

BODY, MOVEMENT, AND INCLUSION: NEW PERSPECTIVES IN PRIMARY EDUCATION CORPO, MOVIMENTO E INCLUSIONE: NUOVE PROSPETTIVE PER LA SCUOLA PRIMARIA



Gabriella Ferrara¹
University of Palermo
gabriella.ferrara@unipa.it

<http://orcid.org/0000-0003-2673-4988> 

Francesco La Versa
University of Palermo
francesco.laversa@unipa.it

<http://orcid.org/0009-0007-1808-7158> 

Maria Moscato
University of Palermo
maria.moscato01@unipa.it

<http://orcid.org/0000-0002-6082-1068> 

Francesca Pedone
University of Palermo
francesca.pedone@unipa.it²

<http://orcid.org/0000-0001-7147-3153> 

Double Blind Peer Review

Ferrara, G., La Versa, F., Moscato, M., Pedone, F. (2025). Body, Movement, And Inclusion: New Perspectives In Primary Education. Italian Journal of Health Education, Sports and Inclusive Didactics, 9(3).

Doi: <https://doi.org/10.32043/gsd.v9i3.1561>

Copyright notice:

© 2024 this is an open access, peer-reviewed article published by Open Journal System and distributed under the terms of the Creative Commons Attribution 4.0 International, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

gsdjournal.it

ISSN: 2532-3296

ISBN: 978-88-6022-522-1

ABSTRACT

English

Physical Education is configured as a qualitative teaching approach that promotes individual growth and social inclusion, requiring a procedural habitus able to facilitate access to physical activity for all students. Based on these premises, this contribution highlights the need for a quantitative approach to address current psycho-physical deficiencies, proposing integrated strategies following the presentation of screening data from a total sample of 772 students.

Italiano

L'educazione fisica si configura come una didattica qualitativa che favorisce la crescita individuale e l'inclusione sociale che richiede un habitus procedurale capace di facilitare l'accesso all'attività fisica per tutti gli studenti. A partire da queste premesse, il contributo evidenzia la necessità di un approccio quantitativo per rispondere alle carenze psicofisiche attuali, proponendo strategie integrate dopo la presentazione dei dati di uno screening su un campione totale di 772 studenti.

KEYWORDS

Physical Education, didactic strategies, inclusion, primary school
educazione fisica, strategie didattiche, inclusione, scuola primaria

Received 13/09/2025

Accepted 29/10/2025

Published 07/11/2025

Introduction

In recent decades, interest in body education has grown exponentially, as demonstrated by the numerous enactments of supranational legislation, which establish that all minors, equally, have the right to an education capable of recalling in a balanced way every dimension of the person, including bodily education.

As acknowledged by the International Charters, Sport is a fundamental right for all, offering numerous benefits across physical, psychological, relational, and social dimensions. For this reason, as recommended by Article 30 of the UN Convention on the Rights of Persons with Disabilities (United Nations, 2014), it is necessary to encourage and promote the participation, as widely as possible, of people with disabilities in ordinary sporting activities at all levels.

For the sport to become a suitable tool to promote a fairer, more harmonious society, to combat racism and intolerance, and to promote inclusion and dialogue between all diversities, the social function of sport must be universally recognised, and the various European institutions must be closer to people's needs. It is necessary to promote policies aimed at the formal and informal education of young people and to encourage sports, recreational, and leisure activities, which promote healthy and permanent lifestyle habits and the understanding of ethical values of behaviour; fair play must, therefore, become a central category of sporting morality.

The benefits of Physical Education can be found mainly on two levels: physical health and cognitive development. Some examples of physical health benefits are increased strength, endurance, flexibility, speed, balance, bone density, improved immune system, skill development, and physical performance. The positive effects of the constant sporting activity, however, have also been identified on cognitive development: some examples are the increase in memory skills, logical-mathematical cognitive skills, and reading skills, the improvement in attention, and the consequent improvement in school performance (Corona, 2008; D'Anna, 2020). The recent legislative innovation introduced in Italy through Law No. 234 of 2021 mandates the deployment of specialist teachers for teaching Physical Education in Primary Schools. This has reignited the debate sparked by Bill No. 992 of 2018, which had already proposed the introduction of specialist Physical Education teachers in Primary Schools to ensure authentic and high-quality education for children. Such education is designed to encompass appropriate and targeted interventions for motor development to foster learning, prevention, and socialisation.

