

Psychosocial Effects of Physical Play in Early Childhood

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Abstract: This research aims to study the psychosocial effects of physical play among young children. It focuses on the effects of dodgeball games among 5–6 year old children at kindergartens. The Playability Scale of Young Children was used for the assessment of the 5-year-old class, with strong focus on one boy in the class, boy A. Through qualitative review, the process of becoming “fully playable” during physical play was considered from 3 aspects: “psychological and social effects”, “dodgeball playing skills” and “the reaction of other children”. As a result, the following 6 phases were seen in the dodgeball games of 5–6 year old children observed from October 2015 to March 2016. In the case of Boy A, it was found that each factor rose at different phases. Through the encounter with people (other children), things (ball, rules) and situations (trouble), he became “fully playable”. It was also found that children could learn the game of dodgeball in a short time, but it took much longer for them to truly learn to work with others, learn from experience and come up with strategies. It was shown that physical play during early childhood has psychosocial effects and helps to nurture “a resilient mind and inquisitive body”.

Key words: psychosocial effects, dodgeball games, Playability Scale of Young Children, 5–6 year old children

1. Introduction

The significance of physical play in early childhood as an active physical experience has been studied from various perspectives, such as the development of physical fitness, acquisition of motor skills, and obesity prevention. Lately, particularly in Japan, with the challenges such as the decrease in the amount of physical activity in children and in their level of physical fitness, attention has been focused on surveys and studies of measures for improving physical fitness and athletic ability. However, in recent years, it is thought that the effects of physical play are also expected to enhance a child’s psychosocial aspects, such as developing positive attitudes, nurturing social development, increasing curiosity and motivation, strengthening resilience and improving mental health. However, this only happens when the physical activity is done as play.

Bateson and Martin (2013) defined principles of play as the following. It is a spontaneous occurrence, voluntary, having significance to the person playing. It is intrinsically motivated; that is, playing itself is the purpose. The person playing is not stressed and is playing under safe circumstances. It is not goal-oriented and the content is incomplete and a little exaggerated. The content is also repeatable. Takenaka (2017) added that goal-oriented physical play “for achieving a purpose” robs the essence of spontaneous play that children engage in

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for themselves and occurs naturally, and in fact this sort of play does not provide any fun. These findings suggest that it is the way of playing and the play process that has value rather than what is being played.

Thus, how should physical play for the purpose of strengthening psychosocial aspects be implemented in early childhood? Additionally, what processes occur during young children's physical play, during what kinds of play exist, and what do young children gain from it? This study attempts to identify the significance of physical play in early childhood from a psychosocial perspective.

2. Background

2.1 Prior Studies Investigating the Psychosocial Effects of Physical Play

In recent years, more researchers are focusing on the psychosocial effects of physical play in children rather than its benefits to the body. Burdette and Whitaker (2005) stated that promotion of 3a, which are "attention" (attentiveness that regulates inhibition and impulse control), "affiliation" (social cooperation skills such as cooperation with friends and self-awareness) and "affect" (positive emotions that promote improvement of feelings such as anxiety) could be expected through unstructured physical play in children. Furthermore, Biddle and Asare (2011) did various studies and report that physical play, including outdoor play, promotes improved self-esteem and the development of cognitive functions.

Additionally, in recent years, the term "playfulness" is frequently used in relation to physical play. In these studies, "playfulness" is defined as an individual's ability to create an environment that can change a situation to be more amusing and interesting (Barnett, 1990, 2007). Moreover, Lieberman (1977) and Barnett and Kleiber (1982) clarify that particularly in children, playfulness includes five elements: physical spontaneity (engaging voluntarily in physical activity through play), cognitive spontaneity (cognitively building new games and activities), social spontaneity (developing relationships with others flexibly on their own), sense of humor (bringing joy to those around them) and manifest joy (be filled with fun and joy).

These insights potentially provide evidence for recommending physical play. However, it is not clear what kinds of physical play and elements exert psychosocial effects. There is a need for research on the concept of playfulness as an intervening parameter to explain the influence of physical play on psychosocial factors.

