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Original Article

Urban outdoor movement education: a playground to promote physical activity. The case of the "Primo Sport 0246"playground

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Abstract
Problem Statement Adequate levels of physical activity (PA) have important effects on mental and physical health; the positive consequences of PA during childhood influence the quality of life and health of children, and also have an impact on the future adults. The movement restrictions imposed by Covid-19 pandemic has resulted in a substantial decrease in levels of PA and an increase in mental and health-related problems. Environments in the open air have been recommended as sites PA; together with mask use, frequent hand washing, and social distancing, outdoor activities should have been performed to maintain adequate levels of PA in children. However, opportunities for outdoor activities are usually limited in urban contexts, where most of the population in Western countries live. Inside the cities, playgrounds represent the most common children opportunities for outdoor activities. Very little is known about the use of playgroundsas tools for increasing levels of PA and promoting motor competences. In this study, we focus on "Primo Sport 0246", a playground dedicated to the promotion of motor development in preschool children. By reviewing the scientific literature on this playground, we identify the conditions that should be taken into consideration when designing new playgrounds in urban spaces dedicated to the development of motor competences in children. **Approach** In this article, we review the scientific literature on the "Primo Sport 0246" playground. Located in Treviso, northern Italy, the playground was designed and built in 2011. The design was based on available scientific knowledge on factors that promote the acquisition of motor competences in children. In the following years, the playground became the object of scientific studies addressing questions related to motor and cognitive development of children. In this review, we describe the most relevant findings that may guide teachers, instructors or parents in their difficult task of educating children toward the acquisition of healthy lifestyles. **Purpose** The major questions addressed when studying the efficacy of the playground and the teaching methodologies to be used, have been the following: Which is the best way to use the park to promote the development of motor skills and executive functions in pre-schoolers? How much do children move in the playground? Can the "Primo Sport 0246" playground model and the teaching methodologies be transferred to kindergartens? **Results** Studies at the "Primo Sport 0246" playground demonstrated that structured physical activity combined with free play was more effective than free activity alone in promoting thedevelopment of motor skills and executive functions in preschool children; well organized, structured activities also induced a larger and longer participation to physical activities of moderate/intense levels, i.e., the levels considered necessary for generating persisting beneficial effects on health.Development and potentiation of executive functions were found to occur when children were involved in difficult activities and games in the zone of proximal development associated with scaffolding by the teacher or an experienced partner. Teachers considered the outdoor activities performed in the park a unique opportunity for pre-schooler development. **Conclusions** The Primo Sport playground is an excellent tool for promoting physical activity, development of motor skills and executive functions in preschool children. The design, that considers specific areas for training manual dexterity, mobility and balance, facilitate this generation of significant benefits in terms of acquisition and potentiation of motor competences and executive functions. The use of the playground in an educational context should consider a combination of moments of free play and structured activities. The presence of difficult tasks (in the area of proximal development) associated with scaffolding by teachers/parents/educators, facilitates the development of motor competences and has positive effects on levels of executive functions.
Keywords: physical activity,playground, kindergarten, motor competence, executive functions, Preschool children, play

Introduction

Scientific evidence highlights that children are moving very little with significant consequences on health, as shown by the diffusion of obesity/overweight (Figure 1,Ministry of Health, 2019).

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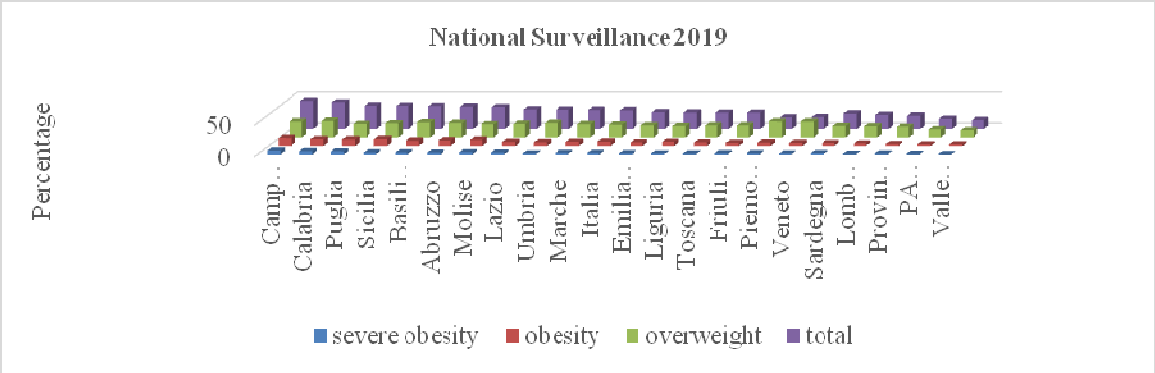