Throughout the years, considerable efforts have been dedicated to establishing Physical Education on principles that honour individual diversity, personal learning

rhythms, and bodily awareness, recognising that experiences in this field are both cognitive and sensorimotor. Educational value is derived from how individuals experience situations, drawing upon their personal histories and past experiences to imbue activities with meaning and uniqueness.

Italian Primary School system is ideally positioned to promote motor activities thanks to recent regulatory changes, serving as a prime arena for educational interventions. This system can reach nearly the entire population of young people who are beginning to adopt and shape their lifestyles. Consequently, a firm and unwavering commitment is essential to advancing movement and sports activities, embracing the culture of corporeality without bias or reservation, and recognising it as a potent avenue for transmitting knowledge and fostering personal growth among all children.

The main goal of this study is to highlight the educational significance of motor activity in its socio-relational context, which is a dimension frequently neglected in Italian educational curricula. To achieve this objective, the authors have undertaken a carefully planned research project aimed at exploring various key aspects of sports education, identified over two decades of teaching, training, and research activities

1. Theoretical background

Social inclusion is a paramount objective on the international stage, with numerous institutions attributing sport a pivotal role in achieving this aim. Notably, the World Health Organization (2010), the revised 2015 version of UNESCO's International Charter for Physical Education, Physical Activity, and Sport (1978), and the European Charter for Sport (1994), recently updated by the Committee of European Ministers (May 16, 2021), reaffirm the principles laid out in the Universal Declaration of Human Rights and the United Nations Charter. These documents underscore the fundamental right of individuals with disabilities to engage in quality Physical Education and sports activities that are adapted, safe, and inclusive, aiming to foster healthy lifestyles and cultivate authentic and participatory relationships.

Sporting endeavors, when conceived and orchestrated with educational merit at the forefront, are widely perceived as opportunities for children, preadolescents, and adolescents to enhance their physical, psychological, and socio-relational capacities, thus bolstering functional independence and the inclusion process.

Over the past fifteen years in Italy, a myriad of projects have been undertaken to provide supplementary support for motor education within the educational framework. These initiatives, predominantly funded by local authorities (State,

Regions, Municipalities), with administrative backing from CONI and oversight from universities, have entailed pairing a graduate in motor sciences with a generalist teacher during Physical Education classes.

While these commendable endeavours have represented tangible yet partial responses to the advocacy efforts outlined in the Toronto Charter (2010), they have necessitated the collective involvement of diverse national and territorial stakeholders united in their commitment to augmenting and enhancing physical activity among primary school children. National, regional, and local entities have played pivotal roles in securing the requisite financial resources to support expert interventions. These resources have been funnelled to regional CONI offices, primarily tasked with administrative duties and coordinating the recruitment and remuneration of expert teachers (graduates in motor sciences) to assist generalist teachers. The positive outcomes stemming from these projects have persuaded the Italian Ministry of Public Education, Universities, and Research to propose the integration of graduates in motor sciences within primary schools.

The legislative measure introduced by Law No. 234 of 2021, mandating the deployment of specialist teachers for motor education in primary schools, has reignited the discourse sparked by Bill No. 992 of 2018. The latter had already advocated introducing specialist motor education teachers in primary schools to ensure genuine and qualified instruction, with interventions tailored to motor development and yielding benefits in learning, prevention, and socialization. Thus, it is imperative to underscore the adoption of a procedural habitus capable of discerning the most suitable didactic and methodological strategies to foster inclusive processes through physical and sporting activities accessible and relevant to all students. Law No. 234 of 2021 emphasises the crucial need for the systematic inclusion of specialised motor education teachers in primary schools. Expected benefits include improvements in motor skills, interpersonal relationships, and socialisation across different genders, age groups, and individuals with disabilities. These improvements are anticipated to lead to better academic performance, healthier lifestyle choices, and positive impacts on healthcare, education, and societal systems.

The teaching of Physical Education, in the specificity and uniqueness of the teaching that adapts scientific knowledge and applications of the same related to the fields of health, physical well-being, and Physical Education, pursues the objective (Raiola, 2019): ealth; Adoption of correct lifestyles; Physical well-being; Acquisition of motor skills; Transversal learning of knowledge related to the body and movement; Social skills through the practice of sport.

Therefore, it is necessary to emphasise all the knowledge and contents that can allow a pedagogical-didactic rereading of the importance of the role of motor and sports activities at school and in the processes of growth and development (Lipoma, 2019).