2.2 Playability Scale of Young Children

Considering the issues discussed in the previous section, the authors have focused on the concept of being "fully playable" in order to shed light on the psychosocial effects of play in early childhood. The word "fully playable (a-so-bi-ko-mu)" was originally coined by Akita (2009). The circumstances for young children to be fully playable are formed through concentration, absorption, development, sustainment and utilization of materials as the child sees fit. In the Japanese day care settings, there is a somewhat common understanding of what it means to be fully playable. However, there had been no research on the specific circumstances of being fully playable. Therefore, we developed the Playability Scale of Young Children (Table 1) (Suzuki, 2016) and clearly defined the state of being of "fully playable." As a result, being fully playable was described in terms of 23 items and five factors including: "Smooth transition between reception, empathy and reaction", "Adaptability to surroundings", "Motivation for exploration", "Creativity and imagination with focus" and "Affinity and Cooperation". The high reliability and validity of the scale has been confirmed.

The Playability Scale of Young Children was used to study how the state of being fully playable was occurred in children aged 5 to 6 years, through the game of dodgeball as a form of outdoor physical play in the

context of free play at a kindergarten. By focusing on the perspective of factors underlying the state of being fully playable, and how this state changed across the phases, we attempted to shed light on the psychosocial effects of physical play.

Table 1 Playability Scale of Young Children (5 Factors and 23 Items)

<Scale score>	
1. <i>Seldom observed (Doesn't apply at all)</i>	
2. <i>Not observed very often (Doesn't apply very much)</i>	
3. <i>Observed sometimes (Somewhat applies)</i>	
4. <i>Observed quite frequently (Applies)</i>	
5. <i>Observed very frequently (Applies very much)</i>	
FI: Smooth transition between reception, empathy and reaction	
Group of items emphasizing the transition between acceptance of, sympathy towards and response to others	
r1: Listens to advice and opinions of others	1 2 3 4 5
r2: Acknowledges and adopts ideas of others	1 2 3 4 5
r3: Encourages, teaches and praises others	1 2 3 4 5
r4: Thinks and acts based on good understanding of motives and feelings of others	1 2 3 4 5
r5: Has fun with and blends in with others while sharing goals, experiences and ideas	1 2 3 4 5
FII: Adaptability to surroundings	
Group of items focusing on activeness towards searching for play and flexibility towards the environment	
s1: Enjoys meeting new things, people and ideas	1 2 3 4 5
s2: Finds renewed interest in familiar things, people and ideas	1 2 3 4 5
s3: Enjoys change	1 2 3 4 5
s4: Facial expressions and physical movements are lively	1 2 3 4 5
FIII: Motivation for exploration	
Group of items describing situations in which child explores and investigates various events and interests in a sustained and independent manner	
e1: Sets a goal and works at it	1 2 3 4 5
e2: Doesn't give up until reaching a certain level of fulfillment	1 2 3 4 5
e3: Sets or chooses challenging tasks	1 2 3 4 5
e4: Attempts to follow through without help	1 2 3 4 5
e5: Decides own role and carries it out responsibly	1 2 3 4 5
e6: Tries to motivate one's self	1 2 3 4 5
FIV: Creativity and imagination with focus	
Group of items focusing on creativity and imagination to expand play, with the focus on the ability to converge it into a certain direction rather than let it expand discursively	
c1: Exercises ingenuity and makes suggestions in order to realize one's ideas	1 2 3 4 5
c2: Recalls past experience and applies it to current play	1 2 3 4 5
c3: Makes good use of materials and resources through trial and error	1 2 3 4 5
FV: Affinity and Cooperation	
Group of items observing children's behavior to create or belong to groups, as well as the attempt to make contribution to the group, which both derive from one's self-esteem	
a1: Enjoys competition and winning/losing	1 2 3 4 5
a2: Creates rules and plans in order to reach a goal	1 2 3 4 5
a3: Takes part in serious discussion in order to share ideas and challenges with others	1 2 3 4 5
a4: Invites others to join in and organizes groups	1 2 3 4 5
a5: Others are naturally caught up in the child's play	1 2 3 4 5

2.3 Significance of Studying

2.3.1 Dodgeball Games

The reason dodgeball game was chosen for this study is because it is a form of outdoor physical play that includes group play and requires learning certain amount of motor skills. Moreover, we believed that the characteristics of dodgeball played within the free play time that children could play freely and subjectively, lent typicality to results of validation of the psychosocial effects of physical play. Table 2 describes typical dodgeball games that are played in early childhood in Japan during free play time. In Japan, dodgeball games are typically introduced to children as play around the age of 5 and 6.