Figure 1: National surveillance 2019 of children of the III class of elementary school to monitor overweight, obesity and severe obesity. (https://www.epicentro.iss.it/okkioallasalute/indagine-2019-dati)

Physical activity (PA) is a major determinant of health at all ages and specific guidelines have been produced by scientific societies, and national and international health agencies including World Health Organization (W.H.O. 2008, 2019).Adequate levels of PA reduce the risk of several non-communicable diseases including obesity, metabolic disorders, cancer (Carson et al., 2016). It has been shown that the beneficial effects of PA are determined by intensity and duration of the activities; accordingly, the WHO guidelines indicate that children, adolescents and adults should be engaged in physical activities of moderate-to-vigorous intensity for at least 60 minutes/day. On the other hand, the organization of the daily activities in modern societies promote sedentariness at work, at school and during transportation and leisure time; thus, it is not surprising the levels of daily PA are below the recommended levels in most the industrial Countries. The impact on the quality of life and health is especially severe when sedentariness and lack of physical activities occur in children as the first years of life provide biological and behavioural imprinting for the rest of the life (Singh et al, 2008). Finally, aware of the relevance of the first years of life for the future human being, W.H.O. issued new guidelines in 2020 dedicated to children from birth to the age of 5 (W.H.O., 2020).

Unfortunately, almost in coincidence with the publication of the small children dedicated guidelines, Europe and then the American continent was swept by the Covid-19 pandemic that forced generalized lockdown in almost all countries. The lockdown, which began in Italy in February 2020, has resulted in a decrease in physical activity levels (Bates et al., 2020).Along with the increased risk of obesity and other non-communicable diseases, lockdown conditions and lack of PA opportunities are known to be associated with psychological problems, such as depression, decreased self-esteem, isolation, relationship difficulties, sleep disorders, etc. (Grgic et al., 2018). The consequences caused by this situation are very serious, especially for pre-schoolers, who still do not have tools to understand reality (Grgic et al., 2018). In line with the WHO recommendations, new data originated in the aftermath of the pandemic (Sunhee, Beomsoo&Jaeil, 2020) which included the recommendation to spend a lot of time outdoors, in every weather season, along with safety measures such as physical distancing, face mask, and frequent hand cleaning.Indeed, schools that have outdoor space or are located near public parks are more likely to spend time outdoors.

Outdoor activities appear to be an efficient solution to counteract the loss of opportunities for PA during the pandemic as the risk of infection transmission is lower in open spaces. Spending time outside has several beneficial effects: it reduces the risk of infection, increases exposure to the sun, promoting vitamin D absorption and efficacy, and reduces the risk of asthma (Eijkemans et al. 2012).Many teachers fear the risks of activities in open spaces and in particular in playgrounds, but studies point out that playing outdoor increases the children capacity to manage themselves, to face difficulties according to their skills. Indeed, the frequency of accidents is very reduced in children accustomed to outdoor activities (Ceciliani, Babini, Tortella, in press). Schools in the proximity of woods and natural open spaces can promote activities of exploration, of movement in these spaces, using the "affordances" provided by the natural environment. Children who live in the city and do not have woods nearby can carry out physical activities in city playgrounds or other spaces where structures or materials of different sizes and design provide "affordances" and possibilities of action (Greco et al., 2020). It should be noted that the European legislation promotes the safety in playgrounds, e.g., indicating flooring materials suitable to protect against falls from overhanging structures, placed at different heights. (Ministry of Productive Activities, 2005). The amount of physical activity of children in the natural environment or parks is similar (Luchs&Fikus, 2018) and that the presence of structures in the park promotes an increase in physical activity (Escalante, García-Hermoso, Backx, & Saavedra, 2014). Thus, city playgrounds provide an alternative to natural open space for that part of the world population confined in urban aggregates. On the other hand, the amount of information on the efficacy of playground organization in terms of promotion of motor development and health in children is very limited. In addition to this, it would also be interesting to know if and how activities in a city playground may also foster cognitive development of a child. These are important questions that have not been

