

# Children with Down Syndrome and Inclusive Playgrounds



University of Groningen

Faculty of Spatial Sciences

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Student: Marlen Jani (S4120701)

Supervisor: Janine Venema

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## Abstract

The focal point of this study is the perceptions of children aged 5-15 with Down Syndrome (DS) regarding public playgrounds in Tirana. The methodology adopted a qualitative design, engaging ten participants in semi-structured interviews and observations. Open-ended questions, visual aids, and a theme-oriented analysis aimed to uncover their perspectives, preferences, and challenges in playgrounds.

This study is filling a gap in inclusive playground studies, by involving children with DS. The existing literature displays the relevance of physical and social environments on perceptions of children. Furthermore, it gives insight into playground participation, physical activity, social support, and overall well-being.

The findings of the study unveiled nuanced perceptions, though several themes were identified. Socializing is an important activity in playgrounds, associated with family members and friendships. Social interactions can also be overwhelming due to discrimination or isolation. Natural elements like sand, and water and engaging in physical play are attractive elements. The type of play has an impactful role in facilitating or hindering participation. Swings or equipment involving sensory and challenging play are preferred, while physically challenging equipment is less preferred.

Some recommendations for future research are using this methodology with a focus on inclusive playgrounds, having assistance from caregivers during data collection, using visuals, and observing participants in a playground setting, to gain a deeper understanding of children's perceptions.

*Keywords: Children's perceptions, inclusive theory, physical activity (PA), social support, type of play*

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## 1. Introduction

### 1.1 Background

Cognitive impairments, often regarded as design challenges, have led to the neglect of individuals who experience them, making public spaces inaccessible and not usable by everyone. Considering disability in designing child-friendly spaces, especially playgrounds, is therefore important in addressing cognitive delays. There is a gap in the literature surrounding children with Down Syndrome (DS), their perspectives on the built environment, and how they experience space. DS is a condition in which a child is born with an extra copy of their 21st chromosome, which causes physical and mental developmental disabilities (Bendak, 2018).

Public playgrounds can inadvertently perpetuate social and spatial exclusion, particularly for children with disabilities and their families, because of inaccessibility, unsatisfactory play options, and lack of interaction (Moore et al., 2022). An inclusive playground was built in the Hague with help from residents and children in the neighborhood (Papadaki, 2023), highlighting the societal impact this research has. It is relevant to explore playground users to strengthen socio-spatial inclusion, despite this not yet being a common practice in urban design (Moore et al., 2022). This is true in the context of Albania, where user experiences are disregarded especially for public spaces and parks (Lekaj et al., 2018). As of 2019, Albania houses 682 individuals with Down syndrome, with nearly half (305) under 18, emphasizing the importance of addressing youth needs in this community (DSA, 2019; Taylor, 2022). The capital, Tirana is a central hub for civil society associations (CSAs), hosting 43% of the total 115 in the country. Notably, 60% of these CSAs in Tirana focus on youth and children, and 24% cater specifically to special needs (Zeqo, 2023). Out of the 22 playgrounds managed by the Municipality of Tirana, only one has equipment accessible to children with special needs (Kadare & Sechi, 2017). In 2018, a survey by Qendra Marrëdhënie revealed that 62% of parents wanted playgrounds for their children, but only 7% lived nearby to such spaces (Kuris, 2019). Public spaces offer various benefits, including improvements in social aspects like friendship development, and physical activity (PA) engagement (Chaudhury et al., 2014).

Schelings and Elsen (2017) point out that the primary focus of research has been on motor impairments and blindness, while cognitive impairments have received comparatively less attention. For example, Dutch municipalities prioritize physical adaptations to playgrounds, potentially overlooking social barriers that impact cognitive disability (Van Melik & Althuisen, 2020). A previous study conducted by Tuckett et al. (2004) revealed in their survey that 60% of architects who participated reported rarely or never taking into account the building requirements of people with learning difficulties, compared to blindness, physical disabilities, and hearing difficulties. Playground accessibility standards have often addressed mobility impairments, resulting in designs disregarding the play of children with sensory or developmental disabilities (Brown et al., 2021). There has been a call to design spaces that cater to the unique needs of diverse populations. The shift becomes relevant considering the inclusion of children with special needs perspectives in the design process. Inclusive theory advocates for the integration of users' perspectives and

emotions (Schelings & Elsen, 2017) and is the main theory for this research. The idea that children contribute to the design process of playgrounds, hasn't been implemented in practice and has been barely talked about in theory. This transformation hinges on adopting an inclusive ideology that prioritizes accessibility, safety, and well-being while also nurturing productivity and engagement for all children, regardless of their abilities. In essence, it is a call to create urban environments that reflect the diversity and unique requirements of the entire population, fostering a more inclusive and equitable society.

## **1.2 Research Problem**

This research would be beneficial for the expansion of existing literature, by focusing on the children's perceptions of playgrounds. Moreover, the paper will shed light on how children with cognitive impairment interact with public spaces, spaces they prefer or avoid, and how emotions are triggered. All these insights could be useful for policymakers and urban planners in creating public spaces in the future. Several articles and papers delve into children's perceptions, but most tend to overlook children with special needs (Jansson, 2008; Hayball et al. 2017; Veitch et al. 2020). Children's insights are invaluable in addressing their needs in playground design, benefiting the target group and the wider community.

This approach aligns with inclusive design theory and its two main principles: considering the complementarity of users and designers and achieving sensitive architecture through reintegrating users' emotions into the design process (Schelings & Elsen, 2017). Individuals with DS are more likely to be physically inactive (Caldwell et al., 2023), thus it is of great interest to gather more insight to make playgrounds inviting, to increase children's physical and mental well-being. By doing so, this research seeks to continue this paradigm shift towards more inclusive designs, by taking into account the perceptions of all users, thereby influencing architects, urban planners, and city leaders.

Following this reasoning, this paper will try to answer this main research question:

*How do children with Down Syndrome aged 5-15 perceive public playgrounds in the city of Tirana?*

Sub-questions:

1. What are the elements of public playgrounds?
2. What aspects are important or preferred by children with DS in public playgrounds?
3. What aspects are less important or less preferred by children with DS in public playgrounds?

## **1.3 Structure of Thesis**

The structure will first cover an existing literature review covering the foundational theories for the research, followed by a complimentary framework that summarizes the main elements of the research context. After that, the methodology section explains the main research tools used for data collection, analysis and ethical considerations. The results are then categorized according to the research questions and display the main findings. Finally, the discussion focuses on the strengths and limitations of the research and future research recommendations. Everything is summarized in the conclusions.

## 2. Theoretical Framework

This theoretical framework aims to understand how children with DS engage in playgrounds. It gathers insights from various studies to explore the elements of playgrounds, the dynamics between them, and ultimately how they are perceived by playground users.