Studies on dodgeball games have been conducted in research on teaching materials for elementary school physical education curricula (Goto & Ikeda, 2005; Hidaka & Goto, 2004) and on the process of development of the throwing movement in early childhood (Kato, 2013; Kitajima & Horita, 2011). However, studies on dodgeball games with focus on its psychosocial aspects is scarce. A rare example is the research on the significance of dodgeball games as an interactive play between caregivers and children (Yajima, 2011).

Meanwhile, in the United States, from around 1986, the educational effect of dodgeball games were questioned in some instances. Around 2000, the playing dodgeball games were not encouraged in elementary schools, and it was even prohibited in some schools in states such as Maine, Florida, and Maryland. It was even prohibited officially in Austin, Texas. At the basis of this trend was the belief that dodgeball games exercised simple motor skills such as throwing, hitting, and catching, and as a result children starting out with poor abilities were hit by the ball quickly and eliminated from the game. It was considered to be a game with many opportunities to lose. Additionally, since there was great anxiety over injuries, it was thought that it had little significance from either a physical education standpoint or a psychosocial standpoint (Tanimoto, 2016). As can be seen from the American slang terms for dodgeball games, such as killerball, warball and murderball, it is perceived to be an extremely aggressive sport. More recently in Japan, a blogger questioned the significance of dodgeball games from a similar standpoint and claimed that dodgeball games were violent and the breeding ground for bullying and that it should be stopped (Katsube, 2015), which caused heated discussion on the Internet.

Table 2 Definition of “Dodgeball Games” (Dodgeball Games Played in Japan)

- Played outdoors.	OUT (B)
- A rectangular court is drawn on the ground (approximately 10m x 20m) with a line in the center dividing the court in half.	IN (B)
- One rubber ball is used.	IN (A)
- Players are divided into two groups and are positioned in the ‘in -court’ of each team. 2 or 3 players are positioned in their ‘out-court’ at the start of the game, which is on the outside of the opponent’s ‘in-court.’	OUT (A)
- Players in the in-court throw the ball and try to hit opponents in the opposite in -court.	
- Opponents in the in-court can either dodge or catch the ball.	
- Players are out if they are hit by a ball (except the head) and must go to their out -court.	
- Players in the out-court are able to get back in the in-court if they successfully hit an opponent in the opposite in-court. (Resurrection rule)	
- Win or loss is decided by how many players are remaining in each in -court at the end of the game.	



However, we know that the rules and playing style of dodgeball games in the US (Fagoganis, 2010) (Zakrajsek, 2013a, 2013b) are quite different from those played by most young children in Japan. The biggest difference, as shown in Table 2, is the existence of the ‘out-court’ in dodgeball games played in Japan. There is

also the “resurrection rule”, whereby even if players are sent to the out-court, they can return to the in-court if they successfully hit an opponent, thus overcoming the problem of “losing early”. Moreover, another big difference is that in the dodgeball games in the free play among young children, every rule is not implemented absolutely, and it is even encouraged that children create and change each rule. Moreover, young children have not reached the stage where they have developed the motor skills to be able to throw a strong ball. Their catching action is also immature. Dodging is the primary action, and thus it is unlikely to be an unfair contest. This makes the dodgeball game a highly flexible form of play.

Therefore, we chose dodgeball games played by 5–6 year old children at kindergartens and nursery centers as forms of outdoor physical play during free play to assess the psychosocial effects of physical play.

3. Research Methods

3.1 Observation Period

October 2015 – March 2016.

3.2 Observation Object

T Kindergarten, Aichi, Japan

Dodgeball games between 5–6 year old boys and girls

Focus on a 5-year-old boy (Boy A: A low scorer on the Playability Scale in October 2015)

We conducted individual observations on some of the children with high frequency of participation in the dodgeball games during free play, and analyzed Boy A, who had been observed for most of the days. Boy A’s rating on the Playability Scale of Young Children (Table 1) was the lowest at the start among the children participating in the dodgeball game.

3.3 Procedure

(1) Dodgeball games were recorded once a week during free time in the morning. Then field notes were created.

(2) Boy-A’s actions during dodgeball games were evaluated using the Playability Scale of Young Children. The authors, the homeroom teacher, and the assistant homeroom teacher performed these evaluations.

(3) Evaluation results were explained from psychosocial aspects, relationship with other children and physical aspects (throw, catch, dodge). The authors, the homeroom teacher, and the assistant homeroom teacher performed these evaluations.

(4) Based on Boy A’s quantitative and qualitative transformation, we studied the manifestation and transformation of becoming fully playable in physical play.

