Effectiveness of an undergraduate course on the self-efficacy of Spanish sports sciences university students for the inclusion of individuals with disabilities

Running Head: Training on Self-efficacy Towards Inclusion

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This study assessed the self-efficacy (SE) gains of higher education students concerning the inclusion of people with disabilities throughout the delivery of a face-to-face training course. The course had a duration of four months, comprising 28 sessions of two hours each. A sample of 158 sports sciences undergraduates (109 intervention group, 49 control group; 69.4% males, 31.6% female) from two Spanish universities took part in this study: 77 per cent did not know about adapted physical activity or para-sport before the course was delivered. The content of the course was based on three blocks: 1) concepts of adapted physical activity and disability awareness; 2) inclusion in physical education; and 3) para-sports, including teaching about the Paralympics and other para-sports for people with disabilities. Simulation was a main teaching strategy across the content blocks—i.e. limitations of body functions, simulating inclusive physical education settings, or practising different para-sports. Significant improvements were found in participants' perception of SE when responding in a physical education scenario that requires the inclusion of an individual with an intellectual, physical, or visual disability ($p < 0.01$, moderate-to-large effect sizes). An undergraduate course that combines information, different types of contact with people with disabilities, and simulation seems effective to improve SE among pre-service physical educators in relation to the inclusion in their sessions of students with disabilities.

Keywords: para-sport; physical education; self-competence; higher education

Introduction

The initial training of university students has been evolving due to changes in legislation and particularly the entry into force of the so-called Bologna Plan (De la Fuente and Martín 2020). In the context of physical activity and sport professionals, this situation has led to numerous changes and the generation of debate regarding new curricula at the university education level (Díaz del Cueto 2013). In Spain, the development of syllabuses for courses on adapted physical activity and para-sports provided an opportunity to implement university training for the inclusion of individuals with disabilities in physical activity and sport, thus contributing to their social inclusion (Jiménez-Monteagudo and Hernández-Álvarez 2013) and improving their quality of life (Heras et al. 2021) and empowerment. The course related to physical activities and adapted sports has evolved from being generally optional to being compulsory in most study plans of the 51 Spanish universities with official studies in physical activity and sport sciences, thus following the guidelines suggested in the white book for these university studies in Spain (ANECA 2008). There are five universities in which there have been no type of training on adapted physical activity and adapted sports; however, in 37 of the official university degrees, there is a compulsory course on physical activity and/or sports for individuals with disabilities, in most cases for six European Credit Transfer and Accumulation System credits. In addition, 18 of the universities offer optional courses involving physical activities and adapted sports content and a course load ranging from four to six credits. Also, three of the universities offer up to three courses related to this subject, with content specifying inclusion, the Paralympics, or therapies aimed at individuals with disabilities.

It should be noted that in the new guidelines for university degrees, in addition to observing a change in the nomenclature of the course (e.g. physical activity and adapted and inclusive sports), there is a lack of consistency in the terminology used to

refer to individuals with a disability, including this and other terms such as special populations, individuals with reduced mobility, or diversity (Diaz et al. 2019). This new scenario should enable the training of future professionals in physical activity and sport sciences so that they can respond adequately to the needs of individuals with disabilities. Thus, initial training in terms of inclusion becomes essential for the different professional itineraries of these university studies—i.e. physical and sports training, physical exercise for health, management of physical activity and sport, recreation, and the field on which this study focuses, physical education (PE). As most of the content on inclusion in initial training is taught in these courses on adapted physical activity and adapted sports, they should offer quality and ensure that future physical activity and sport professionals acquire the appropriate skills to care for individuals with disabilities.

In PE contexts that require the inclusion of students with disabilities, one of the most studied constructs as a key to making this inclusion effective is self-efficacy (SE) (Block et al. 2010), being a form of self-confidence specific to tasks and actions. SE was defined by Bandura (1997) as a judgement made on a personal level about one's degree of competence and confidence to achieve a goal or perform a task. This way, high perceived SE among PE teachers regarding inclusion seems to be associated with (a) a reduction in their anxiety about facing tasks or (b) greater behavioural control (Morley et al. 2005). On the other hand, low SE levels can increase emotional stress and adverse feelings, such as a lack of confidence to adequately care for students with disabilities, including a tendency to avoid inclusive activities (Hutzler et al. 2019). Although there remain few studies in this line, some of the most appropriate strategies to improve PE teachers' SE regarding inclusion have been highlighted—for example, teaching strategies for the implementation of physical activities for individuals with