addressed by designers of existing playgrounds with the notable exception of the Primo Sport 0246 playground in Treviso. Therefore, analysis of the research activities done at this special playground may provide useful information on how playgrounds in urban environments can be used by schools and families to promote motor and cognitive development in children.

Materials and Methods

Publications related to the "Primo Sport 0246" playground in Treviso wereanalyzed.Information and data were collected from published books, scientific articles and other publications related to the "Primo Sport 0246" playground. The publications were categorized as: a) knowledge-based publications; b) evidence-based publications. Data included information on child anthropometric characteristics, motor skills and performances, levels of executive functions. The analysisalso included effects and efficacy of differentorganization,activities, andteaching methodologies, with special interest to the scaffolding by adults.
As this was not a meta-analysis, no statistical issues were considered.

Results

In table 1welistknowledge- and evidence-based publications, regarding the playground "Primo Sport 0246" retrieved through various search engines, such as Google, Google Scholar,Pubmed.

Publications "Knowledge-based"- Project of the playground "Primo Sport 0246"
BookBertinato, L., Donati, D., Durigon, V., Fumagalli, G. e Tortella, P. (2009). *Parco giochi esviluppo senso motorio, linee guida per la progettazione.* EdizioniSapere, Padova.
Book Tortella, P., Durigon, V., Cappellari, D., Fumagalli, G. (2011). *Parco Giochi "Primo–Sport 0246" Il parco per lo sviluppo senso motorio del bambino*, Libreria dello Sport, Milano.
BookBuzzavo, G.& Tortella, P., (2011). Primo Sport. *Surroundings and activities just right for growing up well*. Libreriadello Sport, Milano.
Chapter Tortella, P., Fumagalli (2019). In (a cura di) Weyland, B., Stadler-Altmann, U., Galletti, A., &Prey, K. PAD – Scuole in movimento. Progettare insieme tra pedagogia, architettura e design. *Progetto Primo Sport 0246: proposte per parchi attivi.* Franco
Chapter Tortella, P. (2012). *Parco giochi Primo Sport 0246: il parco di tutti, il parco di ciascuno*, Paesaggio Urbano – Urban Design. ISSN 1120 3544, 34-35.
Chapter Tortella, P., Fumagalli (2019). In (a cura di) Weyland, B., Stadler-Altmann, U., Galletti, A.,&Prey, K. PAD – Scuole in movimento. Progettare insieme tra pedagogia, architettura e design. *Progetto PrimoSport 0246: proposte per parchi attivi.* Franco Angeli, Milano, 102-113.
Chapter Tortella, P. (2012). *Parco giochi Primo Sport 0246: il parco di tutti, il parco di ciascuno*, Paesaggio Urbano – Urban Design. ISSN 1120 3544, 34-35.
Publications "Evidence based" – Research performed in the playground
ArticleTortella, P., Tessaro, F., Fumagalli, G., (2012). Percezione-azione: il ruolo dell'educatore nella attribuzione di significato all'ambiente e al compito, con bambini di 5 anni, in Cruciani M., Cecconi F. (a cura di) Atti del Nono Convegno Annuale dell'Associazione Italiana di Scienze Cognitive (AISC). Università di Trento, Trento, 303, 308. ISBN: 978-88-8443-452-4, https://www.aisc-net.org/home/2012/11/24/atti-aisc12/
