? Or do we want to use the outdoor environment as a second classroom? The choice we make will have consequences, but perhaps the natural playground can help us achieve several of these goals at the same time.

The benefits of a natural playing environment can be diverse. The presence of natural elements in a playing environment can have beneficial effects on the greater motor coordination, improved attention span and concentration, increased occurrence of pretend play, stimulation of creativity, and enrichment of children's curiosity about their surroundings, and social relationships (Nedovic and Morrissey 2013). Pretend play is stimulated due to the natural presence of loose objects in a natural environment. The key principle is, however, that the natural environment has the potential to achieve multiple goals at the same time, while a designed playground is mostly restricted to its intended use.

5.1 Loose parts

The importance of loose parts in an outdoor playing environment is often overlooked (McClintic and Petty 2015). Loose parts refer to objects and materials that do not have a well-defined use and therefore can be used in various ways, and they are portable (Flannigan and Dietze 2012). Using loose parts in any outdoor environment can increase the intrinsic quality of that environment, because loose parts allow children added freedom in developing their own play experience, rather than that their play is controlled by predetermined environmental elements (McClintic and Petty 2015; Flannigan and Dietze 2012). The presence of loose parts affects many aspects of play. It may increase opportunities for play, social interaction, the use of language, increased risk taking, and it can promote of inclusivity of gender and age (Flannigan and Dietze 2012). One of the most common types of play with loose parts is when a stick or twig becomes a gun or some other weapon. Although this may seem violent at first glance it lends itself to the enactment of all kinds of different behaviour, such as roleplaying, playing social hierarchies, running and chasing. Loose object induced play is often accompanied by risky behaviour, but even this risky play behaviour mostly occurs in a very controlled manner. Children generally do use a form of risk assessment in this type of play. Boys and girls preferred different games when loose objects are involved, however, it was also typical that they joined each other's games, and got along fine doing so (Flannigan and Dietze 2012). This in large part due to the fact that loose objects are open-ended by nature and therefore do not dictate who can use them for what purpose, and purposes are easily modified.

It is of course interesting to note, that in a constructed playground, loose objects need to be introduced by the staff. Natural environments are full of loose objects, and this is part of the reason why they function so well as playing environments.

5.2 Using outdoor settings as learning environments

The outdoor environment, including the playground is in many ways no different from the indoor classroom and is just another learning environment (McClintic and Petty 2015). And perhaps what is needed is a re-evaluation of how the outdoor environment can be incorporated into the current curriculum. The outdoor environment should be seen first and foremost as a learning environment, albeit one with very special properties.

As we have seen earlier, children tend to spend less time outdoors than ever before (Burdette and Whitaker 2005), and this has a twofold effect. Not only is there a gap in outdoor knowledge and experience in children, there is also an increased probability that newer generations of childhood educators themselves have the same gap (Ernst and Tornabene 2012). At the same time many early childhood educators would prefer to commence with

environmental education as early on as possible and as a location, an outdoor location is typically seen as a perfect place to do so (Ernst and Tornabene 2012). The biggest problem in environmental education is access to environments with natural elements and the most productive way to stimulate environmental education is often just reducing the barriers that prevent access to these environments (Ernst 2014). Spending time in nature automatically elicits the innate feelings of connectedness.

This connectedness to nature can be described by the word biophilia. Biophilia literally means love of living systems, and this word was used by Edward Wilson to describe the concept of the innate tendency in all humans to focus on, and seek out connections with nature and other forms of life (Wilson 1986). The word innate should be taken literally. It is genetically hardcoded into us. Our interest in the environment and sustainability could be best served by spending time in nature stimulating our biophilic connections.

In short, the outdoors can be used as a learning environment, and specific subjects such as environmental awareness and sustainability could well be best practiced in a natural environment.

5.3 Outdoor play: Safety and Risk

A major health problem for children in our western society is that children are subject to a serious reduction in opportunities to play (Brussoni et al. 2015), and this is often referred to as play deprivation (Belknap and Hazler 2014). Play deprivation has, in all likelihood, multiple causes, although not all may be yet identified. The increase in screen time as discussed before may be of influence, but there is also a shift in the perception of what is acceptable in risk for children by parents and society (Brussoni et al. 2012; Kernan and Devine 2010). This affects the nature of the activities that are acceptable for children. The level of risk that is acceptable has diminished over time in our society.