4. Results

4.1 Phases of Involvement Seen in Dodgeball Games of 5–6 Year Old Children

Based on the development of the dodgeball games during free play observed in the six months of this study, the involvement of children could be categorized into six phases.

(1) Caregiver intervention phase (2015.10.8-2015.10.22): Caregivers serve as a model showing dodgeball game rules and techniques.

(2) Caregiver assistance phase (2015.10.29-2015.11.11): Children are able to run the game without help from

caregivers and even create rules on their own to deal with problems.

(3) Initiative-taking phase (2015.11.25-2015.12.7): Children are able to run the game without help from caregivers and even create rules on their own to deal with problems.

(4) Early trial-and-error phase (2015.12.15-2016.2.1): Children start the game and work together to come up with ideas and run the game.

(5) Late trial-and-error phase (2016.2.4-2016.2.15): Children often give each other orders in order to run the game smoothly.

(6) Game development phase (2016.2.18-2016.3.2): The game is run smoothly with children on both teams coming up with individual and group strategies in order to win the game. Children experience the joy of the game while playing together.

4.2 Evaluation of Boy A's Progress through the Phases Using the Scale Scores and Three Aspects

Based on the phases of involvement in dodgeball games of 5–6 year old children described in the previous section, we calculated Boy A's score using the Playability Scale of Young Children at each phase. The factor score in each phase was calculated as the average of items within each factor for all days observed within each phase. Figure 1 shows the scoring trend. Additionally, the scoring procedure considered physical aspects, psychosocial aspects and the relationship with other children as shown in Table 3. Each phase is described in detail below.

4.2.1 Caregiver Intervention Phase

In this phase, for “FII: Adaptability to surroundings”, Boy A scored two points for “s3: Enjoys change”, “s4: Facial expressions and physical movements are lively” and 1.6 points for “FII: Adaptability to surroundings”. He scored one point for each of the other four factors.