The educational approach to motor and sports activities can be declined on two aspects, namely the epistemological and methodological one and the other heuristic and applicative. Concerning the first aspect, i.e. the epistemological and methodological one refers to the foundational and theoretical aspects of pedagogical knowledge and related teaching tools:

- The potentialities, meanings, and educational value of corporeality and movement;
- To the study, analysis, and experimentation of methods and didactics for the teaching of motor and sports activities in the studio;
- The analysis and experimentation of methods and didactics for the training of teachers, operators, technicians, and experts in correct methodological-didactic approaches to physical and sports activities and to those often neglected scientific evidence that frame human movement as an unavoidable factor of maturation, development and progressive definition of those psycho-physical complexities that arise from the mind-body integration in the holistic-systemic construct of the person (Lipoma, 2019, p. 8).

As far as the application heuristic aspect is concerned, it refers to the techniques and tools for the realisation of pedagogical-educational and methodological-didactic knowledge related to the:

- Motor learning and control processes that concern motor skills useful to humans and their well-being throughout life;
- Physical exercise management, motor, and sports assessment;
- Communication, relational, and motivational dynamics, including initial orientation and models for the first introduction to sports practice;
- Health education, the acquisition of a healthy and active lifestyle, the achievement of well-being in the life cycle, and the participation of everyone in motor and sports activities (Lipoma, 2019, p. 8).

For all these reasons and for the great value that the creation of an educational path has on the development of pupils throughout their lives, it is of fundamental importance to include a specialist in the subject. The school and the training systems, in general, should represent a privileged educational space in which physical activities are correctly and constantly guided at a young age. The effects of this constant, habitual practice aimed at all children can be traced back to three main areas (Casolo & Coco, 2019): the one aimed at the prevention of some pathological situations that are particularly recurrent today, the second one that

examines the situation of form and well-being of the child, and finally the one that studies the contribution that movement has had in the process of maturation of the cognitive system with its implications on learning and self-control.

1.1 Sport: A means for inclusion?

Sport possesses an inherent inclusivity that makes it an ideal tool for fostering socio-educational progress in individuals. However, it is crucial to recognise that sport, on its own, is not inherently educational; its educational value emerges when integrated into educational initiatives and utilised by educators, coaches, and technicians to pursue personal development objectives (Magnanini, 2018). Viewing sports through an educational lens is imperative for creating inclusive environments. Participation in sports activities facilitates social inclusion by providing enriching experiences grounded in values, rituals, and tangible interactions, thereby serving as a foundational element in shaping the life trajectories of individuals, regardless of their abilities (Magnanini, 2021).

In its National Curriculum Guidelines for the first cycle of education, the Ministry of Education, Universities, and Research (2012) recognise the value of sports participation in facilitating shared group experiences and fostering the inclusion of students with diverse abilities. Games and sports are acknowledged as exemplary practices in inclusion processes, serving as active mediators and promoters of interpersonal relationships (Munafò, 2016).

The culture of movement and sport should embrace inclusivity to cater to the diverse needs and functioning modes of all individuals, fostering their educational and developmental objectives while celebrating their social and cultural diversity (De Anna, 2009; Di Palma, Raiola & Tafuri, 2017). Zoletto (2010) emphasises the role of games and sports in blurring cultural boundaries and fostering shared spaces that transcend differences and prejudices, promoting social integration and mutual understanding. Promoting inclusive sports to support societal diversity is imperative, necessitating a more efficient and adaptive system that accommodates the needs of all individuals, regardless of disabilities or other deficiencies (Di Palma & Ascione, 2017). Sport serves as a tool for physical improvement, but also for enhancing critical thinking, cooperation, inclusion, and trust, which are transferable to various facets of life. Breaking down prejudices and fostering inclusivity through sport involves ensuring that everyone, regardless of their abilities, can attain a basic level of technical skills and derive pleasure from physical exertion, thus challenging the notion of "fitness" as a basis for exclusion (Caione, 2021).

Investigations into childhood and adolescence underscore the progressive decline in physical and motor efficiency, highlighting the importance of stimulating physical

activity during these formative stages when physiological systems are developing and reaching peak functionality (Runhaar et al., 2010; Tomkinson & Olds, 2007; Tomkinson et al., 2003).

2. Method

While a progression from input to process to output would seem to be a logical approach to planning and delivering instruction, it is only one route that can be taken. The design approach to curriculum development starts with selecting teaching activities, techniques, and methods rather than elaborating a detailed syllabus or specification of learning outcomes. Issues related to input and output are dealt with after a methodology has been chosen or developed or during the teaching process.