disabilities (Hutzler and Barak 2017), simulations (Leo and Goodwin 2016), the practice of adapted sports (Ocete et al. 2020; Pérez-Torralba et al. 2019), or contact with individuals with disabilities (McKay 2018) are relevant tools for improving both behaviours towards disability and professionals' SE perception in terms of providing care in the field of physical activities and sports (Hutzler and Barak 2017; Reina et al. 2019a). The narrative of the literature review performed by Hutzler et al. (2019) highlights some of these strategies, emphasising that specific training should include practices in school or within university practicums (Taliaferro, Hammond, and Wyant 2015), as well as the description, discussion, and assessment of examples of practical cases within the classrooms (Block, Grenier, and Hutzler 2017; Hutzler and Bar-Eli 2013; Van Laarhoven et al. 2007).

In the case of university students under training, we found some studies that have assessed the effects of training programmes on participants' SE beliefs (Alhumaid, Khoo, and Bastos 2020; Tindall, Culhane, and Foley 2016), and other works that have highlighted the importance of adequate specific prior training to improve behaviours and skills towards disabilities (Hodge and Jansma 1999; Leo and Goodwin 2014; Perlman and Piletic 2012; Piletic and Davis 2010). Regarding studies conducted with in-service PE teachers, we found studies in the American context that investigated the effects of short workshops on the professionals' SE perception (Haegele, Kirk, and Zhu 2018; Taliaferro, Hammond, and Wyant 2015). In the Spanish context, the Incluye-T programme (Reina et al. 2019a) stands out, with 18 face-to-face hours and 12 hours of autonomous work, demonstrating improvements in PE teachers' perception of their SE concerning the inclusion of students with intellectual, physical, and visual disabilities. In addition, it has been demonstrated that the programme was effective in improving SE regardless of gender (men vs. women), previous teaching experience (yes vs. no),

teaching to/with individuals with disabilities (yes vs. no), the educational level (primary vs. secondary), or the geographical area where the training programme was performed (insular vs. peninsular) (Reina et al. 2019a; Reina et al. 2019b).

To the author's best knowledge, few studies have been conducted to assess SE improvements in pre-service professionals in the field of physical activity and sport sciences (i.e. the pathway to become a physical educator in Spain) after the implementation of courses addressing adapted physical activity and para-sports. The goal of the present study was to assess SE gains in Spanish undergraduate students of physical activity and sport sciences with respect to the inclusion of individuals with intellectual, physical, and visual disabilities following a four-month course. The present study hypothesised that the course would improve the three SE subscales (intellectual, physical, and visual) in comparison to a control group.

Method

Participants

An overall sample of 158 participants from two universities located in the eastern region of Spain voluntarily took part in this study. Intervention (IG) and control (CG) groups were set for the two universities considering the semester when the course is scheduled (first semester for the IG and second semester for the CG). All the participants were in their third year (of four) of their official Bachelor's studies in physical activity and sports sciences. Table 1 describes the demographics relating to participants' sex, age, previous training or not in adapted physical activity (APA) or para-sports, and their participation or not in previous APA or para-sports activities. Overall, the sample has a preponderance of male participants (69.4% vs. 31.6% female) and similar age for the two groups; around three out of four people have received no previous training in the course contents (77%), and just over half have not participated in activities related to

APA or para-sports (53.8%). For the IG, attendance at a minimum of 60 per cent of the face-to-face course was set as an inclusion criterion. All participants signed a consent form before the pre-test and the beginning of the course. Approval for this study was received from the ethical committee of the Catholic University of Valencia (Ref. UCV/2018-2019/114).

Table 1. Demographics of the participants considering intervention and control groups

	Number (M/F)	Age (M ± SD)	Previous training* (No / Yes)	Previous participation* (No / Yes)
Intervention group	109 (81/28)	22.4 ± 2.6	81.0% / 19.0%	52.7% / 47.3%
Control group	49 (27/22)	22.2 ± 2.5	69.0% / 31.0%	56.1% / 43.9%
Overall sample	158 (108/50)	22.3 ± 2.6	77.0% / 23.0%	53.8% / 46.2%

M: male, F: female, M: mean, SD: standard deviation, * previous professional training related to adapted physical activity, inclusion or para-sports, ** previous participation in inclusive physical activities or sports with individuals with a disability.