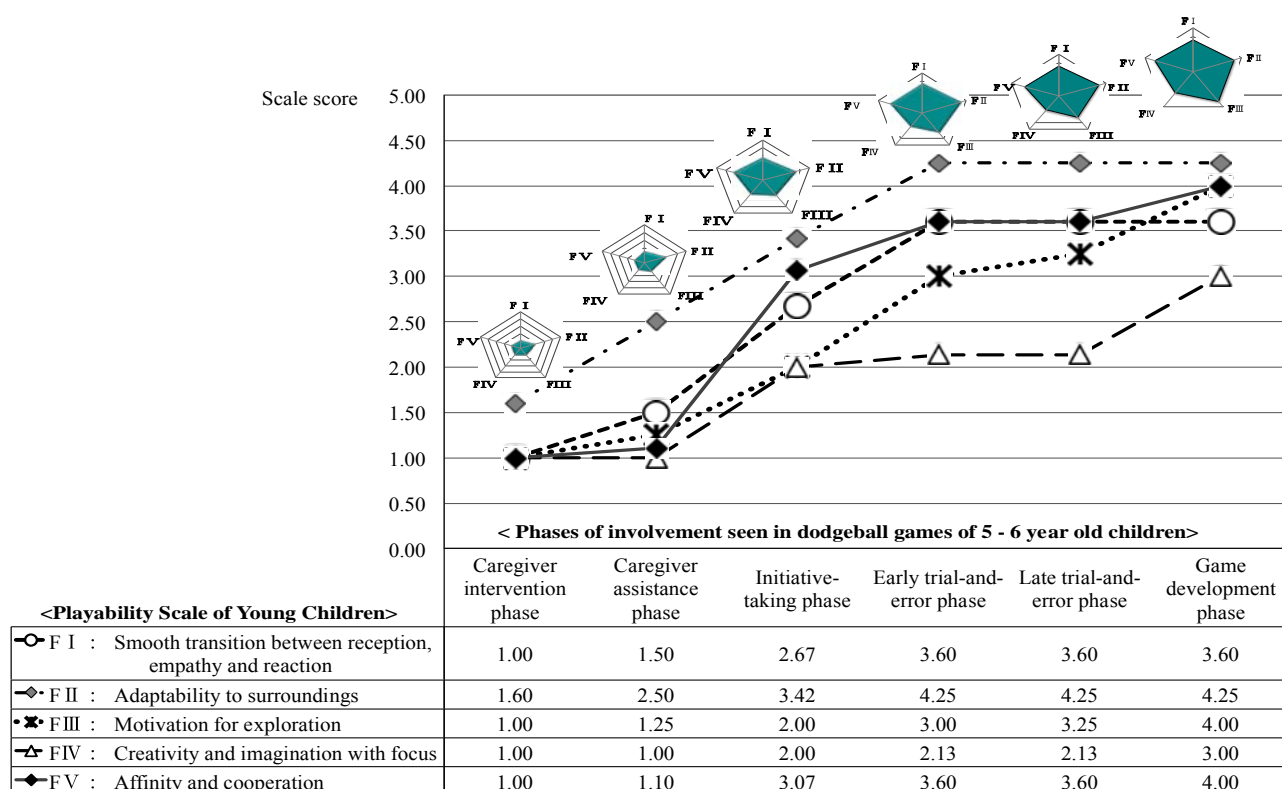


Figure 1 Change of Scale Score in the Playability Scale of Young Children (Boy A)

Table 3 How Boy A Progressed through the Phases Were Evaluated Using the Scale Scores and Three Aspects

Phase	Physical aspects	Psychosocial aspects	Relationship with other children
Caregiver intervention phase	Throw ×	- Runs after and fools around with other children instead of going after the ball.	- Other children are too occupied to get involved with Boy A.
	Catch ×	- Inattentive and walks into the opponent's court when in the "out -court" of his team.	
	Dodge ×		
Caregiver assistance phase	Throw ×	- Asks the teacher to draw the court and tries to start a game on his own.	- Children's reaction to Boy A varies. (Some ignore him while others complain.) - The rock-paper-scissors rule is born to resolve fights over the ball. (The winner gets the ball.)
	Catch ×	- Only few children join the game. (Others avoid getting involved with Boy A).	
	Dodge ×	- Doesn't leave the court even when hit by the ball. - Sulks easily.	
Initiative-taking phase	Throw △	- Invites other children to play the game together.	- Complains directly to Boy A when he plays foul. - Insistent on the rock-paper-scissors rule.
	Catch ×	- When sent to the out-court, tends to wonder around and attempts to return to the in-court.	
	Dodge ×	- Unable to focus on the game when there are many players and gets bored.	
Early trial-and-error phase	Throw △	- Able to stay involved for the entire game (about an hour).	- Complains directly to Boy A when he plays foul. - The utmost priority given to the rock -paper-scissors rule. (Even when one team clearly had the ball first, children resort to the rock-paper- scissors rule.)
	Catch ×	- Is able to wait a little when sent to the out -court.	
	Dodge △	- Tries to sneak back into the in -court sometimes.	
Late trial-and-error phase	Throw △	- Knowing he can "hit an opponent and get back in ," he is able to wait in the out-court.	- Calmly complains or tries to persuade Boy A when he plays foul. - Less relentless fighting over the ball.
	Catch ×		
	Dodge △	- Starts to feel the sting of defeat. - Filled with a sense of exaltation.	
Game development phase	Throw ○	- Always plays on the forefront of the game.	- Points out Boy A's wrong-doing more specifically: "Don't wonder around there. Don't walk ahead. You're in the way." "Don't leave the court when you're not hit".
	Catch ×	- Watches the ball and aggressively goes after it.	
	Dodge ○	- Able to accept his loss when losing in rock -paper-scissors. - Tells other students to hit an opponent and cheers them on. - Shouts for joy screaming "Great!" "Yeah!" and "Wow!"	

During this phase, Boy A had developed very few motor skills for throwing, catching, and dodging required in dodgeball games. He mainly ran after and got in the way of the other children who were chasing the ball. He was fooling around by chasing the children rather than the ball. When he was in the in-court, he stood eagerly in the forefront and was immediately hit by the ball. After that, he reacted to balls that came his way immediately after he went to the out-court, but this did not last. He would quickly sit down or go to a different place. After a while, he was observed wobbling into his opponent's court or his team's in-court. However, the other children were investing their full energies in what they were doing and were not concerned about Boy A; hence, there were almost no complaints about Boy A's actions. During this period Boy A stuck around because he wanted to be with everyone, but most of the time he was not going along with the flow of the game. His desire and ability to concentrate depended solely on whether he was enjoying or not enjoying what was right in front of his eyes.