Curriculum design should start with defining the desired learning outcomes and using them as the foundation for developing instructional process and content. Following Wiggins and McTighe (2005) and continuing with the analogy of forward and central design used above, the term backward design will describe this approach. Backward design starts with carefully stating the desired results or outcomes: appropriate teaching activities and content are derived from the learning results. This is a well-established tradition in curriculum design in general education and, in recent years, has re-emerged as a prominent curriculum development approach in language teaching. It was sometimes described as an 'ends-means' approach, as seen in the work of Tyler (1949) and Taba (1962), who viewed instruction as the specification of ends as a prerequisite to devising the means to reach them.

Backward design is not based on the assumption that input, process, and output are related linearly. In other words, before decisions about methodology and outputs are determined, issues related to instruction content need to be resolved. Curriculum design is seen to constitute a sequence of stages that occur in a fixed order – an approach referred to as a 'waterfall' model where the output from one stage serves as the input to the following stage.

This approach makes decisions about teaching processes or methodology following syllabus specifications. Ideally, the planner starts with a theory and a derived syllabus and then looks for a learning theory to use as the basis for an appropriate pedagogy.

Backward design is a useful method of designing learning activities with the end goal in mind.

This process consists of three steps: 1) Identifying the desired result, i.e., defining your learning outcome; 2) Determining the acceptable evidence, i.e., designing

your assessments; and 3) Planning the learning experiences and instructional materials you will use. Backward design aims to improve student performance by following a purposeful design process that allows instructors to align their teaching practices with the outcomes they are trying to achieve. Backward design has played an influential role in the design of courses throughout higher education, some described in the scientific literature (e.g., 12–18). Backward design is now implemented and taught in the National Academies Summer Institute (Pfund et al., 2009) for training current faculty and the National Science Foundation–funded Faculty Institutes for Reforming Science Teaching (Ebert-May & Weber; 2006) programs for post-doctoral training.

Applying a form of Backward design to research is not a new idea. One example from the field of market research is called “Backward Market Research,” which consists of eight steps that ultimately resemble Wiggins and McTighe’s Backward Design for curriculum development. The key to backward market research lies in identifying the desired outcome (i.e., what data would answer the question you are asking) before embarking on the project to avoid mindless fishing expeditions. As Pearson (2010), a statistician, points out, “Mindless fishing expeditions are unlikely ever to catch a fish worth eating” (p. 16). The same is true in education research. To collect data and try to take a quantitative, data-driven approach to teaching, novice researchers often make the mistake of plunging into the data collection process without considering the underlying pedagogical problem they are trying to solve. To avoid aimless data collection, we introduce a structured approach, a Backward Design in Education Research (BDER) approach, taking components of the Andreasen (1985) and the Wiggins and McTighe models.

2.1 Design

An experimental design that offers several advantages over the single-group approach is the two-group plan. In this design, two samples of students are randomly selected, such as two classes, with one class receiving instruction in a subject through conventional methods and the other class receiving instruction in the same subject through experimental methods. Random selection provides a certain level of confidence that the two groups are comparable in terms of characteristics. The progress in knowledge and skills acquired is monitored through two tests administered to each group: an initial test to assess the starting level of the learners and a final test to assess the overall level of knowledge and skills attained by the learners.

Another methodology utilized in our study is the Backward Design framework developed by Wiggins and McTighe (2007). This approach involves:

- Identification of objectives intended to be achieved, with planning focused on skill attainment;
- Determination of assessment criteria: Evaluation criteria were established before planning activities and lessons;
- Development of a sequence of activities to foster the acquisition of the desired skills.

The educational intervention was designed with the understanding that every student, regardless of background, can achieve significant skill milestones through meaningful tasks derived from content knowledge. The process followed the classic Backward Design model, beginning with the identification of desired results, followed by determining the performances students needed to demonstrate their mastery of knowledge and skills. Subsequently, a pathway was developed to achieve these results and performances. The backward design model was chosen for its ability to clarify goals, align assessments with objectives, and ensure consistency between desired outcomes and learning experiences. The emphasis was placed on promoting experiential learning, focusing on relevance, and fostering students' awareness of their abilities, personal projects, and chosen paths.

Following the Backward design model (Wiggins & McTighe, 2005; 2007), the study first identified the most important objectives to be achieved, focusing on skill attainment. Next, assessment criteria were established before planning activities and lessons. Subsequently, a structured progression of activities was developed to address the identified objectives. These activities were designed to assess the targeted skills and to provide resources to facilitate inclusive change. Finally, considering the starting skills and desired goals, a sequence of activities was elaborated to engage the entire class group in skill development.