Measures

The Escala de Autoeficacia del Profesorado de Educación Física hacia el Alumnado con Discapacidad (EA-PEF-AD; in English, Scale of Physical Education Teachers' Self-Efficacy toward Students with Disabilities) was used in this study (Reina, Hemmelmayr, and Sierra 2016). This is the translated version of the Self-Efficacy Scale for Physical Education Teacher Education Majors toward Children with Disabilities (SE-PETE-D) (Block et al. 2013); it has previously been used with Spanish in-service (Reina et al. 2019a, 2019b) and pre-service (Roldan and Reina 2021) physical educators. The scale begins with general instructions, the objective of the study, an explanation of Bandura's SE theory (Bandura 1997), and how to register a response. The instrument consists of four parts: the first three parts are associated with intellectual

disability (ID), physical disability (PD), and visual impairment (VI), while the last part collects demographic variables. Each subscale is preceded by a narration (i.e. a vignette) that describes situations that a student with either ID, PD or VI would experience during PE classes (e.g. skill level or way of interacting with peers). The scale comprises 33 questions (ID = 11, PD = 12, VI = 10) and covers SE factors regarding teaching students to help their peers with disabilities, instructions to peers, modifying the design of a task for students with disabilities, staying focused and helping the student with disabilities to understand what to do in the task, and creating a safe environment during a PE session. All responses are rated on a Likert scale ranging from 1 (no confidence) to 5 (complete confidence). Higher scores indicate higher perceived SE to include students with ID, PD, or VI in PE classes. Each of the three subscales is organised in blocks of from three to five items according to the teaching situation to which the scale is being applied: (a) a physical condition test; (b) teaching specific skills for a team sport; or (c) teaching the playing dynamics of the team sport itself.

Procedures

A mixed quasi-experimental design with pre- and post-intervention assessments (within-group) and with intervention and control groups (between-group) was used in this study. Data collection was conducted in the first semester of the 2019–2020 academic year. Pre- and post-measurements were conducted in September/October and December/January for the IG and the CG, respectively. Self-efficacy scores in the IG were measured before and after the course entitled Adapted Sports and Physical Activity for People with Specific Educational Needs, a mandatory course for all students with six ECTS credits (three theoretical and three practical). The course covers five main objectives in the syllabus: 1) acting with responsibility during the course and with autonomy and solidarity regarding others; 2) identifying different types of

disability and their general/specific features applied to physical activity; 3) understanding the basic concepts for responding to diversity: para-sports, inclusion, and individual curriculum adaptations; 4) planning and organisation of adapted/inclusive activities for people with disabilities; and 5) respect for people with a disability and predisposition to learn the content of the course.

The intervention course was delivered in four months, comprising 28 sessions of two hours each. The course was structured in three content blocks. The first block included basic concepts surrounding APA and awareness of disability: APA conceptualisation, characterisation of the main disability groups (sensory, physical, and intellectual), and awareness of disability through simulation. The second block considered the inclusion paradigm with a special focus on educational settings: i.e. evolution from specific/segregated to inclusive courses, inclusion in general schools, and the implications of inclusion in other sport and leisure contexts. The third content block was about para-sports, including teaching about the Paralympic movement and other sports programmes for people with disabilities. The course was delivered considering the evidence provided by Lindsay and Edwards (2013) to increase knowledge and to improve attitudes towards the inclusion of people with disabilities in PE. Specifically, the teaching strategies comprised simulation of different types of disability; para-sports practice; case studies; discussion forums; group tutoring; contact with people with disabilities—i.e. para-athletes with physical and visual impairments (talks, para-sports watching, and interactive para-sport practice); and a service-learning activity with people with intellectual disabilities (i.e. visit to an occupational centre in small groups and a sports festival at the university based on the Special Olympics approach).