Risky play is hard to define at the moment because the community hasn't decided on a standard yet, but risky play usually is experienced as an attempt to do something novel, or simply the existence of the feeling that the situation is out of control, often caused by excessive height or speed (Sandseter 2007). Risky play is a behaviour that is commonly associated with the emotion of overcoming fear.

The literature supports the notion that risk is an important part of play and that it might be an absolute necessity for a healthy development (Brussoni et al. 2012; Milteer, Ginsburg, and Mulligan 2012; Sandseter and Kennair 2011; Little and Sweller 2015). And the effects of removing risky elements in play may even go further. Playgrounds that are made too safe are

seen as more unattractive by children than playgrounds that contain more risky elements, and will see a reduced usage (Ball 2004). Children have an innate attraction to risky play (Sandseter 2007). They will actively seek out experiences that are on the edge between dread and exhilaration.

In contrast to this innate desire of children there is the societal urge to make play safer (Sandseter and Kennair 2011; Kernan and Devine 2010). Not only reduces the intensity of the play experience, the play experience also becomes less attractive to the target audience, leading to increased inactivity. This situation is a result of the formalization of the use of space for childhood education and recreation, often resulting in what can be described as a bland experience compared to natural playscapes (Kernan and Devine 2010). Although there might be some variation between playgrounds, they all contain the same elements, often from the same manufacturer. This blandness not only has a demotivational effect on children but also caretakers. In a professional setting a bland environment might be preferred to reduce risk, or a bland outdoor play environment might lead to reduced outdoor activities because they are seen as less attractive by the caretakers. A large survey among Australian early childhood educators and caretakers showed that they are aware of the benefits of risky outdoor play, but that outdoor activities were restricted with safety in mind due to regulations. An example of these type of rules and regulations would be for instance limiting the allowed height on climbing obstacles. An even larger problem is that space is typically limited and often there are not enough resource to create a more challenging environment (Little and Sweller 2015). Therefore, the need to makes things safer has had effects on multiple levels, exacerbating the effect of risk management.

The attractiveness of risk is innate and children will display a natural tendency towards risky outdoor play, and notably it is vital to let children manage those risks themselves in order for them to develop properly and healthy (Brussoni et al. 2012; Sandseter 2007). In practice this typically means that a paradigm shift is required, substituting the mantrum of “as safe as possible” with “as safe as necessary”, to give children, the opportunity to grow.

The number one concern of caretakers during outdoor play is predominantly the safety of the children (Coleman and Dymont 2013). This has implications for how caretakers organize their own tasks during outdoor activities. The caretaker will be preoccupied with performing tasks that are risk-related such as carrying out playground safety checks, monitoring the playground for safety hazards, preventing children from using damaged, broken or hazardous equipment, areas or toys, and having restrictions to the use of equipment, such as height limits (Coleman and Dymont 2013; Sandseter 2007). This poses a problem because all the energy spend on risk-avoidance tasks cannot be spend on promoting learning, educational, social and physical activities.

The mounting workload and constant stress of early childhood educators also poses a problem also during outdoor play activities. Often the outdoor time is used by caretakers to have a “break” (Coleman and Dymont 2013). And their activities are limited to monitoring and talking to colleagues. Let’s be clear about the fact that none of these are negative activities, since communication with colleagues is important and it isn’t always possible during other times. Monitoring is valid from a safety perspective. However, these activities do prevent caretakers from taking an active role during outdoor play time, which may be required to exert enough influence on the children to make a positive change regarding outdoor play.

From a personal perspective I have witnessed the conflict between as safe as possible and as safe as necessary playing out in a local day-care. The staff was divided between a faction that prefers the current safe rules in the playground vs a group who would like to lessen the restrictions in order to allow children to perform more risky play. Staff members that wanted to loosen the restrictions felt that it was difficult to even initiate a discussion on this topic. The staff members that were in favour for strict rules were vehemently opposed to any changes, or at least that is what it felt like to the other staff members. They wanted to exclude as much risk as possible and this was their ultimate goal, which is in line with the literature (Coleman and Dymont 2013). The staff that would like to see changes found it therefore difficult for this reason to discuss the matter, because they felt there was no room for discussion to start with, based on previous experiences.