### 2.1 Inclusive Playgrounds

Public playgrounds are outdoor play environments intended for community use, that enable gathering, socializing, resting, and importantly, participation in play (Moore et al., 2022). For playgrounds to achieve their intended functions, attention needs to be on inclusivity. Inclusion is defined as the process of enabling the full participation of individuals with disabilities in activities, emphasizing the range of human diversity, to provide a space where all people belong (Taylor et al., 2022). Inclusive play is about creating ‘places where individuals with and without disabilities can engage in play together, allowing social barriers to be bridged and contact and social acceptance to be established’ (Van Melik & Althuisen, 2020).

Spencer-Cavaliere and Watkinson (2010) indicate that there are three important aspects of inclusion for children with disabilities in the experience of play: (1) gaining entry to play, (2) feeling like a legitimate participant, and (3) having friends.

Universal design emphasizes the relationship between the physical environment and the user, with a focus on social inclusion (Prellwitz and Skär, 2007). In universal design, environments are usable, and subjective needs and evaluations are embraced (Lynch et al., 2019). Inclusive playgrounds benefit the development of all children, regardless of their developmental abilities (Mejeur, Schmitt and Wolcott, 2013).

### 2.2 Physical Environment of Playgrounds

Playgrounds have been found to lack developmentally appropriate play for children with disabilities (Brown et al., 2021). The physical environment and the type of play often hinder children with disabilities’ participation in play (Prellwitz and Skär, 2007).

The experience of children with developmental disabilities shows that a lot of the playground equipment is complicated to understand, for example, it is hard to use multi-functional jungle gyms with slides and ropes to climb (Prellwitz and Skär, 2007). When playground equipment is too complicated, children with disabilities are less likely to use it for fear of improper use and getting teased, leading to isolation (Mejeur, Schmitt and Wolcott, 2013; Prellwitz and Skär, 2007). Several papers have explored types of equipment that fulfill the needs and interests of children with disabilities, while also encouraging cooperative play (Prellwitz and Skär, 2007; Brown et al. 2021). Play with sand, water, and noise-makers is suggested for children with sensory limitations (Prellwitz and Skär, 2007). Children with disabilities who desire quiet, private places, that can provide a sense of security within a playground, can benefit from solitary play (Brown et al., 2021).

Furthermore, research also indicated that intuitive, easy-to-use playground equipment may be enabling to children with developmental disabilities (Brown et al., 2021). Children with DS spent a greater amount of time



doing motor-based activities in playgrounds with swinging the most used, an activity with no social interaction (Virji-Babul, Hovorka and Jobling, 2006).

In addition, to play equipment found on traditional playgrounds (e.g., slides, swings, monkey bars), inclusive playgrounds may include elements of sensory play (e.g., music elements, visual and tactile stimuli) to engage children with high sensory needs and encourage imaginative play (James et al., 2022). Sensory elements are of particular interest to females (James et al., 2022).

The way the environment is built and equipment is positioned in a playground plays a role in the level at which children interact with one another (Nabors et al., 2001; Mejeur, Schmitt and Wolcott, 2013; Brown et al. 2021). General guidelines for the physical layout of playgrounds include providing closed spaces that promote proximity to encourage more interactions, and open spaces that encourage motor play (Nabors et al., 2001). If a playground has a high density of equipment in one area, children are more likely to interact with each other (Mejeur, Schmitt and Wolcott, 2013).

### **2.3 Social Environment of Playgrounds**

Social models of disability suggest that disability does not solely result from physical or mental impairments but is largely shaped by societal barriers (Van Melik & Althuisen, 2020). When studying children's experiences in inclusive playgrounds in Switzerland, it was found that invisible social barriers exist that limit interaction between children with disabilities and those without disabilities (Wenger et al., 2020). Since playgrounds are inherently a social experience, the playground's social environments should be considered to enhance experiences for children with disabilities (Brown et al., 2021). Despite being considered as highly sociable and having the social capabilities to play with peers, children with DS aren't included to the same degree as children with typical development (Næss et al., 2017). One reason children with disabilities are excluded from play spaces is they don't share equal opportunities for engaging with playgrounds as their peers without disabilities (Taylor et al., 2022). Children with DS were found to engage in solitary and parallel play in the playground, playing alongside peers but lacking interactions, and preferring time with parents (Virji-Babul, Hovorka and Jobling, 2006; Jędrzejowska, 2020).

Many children with special needs exhibit social skills deficits, which may make establishing friendships difficult (Nabors et al., 2001), affecting social support. Social support refers to the emotional qualities of relationships like feeling loved, cared for and listened to (Umberson & Karas Montez, 2010). The lived experiences of disabled individuals and their families often encompass instances of exclusion, prejudice, and disdain (Van Melik & Althuisen, 2020). In playgrounds, children's play behaviors are determined by interactions with others and physical competence within the setting (Taylor et al., 2022). Children's experiences in public spaces, are an interplay of self-image, social interactions with others, as well as the physical and social structuring of the places (Van Melik & Althuisen, 2020).

## **2.4 Access and Participation**

One of the most concerning topics surrounding the use of public playgrounds by children with any disability is accessibility. The research by Van Melik & Althuisen (2020) showed more than 85 percent of families with a disabled child, who participated, struggle finding appropriate places to play outside. Making an environment more “accessible” focuses on changing the physical space to remove barriers that prevent full participation by people with disabilities (Taylor et al., 2022). Access to appropriate facilities for PA and active play has been identified as a determinant of activity participation, and public open spaces need to be flexible to accommodate a diverse population (Chaudhury et al., 2014). Parents’ positive effects have been found to positively relate to the level and duration of children’s play (Venuti et al., 2008). In a study by Maye et al. (2010) cited in Downs et al. (2013), it was noted that reasons for participation included PA perceived as enjoyable or purposeful and those integrated into familiar routines. Making an environment accessible, however, does not make it inclusive (Taylor et al., 2022).

Another way to add structure, and increase accessibility, to playground interactions is to develop cooperative activities, where children work together to complete a group goal (Nabors et al., 2001). Throughout this research, more inclusive ways of designing public playgrounds will emerge, by shifting the focus on what the children view as accessible and prioritizing their experience in public spaces.

The study conducted by Caldwell et al. (2023) highlights the pivotal role of access and how the surrounding environment impacts participation.

## **2.5 Physical Activity**

The World Health Organization defines PA as bodily movement produced by skeletal muscles that requires energy expenditure (Bendak, 2018). Children with DS have cognitive, speech, and communication delays, and patterns of physical inactivity that can result in reduced health-related quality of life (Alghamdi et al., 2021). One of the primary concerns is the heightened risk of physical inactivity, a factor that can lead to a spectrum of health-related issues (Caldwell et al., 2023). Childhood obesity is a substantial health threat within this demographic, underscoring the critical role of promoting PA as a preventative measure (Alghamdi et al., 2021). The positive role of the family and the opportunity for social interaction with peers were identified as facilitators for PA. (Barr and Shields, 2011).