Data Analysis

All the SE scores are presented as means and standard deviations for each of the intellectual, physical, and visual inventory subscales. Data were screened for normality of distribution and homogeneity of variance using the Kolmogorov-Smirnov test and Levene's test, respectively, to determine the appropriateness of using parametric techniques for data analysis. EA-PEF-AD reliability was assessed by Cronbach's alpha calculation, considering scores over 0.70 acceptable (Nunnally and Bernstein 1994). To determine the internal consistency of the scale to evaluate SE, the relationships among the EA-PEF-AD subscales were assessed using Pearson's product-moment correlations (r). The following scale of magnitudes was used to evaluate correlation coefficients: < 0.10, trivial; 0.11–0.29, small; 0.30–0.49, moderate; 0.50–0.69, large; 0.70–0.89, very large; 0.90–1.00, almost perfect (Hopkins et al. 2009). Changes in the level of SE were analysed using a mixed 2×2 ANOVA, using pre-post-intervention scores as the within-group factor and the intervention (IG vs. CG) as the between-group factor. To explore the moderating effect of the demographic variables of sex, and previous training and previous participation in para-sports or adapted/inclusive physical activities, the SE ratio was calculated as the difference between the post-course measurement and pre-course measurement. The repeated-measures ANOVA was launched, including in the model these three demographic variables as between-group factors, and an additional one-way ANOVA was run to calculate the magnitude of the between-group differences. Practical significance was calculated by partial eta-square (ηp^2) as a measure of the effect size for mean differences with the following interpretation: > 0.26, large; 0.25–0.02, moderate; < 0.01, small (Pierce, Block, and Aguinis 2004). In addition, pairwise effect sizes (90% of confidence interval) for within-group comparisons were expressed in Cohen's d units and interpreted as follows: < 0.19, trivial; 0.20–0.49, small; 0.50–

0.79, moderate; > 0.80, large (Cohen 1988). All calculations were carried out using the Statistical Package for Social Sciences (version 25.0 for Windows; SPSS Inc, Chicago, IL, USA) and Microsoft Excel (Microsoft, Seattle, WA, USA). The level of statistical significance to reject null hypotheses was set at $p < 0.05$.

Results

Scale Reliability and Internal Consistency

Table 2 shows the reliability scores for the EA-PEF-AD, considering within-group (pre- vs. post-course) and between-group (intervention vs. control groups) factors. All the measurements exhibited excellent reliability scores (Cronbach's alphas 0.89–0.96). The scale also shows good internal consistency, with large to almost perfect correlations ($0.59 < r < 0.95$; $p < 0.01$).

Table 2. Scale reliability (α) and internal consistency (Pearson's product-moment correlations) between EA-PEF-AD subscales at pre- and post-intervention measures

Self-Efficacy subscales / Groups	Pre-intervention			Post-intervention		
	α	Cor. PDs	Cor. VIs	α	Cor. PDs	Cor. VIs
Intellectual subscale						
Intervention	0.90	0.70**	0.59**	0.89	0.78**	0.73**
Control	0.92	0.74**	0.78**	0.93	0.90**	0.89**
Physical subscale						
Intervention	0.91	--	0.67**	0.91	--	0.77**
Control	0.95	--	0.78**	0.96	--	0.95**
Visual subscale						
Intervention	0.91	--	--	0.90	--	--
Control	0.94	--	--	0.95	--	--

α: Cronbach's alpha, Cor.: Pearson´s correlation, ** $p < 0.01$.

Effect of the intervention course

This section reports the impact of the course after a four-month period of intervention using a 2×2 ANOVA to compare the between-group effects and the interactions between the within-group and between-group variables. The between-group comparison revealed significant differences and large effect sizes for all the subscales: intellectual [$F(1,152) = 103.36$; $p < 0.01$; $\eta p^2 = 0.41$, large]; physical [$F(1,152) = 101.85$; $p < 0.01$; $\eta p^2 = 0.40$, large]; and visual [$F(1,152) = 84.18$; $p < 0.01$; $\eta p^2 = 0.36$, moderate]. In addition, the analysis demonstrates interaction effects between the between-group and the within-group factors for all the subscales: intellectual [$F(1,152) = 52.83$; $p < 0.01$; $\eta p^2 = 0.26$, large]; physical [$F(1,152) = 52.13$; $p < 0.01$; $\eta p^2 = 0.26$, large]; and visual [$F(1,152) = 28.57$; $p < 0.01$; $\eta p^2 = 0.16$, moderate]. These significant interaction effects demonstrate that the pre- vs. post-course comparisons influenced both groups in a different way.

Table 3 shows the overall significant differences and moderate-to-large effects in the pre- vs. post-measurements for all the EA-PEF-AD subscales ($p < 0.01$; $\eta p^2 =$ 0.14–0.24, moderate). Table 3 also shows pre- vs. post-course comparisons of the SE scores for the intervention and control groups. It can be observed that only the intervention group significantly increased SE scores for all the SE subscales ($p < 0.01$; $\Delta = 0.66$–0.68; $d = -1.00$ to -1.08, large) compared to the control group ($p > 0.05$; $\Delta = -0.13$–0.09; $d = -0.12$ to 0.21, trivial to small).