One of the problems in the discussion was that decreasing safety is a hard thing to sell to the parents. The question that would be asked from the parents would come down to something coarse as: “Would it be ok if your child would possibly break some bones or receive some other grave injury?” Over time rules had been tightened over the years each time there had been an incident leading to the current situation. Work pressure on staff had also increased over time and allowing more risky activities would mean that supervision would be more demanding.

Although my experience is merely anecdotal, it falls in line with what I have seen described in the literature, and altogether, is a solid indication that a paradigm shift is needed in the safety needs for outdoor play. And that it perhaps would require more than just information to the relevant caretakers. There are strong beliefs present, and strong beliefs require a strong effort to change. Moreover, any work towards risk increase acceptance needs to be supported by parents, and often policies are dictated by the least tolerant and most vocal faction in this group. Contemporary parents are averse to risk taking when it comes to their children, and this would also need to change.

Interestingly there are even gender biases present in risk assessment. There is a significant difference in the attitude of male and female caretakers in early childhood education. One

study showed that male early childhood education workers on average have a more relaxed attitude towards risky play in children and allow children to engage in riskier play than their female colleagues (Sandseter 2014). This may not really be surprising because even among children there is a notable difference in risk taking between boys and girls, with boys generally engaging in riskier play than girls (Lillard 2015).

Our society is becoming increasingly more multicultural. From a multicultural perspective we have to expect that our views on outdoor play and risk assessment will vary between the members of our society. Because multiculturalism is an ongoing process collecting data and providing information about the benefits of risk and outdoor play will become incrementally more important.

We also give conflicting signals to our children. On the one side we see outdoor play as a way to express freedom and explore our environment. On the other hand we see outdoor play as a risky endeavour, perhaps best to be avoided when can, considering traffic, stranger danger and the inherent risk of physical play (Kernan and Devine 2010). Part of the problem of diminished outdoor play is based in the increase of protective discourse in our society. We perhaps camouflage our intent to control our children with the suggested intent of protecting them. Control and protect sometimes follow the same path, but not always. From this perspective it is easier to control children from the comfort of an inside classroom, which makes it not surprising that this is the preferred environment to raise and teach children.

5.4 Importance and function of risk taking

Risky play is completely enticing to children. They cannot help themselves to engage in it, and revel in the excitement and thrill of it all. Once again, the basis for evolutionary thought dictates that a type of behaviour that is seemingly innate and irresistible, must have some biological usefulness.

Risky play seems to play an important part in an anti-phobic mechanism (Sandseter and Kennair 2011; Poulton and Menzies 2002). From early childhood on, children fear certain stimuli, for instance heights or strangers. This is a protective mechanism that prevents that children have to deal with situations that they are not ready for yet. The problem is, however, that these fears need to be overcome again, because they will interfere with proper functioning. Risky play provides the motivation to do so. Exhilaration is a positive emotion and it creates a strong incentive to engage in activities that are scary. I am not suggesting that thrill-seeking only creates positive outcomes. Thrill-seeking is typically associated with all kinds of

negative behaviours, such as substance abuse, driving recklessly, and antisocial behaviour to name a few.

However, risky play is a form of thrill seeking that can have a highly positive outcome for individuals. It guides the physical and mental development of a child along a steep enough learning curve, and it builds resilience. A systematic review on the effects of risky play showed it had mostly positive effects regarding physical activity, social health and behaviour, injuries, and aggression (Brussoni et al. 2015). On the flipside, deprivation of risky play behaviour may lead to the development of phobia later in life (Poulton and Menzies 2002). From the principles of early intervention (Károly, L. A., Kilburn, M. R., Cannon 2005), it makes more sense to make room for risky play in early childhood than to treat individual pathologies later in life derived from risk deprivation. Individual treatment at these later developmental stages or adulthood is expensive and long-lasting.

5.5 Dangers of a focus on activity levels.

There is an imminent danger to looking at children's health only in terms of physical activity. One forgets that outdoor play, as a physical activity, has a myriad of other beneficial effects besides stimulating physical activity, on the development and health of the child (Broekhuizen, Scholten, and de Vries 2014). Physical activity is very much linked to the current societal concern about obesity. And this has led indubitably to a research focus on obesity. Obesity is currently very much a typical hot topic in science (Michon and Tummers 2009), with 20.000 articles published in the year 2018 on this topic alone. There is a disproportional amount of focus on specific areas of research, which is partially based on societal and political concerns and misconceptions, but also because the scientific community perceives the topic as attractive. This can simply mean it is interesting, or that there is just more funding available.