A study by Grow et al. (2008), cited in Chaudhury et al. (2014) showed that living closer to a larger public park and open spaces increased the likelihood of being active. Involvement in PA can increase motor skills, enjoyment and engagement in that activity, increasing the probability that a child will participate in PA (Imms et al., 2016). Acknowledging the significance of early intervention, the Chief Medical Officer underscores the necessity of encouraging PA in children, thus mitigating the risk of chronic diseases in adulthood (Downs et al., 2013). Furthermore, Caldwell et al, (2023) found that there is a decrease in PA in children with DS while they’re aging. For this reason, it is crucial to understand how



children with DS perceive playgrounds, to make them more attractive, inviting, and designed with the children's needs in mind.

## **2.6 Well-Being**

Public open spaces, including play areas, serve as essential components in enhancing the mental, social, and physical well-being of children, fostering social interactions with their peers (Chaudhury et al., 2014). The benefits of outdoor play are associated with a positive impact on mental health, self-regulation, increased PA, social health and behaviors (Lynch et al., 2019). Social support has been linked to better health-related quality of life (Caldwell et al., 2023). However, in group settings, children with DS have difficulty understanding social situations which may lead to social isolation, even if a peer initiates interaction through play (Virji-Babul, Hovorka and Jobling, 2006). Access to inclusive playgrounds is crucial in providing health-supportive play opportunities for children of all abilities (Taylor et al., 2022).

PA is an important health behavior and positively contributes to the management and prevention of more than 20 chronic diseases and conditions (Down's et al., 2013). Perceptions within the DS community highlight the role of increased PA in developing healthy habits among young children with DS, particularly during early childhood (Caldwell et al., 2023).

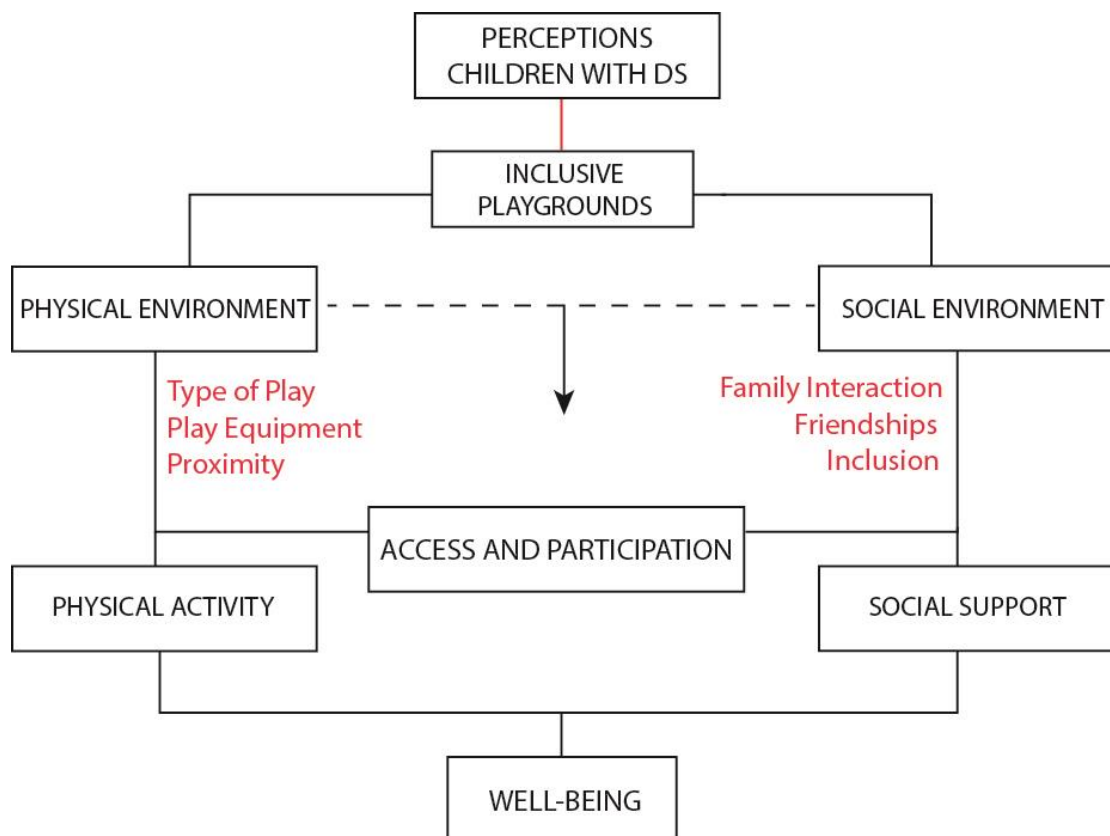
Participation in PA improves the children's skills, promotes their psychological well-being, and boosts their sense of belonging in the community (Alghamdi et al., 2021). Therefore, increasing accessibility in any type of public space will increase children's overall well-being (Caldwell et al., 2023).

This theoretical framework provides a lens through which to examine the multifaceted interplay of elements of playgrounds: PA, type of play, social barriers, and participation of children with DS in public playgrounds. It serves as a foundation for qualitative inquiries and analyses, facilitating a holistic exploration of this subject.

## **3. Conceptual Model**

Inclusive playgrounds will be operationalized as creating an environment where children have equal access to social and physical aspects of play, regardless of ability (Taylor et al., 2022). In this conceptual model, the design of inclusive playgrounds relies on the elements of playgrounds and dynamics between them, highlighted by the Theoretical Framework. This model suggests a comprehensive approach to designing public playgrounds, by assessing both physical and social aspects of the environment and how they relate to accessibility, participation and well-being. The type of play equipment and positionality are important in shaping perceptions, as they can restrict or facilitate participation. Social aspects such as exclusion from peers, social skills and interactions are also important, as they are related to social support. The model, as explained in Figure (1) proposes a link between physical and social elements,

which only when combined, can make children perceive inclusivity in playgrounds. The meaning behind this link is that both social and physical environments need to be addressed in playground policy and design. They facilitate PA increase, improved motor skills, engagement, and enjoyment. Furthermore, they enhance social acceptance, through friendships and social support. This approach will subsequently increase the well-being of children with disabilities and make playgrounds more attractive.



*Fig.1 Conceptual Framework: Inclusive Playgrounds: Aspects and Features that Shape Perceptions of Children with DS*

### 3.1 Expectations

Children with DS are expected to perceive playgrounds, through the unique lens of their personalities. While responses may vary, shared experiences within this demographic are expected. The type of play equipment is expected to be important to participation (Prellwitz and Skar, 2007).

