

# MULTICULTURALISM AND PHYSICAL ACTIVITY: EVIDENCE FROM A HIGHER EDUCATION-BASED INTERVENTION

MARIA GIOVANNA TAFURI<sup>1</sup>, FRANCESCA LATINO<sup>1</sup>, GENEROSO ROMANO<sup>2</sup>

<sup>1</sup>Pegaso University, Naples, Italy

<sup>2</sup>University of Naples "Parthenope", Naples, Italy

## Correspondence:

Francesca Latino

Pegaso University, Naples, Italy, francesca.latino@unipegaso.it

**Abstract:** In an academic context increasingly characterized by cultural pluralism and technological innovation, the need emerges to develop educational practices capable of integrating the bodily dimension into learning processes. The present study explores the effectiveness of a physical activity intervention designed according to the principles of critical pedagogy, embodied education and intercultural education, with the aim of promoting body awareness and intercultural sensitivity in a university context crossed by increasing cultural heterogeneity and digital transformation. The intervention, lasting twelve weeks with biweekly meetings of two hours each, involved 260 students divided into an experimental group and a control group, subjected to pre- and post-intervention evaluation using the Intercultural Sensitivity Scale (ISS) and the Body Awareness Questionnaire (BAQ). The results of the statistical analysis showed a significant increase in scores related to both intercultural sensitivity and body awareness in the experimental group compared to the control group, indicating the effectiveness of the body approach in university education. The integration of digital tools has further enriched the path, offering support for the documentation, reflection and monitoring of learning processes. The pedagogical implications of the study indicate the need to rethink university teaching by systematically including body practices and multimodal approaches, capable of combining corporeality, cultural diversity and digital environments. Future research perspectives will have to deepen the adaptability of these models in different training contexts and analyze more extensively the role of the body as a mediator of transformative processes in higher education.

**Keywords:** Social inclusion, body awareness, intercultural education, experiential learning, educational technologies

## INTRODUCTION

In the contemporary context of higher education, the growing global interconnection has led to a radical transformation of educational paradigms, requiring a profound reflection on the concepts of multiculturalism, inclusion and pedagogical innovation (Rege Colet, 2017). Universities, places traditionally dedicated to the transmission of knowledge and the training of future ruling classes, are today called upon to respond urgently and responsibly to the challenges posed by cultural diversity, the heterogeneity of students' educational and social backgrounds and the needs of a society in continuous digital evolution. The co-presence of students from different cultural contexts is not only a demographic fact, but constitutes a fundamental element of today's educational reality, which requires a rethinking of teaching practices, relational strategies and training models (Khedkar, & Nair, 2016). In this scenario, digital transformation, catalyzed by the advent of intelligent technologies and the emergence of Education 4.0 paradigms, redefines the methods of teaching and learning, opening up new forms of educational interaction but also raising questions about the equity, accessibility and quality of the university training experience. Multiculturalism, far from being a merely quantitative phenomenon, is configured as a qualitative dimension of the educational experience, in which the identities, narratives and corporeality of the students are intertwined in a symbolic and relational space that needs to be inhabited in a conscious and transformative way (Bakar, 2021).

In this complex horizon, the educational challenges related to cultural diversity in university contexts are articulated around a multiplicity of levels, ranging from linguistic and curricular inclusion to the acceptance of religious differences and values, up to the management of truly intercultural pedagogical practices. The mere coexistence of different cultures within university classrooms does not in itself guarantee real inclusion, which instead requires intentional, systematic and reflective action capable of enhancing plurality as a resource and not as an obstacle. The rhetoric of inclusion, often evoked in institutional documents, risks being emptied of meaning if it is not supported by innovative educational practices and a redefinition of dominant epistemologies. To this end, it is essential to question

the role of corporeality and motor activity as foundational dimensions of the educational process, especially in the university context, traditionally centered on the logical-rational and cognitive dimension of learning (Chaika, 2024).

Physical activity, in its broadest sense of body expression, sensorimotor interaction and construction of the self through movement (Raiola et al., 2025), represents a privileged terrain for the development of pedagogical practices oriented towards inclusion and the promotion of intercultural citizenship. The rediscovery of the body as a space for educational mediation and as a vehicle for identity expression makes it possible to overcome the linguistic and cultural barriers that often hinder communication and mutual understanding in multicultural educational contexts. In this perspective, physical activity is not only configured as a compensatory or recreational tool (Aidar et al., 2021; Fari et al., 2023), but as a real epistemological practice, capable of generating meanings, favoring the construction of meaningful relationships and stimulating transformative learning processes. It makes it possible to activate paths of embodied knowledge that enhance sensitive experience, empathy and reflexivity, promoting an education that is based on the authentic encounter with the other in his or her integrity (Calderón, & MacPhail, 2023).

In the theoretical framework of reference, the concept of multiculturalism is configured as a descriptive and analytical category at the same time, useful for grasping the complexity of cultural interactions within educational contexts. It refers to the co-presence, in the same social and educational space, of individuals with different cultural identities, who express themselves through heterogeneous symbolic codes, languages, values, practices and world-views (Karacsony et al., 2022). However, in order for multiculturalism not to be translated into a simple summation of differences, it is necessary to place it within a pedagogical perspective oriented towards inclusion, understood as a dynamic process of recognition, enhancement and transformation of differences into educational resources. The paradigm of intercultural education fits in this direction, which promotes a dialogical, critical and reflective approach to relations between cultures, based on the deconstruction of stereotypes, mutual listening and openness to plurality.

Within this framework, educational corporeality assumes a central role, as a constitutive dimension of identity and a privileged channel of communication and relationship. Corporeality is not only a passive background of the educational experience, but an active subject of knowledge, capable of generating forms of situated and contextual learning. It allows us to recognize the other not only as the bearer of a culture, but as an embodied subject, endowed with sensitivity, emotions and experiences that are expressed through the body (Arora, & Wolbring, 2022). Physical activity, in this perspective, becomes a pedagogical tool capable of promoting knowledge of oneself and of others through movement, play, cooperation and sensory experimentation (Fari et al., 2021). It makes it possible to activate learning paths in which the cognitive dimension is intertwined with the emotional, relational and sensorimotor dimensions, giving rise to authentic and transformative educational experiences (Greco et al., 2019; Di Palma et al., 2025).

The theoretical frameworks that support this approach are many and are articulated around some fundamental guidelines. Critical pedagogy, inspired by the thought of authors such as Paulo Freire (2021) and Henry Giroux (1984), offers an interpretative key to understanding the emancipatory potential of education and the need to promote teaching practices capable of counteracting inequalities and the dynamics of exclusion. In this perspective, intercultural education is configured as a political practice, oriented towards social justice and the construction of democratic educational spaces. The embodied approaches to learning, developed in the psychopedagogical and neuroscientific fields, emphasize the importance of the body and embodied experience in cognitive processes, suggesting that learning is not a purely mental activity, but an integrated process that involves the entire organism (Jusslin et al., 2022). Finally, socio-technical approaches to education offer conceptual tools to understand the interaction between digital technologies, educational practices and cultural contexts, highlighting how digitization can both expand training opportunities and reproduce exclusionary logics, if not guided by principles of equity and inclusiveness.

Digital transformation, which is increasingly affecting higher education, opens up unprecedented scenarios for university teaching, redefining the boundaries of the classroom, the ways of interaction between teachers and students, and the very forms of knowledge (Plekhanov et al., 2023). The paradigms of Education 4.0, based on the integration of artificial intelligence, augmented reality, personalized learning and virtual environments, require a critical reflection on the pedagogical implications of these innovations. While digital technologies offer powerful tools to promote access, flexibility and personalisation of learning, it is also necessary to ensure that they do not become vehicles for new forms of exclusion or cultural homologation. In this context, physical activity and educational corporeality can constitute an essential counterweight, capable of restoring centrality to the embodied and relational experience, and of integrating the digital in a conscious and critical way (Cataldi et al., 2019). The articulation between technologi-

cal innovation and body practice represents, in this sense, one of the most interesting and promising challenges for university education of the future, called to combine educational excellence, cultural inclusion and humanization of educational processes (Pellegrino et al., 2019).