4.2.2 Caregiver Assistance Phase

During this phase, on most days, Boy A was given a score of two or three points in all four items in "FII Adaptability to surroundings", and his "FII Adaptability to surroundings" score rose to 2.5 points. Boy A was still immature in his throwing, catching, and dodging skills, but he was observed yelling "Watch out!" in a loud voice if it seemed as though a child was going to be hit by the ball. He began to watch and chase the ball during the game. Moreover, in the mornings, as soon as he arrived at the kindergarten, he sometimes asked the teacher to draw out the lines for a dodgeball court and started the game on his own. He could be seen enjoying dodgeball games.

Additionally, "r1: Listens to advice and opinions of others" in "FI: Smooth transition between reception,

empathy, and reaction” could be observed every now and then in the latter half of this phase. His score for “FII: Smooth transition between reception, empathy, and reaction” increased to 1.5 points. In the dodgeball games during this phase, there emerged instances of children fighting over the ball. Once they started fighting over the ball, it wasn’t easy to settle, and this caused games to be interrupted many times. When asked by their teacher, “What should be done?” the children came up with the rock-paper-scissors rule as a solution, saying “The side that wins in rock-paper-scissors gets to throw the ball.” Sometimes the teacher intervened when necessary, such as when there was some conflict, but the children gradually started to run the game in their own way. Boy A did not reach the point of joining the discussion, but he watched the other children and followed the rules to a certain extent.

On the other hand, however, in some instances when Boy A attempted to start a game of dodge ball, we observed situations when other children didn’t join saying, “We want to play dodge ball but not with Boy A.” To the other children, Boy A was still a nuisance in the game. During this phase, Boy A would sit down on the ground and sulk when he was hit by the ball. He would complain to the teacher and the other children about his skinned knees more than necessary. Moreover, he sometimes did not go to the out-court when he was hit by the ball. Scenes where he was dragged by his arm by other children and forced to go to the out-court were frequently observed. He was unable to create an inviting atmosphere for others to join. This was the cause of his low score of 1 in “FV: Affinity and Cooperation”.

4.2.3 Initiative-taking Phase

In this phase, Boy A’s affect in “s4: Facial expressions and physical movements are lively” became continuous, and his score in “FII: Adaptability to surroundings” rose to 3.42. Full of elation, he jumped at the very front line while he waited for the ball, and asked for the ball with large movements. Moreover, compared to the previous phase, his “FV: Affinity and Cooperation” score rose rapidly to 3.07. This was because instances of “a4: Invites others to join in and organizes groups” were found. Many such instances were observed where after arriving at the kindergarten he would peek into classrooms other than his own and invite other children to play dodgeball games. In this phase, Boy A’s movement became fairly dynamic, and he started to manage to dodge the ball. However, he was almost unable to catch balls coming toward him, could only throw the ball using both hands which quickly fell downwards and was unable to hit anyone. Even so, his body showed that he was brimming with happy feelings. Additionally, he received scores of 4 points in “a1: Enjoys competition and winning/losing” on many days. We began to observe that he jumped excitedly in the in-court while waiting for the ball, and when he was hit by the ball, his feelings of frustration showed through his entire body. Even after he was sent to the out-court, he would ask for the ball and complain that “No one will give me the ball”. He was only concerned about immediate wins. This kind of thinking is not limited to Boy A. During this phase, all children aged 5–6 years were only concerned about immediate wins and not the final outcome of the game

Meanwhile, the low scores of 2 points for “FIII: Motivation for exploration” continued. In this phase, Boy A was able to concentrate when playing games with a relatively small number of players. However, when there were a large number of players, we observed scenes where he had fewer chances to play and he would lose interest and sit down on the spot. When he was sent to the out-court, at first he endured it, but later he started to wander around the out-court and then attempted to enter the in-court because he was not skilled in catching the ball. There was no decrease in this repeated pattern. When he was told by the other children, “You’re not going to the out-court even though the ball hit you”, “You are returning to the in-court even though you did not hit anyone”, and “If you will not follow the rules you might as well not play”, he followed the rules reluctantly. These were the

causes of his overall low scores in the items under “FIII: Motivation for exploration”.

On the other hand, in this phase the other children began to notice Boy A’s tricks, but they did not pay all that much attention to them. In any case, the children insisted on the rock-scissors-paper rule, and concentrated on the flow of their game. Because of this, it seemed that they unconsciously had the sense that paying too much attention to Boy A delayed the game and made it boring.