Interactions with the family are likely to be attractive for participants (Virji-Babul, Hovorka and Jobling, 2006). Social aspects like feeling excluded and socializing are expected to be less preferred (Nabors et al., 2001), while PA is expected to be less important, especially in older participants (Caldwell et al., 2023).

## **4. Methodology**

### **4.1 Author's Positionality**

As a native of Tirana, I identify as an insider in understanding participants' experiences of discrimination related to cognitive disabilities and the challenges stemming from local government neglect and economic hardships. However, my involvement is observational, as I haven't been a caregiver, limiting my full comprehension of participants' experiences. My motivation for this research stems from interactions with a girl with DS at my mother's kindergarten. It was a pleasure to witness the inclusive efforts of staff and peers, but heartbreaking at times when inadvertently children were less inclusive.

### **4.2 Justification of Methods and Data Collection**

This study uses qualitative methods (literature review, interviews, theme analysis) to explore how children aged 5-15 with DS perceive public playgrounds in Tirana. This method will enrich the discourse on inclusive playgrounds, gaining a better understanding of the firsthand experiences of children and allowing a methodical and thorough analysis of qualitative data. The literature reviews relevant work on children with DS and playground perceptions, parental perspectives, and studies on children without disabilities, as there is a gap surrounding the target group.

Interviews were conducted to address sub-questions two and three. Semi-structured interviews, known for eliciting detailed and personal insights, were used as the primary data collection method (Clifford et al., 2016). To establish a trusting relationship, the initial interview segment involved playful conversations prioritizing the child's comfort (Spratling, Coke, & Minick, 2012). To attain a comprehensive understanding, it was essential to involve parents in the interviews. Open-ended questions, observations, and visual aids (photographs depicting playgrounds) were employed to address communication barriers. Picture-based questions were complemented with a sticker-based ranking system (Appendix I). Gaining children's consent and choosing appropriate interview locations were also primary considerations during data collection (Spratling, Coke, & Minick, 2012).

### **4.3 Recruitment of Participants**

Participants were recruited through purposeful sampling. This technique is widely used in qualitative research for the identification and selection of information-rich cases for the most effective use of limited resources (Palinkas et al., 2015). This involves identifying and selecting individuals or groups of individuals who are especially knowledgeable about or experienced with a phenomenon of interest (Palinkas et al., 2015). Institutions visited to recruit participants are: 'Down Syndrome Albania' and 'Jonathan Center'.

In the first communications with representatives of the respective institutions, the research motivations and objectives are thoroughly explained. Interviews took place in November 2023, at the respective

centers, after participants finish their therapy sessions. 10 volunteers were identified, as shown in Figure (2), according to the criteria, and further communication took place with the parents.

	Name	Gender	Age
1	Water	Male	10
2	Sand	Male	10
3	Flower	Female	11
4	Bird	Female	12
5	Grass	Female	6
6	Wind	Female	11
7	Tree	Male	13
8	Hill	Male	12
9	Field	Male	7
10	Mountain	Male	14

*Fig.2 Description of Participants*

#### **4.4 Research Ethics and Data Management Risks**

This research strives for honesty, scrupulousness, transparency, independence, and responsibility, following the Netherlands Code of Conduct for Research Integrity (KNAW *et al.*, 2018). For this reason, fabricating, falsifying, or misrepresenting research data is prohibited and taken seriously. The participants are asked if they want to participate, informed consent forms are given and signed by parents (Appendix II & III). The researcher clarifies the rights to anonymity and addresses concerns for non-participation. Protecting the confidentiality and privacy of the participants is a priority for the research process. Data will be stored for the duration of this research and deleted once the paper has been finalized.

The power dynamic between respondent and researcher is noticeable because of age difference and because participants are diagnosed with a cognitive disability. Ethical considerations will guide the terminology referring to DS to avoid discriminatory or insensitive language. Empathy and understanding are the underlying principles in the interview process and the entire research.

#### **4.5 Data Analysis**

The interviews are audio recorded and stored securely after finishing to ensure no data is lost. One recording was inadvertently deleted by one participant, so the analysis relied on notes, observations, and visual materials. Interviews are transcribed and analyzed manually with inductive coding. The codes were generated after multiple readings of the transcriptions, based on subquestions, namely Preferred and Less Preferred, PA, Type of Play, and Social Support (Appendix IV). Data was analyzed using theme analysis to identify common themes and patterns in the children's perceptions of playgrounds (Clifford *et al.*, 2016).

## 5. Results

Several patterns emerged regarding participant's perceptions. Preferred elements associated with playgrounds identified are (1) PA, (2) Simple Play and Sensory Play, (3) Family Support, (4) Friendships, and (5) Natural Elements. Less Preferred elements identified are (1) Repetitive and Challenging Equipment, (2) Socializing.

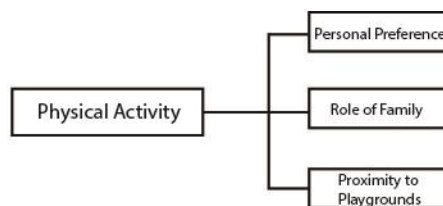
### 5.1 Preferred Elements

#### 5.1.1 PA is encouraged by Family & Proximity to Playgrounds

Interviews highlight a consistent inclination from participants towards physical engagement, contrary to the expectation on PA inactivity based on Caldwell et al. (2023). The majority express enjoyment in activities involving balls, such as football or simply playing with a ball, also reflected in their drawings (Appendix V). Other sports mentioned by participants include swimming, basketball, gymnastics and dancing, reflecting a variety of preferences. The correlation between PA and social interaction is noteworthy, with participants who are more physically active tending to be more social.

Furthermore, participants claimed family members encourage participation in sports. Water(10) expresses a preference for playing football with his dad saying: *“Mom's going to show off my football clothes. And also my brother's.”* Sand(10), displays an interest in sports which he explored with his older brother. These results confirm the positive role of the family in facilitating PA (Barr and Shields, 2011).

Mountain's(14) mother explains that having a playground with a basketball hoop in proximity to their residence increases the child's desire to practice the sport. This finding is consistent with Grow et al. (2008), as cited in Chaudhury et al. (2014), indicating that proximity to public open spaces enhances the probability of PA. Whether through structured sports or more casual play, PA choice reflects their preferences, abilities, the role of family members, and proximity to playgrounds, as shown in Figure (3).