In the light of the theoretical and pedagogical premises outlined at the beginning, the aim of this study is to explore to what extent and in what ways physical activity can be configured as an effective tool for inclusion and intercultural dialogue in the context of higher education, with particular attention to the intersection between corporeality, digital transformation and innovative pedagogical practices. In line with the objective of the study, some research questions were articulated that guided the development of the investigation. The research questions that guided the work focused, on the one hand, on investigating whether and to what extent participation in the motor program favored an increase in the intercultural sensitivity of students, i.e. in their ability to recognize and value cultural differences in relational and academic contexts. On the other hand, we questioned the effectiveness of activated body practices in promoting greater body awareness, understood as attention, perception and understanding of the signals coming from one's body.

The survey therefore aimed to explore the impact of educational intervention on these two specific variables, considered fundamental to support processes of inclusion, well-being and meaningful learning within heterogeneous university contexts.

## **METHODS**

### ***Study design***

The study presented here is configured as a quasi-experimental research with pre- and post-intervention measurements, aimed at evaluating the impact of a physical activity program conducted in a university setting on intercultural sensitivity and body awareness of the participating students. The methodological design has been designed to ensure scientific rigor, replicability and pedagogical relevance, through the use of validated tools and the statistical analysis of the data collected.

The intervention was conducted within the Degree Course in Sports Science, belonging to the Department of Medical, Motor, and Wellness Sciences at the University of Naples "Parthenope" and involved a sample of students enrolled in the first and second year of the same degree course, characterized by a multicultural and multilingual composition. The choice of the university context is based on the desire to explore, through quantitative indicators, the potential of physical activity as a tool for promoting inclusion and educational transformation, also in relation to the emerging paradigms of higher education in an intercultural and digital key.

The intervention was divided into a cycle of 24 meetings, twice a week, lasting two hours each, for a total of 12 weeks during which free-body motor activities, cooperative dynamics, symbolic games and movement sequences aimed at developing body awareness, interpersonal trust and non-verbal communication were proposed. The activities have been designed taking into account the principles of intercultural education and pedagogical models centered on corporeality as a vector of relational and inclusive learning.

The study was conducted in full compliance with the ethical principles outlined by the Declaration of Helsinki for research with humans and was approved by the Department of Medical, Motor, and Wellness Sciences at the University of Naples "Parthenope" (DiSMMeB Prot. N. 88592/2024). All data collection procedures have been designed to ensure the anonymity and confidentiality of the participants, without the possibility of tracing the individual identity at any stage of the analysis. Before the start of the trial, each student involved received detailed information about the objectives of the study, how to participate, the use of data and the right to withdraw at any time without consequences. Only those who gave their informed consent in writing were included in the research. The documentation collected has been stored in a secure form and processed according to the provisions of the General Data Protection Regulation (GDPR 2016/679).

### ***Participants***

The present research involved a total of 260 university students, divided into two equivalent groups: an experimental group consisting of 130 participants, who actively took part in the motor intervention, and a control group consisting of another 130 students, who continued to follow the ordinary curricular path, without participating in any structured physical activity within the project. Both groups were selected from among those enrolled in the first and

second year of the Degree Course in Sports Science, belonging to the Department of Medical, Motor, and Wellness Sciences at the University of Naples “Parthenope”. The sample has a balanced distribution in terms of gender (132 females and 128 males) and is characterized by a high cultural heterogeneity, including students with different linguistic and national backgrounds, reflecting the multicultural composition typical of the contemporary university context.

The inclusion criteria for access to the study included: age between 19 and 27 years, regular enrolment in a degree course at the University, the absence of clinical or motor conditions that contraindicated participation in moderate physical activity and, for the experimental group, the willingness to participate in the entire cycle of meetings envisaged by the intervention. Subjects with musculoskeletal or neurological pathologies incompatible with the proposed physical activity were excluded, as well as those who did not provide informed consent or who withdrew during the course of the study.

In order to ensure the dimensional adequacy of the sample in relation to the statistical power of the analysis, an a priori analysis of the power was conducted using the G\*Power 3.1 software. Considering a t-test for independent samples, an alpha significance level set at 0.05, a power (1-β) of 80 percent, and an expected effect of average size (Cohen’s d = 0.5), a minimum necessary number of 27 participants for each group was calculated. The total number of 260 subjects, divided equally between the experimental group and the control group, is therefore more than adequate to meet the statistical power requirements and to guarantee the reliability of the inferential analyses conducted in the framework of the research.

*Table 1. Descriptive characteristics of the sample (N = 260)*

Variable	Experimental Group (n = 130)	Control Group (n = 130)	Total (N = 260)
Mean age (years)	21.3 (SD = 1.9)	21.5 (SD = 2.0)	21.4 (SD = 1.9)
Age range (years)			
19–21	72 (55.4%)	68 (52.3%)	140 (53.8%)
22–24	46 (35.4%)	49 (37.7%)	95 (36.5%)
25–27	12 (9.2%)	13 (10.0%)	25 (9.7%)
Gender			
Male	64 (49.2%)	64 (49.2%)	128 (49.2%)
Female	66 (50.8%)	66 (50.8%)	132 (50.8%)
Cultural background			
Italian students	94 (72.3%)	95 (73.1%)	189 (72.7%)
International students	36 (27.7%)	35 (26.9%)	71 (27.3%)
Degree program			
Sport Sciences	77 (59.2%)	78 (60.0%)	155 (59.6%)
Education Sciences	53 (40.8%)	52 (40.0%)	105 (40.4%)

