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Service-learning as a pathway to sustainable social development: Social inclusion perceptions of international physical education students

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Abstract: Contemporary academic curricula for physical education teacher education (PETE) increasingly recognize the importance of social responsibility in higher education and its contribution to sustainable social development. In this context, service-learning (SL) is an approach that connects academic learning with community needs, fosters social inclusion, and supports the development of more inclusive and sustainable social environments. The objectives of this study were: (1) to examine whether SL activities help improve the perception of social inclusion among international PETE students, and (2) to determine whether their prior motor experience influences their participation in and experience of SL activities. The quasi-experiment pilot study with self-selected groups analysed the differences between the control group ($N = 25$) and the experimental group ($N = 19$), which actively participated in SL activities. The PRISMA model was used in a systematic literature review to identify current research trends related to social inclusion in the academic environment. A questionnaire with ten categories defining social inclusion and semi-structured interviews was used to determine students' previous dominant motor skills. According to the independent t -test, students with SL experience showed a statistically significant difference from those who did not participate in SL in the subscales of accommodation quality (Cohen's $d = 0.854$) and facilities (Cohen's $d = 0.819$) of the Social Inclusion Scale, while the other scales did not show statistical significance. In addition, the difference between students with competitive or recreational sport as their previous dominant motor skills was only statistically significant in the subscale of accessibility. It can be concluded that SL, as an academic educational tool and curricular activity, is associated with social inclusion of international PETE students, specifically contributing to their perception of student facilities and accommodation. International PETE students with previous competitive sports experience appear to have higher accessibility values, particularly in terms of mobility and resourcefulness on campus. The results indicate that SL, in addition to its educational function, is a potential tool for developing sustainable social inclusion of international students and strengthening the connection between higher education and the community.

Keywords: service-learning; sustainable social development; social inclusion; community engagement; sustainable development goals (SDGs); education

1. Introduction

With the growth of globalisation and increasing mobility in higher education, the proportion of foreign students at domestic universities is continuously rising. Their successful integration into foreign universities has become one of the key prerequisites for successful studies. One tool that can promote the social inclusion of international students is service-learning (SL). This pedagogical approach is an effective method which, in addition to fostering academic and personal integration

[1,2], contributes to the development of various competencies such as critical thinking [3], teamwork [4], and empathetic and effective communication skills [5]. It is a method that helps students learn to think unconventionally [6]. By incorporating SL into teaching, it is possible to bring foreign students closer to the local community and connect them with the local population, thereby reducing their social exclusion. Through active participation in the community, students apply their acquired knowledge in real-world contexts while contributing to the resolution of local and broader social challenges. In this way, service-learning goes beyond traditional educational frameworks and becomes an important mechanism for fostering sustainable social development. It becomes a tool that contributes to sustainable social development. Implementing SL in teaching can provide benefits not only at the individual level but also globally. In the fields of physical activity and sport, the inclusion of SL in academic curricula can be linked to several Sustainable Development Goals (SDGs) [7], including good health and well-being, and economic growth. The process of choosing a faculty is a multidimensional and long-term cognitive-emotional process that involves the interaction of a wide range of factors. According to Mihai-Florin et al. [8], it is a complex process involving high-involvement decisions because the student's choice will reflect on their self-image and may have long-term consequences. The cost of making such a decision often involves major personal or economic sacrifices; the perceived personal and social risk of making a "wrong" decision is high, and there is considerable reference-group pressure to choose a particular option. As Rienties et al. [9] note, it is commonly believed in the educational scientific community that international students often experience insufficient adaptation to the higher-education system in the host country, both academically and socially. Numerous studies indicate that certain groups of international students experience significant stress during the process of acculturation and integration into the institutional culture of the host university. Although the challenges which students face have been substantially documented, a growing number of authors emphasize the need to deepen the research focus. According to their claims, the studies on the adaptation of international students should not only describe the phenomenon of "misfit" but also investigate the underlying psychological, sociocultural, and organisational mechanisms that lead to it. Such an expanded analytical approach would enable a more comprehensive understanding of the adaptation process and contribute to the development of more effective institutional-support strategies for international students. Service-learning (SL) can be identified as one of the tools for the social inclusion of students in general, along with international students. Therefore, the main aim of this paper is to conduct a pilot study – a quasi-experiment and research across all groups of respondents (PETE international students, both with and without the experience of SL) – to determine whether a higher level of social inclusion is recorded among students who have experienced SL compared to those who have not. Furthermore, in order to organise more effective student-centred SL classes, the second aim was to analyse the differences between the subgroups whose previous dominant motor skill was competitive sport, and those whose previous dominant motor skill was recreational sport.