*Fig.3 Physical Activity, Family and Proximity*

#### 5.1.2 Type of Play Facilitates Participation

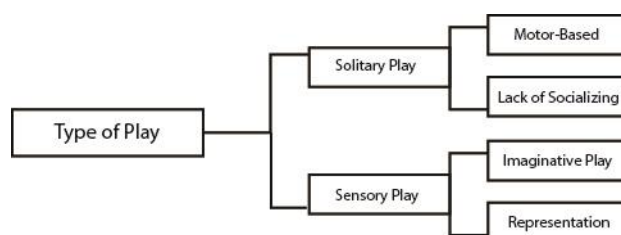
Figure (4) summarizes the reasons participation increases from type of play. The participant's affinity for swings is evident in interviews. Results indicate that participants find simple and solitary play attractive

in playgrounds. Flower(10) reveals: “I play the swing a lot! It’s easy.” Confirming previous research, swings are the most preferred motor-based activity that doesn’t require socializing (Virji-Babul, Hovorka and Jobling, 2006). The swing is an easy-to-use equipment, which is enabling to developmental disability as found by Brown et al. (2021).

As found in a study by Hayball et al. (2017) when reviewing children’s perceptions of outdoor play, it was found that children prefer risky, or challenging playground equipment. Water(10) chose Climbing and his mother explained: “*He likes challenges*”. This statement shows that children with DS have similar play behaviors compared to children without DS.

Hill(12) pretends he is flying when looking at the swing. Another recurring pattern, confirming James et al., (2022), is that imaginative play is encouraged by Sensory Play. Water(10) when presented with the sensory equipment, reacted: “I’m touching it. Beep”.

Familiarity with the equipment is also highlighted. Bird(12) reflects on her fondness for the game, recalling she played in the US, mentioning the absence of similar equipment locally. Grass(6) asserts a personal association with the picture stating, “This. It’s me here.” These statements reflect how representation and familiarity with equipment indicate an attractive type of play.



*Fig.4 Type of Play Facilitates Participation*

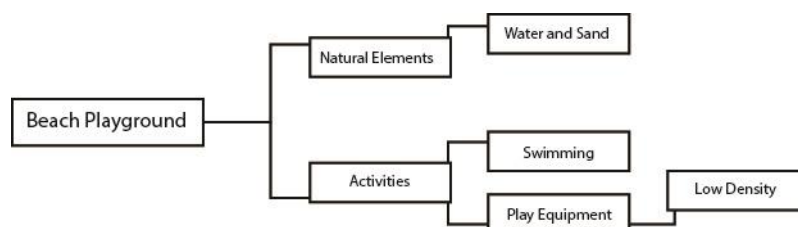
### 5.1.3 Playgrounds: More than Equipment

Participants consistently gravitated towards the beach playground, showing a shared preference for the seaside environment. The beach playground is preferred due to natural elements, engaging in gross-motor activities, and low density of equipment, as shown in Figure (5). Interviews displayed a strong association with the beach, mentioning elements, like sand, the sea, and swimming as attractive. When asked why he chose the beach playground Tree(13) mentioned: “*Because of the beach, the sea. I’ll swim.*”

Another pattern among participants is mentioning swimming and playing on the swing as attractive activities. Flower(11) chose the picture because of the equipment. Her mother explained: “*She likes this equipment (the Seesaw) but she would like it to be on the beach.*” Bird shared she doesn’t like the park playground: “*There is a lot of equipment.*” A high density of equipment in one place increases the opportunity for socializing (Mejeur, Schmitt and Wolcott, 2013), which may be part of the reason why it isn’t preferred.



When asked to draw a playground, most participants drew elements they would find in parks such as flowers, trees, and grass (see Appendix B), further confirming that natural elements are preferred. Their inclination towards the beach portrays a collective interest in natural elements in line with Prellwitz and Skär (2007) who suggested play with sand, water, and noise-makers for children with sensory limitations.



*Fig.5 Playgrounds: More than Equipment*

#### **5.1.4 Social Support in Playgrounds: Family & Friendship**

One of the main themes is the mention of family in association with play, a dynamic that is also connected to playground perception. The main reason to participate in play is family members, as participants prefer playing with their parents, affirming previous research (Virji-Babul, Hovorka and Jobling, 2006).

Participants referred to sharing activities with family members when asked “What do you enjoy in playgrounds?”. Water(10) expressed: *“I want to play there. Brother and me. Me and Mom will go in the water, and Dad will prepare the swim ring.”* The statement displays each member being assigned a significant role. Participants made sure to portray siblings, parents, and extended family members as a major part of their social life in public settings. Flower(10) explains who she prefers to play with: *“No, me, Mom and Dad. That’s it.”* Certain play equipment such as the Seesaw and Merry-go-Round are linked to playing with family.

Some participants display high social tendencies, aligning with Næss et al. (2017). Hill(12) enthusiastically mentioned having five friends. Bird(12) chose a picture by stating: *“I like it because there are a lot of children there.”* Sand(10) also showed a lot of excitement for the same picture: *“I love them all. I want to play with all.”* These results portray a positive reaction towards social interaction with friends and fellow children at playgrounds.

Results show that social support, specifically from family, plays an important role in participant’s playground experiences.

## 5.2 Less Preferred Elements

### 5.2.1 Type of Play Restricts Participation

The climbing equipment is linked to fear, as it requires more physical strength than other pieces of equipment in playgrounds. Grass(6) stated: *“Afraid of this.”* Another participant stated not being afraid, however, there is a link between this equipment and fear, as most participants associate this equipment with it. Sand(10) expressed: *“The boy climbs. Me too. With friends, with friends.”* The equipment poses a social experience for children who share the same goal of climbing to the top, which isn’t preferred by everyone.

The slide is seen as repetitive equipment, predominantly used in playgrounds by young children, something that is viewed in a negative light by older participants in the group. Bird(12) shared her dislike: *“There are a lot of babies.”*

Participants with heart conditions don’t get involved in physical play. Wind(11) points to the Monkey Bars equipment and says: *“I’ll do this. I can do it.”* Children with heart conditions or other health issues may desire active play because that’s what they are lacking but may face emotional challenges as they are unable to engage due to physical limitations. When asked if he likes the equipment, Field(7) says he doesn’t. His mother explains: *“He gets tired if he’s playing that.”* Physical strength plays a big role in participation in play and can result in a negative feeling for children who are excluded from some equipment. Figure (6) summarizes the reasons that can make physical type of play less preferred.