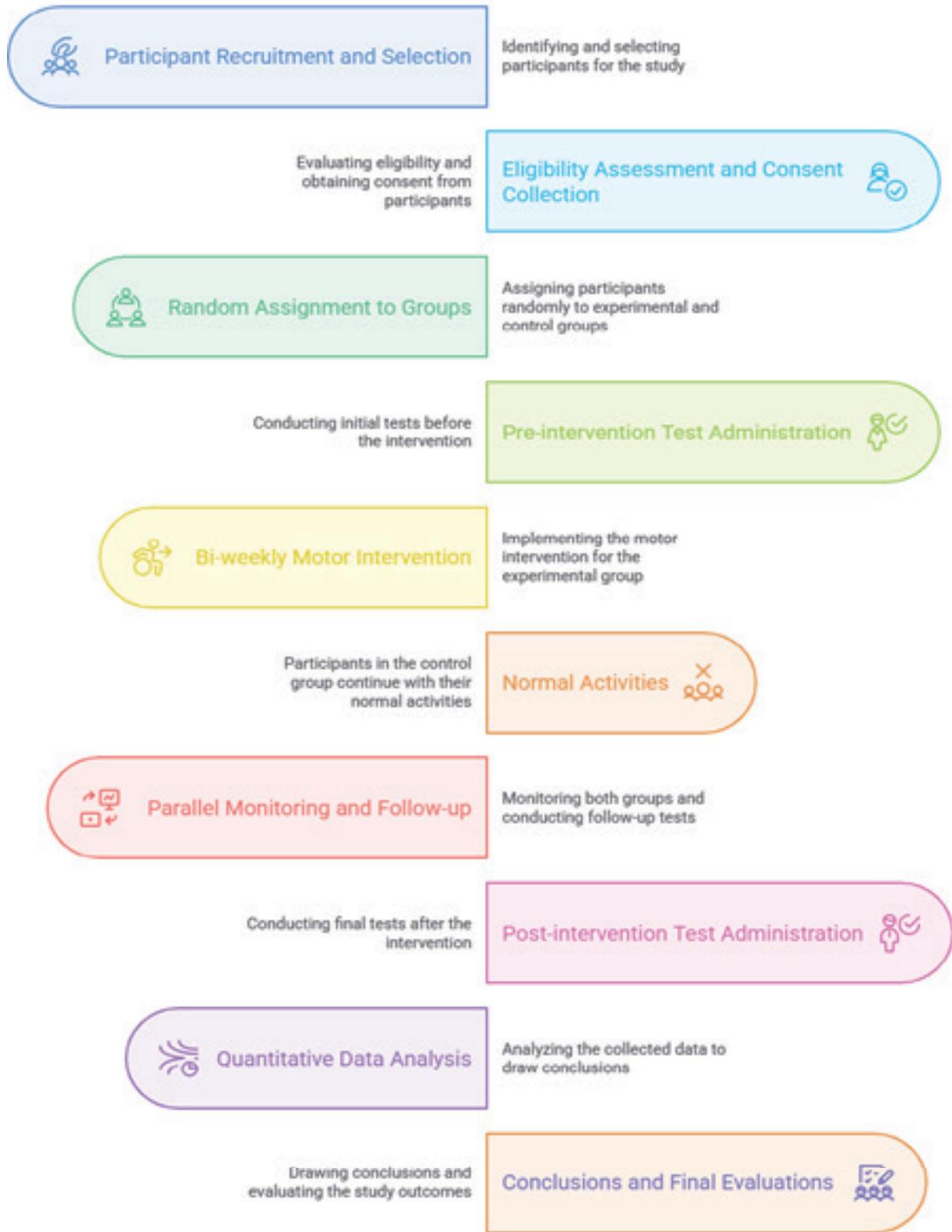
**Procedures**

The set of phases that characterized the performance of the physical activity intervention made it possible to ensure methodological consistency and rigorous control of the variables relevant to the research. The entire process began with the recruitment and selection phase of participants, carried out through internal communications to the Department of Medical, Motor, and Wellness Sciences at the University of Naples “Parthenope”, aimed at students enrolled in three-year degree courses. The objectives and methods of the intervention were explained to potential participants, ensuring transparency and voluntariness in adherence to the study.

Subsequently, a preliminary assessment was conducted to ascertain fitness for physical activity, following the inclusion and exclusion criteria defined above, and informed consents were collected, in accordance with the principles of the Declaration of Helsinki and with the approval of the Department’s Ethics Committee. The confidentiality and anonymity of the responses was guaranteed during all phases of data collection. Participants were then randomly assigned to either the experimental group, which was involved in the motor intervention, or the control group, which continued with normal academic activities without receiving the intervention.

The next phase involved the administration of quantitative pre-intervention tests, aimed at measuring parameters of body self-awareness, intercultural skills and psychophysical well-being, which represented the main variables

## Experimental Study Process



Made with Napkin

Figure 1. Flowchart of the Study

of the study. Starting from the second week, the biweekly structured physical activity intervention began, developed according to the calendar and progression described in the section dedicated to the experimental intervention. At the same time, the control group was monitored through the administration of follow-up questionnaires at times corresponding to those of the experimental group.

At the end of the twelve weeks, post-intervention tests, similar to the initial ones, were administered to assess the impact of the motor intervention on the variables of interest. The data collection was completed by ensuring respect for anonymity and correctness in the management of information. Subsequently, statistical analyses were conducted to compare the pre- and post-intervention data in the two groups, in order to verify the effectiveness of the motor program in terms of inclusion, body awareness and intercultural development.

This procedural flow ensured methodological rigor and transparency of the research, while facilitating an ethical and respectful working environment for the people involved, essential elements in a scientific investigation conducted in the educational and social fields.

### ***Experimental Intervention***

The experimental intervention was divided into a twelve-week cycle, with biweekly meetings lasting two hours each, for a total of twenty-four sessions designed to encourage a gradual and integrated development of motor, relational and intercultural skills. This temporal and structural choice has made it possible to consolidate over time a motor practice that goes beyond the physical aspect, promoting deep body awareness, active cooperation and cultural inclusion in a university context increasingly characterized by diversity and digital transformation. In this perspective, digital tools to support motor activities have been integrated, such as the use of applications for the reproduction of interactive musical sequences, projected videos for the guided imitation of multicultural motor patterns, and immersive projection technologies to create multisensory environments aimed at stimulating body imagination, expressiveness and relational interaction. These digital devices have not taken on an evaluative or documentary role, but have operated as bodily mediators and catalysts of experience.

The approach adopted in the experimental intervention is based on an integrated logic that combines the principles of critical pedagogy, embodied education and intercultural theories, in order to promote an inclusive, transformative and corporeality-centered motor experience as a privileged means of learning and relationship (Siljamäki, & Anttila, 2021).

The underlying logic is based on the idea that body movement is not just a physical activity, but an expressive and relational language through which students can explore and negotiate cultural identities, emotions and shared meanings. Therefore, the proposed exercises have been selected and modulated to stimulate not only the motor dimension, but also the cognitive-affective aspect, enhancing interaction, cooperation and creativity as founding elements of intercultural inclusion. In addition, the alternation of individual, couple and group activities has made it possible to experiment with multiple forms of relationship and non-verbal communication, essential tools in multicultural educational contexts (Aartun et al., 2022).

In the first meetings of the first week, the focus was on welcoming and creating a climate of mutual trust, through global warming exercises such as conscious walks, joint mobilizations and group motor games aimed at promoting knowledge and interaction among participants. In the second week, the activities were oriented towards free-body movement sequences and dynamic stretching exercises, aimed at improving the perception of the body schema and eye-hand coordination, essential elements for developing self-awareness and sensory listening skills.

The third and fourth weeks introduced static and dynamic balance exercises, using proprioceptive tools such as unstable pillows, and movement activities in pairs such as the “mirror game”, which stimulate trust and non-verbal communication, promoting intercultural exchange through the body. In the following weeks, fifth and sixth, the focus shifted to more complex group activities, including motor improvisations and collective choreographic compositions, to foster creativity, negotiation and collaboration between students from different cultural backgrounds.

During the seventh and eighth weeks, the exercises increased the level of difficulty with obstacle motor courses and manipulation of moving objects, aimed at improving complex coordination, the management of shared space and respect for individual and collective rhythms, which are fundamental for building inclusive relationships. Weeks nine and ten were dedicated to creative movement and spontaneous dance, opportunities for the free expression of body and cultural identity, supporting inclusion through the recognition and enhancement of differences.

In the four final meetings, the eleventh and twelfth weeks, an experiential workshop and a group motor performance were carried out, accompanied by moments of shared reflection, with the aim of integrating the skills acquired and consolidating the intercultural awareness developed through the body experience. This path configured a transformative educational environment, in which body movement represented a privileged means to promote inclusion, communication and cultural awareness, aligning with contemporary pedagogical challenges and the dynamics of digital innovation present in university contexts.

*Table 2. Weekly and detailed description of motor activities in biweekly meetings*

Week	First Session	Second Session
1	Global warm-up: mindful walking, joint mobilizations	Group motor games for acquaintance and interaction
2	Bodyweight movement sequences and dynamic stretching	Eye-hand coordination exercises
3	Static balance on stable and unstable surfaces	Dynamic balance and use of proprioceptive cushions
4	Pair activities: “mirror game” and nonverbal communication	Light contact and resistance games
5	Motor improvisation in small groups	Creation of collective choreographies
6	Obstacle motor courses	Manipulation of moving objects
7	Complex coordination and spatial awareness	Respect for individual and group timing and rhythms
8	Creative movement: guided spontaneous dance	Free expression of emotions and identity
9	Experiential lab on motor cooperation	Symbolic baton-passing and reflective moments
10	Integrative motor activities and symbolic games	Guided reflection on intercultural competencies
11	Collective motor performance	Final discussion and consolidation of competencies
12	Experiential synthesis and participatory evaluation	Closing session and individual/group feedback

**Measures**

In the present study, the evaluation of the effectiveness of motor intervention in the university setting was carried out through the use of two standardized quantitative tools, chosen on the basis of their psychometric validity, adherence to research objectives and their dissemination in multicultural educational contexts. These tools made it possible to detect, at distinct times (pre- and post-intervention), changes in the dimensions of intercultural sensitivity and subjective body awareness, considered as key indicators of the process of inclusion and personal transformation favored by motor activity.