1.1. Service-learning as a pedagogical tool in academic environments that responds to modern society needs

Service-learning is a pedagogical tool that integrates academic study with active community participation, each complementing and enriching the other. The underlying theory of this approach derives from Dewey's concept of experiential learning, which holds that the interaction between knowledge, skills, and practical experience is essential for deep learning [10]. One of the most frequently cited operational definitions comes from Ehrlich [11], who describe SL as an educational experience associated with courses and carrying credit in the academic degree system. According to them, students (a) participate in organised community service activities that meet identified community needs, and (b) reflect on these activities to develop a deeper understanding of academic content, broader knowledge of the discipline, and strengthened personal values and civic responsibility. Suggestions for the application of SL enable students to gain meaningful educational experiences combined with active engagement in the community. When such experiences are complemented by structured spaces for reflection, mentoring support, and networking opportunities, they can foster the development of social capital aimed at greater inclusion and cohesion. This pedagogical approach views social needs as opportunities to address civic challenges and improve the quality of social reality. SL places particular emphasis on analysing and understanding social problems to address them creatively and sustainably through collective action. It moves away from traditional perspectives based on paternalistic aid, and assumes that everyone can potentially contribute to building a more just and inclusive society. Furthermore, this approach fosters intensive processes of interaction and communication among different social groups, facilitating the development of a more comprehensive understanding of diverse social experiences and perspectives [12]. In the context of international students, SL can play a key role in social inclusion. Active participation in joint projects, and reflection on these experiences, enable students from diverse cultural and social backgrounds to build social networks, feel that they belong to the academic and local community, and develop intercultural competences. In this way, this pedagogical approach not only enriches academic learning but also actively contributes to integration, reducing the feeling of isolation among international students. SL is a form of experiential learning that integrates academic curriculum with organised volunteer engagement in the local community. As stated by Deeley [6], despite its growing application in higher education, in the existing literature there is still a lack of systematic and critical analysis regarding the effects of this pedagogical approach, especially in the field of physical education and sport.

1.2. Social inclusion in academic environment

The concept of social inclusion can refer, on the one hand, to processes that promote social interaction between individuals with different socially relevant characteristics and, on the other hand, to institutional mechanisms that ensure equal access to participation in all aspects of social life [13]. The literature uses various discourses and terminological frameworks, including concepts such as solidarity, integration, social cohesion, and social capital. At their core, different conceptions of

social inclusion seek to explain how different segments of society connect, integrate, and share common values. The term inclusion is often used to describe the level of social acceptance and individual experiences among peers and close friends. In this sense, an inclusive climate refers to social environments characterised by positive interpersonal relationships and harmony among diverse groups of students. Conversely, research highlights several contextual factors that can contribute to experiences of social exclusion, including peer victimisation, rejection, and lack of friendships. Such forms of disadvantage may be related to student's ethnicity, social class, immigrant status, sexual orientation, or disability [14]. The role of educators in this context is crucial, especially in fostering a sense of belonging among international students. Rienties et al. [9], in their extensive research on 958 students, identified significant differences in academic success and levels of social integration between domestic and international students. These results indicate that international students, while striving for academic success, also have a strong need for social integration and active participation in student culture.

Higher education is a particularly suitable environment for the development and promotion of individuals' social engagement, as it occupies a unique position between basic education and the world of work. At this stage of development, individuals already possess a certain level of knowledge and autonomy, but at the same time they remain within a supportive institutional environment that allows them to explore new roles, values and forms of social action. This is precisely why higher education institutions represent an ideal space for the development of civic competences and for testing different forms of social engagement before entering the professional and wider social context. Therefore, the context of campus-community partnerships that exist to facilitate the resolution of social problems is beginning to emerge. As Bringle et al. state, Campus–community partnerships can be seen as series of interpersonal relationships between (a) campus administrators, faculty, staff, and students and (b) community leaders, agency personnel, and members of communities [12]. The role of community engagement and civic education in this process is particularly important, because higher education should not focus exclusively on the development of professional competences, but also on the formation of responsible, active and socially aware citizens. Through opportunities to engage in community-oriented activities, students develop an understanding of social challenges, learn to cooperate with different stakeholders and adopt the values of sustainable development, social responsibility and care for the community. In this way, higher education becomes a space in which not only future experts are formed, but also individuals who, through their actions, will contribute to the creation of more inclusive and sustainable societies.

1.3. Previous motor experience

An important aspect of Physical Education Teacher Education (PETE) students' participation in creating SL projects is their prior experience regarding the type of dominant motor activity, and the level of dominant motor skill. Examining previous motor experience in relation to SL is important, as it can influence both the perceptions and the benefits international PETE students derive from SL activities,

thus affecting the development of skills such as leadership, application of knowledge, and general life competencies. Considering these differences enables the design of student-centred SL projects and curricula, thereby strengthening the connection between academic education and social practice, as well as community contribution. According to Miletic et al. [15], PE students with varying prior motor experiences perceive the benefits of SL differently. When it comes to the relation between groups with competitive team sport as dominant and the ones with the dominant individual competitive sport, there were significant differences in leadership ability, the ability to apply knowledge, and general life skills related to SL classes. Therefore, previous motor experience among international PETE students should be taken into account when developing SL content. This approach enables international PETE students to engage in critical thinking, theoretical exploration, and practical experimentation [16,17].