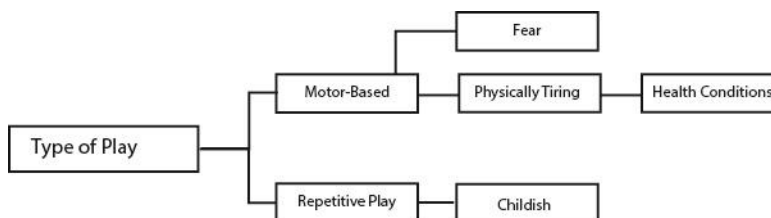
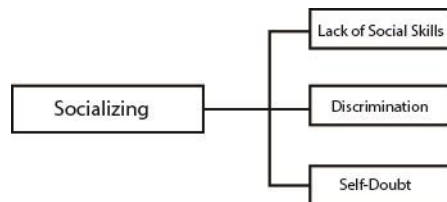


Fig.6 Type of Play Restricts Participation

### 5.2.2 There is such a thing as too much Socializing

Participants display how socializing with peers can be a negative experience, as shown in Figure (7), due to a lack of social skills, self-doubt, or discrimination. Flower(10) expressed discomfort with the picture featuring many children: *“I cry there. At the playground.”* Her father elaborated on her aversion: *“She doesn’t play with children. Sometimes she gets mad around children. She only has one friend and she prefers to only play with her. We don’t go to public playgrounds because of this.”* It further confirms that social elements such as socializing and experiences with others play a role in playground perception and

level of participation in play. Grass(6)'s father says: *"She's not very social around kids."* These quotes play into the fact that social skills deficits may impact friendship making as found by Nabors et al. (2001). Children can understand feelings of exclusion and/or discrimination, even if they can't verbalize it. Field(7) reacted when presented with the picture by pushing it off the table, expressing his discontent. He proceeded to choose the sad emoji to explain how he felt at the playground. His mom elaborates: *"Actually, there are times that he feels sad. Because other children don't accept him. They give strange looks. Their parents as well, they take their children away when he approaches."* The results reveal discrimination as a main reason for socializing being a negative experience. Water's(11) reaction to the picture was characterized by discomfort, facial expressions, and audible unease, expressing a feeling of shame: *"I don't want to. Shame. I feel ashamed to be there."* Results show that self-doubt or the 'othering' of themselves exists.



*Fig.7 Too much Socializing*

## **Discussion**

### *Limitations*

The research is focused on playgrounds in Tirana, where inclusivity isn't a concept applied in designs, limiting the generalizability of findings to other regions or cities with different playground contexts. The sample size is small. It is not representative as it doesn't encompass the entire spectrum of ages, socio-economic backgrounds, or variations in abilities within the community. Furthermore, no comparisons can be drawn between children with and without DS, as there aren't any participants without DS. Interviews took place after therapy sessions, potentially influencing the accuracy of their answers. In the case of a participant who had had a tough session, I decided to keep the interview concise, as my observation was that the participant wasn't focused. Another limitation is the restricted time for data collection, impacting the quantity and quality of the interviews. More time could allow for follow-up interviews in a playground setting, where participants could be observed in their behavior, equipment of choice, and emotions triggered by interactions and play.

The results on less preferred elements aren't conclusive. Participants had a difficult time responding to the question: "What don't you like in playgrounds?", sometimes misinterpreting the question by responding with elements they preferred. In these instances, I didn't always follow up with more questions, which

could impact the depth of the results. This communication barrier between participants and researcher introduces a subjective interpretation of the data, leading to possible biased results. As a researcher, I tried to be objective in my observations, taking notes during interviews and immediately after for every detail, whether or not relevant to the research. The results shown shed light on the unique challenges they face due to physical limitations, personal preferences, or discomfort, influencing their engagement with specific play equipment.

### *Strengths*

The strength of this research lies in studying an underrepresented group, children with DS, shedding light on their perceptions, and contributing to an inclusive understanding of public spaces. Strengths furthermore include the multifaceted approach in data collection, using qualitative methods, such as interviews, visual aids, and interactive techniques to gain insight. The findings of this research could have both practical implications in designing playgrounds as well as an increased participation of children with developmental disabilities in research.

The study underscores the need for further research and considerations to enhance the design and inclusivity of public playgrounds. Recommendations for future research involve using this methodology, in more inclusive contexts. If participants are observed in an inclusive playground, more insight can be gathered on strengths and barriers of play equipment, their organization, and interactions between children. Future research should take into consideration that interviews with children should take place with a caregiver present. Caregivers should only interfere where necessary to avoid leading the participants in certain answers. Interviews would benefit from the presence of professionals like speech pathologists or psychologists. Concerning the location, more insights can be gathered if the interviews were set in a playground, making observations a very important tool for data collection.

### **Conclusions**

The discourse concerns playground perceptions in Tirana of children with DS aged 5-15. Qualitative instruments answered the research questions through literature reviews and interviews. Existing literature assists in understanding the elements of playgrounds and the dynamics between them. Based on the Inclusive Theory (Schelings & Elsen, 2017), inclusivity is achieved through user experiences, addressing social and physical elements. Inclusive playgrounds require physical alterations to the environment, attention to the social environment, and participation of children in the process.

Patterns emerge in participant's perceptions of playgrounds. The importance of PA was underscored, especially with family engagement, confirming the positive role of family members (Barr and Shields, 2011), and PA increases due to proximity to playgrounds (Grow et al., cited in Chaudhury et al., 2014). The children's inclination toward swings confirmed that reasons to participate in play include routine and

familiar activities (Downs et al., 2013). Physically challenging equipment is difficult to play with and creates separation, supporting earlier research that easy-to-use equipment is enabling for those with developmental disabilities (Brown et al., 2021). James et al. (2022) found sensory play preferred by females, confirmed here, although male participants also participated in imaginative play. Sensory play stimulates children's senses by engaging in group, parallel, and solitary play. Elements such as water, sand, and trees are preferred, indicating future designs to incorporate these in the physical layout, and type of play.

Family support and socializing themes highlighted the importance of the social environment in play participation. Results support the claim that play behavior is determined by interactions (Taylor et al., 2022). Socializing was also found to be unattractive, as not all children are social or enjoy the presence of many children due to feeling discriminated against, ashamed, or overwhelmed, confirming previous findings about the link between disability and exclusion (Van Melik & Althuisen, 2020). Results portray the link between physical and social elements, for example, an increased PA engagement displays a higher level of social interaction.

In conclusion, multifaceted perceptions of playgrounds were uncovered, among children with DS in Tirana, highlighting the significance of PA, social support, and identifying less attractive elements for them. Involving children with and without DS in the process can lead to inclusive designs due to considering user experiences and preferences. It's important to prioritize the social environment by facilitating various types of play and encouraging family and peer interactions. Integrating sensory elements, natural features, and easy-to-use equipment while minimizing physical and social barriers can create balanced and accessible spaces that address the perceptions and preferences of children with Down Syndrome.

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## Appendix

### I – Interview Guide

#### I. Opening Questions

Introduce the research and the interview process.

Can you tell me something about yourself? (What's your name, how old are you, what are your hobbies, do you like going to the playground?)

#### II. General Questions about Their Perceptions

##### 6.3 Drawing a Playground

We are now going to play a drawing game. I will give you the necessary materials, and I would like you to draw a playground. You can think about any elements that you think are a part of a playground/or that you think should be a part of a playground.