Article Tortella, P (2013). New environments for the education of 0-6 years old children: what teachers think about the playground for formal and nonformal education. Nuovi spazi per l'educazione dei bambini da 0 a 6 anni: cosa pensano gli insegnanti del parco giochi come luogo di educazione formale e non formale, in Formazione & Insegnamento – European Journal of Research on Education and Teaching. Opportunities of learning. Apparatuses, Dynamics, Transformative processes. (a cura di R. Minello), Lecce, PensaMultiMedia, 161-170.
Article Tortella P, Haga, M., Loras, H., Sigmundsson, H., & Fumagalli, G., (2016). Motor Skill Development in Italian Preschool Children Induced by Structured Activities in a Specific Playground. PLoS ONE, 11(7), e0160244
Article Tortella, P. (2017) "Outdoor activity" Il parco giochi "Primo Sport 0246. Un ambiente adatto allo sviluppo dei bambini. Quaderni di orientamento, 51, 54-61.
Article Tortella, P., Fumagalli, G., Coppola, F., Schembri, R., Pignato, S., (2019). The role of the educator/adult in supporting children of pre-school age in learning difficult tasks: the case of the Playground "Primo Sport 0246". Journal of Physical Education and Sport ® (JPES), Vol.19 (Supplement issue 5), Art 301, pp. 2015-2023, 2019 online ISSN: 2247 - 806X; p-ISSN: 2247 – 8051; ISSN - L = 2247 - 8051 © JPES https://efsupit.ro/images/stories/october2019/Art%20301.pdf
Article Tortella, P., Haga M., Ingebrigtsen, J.E., Fumagalli, G.F. &Sigmundsson, H. (2019). Comparing Free Play and Partly Structured Play in 4-5 Years Old Children in an OutdoorPlayground.Frontiers Public Health, 7, 197.doi: 10.3389/fpubh.2019.00197. eCollection 2019. PMID 31380337
ArticleTortella, P., Schembri, R., Ceciliani, A., & Fumagalli, G.F. (2020). Dual role of scaffolding on motor-cognitive development in early childhood education. *Journal of Human Sport and Exercise, 15*(4proc), S1407-S1417. file:///C:/Users/Tecnico/Documents/PUBBLICAZIONI%20PATRIZIA/2020/2020%20articoli%20pubblicati/2020%20pubblicati%20pdf/JHSE_2020_15_Proc4_37Tortella%20Dual%20role%20of%20scaffolding.pdf
Article Fumagalli, G.F., Tortella, P., Coppola, R., & Sgrò, F. (2020). Physical or emotional scaffolding in a difficult motor task: What is better with 5-year-old children? *Journal of Human Sport and Exercise, 15*(4proc), S1437-S1445. https://rua.ua.es/dspace/bitstream/10045/110852/1/JHSE_2020_15_Proc4_40.pdf
Abstract Tortella, P., Castorina, E., Fumagalli, G. (2010). 0246: structuring playgrounds for 0-6 y old children, Abstract book of the international meeting "Child in the City" Florence, 151.
Abstract Tortella, P., & Fumagalli, G. (2014). The development of motor competence in 5 y old children is related to the scaffold of the physical educator. Sport Science and Health, 10 (S1), S42-S43.