Previous research highlights the significant potential of the SL approach in promoting social inclusion. For example, Gijón [18] notes that SL is an effective tool for fostering social inclusion, as it enables students to participate in structured educational activities and social-engagement experiences. These experiences, combined with opportunities for reflection, social support, and the development of interpersonal networks, can help build social capital and strengthen the process of social inclusion. The importance of further research into this approach arises from the fact that international students are often exposed to a degree of social isolation and exclusion, which can negatively impact their mental health and psychological well-being. Research by Alshammari et al. [19] found that social isolation is a significant risk factor for the deterioration of international students' mental health. Therefore, the aim of this study was to examine whether SL can be used as a tool to alleviate challenges associated with social exclusion, and to promote social inclusion among this population. Previous research on social inclusion in sport offers some insights into the mechanisms for developing inclusive relationships. For example, research by Hovdal et al. [20] analysed passing in team sports as an indicator of inclusive behaviour, and differentiated between declared attitudes towards social inclusion and actual behaviour during sports activities. Furthermore, research conducted in higher-education populations, such as a study by Ruiz-Montero et al. [21], has shown that SL can contribute to the development of prosocial competencies in kinesiology students and physical education teachers (international PETE students) in culturally diverse contexts. However, despite the growing body of research linking SL, sport, and social inclusion, studies focused on international students in higher-education settings remain limited. Therefore, the main objective of this study is to analyse the potential of the SL approach as a tool for fostering social inclusion among international PETE students in higher-education settings.

2. Materials and methods

This paper poses three research questions: (1) What are the current trends in social inclusion? (2) Are there significant differences between international PETE students who participate in SL activities and those who do not? (3) Does the previous motor experience of international students affect their SL activities and, consequently,

influence their level of social inclusion? The first phase of the research involved a systematic review of scientific literature indexed in the Web of Science (WoS) database over the past decade. After applying the PRISMA method, and excluding the papers that did not fully match the topic, 46 scientific papers published in peer-reviewed journals and proceedings were selected from the initial corpus of 1,781 papers. The second phase involved a questionnaire developed by Sedaghatnia et al. [22], comprising ten categories: Safety, accessibility, legibility, comfort, extracurricular activities, social relations, accommodation quality, facilities, academic services, and transportation. This was used to analyse the social inclusion of international students. Simultaneously, differences in the previous motor experience of international students were analysed and used in organising SL classes aimed at creating student-centred curricula to achieve the best possible effect in connecting academia with society. Students were offered a five-point Likert scale to record their assessment (1 indicates “strongly disagree” and 5 indicates “strongly agree”), and the collected data were analysed using the JASP programme as an example. The data for defining research groups based on previous dominant motor skills were collected through semi-structured interviews, considering the type of previous dominant motor activity, and the level of previous dominant motor skill.

2.1. Participants and research design

The research included 44 international PETE students at the Faculty of Kinesiology, University of Split, representing 96 % of all international students from the ERASMUS programme at that Faculty. The research was conducted from November 2025 to January 2026 using a quasi-experimental comparative design. Two main research groups were defined based on students’ participation in SL activities: Experimental (E) and control (C). Students in group E ($N = 19$) attended the elective academic course SL in Kinesiology. Students in group C ($N = 25$) did not participate in academic programmes involving SL. Subsequently, subgroups were defined based on students’ previous motor experience (**Figure 1**), considering the type of dominant previous motor activity and the level of previous dominant motor skill: Competitive sport as previous dominant motor skill ($N = 20$), and recreational sport as previous dominant motor skill ($N = 24$). The group whose previous dominant motor skill was competitive sport consisted of three subgroups: (1) team sports, (2) martial arts, and (3) individual sports. The group whose previous dominant motor skill was recreational sport consisted of two subgroups: (1) social recreational activities, and (2) self-directed recreational activities. The aim of the semi-structured interviews was to determine the lifelong dominant motor skill of international PETE students. In accordance with their previous motor experiences, the students themselves determined their type of previous dominant motor activity, by choosing one of the 6 offered clusters determined in previous research [16]. Since none of the students in this study chose artistic and aesthetic activities as their dominant previous motor skill, 5 research subgroups were defined in this study. After the three dominant lifetime motor skills were determined, each student appointed the level of motor skills mastery on a scale from 1 to 3. Level 3 denotes a professional level of motor skill mastery as athletes with international competition experience.

Level 2 denotes moderate but still significant motor skill mastery. Level 1 denotes motor skill mastery on an amateur or basic level. According to the information obtained, the groups of students were determined based on the type and level of their previous physical activity experience or motor skill mastery. Most often, the students assessed their previous dominant motor skill as 3. If the student did not mark any of them as 3, it was taken as the dominant motor skill of the type they marked as level 2. If two motor skills were assessed as level two, the student would choose in which area they were more skilled through semi-structured interviews.

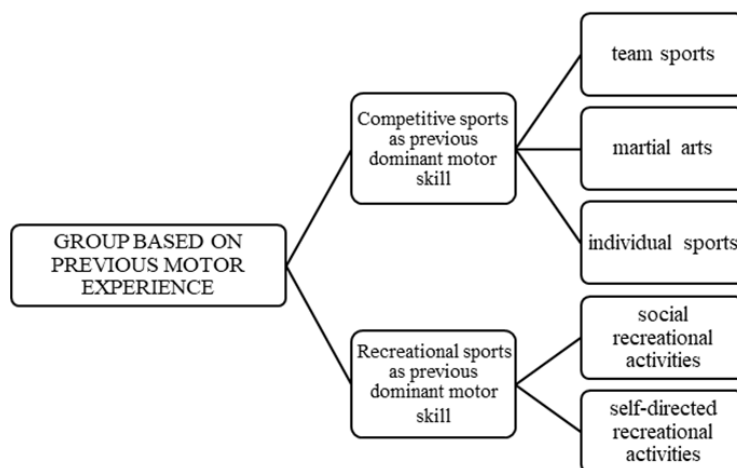


Figure 1. Research groups defined according to dominant previous motor skills.