*The researcher observes the drawing, and observational questions may arise during the process.*

6.4 Now I will show you a photo of a playground. I would like you to point to your answers in the photo.



1.2.1 What is your favorite thing in the playground?

1.2.2 What don't you like in the playground?

1.3 Now I will show you some photos with different emotions. I would like you to choose the one that fits you.



1.3.1 How do you feel at the park? (Emojis: happy/sad/neutral)

1.4 How would you describe the park?

### III. Physical Environment & Social Environment

3.1 What kind of sports do you like?

3.2 Choose between two photos:

Choose between the photos (Stick the sticker on your favorite photo):



3.3 Now I will show you some photos. I will give you some stickers, and I would like you to stick them on the photos you like the most. You are free to stick as many stickers as you want.



3.4 How would you rank these play equipment: (Stick the sticker on the preferred game)



3.5 Do you like to meet friends at the park?

3.6 Final remarks, and thoughts you would like to share.



## II – Informed Consent

### University of Groningen

#### INFORMED CONSENT TO BE PART OF A RESEARCH STUDY

##### KEY INFORMATION ABOUT THE RESEARCHER AND THE STUDY

Study Title: How do Children with Down Syndrome aged 5-15 perceive public playgrounds in the city of Tirana?

Principal Researcher: Marlen Jani, University of Groningen

*Your child is invited to take part in a research study. This form contains information that will help you decide whether you want them to join the study.*

#### 1. Key Information

- The study aims to gather data on the design of inclusive parks for children. This will be done by conducting interviews with children with Down Syndrome to better understand their perspectives.
- If you decide to allow your child to participate, they will be asked to answer simple questions about playgrounds, choose between photographs, rank the pictures, and perform a drawing exercise. This will take approximately 20-30 minutes.
- Participation in this research project is voluntary. You are not obliged to consent to your child's participation, and you may withdraw them at any time. Please take time to read this form and ask questions before deciding whether to consent to your child's participation in this research project.
- Your child will not receive direct benefits from participating in this study. However, other children may benefit from the knowledge gained from this study.
- Approximately 15 children are expected to participate in this study.

#### 2. What will happen to your child in this study?

The data collection procedures used in this study are semi-structured interviews, which will be audio-recorded. Semi-structured interviews mean that apart from the fixed questions in the interview guide, observations during the interview may generate additional questions. The beginning of the interview includes a brief introduction of the researcher and the participants, as well as obtaining the child's consent to participate in the study. The questions are simple, and almost all of them are combined with visual materials (photos, emojis). There are ordering-type questions where the child will place stickers on photographs. There is a drawing exercise where the child will be asked to draw and explain their drawing. Interviews will be conducted at the Down Syndrome Center Albania and Jonathan Center.

#### 3. What risks will my child face by participating in the study and what will the researchers do to protect my child against these risks?

For psychological risk, the following measures will be taken: Your child doesn't have to answer any question they don't want to answer. The interview will stop immediately if the child shows signs of distress. As a parent, you decide whether you want to be present during the interview or not. You are asked to stay close to the center even if you choose not to be in the room for the interview. For informational risks: Since this study gathers information about your child, the main risk of this study is



the loss of confidentiality. See Sections 5 and 6 of this document for more information on how the study team will protect the confidentiality and privacy of your child.

#### **4. If I want my child to stop participating in the study, what should I do?**

Your child is free to withdraw from the study at any time. If your child withdraws from the study before it's completed, there will be no penalty for you or your child. If you choose to inform the researchers why your child is withdrawing from the study, your reasons may be kept as part of the study record. Researchers will retain the information collected about your child for the study unless you request that we remove it from our data. If researchers have already used your information in a research analysis, it will not be possible to retract your information.

#### **5. How will researchers protect the information of my child?**

The interviews will be recorded and immediately after completion, they will be stored in the researchers' private database. Your child's name and any other information that could directly identify your child will be securely stored and kept separate from the study information we have collected from your child. The interviews will be transcribed, and personal data about the child will be excluded for anonymity purposes. The only person with full access to your child's research data is the researcher.

#### **6. What will happen with the information collected in this study?**

We will not retain your child's name or any other information that could directly identify your child. The audio recordings and transcripts of the interviews will be kept until the end of this study (February 2024). The findings of this study may be published in an article or presentation, but they will not include any information that could identify your child.

#### **7. Whom can I contact regarding this study?**

Please contact the listed researcher if you:

- Want more information about the study
- Have a question about the study procedures
- Wish to withdraw from the study before it finishes
- Express a concern about the study

**Principal researcher:** Marlen Jani

**Email:** [marlenjani1@gmail.com](mailto:marlenjani1@gmail.com)

If you have questions regarding the rights of your child as a participant in the research, or if you wish to receive information, ask questions, or discuss any concerns about this study with someone other than the researcher, please contact:

**University of Groningen**

**Faculty of Spatial Sciences**

**Mercator, Landleven 1, 9747 Ad Groningen, Netherlands**

**Telefon: +31 50 363 3896**

#### 8. Your Consent - Parental Permission

By signing this document, you agree to your child's participation in this study. Make sure you understand the study's content before signing it. I will provide you with a copy of this document for your records. I will keep a copy of the study data. If you have any questions about the study after signing this document, you can contact the study team using the information provided above.

*I understand the study's content, and this document has answered my questions so far. I agree for my child to participate in this study.*

Participant Name

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Parent Name

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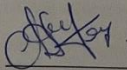
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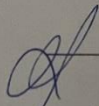
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**III – Signatures**

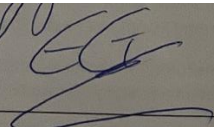
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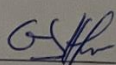
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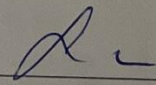
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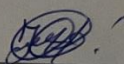
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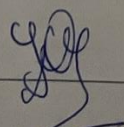
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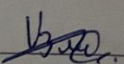
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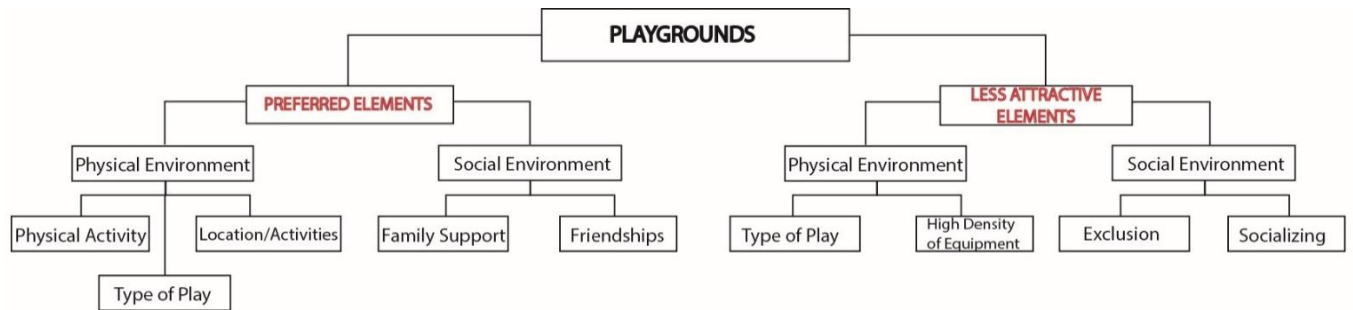
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	14.10.2023

#### IV – Code Tree

The code tree is constructed based on subquestions two and three (Preferred and Less Preferred) and the first subquestion from the literature review (Physical Environment, Social Environment, Physical Activity, Type of Play, Social Support).