There is a great apprehension about the obesity epidemic in children and adults alike, and an increase in physical activity automatically becomes part of solution-based thought. And from this viewpoint outdoor play is seen only as a form of outdoor activity, and all is forgotten about all the other reasons why outdoor play is so important to the child and its development. At the most this type of research will extend the reason to why physical activity is so important to other health risks, such as other preventable chronic diseases besides obesity (LeBlanc et al. 2015). Research with a more holistic view on physical activity in children is harder to find. When you focus on one set of explanations, it is hard to find the one you never considered.

It is important to note that children should have the right to play in outdoor environments. Outdoor play is not just some mechanical means to increase physical activity levels. Outdoor play is a necessity for the healthy development of the child, it's wellbeing and their learning (Kernan and Devine 2010). Perhaps it is not always easy for us adults to connect to the world of children, but in this case, we should put more effort into connecting with the needs of our children. If we view play as an activity from an adult perspective, we have failed from the onset. We need to change our perspective to that of the child, and for them play is more than just avoiding obesity.

The adult view on the nature of an activity is radically different than that from a child. The play of children is rife with spontaneity and is not focused on maintaining single activity or goal, as is often the case in adult physical activities. And there are good reasons for this difference. The developing child has different needs and it is speculated that the developing brain and body prospers on a pattern of diverse stimulation from a heterogenous environment (Burdette and Whitaker 2005). Adults prosper more from attaining specific goals. Projecting the goal-orientated attitude of adults to outdoor play has led to the focus on increasing activity levels. And this is a serious error on our part that needs a revision of thought. Perhaps it is therefore not entirely surprising that outdoor play seems to be misrepresented in research.

Another unfortunate occurrence is that policies are slow to adjust to the latest research and understanding. This is generally the case, and it is also the case in the policies on play. Policies amendments on a national are inherently slow, and in this particular case the whole body of researchers active on this topic hasn't even come to a full understanding or agreement on the matter of outdoor play, its benefits, its inner workings and how we should implement the knowledge we have.

Training and knowledge may be inadequate for those who make decisions on policy and those who implement them. There is a great imbalance between indoors and outdoors in our current educational structures and we must address this issue on many levels in order to be able to make any changes.

5.6 Nature preschools and rain- or shine day-cares: a practical example

A practical example might be in order, because an example might not alleviate all concerns that one might have, but it does give us room to speculate and to imagine that change is possible on a practical level. For more than 50 years there have been preschools with the rain- or shine concept active in Scandinavia (McGurk 2018; Shaw 2011). Like the name suggests, these pre-schools will go outside whether it rains or shines. There is no bad moment to be outside, and preferably outdoor time is not spent on a playground but in nature. Nature is used in

these settings as a classroom, and there is often not a fixed program, but the curiosity of the children will guide the information flow between teacher and pupil.

Taking the rain or shine concept to the extreme is the forest or nature day-care. The original idea for the forest day-care originates from Denmark, but the concept quickly spread to other Scandinavian countries such as Norway and Sweden. An estimated 5% of children attend such a forest day-care in Scandinavia (Borge 2003). In this type of day-care children spend 5-7 hours a day outside in nature, no matter the weather conditions. The day-cares may have an outside yard, but it tends to be bigger than the standard yard and often located at a distance. There are indoor facilities, but they are not seen as the primary site for child care or education.

The nature preschools were based upon a concept introduced by Mrs Flatau in Denmark already in the early 1950s, where she would take her own- and neighbourhood children for walks into the forest. Similarly, a man in Norway, Tom Murstad, had taken it upon himself to take children from Oslo outside the city into the forest where they could spend time outdoors and play in nature under supervision. This tradition was extended to several preschools in the 1970s in Norway where children were regularly taken to the forest, and in 1987 finally the first nature preschool was established in Norway. (Lysklett and Berger 2017).