Students from all groups received basic information about the study, and all the instructions regarding the questionnaire. Students in group E participated in preparing and implementing SL projects during SL classes. For the preparation of the SL project, students were divided into subgroups based on their previous dominant motor skills. According to the conceptual framework of SL in physical education, as defined by Miletic et al. [23], by engaging in projects related to different areas of kinesiology, students actively contribute to addressing specific societal challenges while also developing a deep, reflective understanding of the underlying causes of these issues. The creation of the SL project plan included the following elements: Project title, appointment of the team leader and team members, selection of an external organisation, description both of the needs within the external organisation and of planned activities (including the location and timing of the project's implementation period, expected number of hours spent in the organisation, and an outline of activities), expected learning outcomes, outlining how the society would benefit from the project, definition of students' expectations regarding project implementation, preparation of a backup plan in case the original plan fails, and selection of a mentor for project implementation. Classes were conducted with a student-centred approach, focusing on students' responsibility and activity, and respecting individual differences, interests, abilities, and experience.

The work teams, formed according to previous dominant motor skills, aimed to achieve a higher level of competence and team cohesion in creating the SL project. For the creation and implementation of the SL project, the students selected children and young adults aged 12–18 as the target group, in collaboration with the MoSt

Association. The MoSt Association is a non-governmental organisation that, based on the values of volunteer work, humanity, solidarity, respect for diversity, and human rights, provides concrete assistance to those in need and improves the quality of life for children, young people, and citizens of other age groups, with particular emphasis on addressing homelessness at the city level. International PETE students prepared an SL project designed to foster community building, promote outdoor physical activity, and provide a fun, international, and educational experience for participants. Organised according to previous dominant motor skills, five working teams created the project “Treasure Hunt in the Town of Split” – an engaging and dynamic event intended to encourage teamwork, problem-solving, and cultural exploration. This project is closely aligned with the POP (Physical Outdoor Program), which implements programmes of selective- and indicated prevention and treatment of behavioural problems in children and young people. It also provides post-institutional support to young people leaving alternative care. The students focused on creating an immersive and interactive experience that not only promotes physical activity but also encourages teamwork, critical thinking, and cultural awareness. The specific goals of the project were to (1) foster teamwork and collaboration by forming teams and completing challenges, developing participants’ teamwork skills, and improving both their ability to communicate and work effectively with others; (2) encourage critical thinking and problem-solving by challenging participants to think creatively, solve puzzles, and engage with historical, cultural, and environmental themes, thereby enhancing cognitive skills and resilience; (3) increase cultural awareness by exploring historical sites and learning about the city’s landmarks, culture, and history, while connecting with its heritage; (4) create a fun and memorable experience by providing an enjoyable event that participants will remember, while also teaching valuable life skills. The study implementation and procedures in the experimental design were in accordance with the ethical standards of the Faculty of Kinesiology, University of Split.

2.2. Statistical analysis

The research was conducted in two key steps. Together, they form a coherent and methodologically based procedure. In the first part, content analysis was carried out using the PRISMA model, enabling a systematic review – selection, evaluation, and synthesis of relevant scientific papers. This approach ensured transparency and reliability in identifying the theoretical and empirical foundations of the research problem. In the second part, empirical data collected through questionnaires and semi-structured interviews were analysed at the end of the semester, after completing SL activities. Both groups of participants (both those who did and did not participate in SL activities) took part in the research during the same week of study. At the beginning of the research, they were informed that the information they provided would be used solely for research purposes, that all information would be anonymised, and that the data would be stored only in the researchers’ data files. Regarding the part of the research dedicated to motor experience, only the results concerning the level of competitive and recreational sports will be reported. All other results divided by subgroups are difficult to report due to the small sample size.

The data were processed using the Jamovi statistical programme, and several quantitative analytical procedures were applied. First, descriptive statistics were generated to provide insight into the basic characteristics of the sample and variables. An independent samples t-test was then conducted to examine whether there was a statistically significant difference in arithmetic means (M) and standard deviations (SD) between students with previous experience of SL and those without it. Descriptive statistics for the results on the social inclusion scale were also calculated, with particular emphasis on the differences related to the respondents' dominant motor skills. This was followed by an independent samples t-test to determine specific differences in the effect of the selected factor on the results of the social inclusion scale.

3. Results

3.1. PRISMA analysis findings

As the initial step of the analysis conducted using the PRISMA model within this research framework, the authors identified key contemporary trends in research on the social inclusion of international students over the past decade. At the outset, they considered the entire set of works identified in the Web of Science database, by using the key terms social inclusion, international students, and service-learning. Following the initial search, a preliminary selection was made based on the analysis of titles, excluding works deemed irrelevant both to the subject and objectives of the research. In the next phase, the remaining papers ($N = 981$) were analysed. Through scan reading and a more detailed analysis of abstracts, papers that did not meet the inclusion criteria were further excluded. After this selection stage, 286 works were included for analysis and subjected to a full-text review. Based on the detailed analysis of these full texts, it was determined that a total of 46 papers met the criteria for the final and detailed analysis (**Figure 2**). The literature search was conducted from December 2024 to February 2025. The analysis of the selected papers identified dominant research directions, thematic patterns, and methodological approaches related to the constructs of social inclusion, international students, and the service-learning approach. The findings provided a more systematic understanding of the current state of research. Furthermore, they identified key research trends and gaps in the literature.