Table 3. Mean and standard deviations for the pre-course and post-course measures and intervention outcomes

Self-Efficacy subscales / Groups	M ± SD Pre-course	M ± SD Post-course	Pre vs Post Intervention Effects	
			p-values	Effect Sizes
Intellectual subscale				
Overall	3.23 ± 0.65	3.65 ± 0.79	< 0.001	ηp^2 = 0.14 (moderate)
Intervention	3.37 ± 0.62	4.04 ± 0.49	< 0.001	*d* = -1.08 (large)
Control	2.91 ± 0.61	2.78 ± 0.63	0.119	*d* = 0.34 (small)
Physical subscale				
Overall	3.34 ± 0.72	3.74 ± 0.86	< 0.001	ηp^2 = 0.15 (moderate)
Intervention	3.52 ± 0.65	4.18 ± 0.52	< 0.001	*d* = -1.02 (large)
Control	2.93 ± 0.73	2.82 ± 0.71	0.113	*d* = 0.23 (small)
Visual subscale				
Overall	3.19 ± 0.76	3.69 ± 0.84	< 0.001	ηp^2 = 0.24 (moderate)
Intervention	3.39 ± 0.68	4.07 ± 0.57	< 0.001	*d* = -1.00 (large)
Control	2.76 ± 0.75	2.85 ± 0.71	0.227	*d* = -0.17 (trivial)

M: mean, SD: standard deviation.

Effect of the Demographic Variables on SE Gains

Once the effect of the course was demonstrated for the participants belonging to the intervention group, a 2×2×2×2 repeated-measures ANOVA was launched, the first digit being the within-group factor (pre- vs. post-course) and the others the three between-group factors: i.e. sex (male vs. female), previous training (yes vs. no), and previous experience (yes vs. no) in para-sports and/or adapted/inclusive physical activity or education. The analysis only reported an interaction effect in the physical subscale for the variables course*sex [$F(1,75) = 5.70$; $p = 0.020$; $\eta p^2 = 0.022$, trivial]. However, the

one-way ANOVA reported in Table 4 for the three demographic variables reveals significant differences and moderate effect sizes for the intellectual and physical subscales when comparing men and women (higher improvement ratio in women), and for the visual subscale when comparing those with previous training or not (higher improvement ratio for those without previous training).

Table 4. Means, standard deviations, and one-way ANOVA outcomes for the demographic variables of sex, previous training, and previous experience reported by the intervention group

Variable	M ± SD (1)	M ± SD (2)	p-values	Effect sizes (*d*)
Sex (Male = 1, Female = 2)				
Intellectual subscale	0.58 ± 0.74	0.91 ± 0.59	0.039	-0.50 (moderate)
Physical subscale	0.53 ± 0.65	1.00 ± 0.57	0.001	-0.77 (moderate)
Visual subscale	0.62 ± 0.70	0.87 ± 0.65	0.108	-0.37 (small)
Previous Training (Yes = 1, No = 2)				
Intellectual subscale	0.49 ± 0.73	0.77 ± 0.69	0.153	-0.39 (small)
Physical subscale	0.40 ± 0.65	0.74 ± 0.67	0.073	-0.49 (small)
Visual subscale	0.35 ± 0.70	0.75 ± 0.68	0.035	-0.58 (moderate)
Previous Experiences (Yes = 1, No = 2)				
Intellectual subscale	0.75 ± 0.75	0.69 ± 0.64	0.687	0.09 (trivial)
Physical subscale	0.61 ± 0.59	0.75 ± 0.72	0.321	-0.21 (small)
Visual subscale	0.64 ± 0.69	0.70 ± 0.66	0.718	-0.09 (trivial)

M: mean, SD: standard deviation.

Discussion

This study aimed to assess SE changes in relation to the inclusion of students with specific disabilities (i.e. intellectual, physical, and visual) within specific situations

encountered during PE practice, hypothesising that the intervention group would improve on the three SE subscales compared to a control group after a four-month university course. According to the results, the training course promoted significant improvements in perceived SE regarding the inclusion of individuals with disabilities in PE classes.