Highlighting the significance and necessity of a qualitative approach to motor education raises concerns regarding the importance of incorporating a quantitative approach to address the deficiencies observed in today's younger generations, particularly in terms of psycho-physical well-being. After a screening on a sample population, it becomes evident that integrated strategies, encompassing both qualitative and quantitative methods, are required to effectively tackle the emerging well-being issues associated with the individual's stage of development.

2.2 First screening

Developmental studies show a progressive decline in physical and motor efficiency in the school population, especially in aerobic performance, which is an important indicator of physical efficiency (Cereda, 2016; Monacis et al., 2022; Runhaar et al., 2010; Tomkinson & Olds, 2007) it is crucial to understand the importance of stimulating aerobic capacity during developmental age. During this period of

growth and development, the body can maximize its physical capabilities, including the cardiovascular and respiratory systems. This means that individuals can achieve levels of physical efficiency that may no longer be achievable at later ages.

Therefore, providing opportunities for physical activity and aerobic exercise during the developmental age is crucial to ensure optimal development and to promote a healthy and active lifestyle in the long term.

To verify the state of physical and motor well-being of the Sicilian and Piedmontese school populations almost at the end of primary school, a screening was carried out on a sample of children attending the fifth grades of the two territories, in September 2022, which determined the data summarised below and the launch of a study protocol.

The sample comprised 449 children aged 9 to 11 years, consisting of 225 males and 224 females, all from Comprehensive Institutes in the provinces of Turin and Palermo. A notable finding emerged after comparing the percentage distribution of students with the Motorfit Lombardia reference tables. Approximately 66% and 57% of participants demonstrated insufficient to poor performance respectively in the aerobic endurance test (Cooper 12m) and the anaerobic endurance test (10x5 shuttle). Conversely, only 27% and 34% of participants achieved good to excellent results in the aerobic and anaerobic endurance tests, respectively, with the remaining portion of the sample deemed sufficient.

	B.M.I	S&R	S.L.F	ADD.	NAV.	COOP.	F.A.S	P.A.Q.I.	M.A	M.S
group	20,1	65,5	33,1	9	13,9	624,09	7,9	0,4	0,5	0,5
d.s	1,7	2	11	1,7	0,9	27,1	4,1	0,1	0,1	0,2
sign	p= 005	N.S	p= 000	p= 000	p= 000	p= 000	p= 001	p= 000	p= 000	p= 000

Table 1 Baseline screening results prior to experimental intervention

Similarly, regarding explosive force in the lower limbs, 61% of participants exhibited insufficient to poor performance, while 28% demonstrated good to excellent results, with the rest of the sample deemed sufficient. However, more favorable outcomes were observed in tests assessing upper limb strength (60% achieving good to excellent scores) and abdominal strength (57% achieving good to excellent scores).

When comparing sexes, the trend persisted, with both males and females exhibiting poor values in aerobic resistance (64% vs. 52%) and anaerobic resistance (68% vs. 63%), as well as in the standing long jump (51% vs. 59%).

2.3 Research questions

Based on the aforementioned considerations, the research endeavors to address the following questions:

- Can a process of sports literacy be fostered among children aged 9 to 11

years?

- What specific actions can be implemented to enhance sports skills in fifth-grade primary school students?

Furthermore, motor literacy is perceived as a disposition aimed at bolstering one's motivation to engage in physical activity throughout one's lifespan, representing genuine life competence (Whitehead, 2010). This facet of health promotion can be effective if approached through enjoyable and engaging educational methods coupled with the intensity of activities to establish the groundwork for health during developmental stages.

2.4 Participants and tools

The participants were drawn from schools in both the provinces of Turin and Palermo, ensuring an equal distribution between the two regions. The sample consisted of 323 children between the ages of 9 and 11, comprising 125 males and 198 females.