Among these, the following conclusions are notable: (1) curricular approaches to acclimatisation, including the integration of extracurricular activities, enable more comprehensive development of academic and social skills; (2) the development of intercultural competences is recognised as a key element for effective adaptation and cross-cultural cooperation; (3) social networks and digital platforms play a significant role in the socialisation process, facilitating connections among students from different cultural and geographical backgrounds; (4) the main social barriers – such as language barriers, limited friendship networks, and challenges in engaging in university social life – remain key areas for intervention and support. Four identified thematic areas jointly guided both research-focus development and the design of this study. Curricular approaches to acclimatisation and the integration of extracurricular activities indicated the importance of structured educational interventions that extend

beyond formal teaching, and contribute to students' social adaptation. In parallel, the emphasis on the intercultural-competences development highlighted the need for a deeper understanding of how students acquire and apply the skills required to function in multicultural academic environments. All this typically applies to international students. The role of social networks and digital platforms further demonstrated the changing patterns of student socialisation. It also underscored the importance of informal learning and networking, which can significantly impact the sense of belonging and inclusion. At the same time, identified social barriers (such as language difficulties and limited social networks) pointed to persistent challenges in the social integration of international students. The combination of these findings indicated the need to explore educational and institutional approaches that can simultaneously address the academic, social, and cultural dimensions of the student experience. For this reason, the research focuses on SL as a pedagogical approach that connects experiential learning with social engagement, with particular emphasis on social inclusion and the experiences of international students.

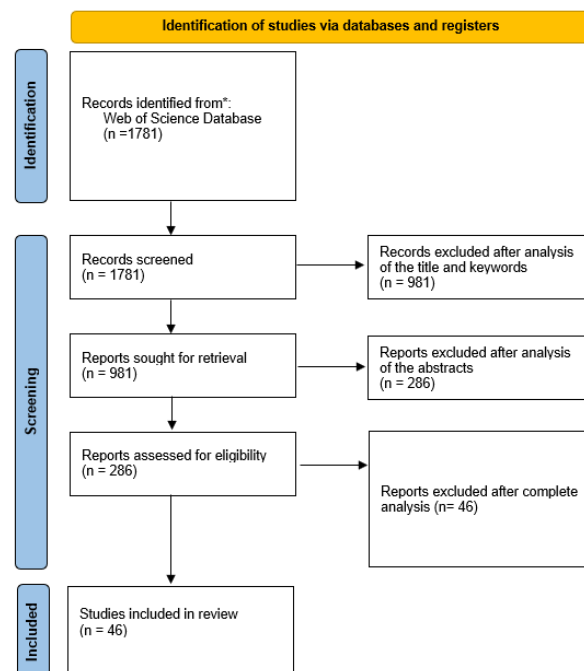


Figure 2. PRISMA flow diagram for new systematic reviews which included searches of WoS database.

3.2. Descriptive statistics findings

At the beginning of the research's second phase, a descriptive analysis was conducted to gain insight into the basic characteristics of all scales measuring different aspects of international students' social inclusion. All necessary assumptions for the measures (normality, homogeneity of variance) were checked at the start of the analysis. The use Shapiro–Wilk tests and the visual inspection of Q–Q plots showed no sign of violations. Given the exploratory nature of the subscale analyses, Cohen's *d* was reported and interpreted as a measure of effect size alongside *p*-values to provide a more robust interpretation of the findings, and to

reduce overreliance on statistical significance. An initial analysis tested whether there was a difference between the students experienced in SL and those who are not. For this purpose, an independent samples *t*-test was conducted, with inclusion subscales as the dependent variable, and experience in SL as the independent variable. Furthermore, at the beginning of the research, Cronbach's alpha was also analysed and was satisfactory for most scales, except for the Facilities, Extracurricular Activities, and Accessibility scales (**Table 1**). Although Cronbach's alpha values were slightly below the conventional threshold of 0.70, values around 0.60 are considered acceptable given both the small number of items and the exploratory nature of the research as stated by the McNeish [24].

Table 1. Descriptive statistics and independent *t*-test significant results of the social inclusion based on students SL experience.

Subscales of social inclusion	Cronbach's alpha	Students with SL experience (<i>N</i> = 19) <i>M</i> ± <i>SD</i>	Students without SL experience (<i>N</i> = 25) <i>M</i> ± <i>SD</i>
Legibility	0.707	4.147 ± 0.813	4.237 ± 0.463
Social relations	0.619	4.040 ± 0.724	3.697 ± 0.748
Accommodation quality	0.716	4.100 ± 0.669*	3.474 ± 0.812*
Facilities	0.597	3.914 ± 0.562*	3.504 ± 0.405*
Extracurricular activities	0.559	3.000 ± 0.794	3.011 ± 0.767
Accessibility	0.584	3.460 ± 0.825	3.434 ± 0.485
Safety	0.688	3.728 ± 0.688	3.800 ± 0.427
Comfort	0.833	3.656 ± 0.743	3.705 ± 0.509
Academic services	0.754	3.520 ± 0.710	3.645 ± 0.625
Transportation	0.786	3.493 ± 1.023	3.772 ± 0.854

*There is a statistically significant difference (Cohen's *d* for Accommodation quality is 0.854, and for Facilities 0.819)