Abstract Tortella, P., Fumagalli, G. (2014). Difficult motor skill acquisition in 5 y old children can be modulated by educators, Science & Sport, 29, (S), S49-50.
Abstract Tortella, P., Fumagalli, G., Lorås, H., Haga, M., Sigmundsson, H. (2014). Exploring the effects and specificity of playground activities on motor skills in 5 years old children, Science & Sport, 29(S), S50. (referee+if. 0,537) ISSN 0765-1597.
Abstract Tortella, P., Fumagalli, G., (2015) *"Controlled playground activity improves motorcompetence, physical fitness and executive functions".* Proceeding ACPES 2015.1ST ACPES' Conference 2015 (5th AUCPESS' Conference) Enhancing the Quality of Services in physical Education, Health and Sport for a better future. September 15th – 18th, 2015. Semarang – Central Java, Indonesia, 255.
Abstract Tortella, P., Fumagalli, G. (2015). Emotional feedback in physical activityimproves executive functions in 5 years old children. Abstract book. SISMES VII National congress, 2-4 October 2015.Sport Science for Health, Springer, 11(s1), Sept. 2015, S15.
Abstract Tortella, P., Fumagalli, G., (2016). The role of scaffolding in Physical Activity in development of motor and cognitive skills. Journal of Sport & Exercise Psychology, NASPSPA, Montreal (Canada) 15-18th June 2016 Conference Abstracts, Human Kinetics, S20. ISSN 0895-2779.
Abstracts Tortella, P., Fumagalli, G. (2016). The Role of Structured Activity and Scaffolding by Physical Educator in Development of Motor and Cognitive Skills in Preschool Children. Abstracts book AIESEP Conference, Blazing New Trails: Future Directions for Sport Pedagogy and Physical Activity. 8-11 June 2016, Laramie, Wyoming, USA.

Table1: knowledge-based publications and evidence-based publications

Knowledge-based publications

The "Primo Sport 0246" playground project

In 2009 the company Verde Sport of Treviso, chaired by Comm. Giorgio Buzzavo, decided to establish in their sports club "City of Sport - La Ghirada" a space specifically dedicated to the promotion of motor development in children up to 6 years old. "La Ghirada"is a 22-hectare open-air space dedicated to sports for all ages; there a swimming pool, rugby fields, basketball courts, volleyball courts, beach volleyball courts, a gymnasium, physical therapy, massage, golf courses, soccer fields, a restaurant, and offices. Facilities are used by professionalsbut are also freely accessible to everyone. Following discussions with an interdisciplinary group of experts from the Universities of Venice and Verona and representatives of firms, the Centerfor Child Motor Development of the University of Verona, led by Prof. Guido Fumagalli, elaborated the project of a playground that, based on knowledge available on the scientific literature, was best suited to promote motor development in preschool children (Bertinato, Donati, Durigon, Fumagalli, Tortella, 2009).

Figure 1 shows the 2000 square meters area identified for the playground.

Figure 1: Future playground space

In April 2010,the playground "Primo Sport 0246" was inaugurated; the park has been built in compliance with the European safety standards, namely with"EN 1176", equipment for play areas; EN 1177, surface coatings of play areas; UNI 11123, design of parks and outdoor play areas; (Ministry of Productive Activities, 2005). The construction followed the design elaborated by the researchers of the University of Verona (Tortella &Fumagalli, 2011; Tortella, Durigon, Cappellari&Fumagalli, 2011)based on factors promoting motor development and the park was organized in areas of manual, mobility, balance and symbolic play (Tortella, 2009) (Figure2).

Figure 2: "First Sport 0246" playground areas.

Hypothesis of the "knowledge-based" project of the playground "Primo Sport 0246".

The "knowledge-based" project (Tortella, Castorina&Fumagalli, 2010; Tortella et al., 2011b) of the park has called for the organization of the playground in motor areas: manual skills (manuality), mobility, balance. Each area was provided with equipment and games that, based on their use by children, favor the development of the motor skills expected for that specific area. Frequency, intensity and duration of motor practice are fundamental conditions for the development of a skill and in the case of preschool children, the following aspects have been considered: a- Preschool children play near their parents. If parents enter and sit on a bench, children remain in the area where the parent is and use the structures there present; b- The structures, in each area (dexterity, mobility and balance) are arranged in order of increasing difficulty. This allows the child to choose where and how to play, according to his/her abilities; c-- The time spent in the area and the practice of activities related to the same function (manuality, mobility, balance) should promote the development of the related motor skills (Sgrò& Lipoma, 2015), according to the principle of developmental specificity (Sigmundsson, Leif, Polman, &Haga, 2017).The park thus structured could be used with free play modes, or with structured activities for motor skill development pathways and rehabilitation purposes.