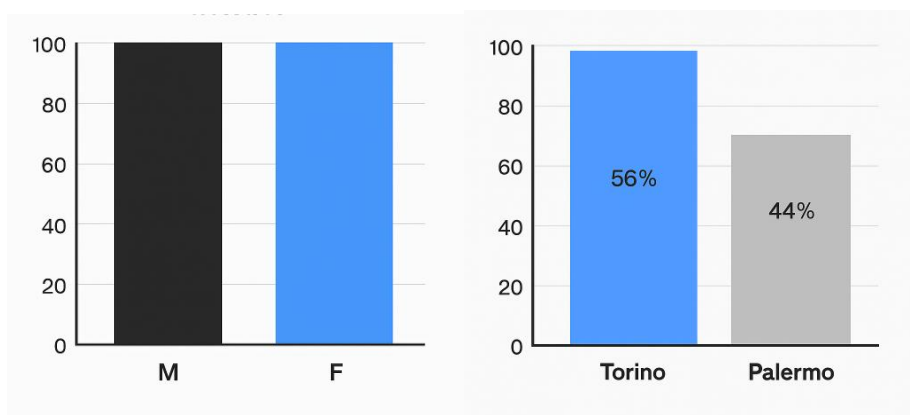


Figure 1 Gender distribution for Sicilia and Piemonte

An experimental plan that offers some advantages over the single-group plan is the two-group plan. In this plan, two samples of pupils are randomly chosen, for example, two classes, one of which offers the teaching of a subject by an ordinary method and the other the teaching of the same subject by an experimental method. Random choice gives a certain degree of confidence that the two groups are homogeneous (Benvenuto, 2015; Zanniello, 2003).

The two changes in the knowledge and skills acquired are monitored through two tests for each group: the initial test, which detects the starting level of the learners, and the final test, which detects the level of knowledge and skills reached overall by the learners.

The tools used in the research are:

- Eurofit Test (Council of Europe, 1988): a set of physical fitness tests that assess flexibility, speed, endurance, and strength. The Council of Europe devised it to evaluate physical fitness in children and young people; it includes easily performed field tests that have demonstrated adequate reliability and validity, along with anthropometric measurements;
- Anamnestic Test: It serves as a tool for gathering comprehensive information regarding an individual's background, lifestyle habits, and other pertinent details to assess their current sports health condition. By utilizing the anamnestic test, educators can gain a holistic understanding of each individual's needs, empowering them to implement effective and high-quality teaching strategies tailored to the specific requirements of their students;
- Motorfit Test Lombardia (2006): It is a tool for monitoring the state of motor well-being of primary school students relating to gross motor development: Hops, Gallops, Throwing, and Receiving free or with tools;
- Physical Activity Questionnaire for Children – PAQ-C (Gobbi et al., 2012) is a questionnaire designed to assess habitual moderate to vigorous physical activity levels of school-aged children.

The student's knowledge of the habits and sports activities was detected through a cognitive questionnaire especially drawn up and administered at the entrance, Anamnestic Test. The measurement of the physical condition of the subjects was carried out through the Motorfit Lombardia tests (2006), which, based on the Eurofit tests (Council of Europe, 1988), presented reference tables, for the evaluation of efficiency levels on the following capacities: explosive force (standing long jump in cm); aerobic endurance (Cooper 12 minutes in m.); anaerobic resistance (shuttle 10x5 meters in s.); upper limb strength (suspension from the espalier in s.); abdominal muscular resistance (Rip No. Bust Elevation Test); flexibility (sit&rich cm). Anthropometric data (height and weight) and the levels of physical activity practiced through a special questionnaire were collected: Physical Activity Questionnaire for Children – PAQ-C (Gobbi et al., 2012).

2.5 Procedures

The concept is the first approach that addresses integrating quality and quantity in educational proposals.

The percentage distribution of the students compared to the reference tables showed the following results: 56% and 75% of the participants were insufficient-poor, respectively, in the aerobic endurance test (Cooper) and anaerobic endurance test (Navetta), only 37% in the first test, and 42% in the second test, were good or excellent, the rest of the sample was sufficient. Also, in terms of the

explosive strength of the lower limbs, 63% of the participants were insufficient-poor and 36% good-excellent; the rest of the sample was sufficient. On the other hand, better results were performed in tests of upper limb strength (62% good-very good) and abdominal strength (73% good-very good). The trend remains similar, even comparing the poor values in both aerobic endurance (78% vs 42%), anaerobic endurance (82% vs 53%), and standing long jump (49% vs 71%). The results analysis of the standing long jump test shows, in addition to greater flexibility, as mentioned above, a greater strength: 144.4 of the experimental group compared to 44.4% of the lower limb control group.

The statistical analysis was conducted with SPSS.23 (univariate ANOVA) software, comparing any differences between the experimental group and the control group in all the tests carried out. The students in the experimental group were significantly ($p < 0.05$) more performing than their classmates in the control group, except in BMI and upper limb strength, where there was no significance. The results are significantly more relevant ($p < 0.05$) than the PAQ-C data (Tab.), in agreement with the literature and analyses already conducted in other studies (Andersen et al., 2006; Troiano et al., 2008).