The analysis shows that a statistically significant difference was recorded only for the scales regarding "Accommodation quality" (the group with experience recorded *M* = 4.100, while the group without experience recorded *M* = 3.474, *p* = 0.008, representing a large effect (Cohen's *d* = 0.83) and "Facilities" (the group with prior experience had a mean score of 3.914, whereas the group without prior experience had a mean score of 3.504, *t* (42), *p* = 0.010, representing a large effect (Cohen's *d* = 0.86). Previous research highlighted the importance of the pedagogical component of space. For example, authors Preece & Manicom [25] note that shared spaces and environments where SL takes place contribute to the pedagogical experience. The quality and accessibility of these facilities serve as resources that enable mutual learning between students and community members. It is important to note that students who participated in SL activities worked on real-life, socially oriented projects within the associations and organisations with which they collaborated. This emphasises that, for the inclusion of foreign students, it is important to connect them through the facilities of local associations. In this way, they are connected with the environment in which they study through physically visible spaces.

The aim of descriptive statistical analysis of the results on the social inclusion scale was to determine the basic characteristics of results distribution in relation to the subjects' previously dominant motor skills. The analysis included the calculation of arithmetic means and standard deviations in order to provide a precise insight into the variations within each motor skills group. This enabled the initial comparison of the groups, and identification of potential differences at the level of social inclusion.

3.3. Inferential statistics findings

An independent sample *t*-test was also used to determine the differences between the two subject groups, classified according to the type of their previous dominant motor skills (previous dominant motor skills being either competitive or recreational sports). The results in **Table 2** indicate that a statistically significant difference was found only on the "Accessibility" subscale, $t(42) = 2.44$, $p = 0.019$, with a medium-to-large effect size (Cohen's $d = 0.74$), indicating higher scores in one group. However, the Brown-Forsythe test suggested unequal variances; therefore, this result should be interpreted with caution. No significant differences between the groups were found on other subscales.

Table 2. Significant results of descriptive statistics and independent t-test regarding social inclusion based on students' previous dominant motor skills.

Subscales of social inclusion	Competitive sports as previous dominant motor skill ($N = 20$) $M \pm SD$	Recreational sports as previous dominant motor skill ($N = 24$) $M \pm SD$
Legibility	4.267 $\pm$ 0.431	4.118 $\pm$ 0.835
Social relations	4.013 $\pm$ 0.641	3.792 $\pm$ 0.823
Accommodation quality	3.925 $\pm$ 0.591	3.750 $\pm$ 0.930
Facilities	3.736 $\pm$ 0.533	3.738 $\pm$ 0.550
Extracurricular activities	3.130 $\pm$ 0.834	2.900 $\pm$ 0.720
Accessibility	3.713 $\pm$ 0.624*	3.229 $\pm$ 0.679*
Safety	3.860 $\pm$ 0.477	3.675 $\pm$ 0.659
Comfort	3.830 $\pm$ 0.610	3.550 $\pm$ 0.660
Academic services	3.675 $\pm$ 0.721	3.490 $\pm$ 0.628
Transportation	3.517 $\pm$ 1.095	3.694 $\pm$ 0.170

*A statistically significant difference was recorded only on the "Accessibility" scale (Cohen's $d = 0.738$). Subgroups (team sports, martial arts, individual sports; social vs self-directed recreation) cannot be analysed due to small sample size.

4. Discussion

The implementation of PRISMA analysis in the first phase of the research represented a key methodological step in deepening the understanding of the contemporary concept of social inclusion in higher education. The systematic identification and synthesis of relevant research trends enabled a clearer understanding of how international students cope with adaptation processes in a new environment. Based on the trends identified by the PRISMA review, it can be concluded that, for international PETE students, curricular approaches to adaptation, including the integration of extracurricular activities, support a more comprehensive

development of international students' academic and social skills. In this pilot study, a participation among international PETE students was related to higher scores on two subscales of social inclusion. Additionally, when motor skills were considered, a correlation was found only in one subscale – “Accessibility”. The specificity of international PETE students regarding SL activities was highlighted in previous research made by Perez-Ordas et al. and Santos-Pastor et al. [26,27], as being cooperative and social by nature, making them ideal for fostering prosocial behaviours such as inclusion and respect. When interpreting the results, it is important to distinguish between international students participating in short-term mobility programmes, such as the Erasmus+ programme, and those enrolled in full-time study programmes abroad, as their needs and experiences differ significantly. Students who engage in mobility processes are motivated by different motives and have different expectations from their mobility. Students who are involved in short-term mobilities are mainly focused on the destination and the ease of recognition of acquired credits and learning outcomes. They mainly socialize with other foreign students. Students who are in another country to acquire a European qualification are more focused on the quality of the qualification and assimilation into the culture of the foreign country in which they are staying. However, the influence of previous dominant motor skills, which can affect the quality of participation in SL activities, is insufficiently addressed in research made by Miletic, et al. [23]. The findings of this research suggest that both the quality of accommodation and the availability of facilities are perceived as key predictors of social inclusion among international students who participated in SL activities. It should be noted that the interpretation of social inclusion scales in this discussion refers only to the dimensions covered by the research of Sedaghatnia et al. [22]. These factors contribute to well-being, satisfaction, and opportunities for social interaction, which in turn facilitate the integration into both the academic and wider social community. Given that part of the teaching in the SL course took place in spaces belonging to community partners, this is especially important. It implies that, for international students to feel included, it is important to connect them through the facilities of local associations. In this way, they are being linked to the environment in which they study via physically visible spaces. Participation in SL activities involved students spending considerable time on the premises of host organisations both during the design and the implementation of project activities. Quintero & Zerva [28] point out that international students, through everyday interactions and meaningful experiences, can develop a strong emotional attachment to the host environment, which they eventually come to perceive as their “second home”. This type of developed sentiment is referred to as “place attachment”, and it may contribute to a more positive evaluation of accommodation conditions and facilities among students involved in SL activities.