Evidence-based publications

The playground "Primo Sport 0246" is a private park for public use that has been used by researchers to answer the following questions: 1-Can a playground become an outdoor physical activity site for preschools? 2-Which is the best way to use the park to promote motor skill development in pre-schoolers? 3-Which is the most appropriate physical activity at the park to promote the development of executive functions? 4- Is the amount of vigorous and intense physical activity of children affected by interventions aimed at developing motor skills or executive functions?

The activities at Primo Sport 0246 playground have been characterized by the participation every year of approximately 200 children 3-5 years old. They were usually divided into control and experimental groups according to the different experimental plans that were designed by the Research Center for Child Motor Development of the University of Verona and were locally organized and carried out by Dr P. Tortella (member of the Research Center). A.S.D. Laboratorio 0246 supported the organization and the costs related to the project and its Scientific Committee supervised and evaluated the ethic aspects of the projects. In 2013 (Tortella, 2013) a questionnaire was administered to the teachers of the preschools involved in the research, asking what they thought of the project at the playground. The results of the study showed that outdoor activity at the Primo Sport playground was an excellent opportunity to allow all children to practice well-organizedmotor activities. This opportunity was especially important for families of low socioeconomicstatus with limited or no options for outside school opportunities. Tortella, Tessaro&Fumagalli (2012), in a study on the development of motor skills at the playground, highlighted the important and fundamental role of "scaffolding" by the educator for the development of motor skills and "affordances" (possibilities of action) bound to the environment. Tortella, Fumagalli, Coppola, Schembri&Pignato (2019) also highlighted the important roleof scaffolding provided by the educator (or a more experienced partner) in conditions where the child is facing difficulties in the zone of proximal development. Fumagalli, G.F., Tortella, P., Coppola, R., &Sgrò, F. (2020) demonstrated that the support of the adult during very difficult tasks allows the child to increase both the level of motor skills and of executive functions. These cognitive processes appear to be stimulated by the difficult task (and scaffold) and by structured activities: these were especially effective for children who started with low levels of motor skills. Free play activities alone did not yield statistically significant results. Fumagalli, Tortella, Coppola&Sgrò (2020) also pointed out that physical support (in proximal development zone games only, only provided upon request by the child) associated with emotional support increments the development of both motor and executive function in children with an adequate starting level of motor skill; in children with a low level of motor skill, the physical and emotional support was beneficial for the acquisition of the motor competence and *had no effect*on executive functions.

Tortella, Haga, Loras, Sigmundsson&Fumagalli (2016) conducted a playground study with a group of preschoolers who attended the park for 10 weeks, 1 hour per week. Each meeting included 30 minutes of free play and 30 minutes of structured activity in the park areas. A group of children of the same age did not attend the playground but practised the motor education program provided in the preschool. At the end of the 10 weeks, the group that did the activities at the playground haddeveloped balance and manual skills (large motor)to an extent significantly larger than the control group. An analysis on the level of motor activities and the intensity of the engagement was performed by Tortella, Haga, Ingebrigtsen, Fumagalli, &Sigmundsson, (2019); in that study, level of activity was measured by accelerometer and comparison was made between children allowed to freely play in the various motor areas of the park (manuality, mobility, balance) versus children attending a combination of free and structured activities performed in the same areas for the same total amount of time. The results showed that the combination of free play and structured activity resulted in a larger engagement in physical activities as compared with the group of children who were experiencing free play only. Interestingly, the effects were more pronounced in 5years old than in 4 years old children. Also, in that population,the intensity of the activities was higher with a significant proportion of time spent with vigorous/intense physical activities.

Discussion

We analysedthe potential of a playground to promote motor and cognitive development in preschool children. The questionaddressed were: a)can the playground "Primo Sport 0246" in Treviso (and similar structures) be an efficient place for supporting the physical activity of preschool children? b) can it promote the development of motor skills and executive functions? c) can learnnew skills to be associated withasituation of vigorous and intense activity?