	B.M.I	S&R	S.L.F	ADD.	NAV.	COOP.	F.A.S	P.A.Q.I.	M.A	M.S
Experimental group	19,9	96,2	144,4	19,4	21,7	1773,9	16,6	2,6	2,8	2,8
d.s	3,6	8,1	22,5	4,8	1,9	316,3	13,9	0,6	0,6	1
Control group	19,3	63,5	36,1	8	12,9	604,09	6,9	0,4	0,5	0,5
d.s	1,7	2	11	1,9	0,9	27,1	4,1	0,1	0,1	0,2
sign	N.S	p= 000	p= 000	p= 001	p= 000	p= 000	N.S	p= 000	p= 000	p= 005

Table 2 Comparison of improvements in the experimental group relative to the control group

This suggests that Physical Education must not only uphold the qualitative aspect but also ensure the quantitative aspect through engaging and motivating strategies. It should entail an adequate psycho-physical commitment, striking a balance between intensity that is neither excessive nor insufficient. Engaging in motor-physical-sports activities within the playful and educational dimension should stimulate aerobic activity, physical effort, and movement in the school environment, aiming to encourage children to combat sedentariness and enhance their quality of life.

Conclusions

The core concept underpinning this study underscores the crucial role of engaging, playful, and motivating teaching practices, fostering active participation characterized by sufficient cognitive, physical, and mental engagement.

As motor-physical-sports education continues to evolve with increasing pedagogical support tailored to developmental needs, a pressing need arises to devise teaching methodologies that effectively address constraints such as limited time, quantity, and intensity while ensuring the preservation of educational quality. Empirical evidence from the literature, coupled with the screening outcomes presented here in sheds light on significant deficiencies in aerobic functionality observed in most children transitioning to lower secondary school. In an era where physical activity, energy expenditure, and an innate desire for continuous movement should ideally define the daily routines of every child, it becomes evident that existing educational paradigms inadvertently foster a sedentary and technology-centric lifestyle, thereby dulling children's inherent zest for movement. Qualitative educational models are rightfully emerging in response to this imperative, emphasizing pleasure, enjoyment, participation, and personalization. However, it is crucial to acknowledge that complementary approaches, such as enriched education or physically active lessons, can also play a pivotal role in addressing the quantitative dimension of educational action. Effective collaboration among diverse educational stakeholders is essential to ensure the widespread adoption of these strategies across varied contexts, instilling in children a dynamic and active approach to life.

This transformative journey should be anchored on three fundamental pillars: firstly, adherence to ministerial guidelines and evidence-based practices drawn from the biomedical, psycho-pedagogical, and motor-sports domains; secondly, a comprehensive exploration of corporality in its entirety, encompassing motor function, human movement patterns, relational dynamics, and socialization processes; and thirdly, a deep understanding of motor, cognitive, social, affective, and moral development during the formative years, guiding the design of tailored, effective, and age-appropriate didactic approaches. We can usher in a more holistic and impactful educational paradigm through concerted efforts toward these pillars, empowering children to lead healthier, more active lives.

References

- AA.VV. (2006). *Motorfit Lombardia: una ricerca per conoscere lo stato di benessere motorio degli studenti della Lombardia*. Milano: IRRE Lombardia.
- Andreasen, A. R. (1985). Backward market research. *Harvard Business Review*, 63(3), 176-182.
- Benvenuto, G. (2015). *Stili e metodi della ricerca educativa*. Roma: Carocci.
- Troiano, R. P., Berrigan, D., Dodd, K. W., Masse, L. C., Tilert, T., & McDowell, M. (2008). Physical activity in the United States measured by accelerometer. *Medicine and science in sports and exercise*, 40(1), 181.