In particular, the student-centred approach focuses on increasing student activity and developing critical thinking skills in relation to identified societal problems. The “Accommodation quality” scale refers to comfortable living conditions, which may be influenced by previous experiences in students' home countries. The “Facilities” scale also includes housing conditions, as well as nutritional, sports, health, and religious habits, all of which can be significantly affected by the living conditions and standards of living in the students' countries of

origin. Therefore, future research on the inclusion of international students should consider their previous living habits, and standards in their countries of origin. Differences found in social inclusion scales are consistent with the conclusions in the research made by Ruiz-Montero et al. [21], which state that SL has a transformative role, enabling international PETE students to acquire prosocial competencies in contexts relating to cultural diversity and social justice.

Based on their previous motor skills and experiences, the analysis of the differences between groups of international PETE students enables a more specific insight into their social inclusion. An added value to the inclusion of international PETE students in this study is the connection through sports activities that transcend cultural, geographic, economic, and other differences. Forming working groups for SL activities based on previous dominant motor skills places sports competences in the foreground, which indirectly cancels out other factors possibly affecting social exclusion. According to the results, the “Accessibility” scale reflects the detection and analysis of previous dominant motor skills of international PETE students. Differences in the “Accessibility” scale are found in favour of students with previous dominant motor skills developed in competitive sports, indicating that they do not perceive organisational obstacles as significant in adapting to a new international environment. The previous experiences of students involved in competitive sports, which include frequent travel, changing environments, and socialising at an international level, contribute to better inclusion in the new international environment. Therefore, international PETE students with the experience in competitive sports showed a higher level of adaptation in the academic environment on the “Accessibility” scale, which refers to the ease of moving around the campus, moving from one location to another in a new environment, and either using a bicycle or walking longer distances. The importance of accessibility through different forms of sport is emphasised by Karusisi et al. [29]. They state that it is a multidimensional concept integrating educational, financial, and geographical aspects, and that special importance should be given to sport.

In addition to the findings that highlight the potential of SL as an effective approach to fostering the social inclusion of international students, it is important to emphasise its broader social significance, which goes beyond traditional pedagogical frameworks. Although SL is often viewed primarily as an educational method focused on developing students’ competences, its value also lies in its ability to connect higher education with the real needs of the community and to respond to complex social challenges. In this context, service-learning can be seen as a strategic tool for promoting sustainable social development, as it contributes to strengthening more inclusive communities. Particularly in the context of the internationalisation of higher education, SL offers international students the opportunity to actively engage in their social environment, thereby not only supporting their academic and personal development but also encouraging their integration into the local community and fostering a sense of belonging. SL goes beyond the traditional understanding of education as a process of knowledge transfer and links academic learning with active contributions to solving social challenges. Its value is not limited to the development of students’ competences but is also reflected in the capacity to connect higher education institutions with the community and create long-term social impacts. In

this sense, SL can be seen as an important mechanism for achieving the Sustainable Development Goals [7], particularly by promoting quality education, reducing inequalities, developing sustainable communities and building partnerships. SL's connection to SDG 4 (Quality Education) is evident in its encouragement of experiential and transformative learning that enables students to apply theoretical knowledge in real social contexts. At the same time, SL contributes to SDG 10 (Reduced Inequality) by supporting the inclusion of different social groups, creating space for intercultural dialogue and developing more inclusive communities. The contribution of SL is important to emphasise in the context of international higher education, where it can enhance the social integration of foreign students through their active involvement in the local environment. Furthermore, through cooperation between higher education institutions, civil society organisations, public institutions and local communities, SL directly supports SDG 17 (Partnerships for the Goals). Such partnerships enable the joint identification of social needs and the development of sustainable solutions based on the collaboration of different stakeholders. In relation to SDG 11 (Sustainable Cities and Communities), SL contributes to building more resilient and inclusive communities through projects aimed at addressing local challenges, strengthening social cohesion and encouraging active citizenship. Therefore, service learning should not be viewed solely as a pedagogical method, but as a broader social tool that connects education, community and sustainable development.