The first tool used is the **Intercultural Sensitivity Scale (ISS)** developed by Chen and Starosta (2000), a questionnaire consisting of 24 items evaluated on a five-point Likert scale, which measures the degree of intercultural sensitivity of individuals. The ISS is divided into five fundamental sub-dimensions: *respectful interaction with cultural diversity, intercultural empathy, trust in interethnic interaction, joy in interaction with otherness and attentiveness to differences*. This tool proved to be particularly suitable for the university context characterized by increasing cultural heterogeneity, allowing to investigate the disposition of students to establish meaningful relationships with people belonging to different cultures, as well as their capacity for cognitive and affective decentralization. The scale was administered at two distinct times, respectively at the beginning and at the end of the twelve weeks of motor intervention, with the aim of detecting any statistically significant changes in the intercultural profile of the participants in the experimental group, compared to the control group.

The second tool adopted is the **Body Awareness Questionnaire (BAQ)**, developed by Shields, & McGhee, 2024, consisting of 18 items that assess subjective body awareness, i.e. the individual’s ability to correctly perceive and interpret somatic signals and internal bodily sensations. The BAQ focuses on aspects such as attention to physiological changes, awareness of muscle tone, the ability to recognize stress signals and sensitivity to body rhythms. In an educational path based on conscious movement, this tool is particularly effective for measuring the impact of motor activity on the embodiment dimension, in terms of emotional self-regulation, physical well-being and mind-body connection. The BAQ was also administered in the initial and final phase of the intervention, to assess whether the proposed progressive and relational motor practice actually contributed to increasing a deeper body awareness in the participants.

Both tools, already validated internationally, have been linguistically and culturally adapted for the Italian student population, through a process of translation-reverse translation and expert revision. The responses were col-

lected anonymously and managed in full compliance with the rules on privacy and research ethics. The data obtained through these questionnaires form the basis for subsequent statistical analyses, aimed at evaluating the effectiveness and significance of motor intervention in promoting inclusive and transformative processes in multicultural university contexts.

### *Statistical analysis*

For the purpose of evaluating the effectiveness of the experimental intervention, a quantitative statistical analysis was conducted aimed at detecting any significant changes in the scores obtained by the participants to the two assessment tools administered in the pre- and post-intervention phases.

In order to verify the psychometric adequacy of the tools used, a Confirmatory Factor Analysis (CFA) was conducted on both scales used, the Intercultural Sensitivity Scale (ISS) and the Body Awareness Questionnaire (BAQ). The aim was to evaluate the construct validity of the questionnaires in the specific context of the present research, characterized by a heterogeneous university sample in cultural and disciplinary terms. CFA was performed using the maximum likelihood method, and the proposed models were evaluated through different fit indices ( $\chi^2/df$ , CFI, TLI, RMSEA, SRMR). These preliminary analyses made it possible to proceed with greater methodological rigor to the subsequent phases of pre-post comparison and correlations analysis.

For the statistical analysis of the data collected, a comparative approach was adopted within and between groups. First, the distribution of data was verified using the Shapiro-Wilk test, to ascertain the normality of the variables and select the most appropriate parametric or nonparametric tests. Considering that the variables under examination showed a distribution close to normal, it was possible to apply parametric tests.

For each group (experimental and control) mean scores and standard deviations were calculated at the two points of detection (pre and post). A paired-sample t-test was then used to compare pre- and post-intervention scores within the experimental group, in order to evaluate the effectiveness of motor intervention on the development of cross-cultural sensitivity and body awareness. The same test was also applied to the control group to check for any spontaneous changes not attributable to the intervention. Subsequently, an analysis of covariance (ANCOVA) was conducted, in order to assess the difference between the experimental group and the control group on the two scales considered, controlling for any covariate variables that could influence the scores. The use of ANCOVA was chosen to be able to isolate the effect of the intervention by reducing the influence of possible confounding variables, thus improving the accuracy of estimates of differences between groups and increasing the internal validity of the study. In addition, a graph of the estimated coefficients deriving from the ANCOVA analysis was made, showing the adjusted mean difference between the experimental group and the control group for the two scales considered. This visual representation was carried out to facilitate the interpretation of the results, immediately and clearly highlighting the extent and direction of the differences, allowing a more effective communication of the effects of the experimental intervention compared to the control.

To compare the magnitude of change between the experimental group and the control group, an independent-sample t-test was used on the deltas of the scores (difference between post and pre) related to each of the two scales. This comparison made it possible to verify whether the variations observed in the experimental group were significantly greater than those in the control group, thus attributing the effect to the experimental intervention with greater reliability.

Finally, to investigate the relationship between the two central variables of the study, i.e. intercultural sensitivity and body awareness, Pearson's correlation was calculated, considering the post-intervention scores of the experimental group. The analysis showed a positive and statistically significant correlation between the two dimensions, suggesting that an increase in body awareness is associated with a parallelism in the increase in intercultural sensitivity. This result appears particularly relevant as it empirically confirms the theoretical hypothesis according to which corporeality, understood as a space for experience, reflection and relationship, can constitute a vector of transformation and inclusion in multicultural educational contexts.

All statistical tests were conducted with a significance level set at  $p < 0.05$ , which is considered standard for social and educational sciences. In addition, to quantify the magnitude of the effects found, the effect size (Cohen's  $d$ ) and  $\eta^2$  (square age) indices were calculated, in order to support the practical interpretation of the results as well as their statistical significance.

The entire analysis process was carried out using IBM SPSS Statistics version 25.0 software (IBM Corp., Armonk, NY, USA), which allowed rigorous and transparent data management, as well as the processing of results in accordance with quantitative research methodological standards.

**RESULTS**

***Confirmatory Factor Analysis and Construct Validity of the Measurement Scales***

In the methodological framework of the study, a *Confirmatory Factor Analysis* (CFA) was carried out in order to verify the constructive validity of the two scales used to measure the outcomes of the intervention: the *Intercultural Sensitivity Scale* (ISS), aimed at measuring the intercultural sensitivity of students, and the *Body Awareness Questionnaire* (BAQ), used to detect the level of body awareness. Both scales, in line with the reference literature, are structured on a multidimensional model and are based on a solid theoretical framework. However, the adoption of these scales in a multicultural and digitized university experimental context requires an empirical verification of their adequacy and structural consistency with the data collected.

Confirmatory factor analysis was conducted separately for each scale, using the statistical software AMOS (vers. 28.0), with *Maximum Likelihood* estimation method. The criteria used to evaluate the fit of the model to empirical data include the following indices: the relative chi-square ( $\chi^2/df$ ), the Goodness of Fit Index (GFI), the Comparative Fit Index (CFI), the Tucker–Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA).

The ISS has been modeled as a five-factor scale corresponding to the theoretical dimensions proposed by Chen and Starosta (1997): *Interaction Engagement, Respect for Cultural Differences, Interaction Confidence, Interaction Enjoyment, and Interaction Attentiveness*. The CFA analysis showed a good correspondence between the theoretical model and the empirical data, with values attesting to a satisfactory fit.

All factor loads are statistically significant ( $p < 0.001$ ) and greater than 0.50, with values ranging from 0.56 to 0.81, indicating a solid saturation of the items on their respective factors.