### V– Drawing Exercise Results

Six participants participated in the drawing exercise, while an additional four participants indicated their inability or lack of interest to partake in the activity. The primary objectives of the exercise were twofold: firstly, to initiate the interview process in a lighthearted and playful manner, and secondly, to elicit a deeper insight into the participants' perspectives on playgrounds. It is noteworthy that the outcomes are influenced by the drawing capabilities of those who participated in the exercise.



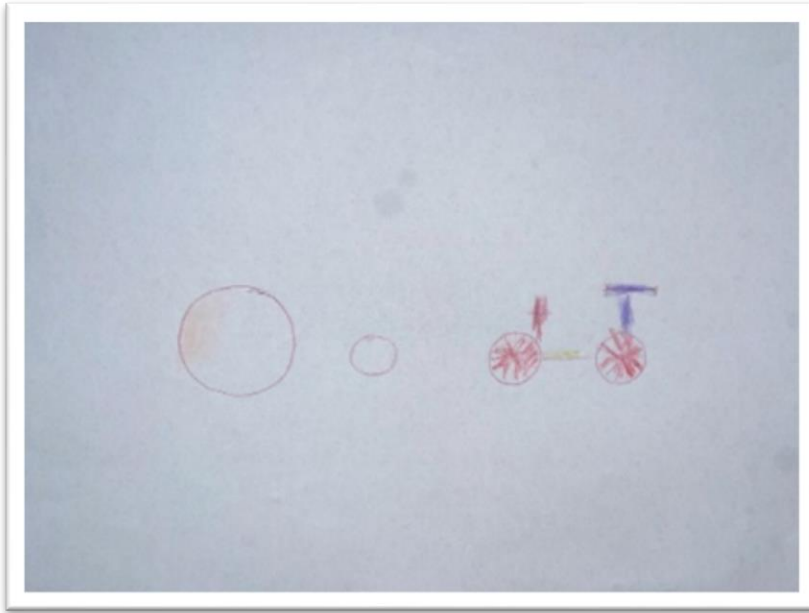
1.

The drawing portrays a boy climbing on the equipment. The drawing was inspired by the climbing equipment picture. For this reason, it hasn't been included in the data analysis.



2.

The drawing portrays three girls and a boy (the upper part of the drawing) playing in a playground by throwing and kicking balls (The balls are depicted as circles with an X mark inside). Grass is drawn in green.



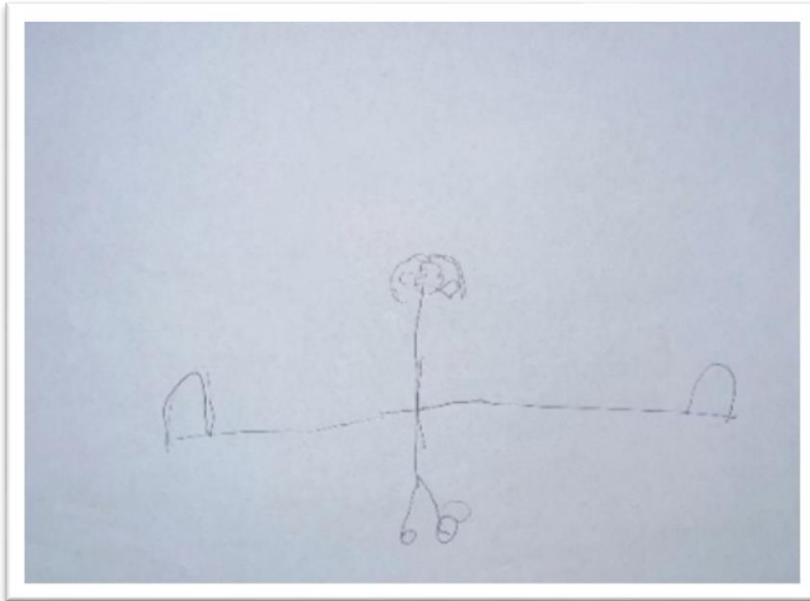
3.

The drawing portrays favorite play 'things' for the participant, including balls to throw and a bicycle. (The bicycle was originally the participant's idea, but required assistance from the researcher to draw).

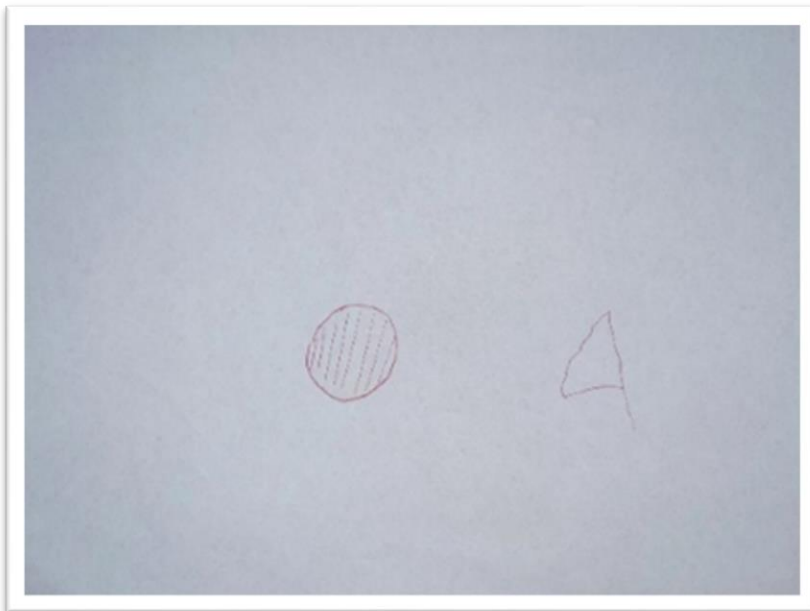


4.

The drawing portrays a familiar playground for the participant. (Mother explains the red umbrella can be found there) The participant made sure to include flowers.



5.  
The drawing represents a girl playing in the playground.



6.  
The drawing displays a ball and a flag (Both are related to football).