In these nature preschools in Norway a large amount of time is spent outside, and even in the winter close to 70% of nature preschools still spent at least 4 hours outside in the harsh winter climate of Norway. In the summer the time spent outside even increases and 87% of them spend 6 or more hours a day outside (Lysklett and Berger 2017). Most of these nature preschools take regular trips to designated nature areas. They spend a lot of their time playing and learning in these natural environments, which typically provide a more challenging and stimulating experience than artificial ones (Sandseter 2007). Risky play is generally seen as a positive influence in the Norwegian curriculum, and not automatically discouraged (Lysklett and Berger 2017), and perhaps this facilitates the existence of nature preschools.

The main effect of being outdoors in these nature preschools is that it increases the freedom of not only the children, but also the adult staff, who has to be more flexible in the outdoor environment (Lysklett and Berger 2017). The staff tends to be very much aware of this particular qualitative difference between the indoors and outdoors environment and feel that indoor activities are necessarily more organized, while outdoors this kind of strict organization will not work. This element of freedom not only brings opportunities to the children but is also seen as a rewarding work quality for the staff.

The freedom that must be given to the children in a natural environment comes with an unexpected benefit. Where there is freedom there is also responsibility (Lysklett and Berger 2017). In a natural environment the staff and children will have to work with invisible

boundaries because there are no fences. The children have to show a level of control that is not always present in a regular day-care setting, and transgressions are answered with restrictions in the freedom that is given. Instead of being able to play till the invisible border they now have to stay within eyesight of an adult, or near them. Children are trained from early on in taking personal responsibility.

An important question is how these nature preschools manage to do what other preschools and day-cares do not manage: How can they spend so much time outdoors? In Norway the nature preschools tend to be smaller than their regular counterparts and they differentiate by their organization of routines (Lysklett and Berger 2017). The smaller size diminishes the distance between the day-care manager and staff. This allows for more flexibility. The routines used are also often geared towards increasing flexibility, such as the invisible fences. Many routines allow for the acceptance of risk. In case of the invisible wall, it would be easy in the theory for a child to wander off and get lost, but the experience in practice has shown it rarely happens, and that the risk is acceptable. An important concept of flexibility is that the trusting relationship between staff and children is reciprocal. Trust breeds trust.

At the same time there is a lot of room for experimentation. Interestingly also here the importance of loose parts is recognized. There is often no need for toys, because nature provides the children with so many objects that can be turned into improvised toys by the children. Also, the natural environment really tends to stimulate the children's imagination and promote activities such as role play. (McGurk 2018).

The nature preschool is perhaps therefore the best example we have of a holistic approach to using the outdoors as a learning environment, and it shows that even in the current structure and organization of our society it is possible to maximize and use outdoor time. In Finland there are also various day-cares that operate on the spectrum between rain-or shine and nature day-care (Shaw 2011), several of which are operating in the Helsinki area, the most urban setting of Finland. Each has their own individual solution to maximize outdoor time, and on how to fill in the curriculum. This is mainly done by a motivated staff, facilitated by flexible routines, and supporting parents.

6 Conclusions

Why do we play? Why do children play. Perhaps we shouldn't look at play of children through the looking glass of adults. We continue to seek usefulness in play. A purpose that suits us as adults. We react to the obesity epidemic among children with looking for opportunities to

stimulate physical activity. The purpose of play has become to squeeze out every little drop of physical activity that we can.

A paradigm shift is needed. Play is a means to children to experience and give meaning to the world (Samuelsson and Johansson 2006). That is the core purpose. And perhaps that should be the only purpose in an ideal world.

Unfortunately, we live in a society where the lives of children are distorted from the principles that should govern their lives. It has resulted in some side effects that are unwelcome and worrisome, such as childhood obesity.

Perhaps the most important conclusion that can be found in this thesis is our societal reluctance to give our children the chance to be outside. We may mean well, but it doesn't mean we are not harming our children at the same time.

It is too simple to blame technology for the diminished activity levels in the current generation of children growing up. It is only a small part of the problem. The greatest problem is essentially that we live in a culture that is intent on controlling others, which include our children. We have come to find risk unacceptable, and the word has so many negative connotations, that any activity associated with risk is to be avoided. From a developmental and well-being perspective we have learned, however, that risk contributes positively to these aspects. Risk avoidance can actually cause negative outcomes, such as phobias, exclusion, and diminished wellbeing to name a few. We have seen that risk is used in our biology to train ourselves to become more resilient. To overcome fear. To progress from one stage to another. Risk should therefore be welcomed. Risk is part of nature's early intervention strategies to create a healthy mind. And therefore we should allow for a healthy dose of risky play in our society in order to create our own intervention strategy.