4.1. Study limitations

Although this study provides the basis for further research on both the social inclusion of international students and the role of SL in this process, it is necessary to acknowledge the observed limitations. Interpretation of social inclusion scales referring only to the dimensions covered by the research of Sedaghatnia et al. [22] could be considered as conceptual limitation. The results indicate that the economic and cultural backgrounds of the environments from which international students come should be considered in future research; the differences between them, which may affect the level of social inclusion, could be related to a number of other factors as already pointed out by Chankseliani & Kwak [30]. Future studies should also improve the methodological approach by integrating quantitative and qualitative methods. These would allow for a deeper understanding of students' experiences. It is particularly advisable to conduct longitudinal studies to monitor the dynamics of social inclusion over time, and to identify the factors which influence long-term adaptation and integration. It is important to emphasise the self-selection bias and the small sample sizes although the latter are common in SL research aiming to understand the programmes applied [31–34]. Even though this is a pilot study, the sample is too small to form the basis for relevant conclusions. However, it can be regarded as an initial step, and a foundation for future research development. The research was carried out on a sample of international PETE students, homogeneous in terms of having chosen the country in which they came to study through the ERASMUS programme. Furthermore, as authors Jadric et al. point out, they all experienced the same new environment and adaptation process [35]. Although, in

general, as Hovdal et al. state, SL activity can be associated with motor activities and team sports [20], robust conclusions would require consideration of other unmeasured variables (e.g., socioeconomic status, personality, language proficiency) which could also explain higher accessibility scores and previous participation in competitive sports. It is also important to note that the statistically significant difference between groups on the Accessibility subscale ($d = 0.74$, $p = 0.019$) was determined based on a lower reliability measure (Cronbach's $\alpha = 0.584$), which may increase the possibility of measurement error and affect the stability of the obtained effect. We further emphasize that future research based on more than one-university pilot sample needs to further examine and refine this subscale and verify the above finding using instruments with better psychometric properties.

Unlike experimental studies, this study neither randomised participants into groups nor used a pre- and post-intervention design. Participants chose to enrol in an elective course independently, which is why the study can be classified more precisely as a quasi-experimental or pilot study. Such research approach allows the examination of the relationship between participation in SL activities and the level of social inclusion. However, at the same time, it limits the possibility of drawing firm conclusions about the cause-and-effect relationships. The self-selection of students into the SL group represents a potential threat to the internal validity of the study. Students who choose to attend courses based on the SL approach may differ from their peers in various characteristics, such as the level of prosocial orientation, interest in community work, openness to new experiences, or previous volunteering experience. Therefore, the differences found between the groups may not necessarily be a consequence of participation in SL activities, but may partly reflect the existing differences among students before joining the course. The absence of pre-test/post-test measurements limits the ability to assess change attributable to SL. It is important to emphasise that the sample size ($N = 44$) is very limited, which restricts generalisability and statistical power.

4.2. Practical implication and future research directions

The practical implications of the results highlight several key areas for improving the social inclusion of international students. Firstly, integrating intercultural competence into curricula can serve as a strategic tool to facilitate academic- and socio-cultural adaptation. Secondly, developing and implementing comprehensive inclusion policies within higher-education institutions enable a systematic approach to fostering a sense of belonging. Furthermore, it is recommended to adopt adaptation mechanisms focused on the specific needs of students, emphasising the role of social networks in supporting the socialisation process. Thirdly, in line with student-centred approach and specifically for international PETE students, respecting their previous dominant motor skills and physical activities when preparing SL projects can both increase student engagement and contribute to innovating the academic curricula for international PETE students.

SL should not be regarded solely as an educational approach, but also as a broader strategy for promoting inclusive and sustainable social development within higher education institutions and local communities. SL has significant potential to

strengthen campus–community relationships, foster social inclusion, enhance students’ sense of belonging, and support collaborative responses to societal challenges. Bearing that in mind, it is practically important to integrate SL into higher education curricula and institutional strategies as a means of encouraging socially responsible education, active citizenship, and the development of more inclusive and sustainable communities.

Previous research made by Cieśluk et al. has suggested the importance of gender perspective in analysing the relationship between sociodemographic indicators and decision-making styles [36]. Future research should seek to reduce self-selection bias by using randomized participant allocation where ethically and organizationally feasible, to increase the internal validity of findings. It is also recommended to use longitudinal designs with baseline (pretest) and final (post-test) measurements, which would allow for more precise monitoring of changes over time and more robust conclusions about observed relationships between variables. Finally, it is important to recognise that the challenges international students face manifest through life, in terms of both academic and sociocultural factors. Therefore, these require a multidimensional approach to interventions. The added value of applying a systematic review of PRISMA model in this pilot study is the identification of insufficient information available in the literature, which can be upgraded by this and future scientific research on the sample of international PETE students. PRISMA model ensured transparency and reliability in identifying the theoretical and empirical foundations of the research problem and enables linking theory and practice, especially with regard to curricular competencies aimed at teaching SL. The pilot research targeted the international PETE international students at the one-university sample represents a good basis for recommending practical application and for further research.

5. Conclusion

Based on the research conducted, SL is an academic educational tool that can contribute to integration and social inclusion of international students. The results of this study indicate that previous SL experience specifically contributes to greater satisfaction with the quality of student facilities and accommodation, while total social inclusion and other dimensions do not differ significantly. Furthermore, previous dominant motor skills should be considered when developing student-centred curricula and implementing SL content into higher-education programmes in physical education and sport. International PETE students with previous experience in competitive sports in this one-university small pilot sample appear to have better accessibility values, particularly regarding mobility and resourcefulness on campus. The results obtained through PRISMA analysis contribute to a deeper understanding of the contemporary concept of social inclusion in higher education. Notably, the first identified key trend relates to curricular approaches to acclimatisation, including the integration of extracurricular activities, which enable a more comprehensive development of academic and social skills. This supports the conclusion that participation in SL, as an academic pedagogical tool and curricular activity, can be associated with more positive perceptions of facilities and accommodation among

international PETE students' social relations – an important aspect of social inclusion at domestic universities.

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