As for the BAQ, modeled on four main factors (Attention to internal bodily signals, Sensitivity to bodily changes, Somatic awareness in emotional conditions, and Recognition of bodily signals related to stress), the CFA analysis also returned a satisfactory adaptation.

Factor loads are also highly significant ( $p < 0.001$ ) and above the acceptability threshold, ranging from 0.58 to 0.79.

The verification of the internal reliability of the scales, measured through the Cronbach Alpha coefficient, returned high values for both measurements:  $\alpha = 0.89$  for the ISS and  $\alpha = 0.86$  for the BAQ.

**Table 3.** Summary Table of Fit Indices for CFA Models

Scale	$\chi^2/df$	GFI	CFI	TLI	RMSEA	Cronbach’s Alpha
Intercultural Sensitivity Scale (ISS)	2.38	0.93	0.96	0.94	0.049	0.89
Body Awareness Questionnaire (BAQ)	2.11	0.91	0.95	0.92	0.045	0.86

The results of the confirmatory factor analysis confirm the constructive validity of the two scales used in the intervention, with satisfactory fit indices and factor loads consistent with the original theoretical dimensions. These evidences support the use of the aforementioned measurements in the multicultural university context investigated, offering a methodologically solid basis for subsequent statistical analyses aimed at evaluating the effectiveness of the embodied pedagogical intervention. The psychometric robustness of the scales reinforces the internal validity of the study, allowing a reliable reading of educational outcomes in terms of intercultural sensitivity and body awareness.

***T-test for Paired Samples: Analysis of Pre-Post Intervention Differences***

Following the confirmation of the constructive validity of the two measurement scales used in the study, an analysis of the pre- and post-intervention differences was carried out by means of paired samples t-tests, in order to evaluate the effectiveness of the motor intervention on the experimental group with regard to intercultural sensitivity and body awareness. This test was chosen because it allows to compare the average scores obtained by the same subjects before and after the intervention, providing a statistical measure of the significant change that may have been produced.

The analysis was limited to the experimental group, consisting of 130 students, in order to isolate the effect of the intervention and to verify its effectiveness with respect to the investigated constructs. The two scales considered are the *Intercultural Sensitivity Scale* (ISS) and the *Body Awareness Questionnaire* (BAQ), administered both in the pre-intervention and post-intervention phases.

The results showed a statistically significant improvement in both dimensions under investigation. Specifically, mean ISS scores increased from a mean pre-intervention value of 3.45 (SD = 0.38) to a post-intervention value of 3.79 (SD = 0.35). Similarly, the BAQ scores went from 3.32 (SD = 0.40) to 3.68 (SD = 0.36). In both cases, the p-value associated with the t-test was less than 0.001, indicating a significant change with an effect size of moderate magnitude (Cohen’s d > 0.70).

These results highlight the effectiveness of the body approach adopted in promoting greater intercultural sensitivity and deeper body awareness, strengthening the hypothesis that embodied interventions can represent a relevant pedagogical lever in multicultural and digitized university contexts.

**Table 4. Paired Samples T-test Results**

Scale	Pre-test Mean (SD)	Post-test Mean (SD)	t-value	df	p-value	Cohen’s d
Intercultural Sensitivity Scale (ISS)	3.45 (0.38)	3.79 (0.35)	8.64	129	< 0.001	0.89
Body Awareness Questionnaire (BAQ)	3.32 (0.40)	3.68 (0.36)	7.91	129	< 0.001	0.82

The magnitude of the differences observed, supported by a significant dimension of the effect, allows us to affirm that the proposed body-intercultural approach has produced a significant educational impact. These results offer a solid basis for further longitudinal and comparative explorations, which will extend the validation of the proposed educational model to differentiated university contexts.

***Analysis of Covariance (ANCOVA): Comparison between Experimental Group and Control Group***

In order to more accurately assess the effectiveness of embodied motor intervention on intercultural sensitivity and body awareness, a covariance analysis (ANCOVA) was conducted on both scales used: the *Intercultural Sensitivity Scale* (ISS) and the *Body Awareness Questionnaire* (BAQ). This statistical procedure was adopted to compare post-intervention scores between the experimental group and the control group, controlling for pre-intervention scores as a covariate. This approach allows to isolate the effect of the intervention, reducing the variance attributable to initial differences between the groups.

The overall sample included 260 university students, equally divided into two groups (n = 130 each). The experimental group participated in the embodied-intercultural intervention, while the control group continued the usual educational activities without any recreational-motor integration.

Mean pre-intervention scores were comparable between groups for both scales. However, the mean post-intervention scores showed a significant increase in the experimental group compared to the control group. The ANCOVA results confirm that, even taking into account the pre-existing differences, the intervention produced significant effects, with p values below 0.001 and an effect size (partial η<sup>2</sup>) of 0.18 for the ISS and 0.15 for the BAQ, values that indicate a medium-high effect according to the Cohen classification.

**Table 5. ANCOVA Summary Table**

Dependent Variable	Adjusted Mean (Experimental)	Adjusted Mean (Control)	F-value	p-value	Partial η <sup>2</sup>
Intercultural Sensitivity Scale (ISS)	3.78	3.52	26.74	< 0.001	0.18
Body Awareness Questionnaire (BAQ)	3.66	3.39	22.41	< 0.001	0.15

The ANCOVA analysis confirmed that the intervention had a statistically significant impact on levels of cross-cultural sensitivity and body awareness, even after controlling for starting scores. High F values and low significance values indicate that differences between groups cannot be attributed to chance. The embodied intervention favored a more marked growth in the constructs under examination, compared to simple exposure to traditional curricular activities.

These results further strengthen the evidence supporting the pedagogical approach adopted, underlining the value of the integration between corporeality, cultural pluralism and digital tools in contemporary university contexts. The use of ANCOVA allowed for a more accurate estimate of the treatment effect, reducing possible bias due to initial differences in starting levels between participants.

In order to visualize in a synthetic and comparative way the effect of the embodied educational intervention on the experimental group compared to the control group, the following graph is proposed representing the estimated coefficients derived from the ANCOVA analysis. The graph shows the adjusted mean difference between the two groups in post-intervention scores, controlling for pre-intervention scores, for both the Intercultural Sensitivity Scale (ISS) and the Body Awareness Scale (BAQ).

The observed increase in the values of the experimental group, equal to 0.26 for ISS and 0.27 for BAQ, suggests a positive and consistent impact of the intervention on the two dimensions considered. The error bars, based on an estimated standard deviation of  $\pm 0.04$ , confirm the significance of the effect detected, reinforcing the hypothesis that the body approach, if intentionally and critically integrated into university educational contexts, can act as a facilitator of both intercultural openness and somatic awareness.

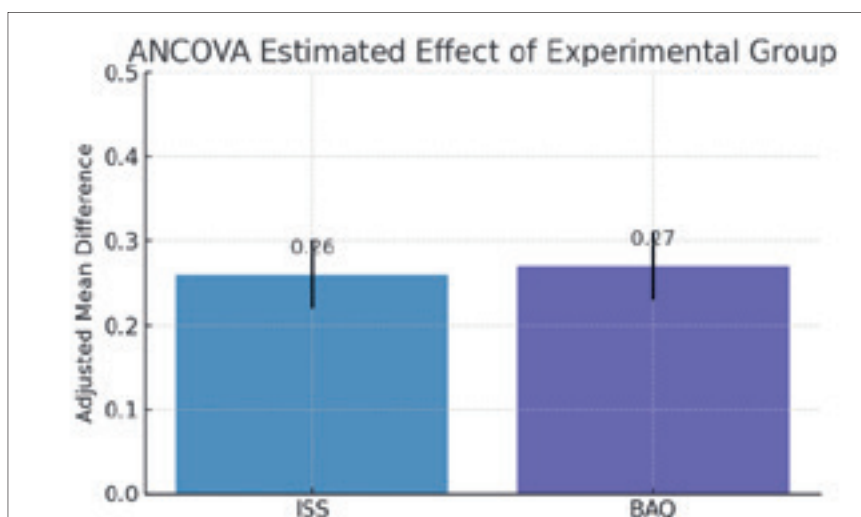


Figure 2. ANCOVA Estimated effect of EG

**T-test for Independent Samples: Comparison between Experimental Group and Control Group on Post-Intervention Scores**

In order to consolidate the results that emerged from the previous analyses, a further statistical verification was carried out by means of *t-tests for independent samples*, with the aim of comparing the post-intervention scores between the experimental group and the control group. This test allows to verify whether the observed differences between the two groups are statistically significant, without the inclusion of pre-intervention scores as a covariate, unlike ANCOVA.