We may have forgotten that nature can act in ways we never imagined on our wellbeing, mental- and physical health. From this perspective programs that are based on nature could help us to achieve goals, even though we sometimes do not even know the exact mechanisms behind it. Nature is a promising tool for establishing early intervention programs. As we have seen nature acts in a myriad of ways and the combination of nature and free play is permissive to reduction in stress, building up resilience, and a health mental- and physical development in children. A daily trip to the forest could act as an early intervention program to reduce stressors in children without much added costs. Traditional organized early intervention programs are often costly because they usually require extra staff, especially when they want to be successful (Karoly, L. A., Kilburn, M. R., Cannon 2005). Most school and day-care directors and managers prefer universal early intervention programs where every child is included in the early intervention program because it is easier (Calear and Christensen 2010). This is in contrast to indicated programs, where children with mild symptoms are incorporated into the

program, and selective programs, where those that have clear indications of problems are chosen.

If we take stressors as an example, we know that children are all different and they deal differently with stress inducing factors in their lives. Some children will show more resilience and shake off stress like it is nothing. Others will need that extra little bit of help. We have seen that nature can act as a stress buffer for children (Wells and Evans 2003). A universal day-care policy of having regular free play time in a natural environment could help those that need that little extra help to deal with their daily stress and stressors.

This is of course only a small example on how nature and free play could help us. We should be open to a re-evaluation of the role of nature and how our current views on play dictate our policies and ideas. There should be the realization that our current thinking might be causing some undesirable problems, in the area of physical and mental health, exercise, education, development, and wellbeing of our children. Contemplating this possibility should be a priority, because at the moment this is hardly happening.

A major problem in the research on outdoor play is that the bulk of the research focus lies in obesity research which causes a serious imbalance in the rhetoric and focus. There is an excessive emphasis on activity levels. Research is dictated by the interests of principal investigators, but mostly by the funding available. There are many interesting venues of future research that could be undertaken on the topic of outdoor play. The limitation here, might be the same as is generally present in social science. A lack of consistent and pervasive funding. We mentioned earlier that there have already been around 20.000 articles published on obesity alone this year. This would be an unimaginable quantity of articles in social sciences for just one topic. Considering the enormous costs of publishing an article on a medical or biological paper compared to a social science paper, it becomes clear that our society still undervalues social sciences as a means to innovate and support our society or solve important societal issues. Social sciences have a lower standing than medical biology (Fanelli and Glänzel 2013), and this could explain differences in funding and focus. Social sciences should promote themselves more strongly as the leaders in innovation and the providers of answers to all kinds of important answers we are seeking, such as childhood obesity. And they can do so by giving deeper and more rewarding answers than for instance medical biology can, if they focus on holistic answers and pursue real questions instead of perceived questions.

To move forward as a society, we should rethink how we manage science and its relationship to practice. Currently it is still very much assumed that scientific progress will lead to societal progress and science can be translated into practical policies and solutions. In this sense remarkably little has changed since the second half of the 19th century, when pure science for the first time started to seriously look at practical problems and applied sciences were

developed (Schauz 2014). The connection between scientific results and practical solutions is much more complex than we assume, and this would favour the idea where we put more effort in social science studies that test the knowledge gained. We should also establish a more effective means of communication between the different scientific fields, to prevent an excessive focus on narrow topics, such as obesity. Since society funds most of the science perhaps society can also demand and orchestrate its output towards a more applicable and relevant manner. In times of austerity science for the sake of science might be a luxury we cannot afford.

We should perhaps end this discussion on a more positive note on what is possible, and how we should implement some of the lessons learned so far. One could raise the criticism that it seems to impractical to implement more time in nature in a day-care or school setting. It is a valid criticism. Work pressure is high in the educational setting, a curriculum and a set of national guidelines need to be fulfilled, and the resources are definitely not unlimited. Nature might not be around the corner. Could you really let children loose in nature while maintaining a reasonable level of control and risk management? These are all valid concerns and it is therefore justifiable to enquire whether it is even practically possible to incorporate nature into such a setting.