As described above, during this phase, Boy A’s fully playable state did not continue for long, because his own feelings and needs conflicted with his involvement with other children and the flow of the game.

4.2.4 Trial-and-error Phase

Phases in free play dodgeball games of 5–6 year olds are divided into early trial-and-error phase and late trial-and-error phase depending on the number of problem-solving scenes. However, there were few significant changes between the two phases according to Boy A’s scale scores. Therefore, observations were made of the entire trial-and-error phase.

In this phase, Boy A’s score rose for four factors other than “FIV: Creativity and imagination with focus”. In “FII: Adaptability to surroundings”, we began noticing him having fun with other children and enjoying the atmosphere at that time and place. Additionally, he began receiving a score of 4 in “r5: Has fun with and mingles with others while sharing goals, experiences, and ideas” under “FI: Smooth transition between reception, empathy, and reaction”. By this time, Boy-A began to play dodgeball games, even with many players, for the full hour without leaving the game and he became able to continue playing while enjoying the atmosphere of the game.

Furthermore, there was a pronounced increase in his score for “FIII: Motivation for exploration” at 3.25 points. This is because he scored 4 points in “e1: Sets a goal and works at it”, “e3: Sets or chooses challenging tasks” and “e5: Tries to motivate one’s self”. It was thought that this increase was influenced by his athletic skill improvement. He was still throwing using both hands but was able to throw upwards. Moreover, there were times he could get away from the ball so that he would not be hit. Even when he was sent to the out-court, he had confidence that he could make the shot, and he started waiting patiently and doing his utmost to chase the ball if it came near him. He was starting to match his actions with the flow of the game. Through this, we began to observe his desire to keep going, his ability to give up when things didn’t go his way and his attempts to negotiate various conflicts with other children. Evidently, he did not entirely stop nonchalantly trying to move from the out-court to the in-court, and he continued to cause trouble. But we observed that even when he lost the rock-scissors-paper rule, he gave up the ball without sulking and passed the ball to the other child.

4.2.5 Game Development Phase

During this phase, Boy A scored 3 points on “FIV: Creativity and imagination with focus”, on which until then he had never scored above 2 points, and his score for “FIII: Motivation for exploration” rose to 4 points. During this phase, dodgeball was refined as a game, and many of the children began to worry about winning. Everyone could share the joy of playing for the same goal of winning. During this time, Boy A also began to care about the outcome of the game. Because of this, he began to think of himself and as a member of the team. His scores on “c1: Exercises ingenuity and makes suggestions in order to realize one’s ideas” and “e5: Decides own role and carries it out responsibly” improved noticeably.

Furthermore, Boy A was able to run away so as to dodge the ball, and so he could align even more with the game and the movements of the other children. Additionally, he went immediately to the out-court after he was hit by the ball in the in-court. Even in the out-court, he began to watch the movement of the ball closely and attempted to catch the ball. Moreover, he began to instruct and cheer other children, saying “Make a hit”. He

would spontaneously clap when another child made a good shot, and he would shout with joy, yelling “Great”, “Way to go” and “Wow”. We began to observe him patting the heads of other children who had been hit to make them feel better. He began to score highly on “a1: Enjoys competition and winning/losing” of “FV: Affinity and Cooperation”. In addition, his average score on all items of “FI: Smooth transition between reception, empathy, and reaction” became higher.

Even so, Boy A did some arbitrary things that were not in line with what the other children wanted. He was sometimes criticized or instructed by the more skilled players, who said things like, “Do not wander around, and do not go to the front. You are in the way,” and “Don’t go out. You haven’t been hit.” Even so, he began to conform to a certain extent. Boy A still continued to cause some problems, but we observed him at times controlling his emotions and continuing to be in a fully playable state as a result.

5. Discussion

This study involved dodgeball games played by 5–6 year old children during free play at kindergartens as forms of outdoor physical play. The purpose of the study was to identify the psychosocial effects of physical play in early childhood. Using the Playability Scale of Young Children, we analyzed how the “fully playable” state appears during dodgeball games played during free play among 5–6 year old children, its underlying factors, and how this state changes. As a result, we observed the transformation of Boy A during the six phases of involvement. The following considers the psychosocial effects of physical play based on our findings.