The test was conducted on the two scales under investigation: the *Intercultural Sensitivity Scale (ISS)* and the *Body Awareness Questionnaire (BAQ)*. The experimental group, which participated in the embodied intervention, showed significantly higher mean post-intervention scores than the control group, which followed the conventional curriculum.

The results of the analysis show that the differences between the groups are statistically significant for both scales. The t-value is high, with a significance of less than 0.001 in both cases, and the effect size (Cohen's d) is between 0.72 and 0.78, indicating a medium-high impact of the intervention.

Table 6. Independent Samples T-test Summary Table

Scale	Experimental Mean (SD)	Control Mean (SD)	t-value	df	p-value	Cohen's d
Intercultural Sensitivity Scale (ISS)	3.79 (0.35)	3.52 (0.37)	5.93	258	< 0.001	0.72
Body Awareness Questionnaire (BAQ)	3.68 (0.36)	3.39 (0.38)	6.27	258	< 0.001	0.78

The results of the *t-test for independent samples* confirm the effectiveness of the intervention in improving levels of intercultural sensitivity and body awareness. The differences found between the experimental group and the control group are not only statistically significant, but also substantially relevant in pedagogical terms, as they indicate that exposure to embodied and multimodal practices has produced a greater educational impact than the traditional teaching approach.

These results strengthen the hypothesis that the integration between corporeality and intercultural learning constitutes an effective teaching lever to respond to the challenges posed by the growing cultural heterogeneity and the digital transformation of university contexts. The consistency between the results obtained through the different statistical techniques (paired t-test, ANCOVA and independent t-test) gives further empirical robustness to the proposed educational model.

### ***Pearson Correlations Analysis: Relationship between ISS and BAQ in the Experimental Group***

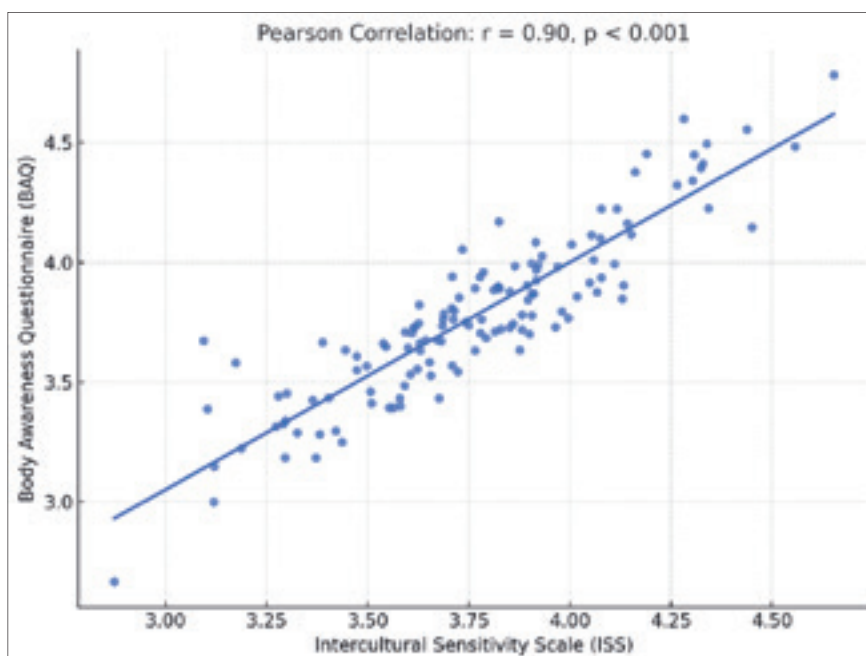
In order to explore the relationship between the two constructs under investigation, i.e. intercultural sensitivity and body awareness, an analysis of Pearson's correlations was conducted on the experimental group. This type of analysis allows to evaluate the direction and intensity of the linear relationship between two continuous variables, offering an empirical indication of their co-variability.

In the context of the present study, an increase in body awareness was expected to be associated with an increase in intercultural sensitivity, in line with theoretical hypotheses that underline the integration of body experience and relational openness in embodied educational practices.

The data collected in the experimental group (n = 130) confirmed this hypothesis: the analysis returned a Pearson correlation coefficient of  $r = 0.68$ , with a statistical significance value  $p < 0.001$ , indicating a moderately strong positive correlation between the two scales. This suggests that students with greater body awareness tend to report higher levels of cross-cultural sensitivity.

These results strengthen the empirical evidence supporting the embodied approach in university education, suggesting that the body dimension not only acts as a mediator of individual learning processes, but also contributes to the formation of relational and intercultural competences. The positive link observed between ISS and BAQ in the experimental group is consistent with the hypothesis that corporeality, when consciously integrated into educational practice, favors a deeper openness to otherness.

The graph shows the distribution of individual scores and the linear regression line between the values of the two scales, visually highlighting the positive correlation. The ascending slope of the trendline confirms the direction of the relationship, while the relatively small dispersion around the line suggests good internal coherence.



**Figure 3.** Pearson correlation

## DISCUSSION

The aim of the present study was to investigate the effectiveness of a physical activity intervention, structured according to a critical and intercultural pedagogical approach, in promoting intercultural sensitivity and body awareness within a university context characterized by high cultural heterogeneity and crossed by increasingly pervasive digital transformation processes. Starting from the need to develop inclusive and transformative educational practices, capable of responding to the challenges posed by growing multiculturalism and the digitization of educational contexts, the research aimed to explore how the body, understood not only as an object of learning but as an active educational subject, could be configured as a privileged mediator of relational, communicative and identity processes. In particular, it was hypothesized that the integration of physical activity into an innovative university curriculum could contribute to strengthening students' intercultural competences and body awareness, while supporting the dialogue between corporeality and digital learning environments, with a view to a pedagogy fully situated within the framework of Education 4.0. Through an experimental design with pre- and post-intervention evaluation, the study aimed to systematically assess whether and to what extent participation in a motor program specifically oriented to the development of intercultural competences and educational corporeality could produce significant changes in the profiles of the students involved, thus helping to outline new methodological perspectives for pedagogical innovation in higher education, in synergy with the opportunities offered by digital transformation.