We have seen from the practical example of nature preschools or rain- or shine day-cares, that it is possible to incorporate more outdoor time in the existing curriculum and that it promotes all kinds of beneficial learning experiences, besides increasing the wellbeing of the child. An important part of the nature preschool is building a bond of trust between staff and children, in order to allow an environment of freedom. The increased freedom motivates staff, which benefits children the children even more. I haven't really touched this particular subject in this thesis, but one could imagine that a motivated staff is particularly beneficial to the developmental environment of the child, and an increased time spend in a quality nature environment, where staff is granted freedom and the opportunity to improvise, will increase their motivation. In a time where career burnout is prominent, the wellbeing of children in early childhood education settings are not the only concern, although they are the major concern. The quality of the working environment for the staff is also instrumental to a high-quality early childhood education. Any improvement that benefits both children and staff is one that is highly welcome, and nature is such a means to an end.

I would like to end with a set of guidelines that could act as focus point on where we should and could pay attention when we consider implementing or promoting outdoor play. Due to our gaps in knowledge this set of guidelines is far from complete, and they are possibly distorted due to my own personal interests, background and knowledge.

7 Guidelines

As a final concluding chapter in this thesis I would like to propose a set of preliminary guidelines that could be used in an early childhood education or policy setting. The list is not comprehensive or final. This is mainly due to the limitations of this thesis, the limitations found in the literature, and the limitations we set ourselves as a society when discussing the problem of decreased levels of physical activity in children in current generations. The list should be expanded, and holes should be filled in. However, we need to start somewhere, and I hope that this modest list will aid those interested in the matter and those who wish to orientate themselves on this complicated topic.

7.1 Outdoor play promotes a health development of the child

This is a fundamental guideline supported by unanimously by the literature that I encountered during my review of the current literature. There are many reasons why it would be good to promote outdoor play, but the core issue is and will remain that it is a necessity for the normal development of any child, and deprivation of this quintessential activity may lead to developmental issues that may persist throughout adulthood.

7.2 Day-cares, schools, governments, parents should focus on outdoor play as a serious activity and not a frivolous waste of time, a time filler, or a means to shed energy

Parents are subjected to the current environment of high-pressure jobs and life, and sometimes forget the importance of outdoor play and fail to allow for enough outdoor time for their children. The same is valid in early childhood working environments and schools due to the increasing loads of work pressure. However, outdoor play is essential to a healthy development and it should be therefore taken seriously, even though the play itself is fun and seemingly not serious. It might seem at first glance another chore or work task, but the outdoor environment can fulfil so many roles and functions that after some time and experience it may actually reduce the workload. For instance, it could act as a second classroom, or as a means for parents to spend quality time with their children.

7.3 Phrasing matters

Outdoor play is not just a means to increase physical activity. Outdoor play is crucial to the whole development and learning of the child. By phrasing the whole issue around the need to increase physical activity, the outdoor environment becomes a tool to merely increase physical activity, ignoring all the other beneficial influences and possibilities of this type of

environment. We are limiting ourselves in thinking, executing and research, by limiting the question we are asking.

7.4 Natural playscapes are better for the development of motoric skills in children than artificial ones

In general, natural playscapes or environments are better for the development of motoric skills than regular ones. There are two important matters we need to consider regarding this statement. One of the main current goals is to increase the physical activity levels of children, based on the concerns about childhood obesity and increased screen time. At first glance, the desire to increase physical activity levels agrees with this particular guideline, where natural environments are preferred because they are significantly better for the development of motoric skills in children. However, better skills don't necessarily mean increased activity. It is implied, but not proven. For example, the activity levels that occur in a natural environment could be the same or less, but higher in quality. We simply do not know what is exactly happening. The current research should be redone with a slight change in the research question: does a natural environment increase the physical activity levels of children. Does the natural environment improve the quality of movement, the quantity, or both?

On the other hand, if the goal of education would be to improve the quality of life for children as much as possible, and to give children all the advantages that are possible than the whole issue is a no-brainer. A child playing in a natural environment will have developmental benefits over those that do not, that go far beyond that of increased physical activity.