- Caione, G. (2021). *Bes e attività motorie inclusive: Proposte didattiche operative*. Torino: Soares.
- Casolo, F., & Coco, D. (2019). Educazione motoria nella scuola primaria: Quali competenze per il docente?. *Formazione & insegnamento*, 17(3 Suppl.), 37-46.
- Cereda, F. (2016). Attività fisica e sportiva: tra l'educazione della persona e le necessità per la salute. *Formazione e insegnamento*, 14(3), 25-32.
- Corona, F. (2008). *Gioco ed attività ludico-motorie e sportive nella scuola: indicazioni didattiche*. Lecce: Pensa MultiMedia.
- D'Anna, C. (2020). *Life skills education for inclusion. Le potenzialità dell'educazione fisica e dello sport a scuola*. Lecce: PensaMultiMedia.
- De Anna, L. (2009). (Ed.). *Processi formativi e percorsi di integrazione nelle scienze motorie*. Milano: Franco Angeli.
- Di Palma, D., & Ascione, A. (2017). L'importanza di sviluppare la prospettiva Educativa ed Inclusiva dello Sport. *Giornale Italiano di Educazione alla Salute, Sport e Didattica Inclusiva*, 1(4), 18-23.
- Di Palma, D., Raiola, G., & Tafuri, D. (2017). The strategic contribution of sport to the management of diversity. *Sport Science*, 10(1), 40-43.
- Ebert-May, D., & Weber, R. P., (2006). FIRS T— What's next? *CBE Life Sci Educ*, 5, 27–28.
- Gobbi, E., Ferri, I., & Carraro, A. (2012). A contribution to the Italian validation of the Physical Activity Questionnaire for Children (PAQ-C). *Sport Sciences for Health*, 8, 63-63.
- Lipoma, M. (2019). L'approccio pedagogico-educativo alle attività motorie e sportive. *Formazione & insegnamento*, 17(2), 7-10.
- Magnanini, A. (2018). Le diversità, lo sport e la resilienza: processi inclusivi e marginalità. In P. Moliterni, & A. Magnanini (Eds.), *Lo sport educativo per una società inclusiva. Tra esperienze, problematiche e prospettive* (pp. 55-68). Milano: FrancoAngeli.
- Magnanini, A. (2021). *Pedagogia speciale e sport: modelli, attività e contesti inclusivi tra scuola ed extrascuola*. Torino: Soares.
- Monacis, D., Trecroci, A., Invernizzi, P. L., & Colella, D. (2022). Can enjoyment and physical self-perception mediate the relationship between BMI and levels of physical activity? preliminary results from the regional observatory of motor development in Italy. *International Journal of Environmental Research and Public Health*, 19(19), 12567.
- Munafò, C. (2016). L'Orienteering, un'attività sportiva per l'inclusione e l'apprendimento di alunni con disabilità. *Educare*, 16(7), 64-70.

Palumbo, C., Ambretti, A., & Scarpa, S., (2019). Esperienze motorie, sportive e disabilità. *Italian Journal of Special Education for Inclusion*, 16, 217-232.

Pearson, R. W. (2010). *Statistical persuasions*. Thousand Oaks: SAGE.

Pfund, C., Miller, S., Brenner, K., Bruns, P., Chang, A., Ebert- May, D., et al. (2009). Summer Institute to improve university science teaching. *Science*, 324, 470–471.

Raiola, G. (2019). L'insegnante di Educazione Fisica nella Scuola Primaria: problematiche ordinamentali e possibili prospettive. *Formazione & insegnamento*, 17(3), 182-192.

Runhaar, J., Collard, D. C., Singh, A., Kemper, H. C., van Mechelen, W., & Chinapaw, M. (2010). Motor fitness in Dutch youth: Differences over a 26-year period (1980-2006). *J.Sci. Med. Sport*, 13, 323-328.

Taba, H. (1962). *Curriculum development: Theory and practice*. New York: Harcourt Brace and World.

Tyler, R. (1949). *Basic principles of curriculum and instruction*. Chicago, IL: University of Chicago Press.

Tomkinson G. R, Leger L. A., Olds T. S., & Carzola, G. (2003). Secular trend in the performance of children and adolescents (1980-2000): analysis of 55 studies of the 20m shuttle run test in 11 countries. *Sport Medicine*, 33, 285-300.

Tomkinson, G. R., & Olds, T. S. (2007). Secular changes in pediatric aerobic fitness test per-performance: the global picture. *Me.Sport Sci.*, 50, 46-66.

United Nations (2014). *The convention on the rights of persons with disabilities*. New York and Geneva: United Nations of Human Rights.

Whitehead, M. E. (2010). *Physical Literacy: Throughout the Lifecourse*. London: Routledge.

Wiggins, G., P., & McTighe, J. (2005). *Understanding by design*. Alexandria: Ascd.

Wiggins, G., & McTighe, J. (2007). *Schooling by design: Mission, action, and achievement*. Arlington: Ascd.

Zanniello, G. (Ed.). (2003). *La prepedagogicità della sperimentazione*. Palermo: Palumbo.

Zoletto, D. (2010). Sport e seconde generazioni fra rischi di ghettizzazione e intenzionalità educativa. Una ricerca sulla valenza educativa del calcio in aree a forte processo migratorio. *Pedagogia oggi*, 2, 142-149.