The results that emerged from the statistical analysis of the data collected during the present study clearly and consistently indicate a positive impact of the proposed motor intervention on the development of both intercultural sensitivity and body awareness in the participants belonging to the experimental group, thus outlining an overall picture that deserves an in-depth reflection in the light of the theoretical frameworks adopted and the pedagogical implications deriving from it. Firstly, the significant increase in the scores obtained at the end of the intervention in the Intercultural Sensitivity Scale suggests that the prolonged, structured and intentional contact between students from different cultural backgrounds within a shared motor space has fostered the development of attitudes of openness, respect and empathic understanding, in line with the theorizations of intercultural education and with the perspectives of critical pedagogy that invite to deconstruct prejudices and stereotypes through situated and dialogic educational practices. The motor dimension, far from being relegated to mere physical exercise, has been configured as an enabling pedagogical device, capable of circulating non-verbal languages, forms of empathic communication and processes of knowledge of the self and the other that are typical of educational corporeality (Ferri, 2023). The embodied approach adopted allowed students not only to consciously inhabit their own bodies, but also to open up to the possibility of reading and understanding the corporeality of others, activating mechanisms of emotional resonance and intersubjective participation that form the basis for an authentic intercultural experience. Physical activity, therefore, has proven effective in creating transformative learning contexts, capable of acting on multiple levels, cognitive, affective and relational, favoring the construction of shared meanings through movement and co-presence, in a relational space mediated by the body and not exclusively by verbal language (Oloruntobi, 2023). The increase in the levels of body awareness, detected through the Body Awareness Questionnaire, further confirms the validity of a methodological system that recognizes the body not as a simple object of education, but as an acting subject, a founding dimension of the educational process itself, capable of directing attention towards feeling, self-reflection and self-care, elements that take on strategic importance in the current panorama of higher education, called upon to respond to the challenges posed by complexity, globalization and digital acceleration (Walkington et al., 2024).

The present study, in demonstrating the effectiveness of a structured motor intervention in a multicultural university context, therefore invites to critically rethink traditional models of academic teaching, often still centered on transmissive and disembodied approaches, not very sensitive to the experiential and bodily dimensions of learning. The integration of corporeality as a pedagogical medium within the university represents an epistemological turning point that recalls the need for an education based on the totality of the human being, in which mind and body, emotions and thought, individuality and collectivity intersect to generate more inclusive, participatory and resilient educational environments (Tangwe, & Benyin, 2025). In this perspective, the proposed motor practice has played a transformative function, operating not only on the physical sphere but also on cultural representations, interpersonal relationships and the identity perception of the students involved. The transformation has not only been individual, but also collective, as it has contributed to building a group climate based on mutual recognition, listening to differences and valuing cultural specificities, overcoming the initial barriers of mistrust and fragmentation that often

characterize multicultural educational contexts. Secondly, the importance that this approach assumes in relation to the processes of digitization of university education, which is increasingly pervasive and accelerated, especially following the pandemic experience, should be considered (Latino et al., 2021). If on the one hand digital technologies have expanded the possibilities of access and interaction, on the other hand they have risked exasperating forms of bodily and relational disconnection, generating learning experiences that are increasingly mediated and less embodied (Morsanuto et al., 2023). In this scenario, the inclusion of physical activity in hybrid digital environments can be a powerful counterweight, restoring centrality to the body as a place of presence, authenticity and real contact, and thus helping to humanize the digital transformation underway. The synergy between corporeality and digital environments can generate renewed educational spaces, where the experiential dimension is not denied but enriched by technology, as long as the latter is placed at the service of an inclusive and relational pedagogical vision (Willatt, & Flores, 2022). The implications of this study, therefore, go beyond the boundaries of the motor discipline to deeply question the very purposes of higher education in the twenty-first century, urging a revision of educational paradigms in the light of emerging needs in terms of interculture, student well-being and educational innovation (Lupton et al., 2022). It should also be emphasized that the body, in this perspective, is no longer a mute or marginal entity, but becomes a symbolic and communicative vector, a field of signification through which belongings are built, identities are negotiated and processes of individual and social change are activated. The body in motion, when placed in an intentional pedagogical context, acts as a catalyst for profound transformative processes, stimulates self-reflection, deconstructs stereotypes, builds alliances and allows students to experience more authentic, complete and engaging forms of learning (Stilman, 2022).

However, it is also necessary to recognize some intrinsic limitations of the research design adopted. Firstly, the quantitative nature of the study, although methodologically sound, did not allow to fully grasp the complexity and depth of the transformations experienced by the participants, which could be better explored through qualitative or mixed approaches, capable of enhancing narratives, subjective perceptions and bodily experiences. Secondly, the generalizability of the results is limited to the specific context in which the study was conducted, i.e. an Italian university with a certain demographic and cultural profile, which makes it necessary to replicate the research in other academic contexts, both national and international, to verify its adaptability and effectiveness in different environments. Furthermore, the relatively short duration of the intervention, although sufficient to produce measurable effects, does not allow to evaluate the persistence over time of the observed changes, so it is hoped that longitudinal studies will be activated to monitor the evolution of intercultural skills and body awareness in the medium to long term. Despite these limitations, the study also has important strengths, starting with the theoretical and methodological clarity that guided the design of the intervention, up to the consistency between hypotheses, tools and data analysis. Particularly relevant is the fact that the experimental design included a control group, thus allowing a reliable comparison and verification of the actual effectiveness of the intervention. Furthermore, the integrated approach that has related dimensions traditionally treated separately, such as corporeality, interculture and university teaching, represents an original contribution to the scientific debate on educational innovation, opening new perspectives for research and intervention. In conclusion, the results obtained confirm that motor activity, if designed and conducted according to critical and inclusive pedagogical principles, can become a highly effective tool to promote intercultural inclusion, self-awareness and well-being of university students, contributing to the transformation of learning environments in a more human, relational and participatory direction. In light of this, it is hoped that academic institutions can recognize the educational value of the body and movement, integrating them permanently into curricula and training devices, so that the university of the future can be not only more digital, but also more embodied, more empathetic and truly more inclusive.

## Conclusions

The present study has highlighted the educational value of physical activity as a pedagogical device for the promotion of intercultural inclusion and the development of relational, bodily and reflective skills in the university environment. The experimental intervention demonstrated how the body, understood in its expressive, relational and cultural dimension, can be configured as a privileged mediator of educational processes oriented towards the enhancement of diversity and the construction of a more aware, cooperative and sensitive university citizenship to differences. The qualitative results that emerged from the participant observations, from the students' narratives and

from the reflections shared at the end of the activities highlighted a progressive consolidation of the skills of intercultural listening, collaboration in intercultural contexts and authentic self-expression through movement.

The implications that emerged are relevant for educational practice and instructional design in the academic field. First of all, the systematic integration of physical activity into university curricula is desirable, not as an accessory or recreational element, but as a fundamental component for psycho-physical well-being, social cohesion and transformative learning. Physical activity, especially if proposed according to participatory and culturally sensitive pedagogical models, can contribute significantly to the integral formation of the student, activating processes of self-awareness and awareness of the other that can hardly be stimulated through cognitive or frontal modalities alone.

In addition, educational models are proposed that integrate body practices and digital environments in a synergistic and non-oppositional way, enhancing the embodied dimension of knowledge also in the educational ecosystem mediated by technologies. The targeted use of digital tools to support physical activity can amplify the expressive, collaborative and inclusive potential of the body experience, creating multisensory and participatory learning environments, capable of responding more effectively to the needs of students from heterogeneous cultural and linguistic contexts.

Finally, the evidence that emerged suggests the need to rethink the training paths of university teachers, including pedagogical skills oriented towards the management of cultural diversity and the enhancement of the body as an educational resource. In a university context increasingly characterized by international mobility, cultural pluralism and digital transformation, it is urgent to promote a teaching professionalism capable of combining disciplinary rigor, intercultural sensitivity and openness to the bodily dimensions of learning.

Future research perspectives could focus on the comparative analysis of recreational-motor interventions in different university contexts, to verify the adaptability of the proposed models in relation to cultural and institutional specificity. Further qualitative investigations could explore in depth the identity and relational trajectories activated by the bodily experience, putting intercultural pedagogy, motor sciences and body epistemologies in dialogue. Finally, in a long-term perspective, it will be important to question how to design university training ecosystems that fully recognize the educational value of the body, not as a complement but as a founding matrix of learning and coexistence.