When schools were invited to participate in the activities organized at the playground activities during the February-May period, parents and teachers initially expressed many concerns, pointing out that it was cold, that children would get sick, that there was moisture on the ground and the instruments, that children would get dirty, etc. The outdoor activity was not well-consideredand it took a couple of years to have a long list of preschools in the city of Treviso, who were willing to participate in the research. After that difficult beginning, the "Primo Sport 0246" playground became very popular. Some Italian cities have built a similar Primo Sport 0246 park, using the same concept, such as the city of Rome (Tortella, 2017), San Lazzaro di Savena, Bologna, Italy, 2019.Also, some Italian preschools have built a mini-park "Primo Sport 0246", with smaller dimensions, around 400-500 sqm: “Bambi & Bimbi”, Pescantina, Verona, Italy, 2016; “GrigolliBresciani”, Cerea, Verona, Italy, 2014 with funding by CariVerona; “AngeliCustodi”, Gargagnago, Verona, Italy, 2014,with funding by CariVerona; “San Gaetano”, Molina di Malo, Vicenza, Italy, 2017,with funding by CariVerona.

With respect to the questions of whether playground activity can promote the development of motor skills and executive functions, and whether children may engage in vigorous and intense activity, the data have shown that motor programs that include structured activity and free play promote both significant engagementsin vigorous activities as well as the development of motor skills and executive functions, whereas free play alone has not been found to be effective in achieving these goals. Structured activities are especially relevant for fostering executive function by physical education (Tortella, Schembri, Ceciliani &Fumagalli, 2020). Other studies (Sigmundsson et al. 2017) also point out that skill learning is very specific, especially in children; indeed, a subject develops the skill that is practisedand that training is necessary for consolidation of a skill (Schembri et al. 2019).

Conclusions

A city playground is a place where children may play and have fun (Coppola et al., 2020) in an outdoor context. Being in open space facilitates movement-based games in children and limits the interpersonal diffusion of Covid-19 and other viruses. The use of a playground is therefore a potentially useful opportunity for children living in urban contexts to move at the level and for the amount of time recommended by most scientific agencies and W.H.O. However, the use and design of a city playground are more complicated than expected. Against common belief, children do not necessarily play movement games when visiting a playground; they often sit on the ground, liedown and relax with their friends. Free-play, relevant for the social and psychological development of children, has no or negative effects on physical activity levels and duration. Indeed, children preferentially move in response to specific plans or reasons. This was emphasized by data from events carried out at the Primo Sport 0246: indeed, PA was significantly more vigorous and intense in the children when involved in structured games (Fischetti et al., 2020). An interesting information obtained from the studies carried out at the Primo Sport 02346 playgroundwas that children were physically very active during time dedicated to the learning and training of a specific skill, (Sgrò et al., 2020). This confirms other studies (Stodden et al., 2008) learning and development of motor skills increase physical activity levels.

A piece of further interesting informationconcerns the link between physical activity and the development of executive functions (Tortella, Schembri, Ceciliani, & Fumagalli 2020). In the studies performed at the playground, the increase of executive functions was associated withfree play and that even difficult tasks are provided in functional areas of. The teacher is responsible for supporting each child, in difficult tasks.
overturns the standard idea that the effects of physical activity on cognitive functions may have the same kind of relationship as between physical activity and health. We strongly support the concept elaborated by Adele Diamond whereby education by physical activities and not physical activities per se promote the development of executive functions (Diamond & Ling, 2016).

Altogether, the data obtained by the studies performed at the “Primo Sport 0246” indicate that playground can be an important opportunity for promoting motor and cognitive development in children living in an urban environment where possibilities to experience natural environment are scarce or absent. However, significant constraints limit the design and the use of a city playground. Most of the emphasis should be given to the adult whose intervention is necessary to encourage and promote physically active games and to support children when difficult conditions emerge. Scaffolding and organization by the adult are relevant issues also when children are free to move in open space. Opportunities of outdoor movement provided by playgrounds are not sufficient to promote motor development in children and future acquisition of active lifestyles. Teachers and parents should always remind of the need foroutdoor movement education as a tool for the exploitation of the beneficial effects of physical activity on motor and cognitive development and health of children.

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