If these were dodgeball games played as a sport, coaches would probably first organize a game system, and then execute it with a high level of structure. By contrast, the dodgeball games observed in this study was first presented with minimum level of structure by the teachers. The children gradually shaped it through trial and error. We observed in children creative ingenuity while cooperating with others in the latter part of the phases, but this also indicates that organizing it into the form of a structured game takes a considerable amount of time. Moreover, the trial and error in the game had processes involving diverse challenges for young children.

Coakley (1982) compared the way of development of activities in children who enjoyed pure physical play with that of children who belonged to competitive sports teams. In the former group, the participants themselves decided things. By contrast, in the latter group, decisions were made according to roles and relationships. Concerning goals and meanings, the former varied on an ad hoc basis while the latter were decided and static. Regarding rules, the former fluidly created rules, while the latter had highly formal and specialized rules. Overall, common understanding among members was valued in the former group, while the latter depended on control and obedience. Moreover, the degree of freedom was high and varied in pure physical play. By contrast, competitive sports were limiting and lacked flexibility. Based on these findings, Sawae et al. (2014) claimed that pure physical play and competitive sports are polar opposites, and that there is consistent difference in the degree of freedom. They concluded that it is only during pure play and not competitive sports that free and self-motivated play can occur and that play and sports are different things to children.

In the free play dodgeball games in this study, rule creation by children to solve issues, children coaching one another in order to enjoy the game in their own way, and children putting their heads together to come up with various ideas to solve issues were observed. This is proof that dodgeball games during free play function as pure play. Moreover, it was shown that during free play dodgeball games, the context was created for trial and error and challenges among children, and that during physical play it is possible to experience processes of

self-determination, voluntary observance of rules, cooperating with others and creative ingenuity.

It was also shown that the process of young children becoming “fully playable” was centered around the children themselves. In the case of Boy A in these dodgeball games, at first, the “adaptability to surroundings” factor increased. In the initiative-taking phase, the “smooth transition between reception, empathy, and reaction” and the “affinity and cooperation” factors increased. During the trial-and-error phase, the “motivation for exploration” factor increased. Finally, in the final “game development phase,” behaviors related to the “creativity and imagination with focus” factor started to appear. In this way, each factor rose in different phases. It can be expected that other types of physical play will show different patterns of increase, but it can be said that these factors can be used to evaluate psychosocial effects of physical play in early childhood.

From the above results, we observed a psychosocial structure whereby the fully playable state was born and deepened when the children encountered people (other children), things (balls and rules) and situations (issues). In the different scenes, we observed that the children ascertained the meaning of people, things, and situations, and explored what was important and enjoyable for them. During this process, the young child (Boy A) built up a “resilient mind” that will make his emotions and ideas flexible. Moreover, the athletic skills required to play dodgeball were acquired through daily play, and children used these skills to better respond to people, things, and situations. This process built up an “inquisitive body.”

Figure 2 is a model diagram showing the psychosocial effects of physical play in young children and how it builds up a resilient mind and inquisitive body. When children encounter people, things and situations during free play, they reach the state of being “fully playable.” Physical play is an opportunity to raise a resilient mind and inquisitive body, and this is an important psychosocial effect of physical play.

In the future, we would like to continue our study of the psychosocial effects of physical play in early childhood using other types of play besides dodgeball games.

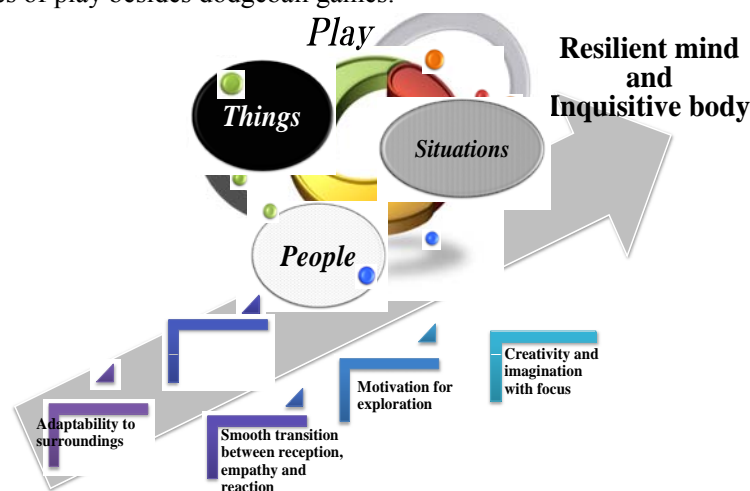


Figure 2 Psychosocial Effects of Physical Play in Early Childhood

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