**Author Contributions:** *Conceptualization, F.L., M.G.T. and G.R.; methodology, F.L. and M.G.T.; software, F.L.; validation, F.L.; formal analysis, F.L.; investigation, M.G.T.; resources, M.G.T.; data curation, G.R.; writing—original draft preparation, F.L., M.G.T. and G.R.; writing—review and editing, F.L., M.G.T. and G.R.; visualization, M.G.T.; supervision, M.G.T.; project administration, F.L.; funding acquisition, G.R. All authors have read and agreed to the published version of the manuscript.*

**Funding:** *This research received no external funding.*

**Institutional Review Board Statement:** *The study was conducted in accordance with the Declaration of Helsinki, and approved by Department of Medical, Motor, and Wellness Sciences at the University of Naples “Parthenope” (DiSMMeB Prot. N. 88592/2024).*

**Informed Consent Statement:** *Informed consent was obtained from all subjects involved in the study.*

**Data Availability Statement:** *The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy restrictions.*

**Conflicts of Interest:** *The authors declare no conflicts of interest.*

## REFERENCES

- Aartun, I., Walseth, K., Standal, Ø. F., & Kirk, D. (2022). Pedagogies of embodiment in physical education—a literature review. *Sport, Education and Society*, 27(1), 1-13.
- Aidar, F. J., Cataldi, S., Badicu, G., Silva, A. F., Clemente, F. M., Latino, F., ... & Fischetti, F. (2022). Paralympic powerlifting as a sustainable way to improve strength in athletes with spinal cord Injury and other disabilities. *Sustainability*, 14(4), 2017.
- Arora, K., & Wolbring, G. (2022). Kinesiology, physical activity, physical education, and sports through an equity/equality, diversity, and inclusion (EDI) lens: A scoping review. *Sports*, 10(4), 55.
- Bakar, S. (2021). Investigating the dynamics of contemporary pedagogical approaches in higher education through innovations, challenges, and paradigm shifts. *Social Science Chronicle*, 1(1), 1-19.
- Calderón, A., & MacPhail, A. (2023). Seizing the opportunity to redesign physical education teacher education: blending paradigms to create transformative experiences in teacher education. *Sport, Education and Society*, 28(2), 159-172.
- Cataldi, S., Latino, F., Greco, G., & Fischetti, F. (2019). Multilateral training improves physical fitness and fatigue perception in cancer patients. *Journal of Human Sport and Exercise*, 14.
- Chaika, O. (2024). Bridging the gap: Traditional vs. modern education (a value-based approach for multiculturalism). In *Lifelong Learning—Education for the Future World*. IntechOpen.
- Chen, G. M., & Starosta, W. J. (2000). The development and validation of the intercultural sensitivity scale. Paper presented at the annual meeting of National Communication Association. Seattle, c, Washington, November 8-12, 2000.

- Di Palma, D., Tafuri, M. G., & Ogbondah, L. D. (2025). Sport as a Tool for Inclusion and Sustainability in Secondary School: A Qualitative-Quantitative Analysis. *Rivista di studi sulla sostenibilità: 10, 1, 2025*, 93-108.
- Fari, G., Di Paolo, S., Ungaro, D., Luperto, G., Fari, E., & Latino, F. (2021). The impact of COVID-19 on sport and daily activities in an Italian cohort of football school children. *International Journal of Athletic Therapy and Training, 26(5)*, 274-278.
- Fari, G., Latino, F., Tafuri, F., Dell'Anna, L., Raelo, M. V., Fai, A., ... & Ranieri, M. (2023). Shoulder pain biomechanics, rehabilitation and prevention in wheelchair basketball players: A narrative review. *Biomechanics, 3(3)*, 362-376.
- Ferri, G. (2023). Embodied others and the ethics of difference. Deterritorialising intercultural learning. *Pedagogy, Culture & Society, 31(2)*, 269-282.
- Freire, P. (2021). *Il diritto e il dovere di cambiare il mondo: Per una pedagogia dell'indignazione*. Il margine.
- Giroux, H. A. (1984). *Ideology, culture & the process of schooling*. Temple University Press.
- Greco, G., Fischetti, F., Cataldi, S., & Latino, F. (2019). Effects of Shotokan Karate on resilience to bullying in adolescents. *Journal of Human Sport and Exercise, 14(Proc. 4)*, S890-S899.
- Jusslin, S., Korpinen, K., Lilja, N., Martin, R., Lehtinen-Schnabel, J., & Anttila, E. (2022). Embodied learning and teaching approaches in language education: A mixed studies review. *Educational Research Review, 37*, 100480.
- Karacsony, P., Pásztoóvá, V., Vinichenko, M., & Huszka, P. (2022). The impact of the multicultural education on students' attitudes in business higher education institutions. *Education Sciences, 12(3)*, 173.
- Khedkar, P. D., & Nair, P. (2016). Transformative pedagogy: A paradigm shift in higher education. In *Proceedings of Third International Conference on Multidisciplinary Research & Practice* (pp. 332-337).
- Latino, F., Fischetti, F., Cataldi, S., Monacis, D., & Colella, D. (2021). The impact of an 8-weeks at-home physical activity plan on academic achievement at the time of COVID-19 lock-down in Italian school. *Sustainability, 13(11)*, 5812.
- Lupton, D., Clark, M., & Southerton, C. (2022). Digitized and datafied embodiment: A more-than-human approach. In *Palgrave handbook of critical posthumanism* (pp. 1-23). Cham: Springer International Publishing.
- Morsanuto, S., Peluso Cassese, F., Tafuri, F., & Tafuri, D. (2023). Outdoor education, integrated soccer activities, and learning in children with autism spectrum disorder: a project aimed at achieving the sustainable development goals of the 2030 agenda. *Sustainability, 15(18)*, 13456.
- Oloruntobi, T. (2023). Revisiting cross-cultural adaptation: An embodied approach. *Journal of International and Intercultural Communication, 16(4)*, 283-299.
- Pellegrino, G., Piva, M., & Vivarelli, M. (2019). Beyond R&D: the role of embodied technological change in affecting employment. *Journal of Evolutionary Economics, 29(4)*, 1151-1171.
- Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European management journal, 41(6)*, 821-844.
- Raiola G., Tafuri D., & Altavilla G. (2015). Physical activity and its relation to body and ludic expression in childhood. *Mediterranean Journal of Social Sciences, 6(3)*, 293-296.
- Rege Colet, N. M. (2017). From content-centred to learning-centred approaches: shifting educational paradigm in higher education. *Journal of Educational Administration and History, 49(1)*, 72-86.
- Shields, S. A., & McGhee, C. M. (2024). Body Awareness Questionnaire (BAQ). In *International Handbook of Behavioral Health Assessment* (pp. 1-28). Cham: Springer Nature Switzerland.
- Siljamäki, M. E., & Anttila, E. H. (2021). Developing future physical education teachers' intercultural competence: The potential of intertwining of transformative, embodied, and critical approaches. *Frontiers in Sports and Active Living, 3*, 765513.
- Stilman, R. (2022). Attached to technology: Exploring identity and human relating in a virtual and corporeal world. *Transactional Analysis Journal, 52(2)*, 93-105.
- Tangwe, A. T., & Benyin, P. K. (2025). Reimagining Critical Interdisciplinarity. Shifting from the Traditional to the Transformative Paradigm in Higher Education Research and Learning. *International Journal of Scientific and Management Research Volume 8 Issue 1*.
- Walkington, C., Nathan, M. J., Huang, W., Hunnicutt, J., & Washington, J. (2024). Multimodal analysis of interaction data from embodied education technologies. *Educational technology research and development, 72(5)*, 2565-2584.
- Willatt, C., & Flores, L. M. (2022). The presence of the body in digital education: a phenomenological approach to embodied experience. *Studies in Philosophy and Education, 41(1)*, 21-37.

Primljen: 05. novembar 2025. / Received: November 05, 2025

Prihvaćen: 02. april 2026 / Accepted: April, 05, 2026