From an international perspective, our results are similar to those found in the study conducted by Tindall et al. (2016), who assessed the effect of a ten-week university programme in the Irish context and observed improvements in the three subscales of perceived SE. The study conducted by Taliaferro, Hammond, and Wyant (2015) in the context of West Virginia University in the USA implemented a fifteen-week training programme and a nine-week practicum, and these authors also observed improvements in the three SE subscales. That study emphasised the importance of performing real practices with individuals with disabilities, and a progressive improvement was observed in perceptions throughout the practicum (Taliaferro, Hammond, and Wyant 2015). However, one characteristic of the practicum performed was that the practices were very structured and somewhat distant from the reality of practice performed with individuals with disabilities. Thus, in the conclusions of that study, the authors stated that the results may not be totally realistic as the participants' perceived SE could be highly influenced by the experience in the practice. In our case, the implemented programme had implicit practices within it and, in some, direct contact with individuals with disabilities; however, no structured practicum sessions were designed in order to prepare the students for assessments.

In the Spanish context, we only found two studies conducted with pre-service PE teachers. The first was conducted with a group of 228 university students of primary and early childhood education, concluding that those participants with specific training

in inclusive physical education and with previous participation in inclusive sport perceived themselves as more competent when adapting the class tasks (Abellán et al. 2019). However, this was not an intervention study; it was conducted with future professionals of lower educational cycles. The other study was conducted with 124 university students of physical activity and sport sciences, demonstrating that the use of teaching strategies that encouraged student participation and reflections on learning increased students' SE, regardless of the teaching format (face-to-face vs. online teaching). Moreover, the SE gains were invariable with respect to demographic co-variables such as sex, previous training in physical activities and adapted sports, or previous experience or contact with individuals with disabilities (Roldan and Reina 2019). Another study conducted with pre-service PE teachers in Serbia highlighted the effects on behaviours and perceived SE for inclusion when students under training were not familiar with the organisation and adaptation of PE classes for children with disabilities (Jovanović et al. 2014). This is a complex phenomenon that requires much expertise that can be obtained in the course.

It is worth mentioning other works conducted with in-service physical educators using the training programme known as Incluye-T (Reina et al. 2019a, 2019b). The participants improved their perceived SE in the three subscales for inclusion of students with disabilities. Although the programme was composed of 18 face-to-face hours—a shorter time in comparison to our course with its 56 face-to-face hours—the higher improvement rates of in-service teachers may be related to a greater capacity to apply the experiences and learning acquired in the programme to their own students directly in real life. Another reason may be the short-term effect that more intense learning may have in a shorter period of time (i.e. three weeks). In this sense, the recent study conducted by Reina et al. (2021) demonstrated that in-service PE teachers that

implemented the Incluye-T programme were capable of influencing the behaviours of their PE students towards inclusion using awareness interventions in real educational settings.

Simulation was used in both programmes as a key element (Colwell, Thompson, and Berke 2001) so that the participants could put themselves in the place of individuals with some type of disability and thus experience what they can feel. Although disability simulation activities are often designed and implemented by outsiders (e.g. physical educators without a disability) to reflect the experiences of insiders (e.g. physical students with a disability) (Leo and Goodwin 2016), they may be able to understand better the inclusive strategies to be implemented to favour full participation in the tasks. The presence of practical content in the course based on simulation enables vicarious and mastery experiences in modifying activities, equipment, and instructions for students with special education needs (Reina et al. 2019a). Secondly, based on Allport's contact theory (Allport 1954), contact with individuals with disabilities favours the elimination of prejudices or the improvement of relationships with individuals with some type of disability. In our study, simulations were carried out throughout the course. Furthermore, there were three types of contact, since two athletes with disabilities participated, one with cerebral palsy and the other with visual impairment. In addition, the students had at least one contact experience with individuals with intellectual disabilities in an occupational centre and with the implementation of an event for individuals with disabilities at the university.

It is important to highlight the importance of designing training programmes for future PE teachers that include practical content related to inclusive PE. These programmes should include contact experiences with individuals with disabilities (Hodge and Jansma 1999) in order to enable teachers to perceive themselves as having

the ability to serve students with disabilities successfully in PE classes. In order to perform as a PE teacher in secondary education, the Spanish educational system requires that the students complete a year on a Master's course in education. The knowledge acquired in the course of the present study can develop the basis for including students with disabilities in PE, while the Master's programme includes compulsory practical hours in real-life situations, usually with students with and without disabilities, allowing transference of the acquired teaching skills.