7.5 Free play in a rich natural environment can reduce stress levels in children

Perhaps this is one of the more important messages that I put forward so far. Austerity measures and budget cutbacks are diminishing the quality of care that can be offered to people in general, which includes also our children. At the same time, the current generations of children find themselves in a particular demanding social environment. There are rapid changes going on in the working environment, with increased demands for flexibility, and these will greatly impact the future of children. A hollowed out educational system due to austerity measures is affecting them right now. Parents are already under the strain of changing societal pressures, and this indubitably affects their relationship with their children. In short, children are expected to encounter more and more uncontrollable stressors. The stress that they endure will be of the kind which they have no control over, and it is becoming ever more vital that children are offered the resources to deal with these kinds of stressors. Incorporating more nature in our immediate living environments could be a general method to give the population means to deal with uncontrollable stressors, and this would be particularly

beneficial to children. It might also mean that time needs to be reserved on a daily basis in the schedule of the child where they can spend time in nature, and they need to be given the ability to access nature. Young children should be helped in these goals by parents and care-takers. Older children are perhaps more inclined to follow up on voluntary opportunities, but it means of course that these opportunities must present. Moreover, healthy habits such as using nature to reduce stress acquired during childhood could follow the child into adulthood.

7.6 Free play in nature as an early intervention program for mental health issues

Free play in nature can be potentially used as a means to reduce mental issues, such as phobias and anxiety on a population level. Free play is therefore suited for early intervention programs. Introduction of free play in nature programs will benefit the mental health of children and prevent expression of phobias and anxiety on a population level. As such these programs will work well as inclusive early intervention programs if they are incorporated into the educational system. A cost-benefit analysis should be made of course, but the treatment of phobias and anxiety on an individual level is costly and puts pressure on the general health care system.

7.7 Continued education of staff on outdoor activities and play is needed

Education and child care institutions should continually educate their staff regarding the promotional and importance of outdoor play and strive to place these activities in a natural environment when possible. Appropriate play activities in natural landscapes and playgrounds should be developed, given training on, and distributed among peers. Continued training is needed on the topic of outdoor play to keep up to date with the latest developments.

7.8 Responsibility and awareness for physical activity in children

Teachers and child care workers should be made more explicitly aware of how they can stimulate physical activity in children and made aware on how far it is also their responsibility, and what is expected of them in this regard. The same is valid for parents. It is easy for one group to put the responsibility with each other, but the truth is that there should be a cooperation and mutual responsibility between teachers and child care workers on one side, and parents on the other.

7.9 Promotion of risky play

Risky play should be promoted. It increases physical activity levels and creates resilience, and the ability to mentally cope with encounters of novel situations. However, this counters all current societal and parental trends. It will not be an easy task to change the mentality regarding this issue. A shift in focus on the research and the provision of information would be the first step. A general national recommendation on playground rules that stimulate healthy risky play and a training program could facilitate the process of reducing the current aversion for risky play scenarios. Part of the responsibility should lie within the parents who should be ready to accept the introduction of risky play in day-cares and schools, where they would need to adapt a more accepting attitude regarding possibly injuries and accidents. Because the occasional individual injury might be the ultimate price we have to pay for the overall health of the coming generations of children.

7.10 Focus on holistic research

The overall research focus should be on a holistic picture where play is central, and not effects such as increase in obesity levels. Holistic research is especially needed if we ever would like to have a public debate on how to best progress in regard to improving the wellbeing and quality of life of our children. With the focus on one aspect we lose sight of the matters that are perhaps more important. In theory we have the perfect learning environment at our feet: nature. Yet, we choose to ignore this rather attractive classroom in favour of the controllable indoor classroom. More information and knowledge on how nature, and being outdoors, could benefit us in achieving several goals as a society, would benefit us all, and this cannot be done by focusing on obesity and physical activity alone.

7.11 Promotion of outdoor play benefits all

Promoting outdoor play could be a means to increase the health and wellbeing of the general population over time. It could also be a means to reconnect society to environmental interests, especially if the outdoor play occurs in natural environments. From our quick glance at nature preschools we have learned that spending large amounts of time in nature also brings freedom, flexibility and trust. And these three concepts facilitate motivation not only in children, but also staff. A focus on outdoor education in nature could therefore also be a way to reduce burnout levels among early childhood educators, and to increase motivation levels. This not only benefits the adult staff, but also the children that are taught by them.

The exposure of children to nature would teach them appreciation for their environment, possibly leading to a generation more interested in sustainability and safeguarding the future.

Appreciation of nature will make the drive to protect nature stronger. A healthy population will be more able to deal with the many societal changes that are coming in the future.

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