Concerning the moderator effect of the demographics of sex, previous training, and previous participation in para-sports or adapted/inclusive physical activities, the results of this study are in line with others in the literature, but some caution should be taken in relation to the standard deviation scores of the SE gains of the intervention group. In terms of gender, women reported higher SE gains in the three subscales, these being significant for the intellectual and physical subscales. Although Hutzler et al.'s (2019) narrative review on attitudes and self-efficacy regarding inclusion in PE stated the limited information concerning pre-service and in-service physical educators' SE considering their sex, our results are in line with those reported by Jovanović et al. (2014), who used the same inventory to assess SE in a sample of 120 pre-service physical educators (75 males and 45 females) from three universities in Serbia, where females reported higher SE scores compared to males in two of the three universities. However, the study by Jovanović et al. (2014) is a cross-sectional design, and further evidence should be obtained in intervention or randomised trial designs. Concerning their previous training, an overall tendency was found towards higher SE gains for those participants without previous training, but significant differences were found only for the visual subscale. These results are in line with those obtained by Hutzler et al. (2005) in a sample of 153 PE majors (58 males and 95 females) in Israel, reinforcing the fact

that baseline levels of SE should be considered prior to delivering inclusive PE training workshops (Neville et al. 2019). Future research could explore the effects of different levels of difficulty for the tasks/activities used in the university courses, since it has been demonstrated that having previous experience of observing a physical educator teaching a student with a disability influences university students' SE (Alhumaid et al. 2020).

Some limitations of the present study should be pointed out. In the first place, it would have been positive to assess the students several months after the intervention to confirm whether the improvements detected were maintained in the long term. However, the pandemic situation that affected us after the application of the course did not allow that assessment to be performed. In addition, a recent study by Ng et al. (2021) has observed that social distancing measures derived from COVID-19 have influenced inclusive teaching strategies, suggesting that new skills are necessary for effective inclusion in PE, and raising new questions for further studies. Secondly, although an in-service learning methodology was used (Jiménez-Monteagudo 2020), it was only performed with individuals with intellectual disabilities. It would have been pertinent to have performed it also with individuals with physical and visual disabilities. However, in the logistics of organising these activities within the teaching course, it was not possible to incorporate all disabilities. There was contact with athletes with physical and visual disabilities, however, having performed simulations of both disabilities and planned inclusive activities for each of the disabilities assessed with the SE evaluation scale. Thirdly, although the participants were students from the same course and from the same southeast Spanish region, the control group and the experimental group were not from the same university; and although the duration in weeks of the semester was the same (i.e. 14 weeks), the load of the physical activities and adapted sport course had

a difference of 1.5 ECTS credits in the case of the control group (i.e. 6 vs. 7.5 credits). However, this would not bias the study outcomes due to the courses being scheduled in different semesters. Fourthly, both the SE-PETE-D (English) and the EA-PEF-AD (Spanish) inventories only measure the physical educators' SE outcomes regarding the inclusion of students with intellectual, physical, and visual impairments. Although this would be enough when the content of the course is closely related to Paralympic sports and its eligible impairments, the tool misses the evaluation or other groups such as hearing impairments or autism (Li et al. 2018).

Conclusions and Future Research

This study concludes that an APA syllabus that combines different teaching strategies for improving knowledge about and attitudes towards people with disabilities that was applied with university students of physical activity and sports sciences is effective in improving their SE regarding inclusive PE that involves those with intellectual, physical, and visual impairments. It is true that nothing has been said about hearing impairment because the tool does not cover hearing impairment. However, there were activities related to hearing impairment in the course. In fact, the main focus was on strategies to improve communication within inclusive physical activities.

Considering further studies, it would be enriching to perform comparative studies of training courses from different Spanish or European universities in an attempt to find common elements that ensure basic initial training. This way, physical activity and sport professionals will be able to provide adequate attention to individuals with disabilities. Similarly, it would be opportune to undertake comparative studies with students that are attending or have attended a Master's course in education that qualifies them to teach in Spain, and to assess whether these courses have relevant content and teaching methodology to improve inclusive PE. Finally, given that there are compulsory

and optional courses in the different study plans of the Spanish universities that offer a degree in physical activity and sport sciences, it would be interesting to compare students from the two types of course, since there could be extra motivation and potential differential effects on self-efficacy gains in the case of students who attend the optional courses.

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