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## RESEARCH ARTICLE

### Experiences of an Adapted Physical Activity Intervention Program in Saudi Pre-Service Physical Education Teachers' Self-Efficacy Towards Inclusion

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#### Abstract:

#### Introduction:

Adapted physical activity programs are considered to be one of the most effective and timely ways of increasing levels of self-efficacy among pre-service physical education teachers toward inclusive practices. However, the literature lacks adequate qualitative studies to measure the effectiveness of such programs. To address this paucity, the present study aims to explore pre-service physical education teachers' experiences after completing a 6-week adapted physical activity intervention program designed to improve the inclusion of students with physical disabilities in general physical education settings.

#### Methods:

Six pre-service physical education teachers who completed a 6-week adapted physical activity intervention program participated in individual semi-structured interviews. Deductive and inductive techniques were used in the data analysis.

#### Results:

All the participants reported that the intervention program was relatively effective at enhancing their self-efficacy and preparation towards including students with physical disabilities in physical education classes.

#### Conclusion:

Regular exposure to practicum involving teaching students with disabilities is key to encouraging strong self-efficacy among pre-service PE teachers. Some suggestions for future intervention programs are provided.

**Keywords:** Inclusive physical education, Students with disabilities, Physical disability, Physical education, Teacher education, Inclusive education, Saudi Arabia.

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## 1. INTRODUCTION

Inclusive education is a global initiative that aims to eliminate exclusion from and within educational institutions. It is based on human rights, equity, and social justice and focuses on the educational inclusion of individuals with disabilities [1]. Globally, the number of students with disabilities in inclusive schools is increasing [2, 3]. For instance, in the United States, 95% of students with disabilities aged between 6 and 21 years attended inclusive schools [4, 5]. More than 140,000 students with disabilities in Spain study in regular schools [6]. Despite

the international trend toward inclusion, physical education (PE) teachers tend to be inadequately prepared for the challenges of inclusive teaching [7 - 10].

It has been argued that teachers' self-efficacy (SE) in teaching students with disabilities is one of the most important elements for successful inclusion in inclusive PE settings [11 - 14]. Teacher efficacy has been defined as teachers' beliefs and confidence in the ability to impact their students' learning [15, 16]. It is believed that teachers with higher levels of SE are more likely to implement different strategies (e.g., adapting lessons for students with disabilities) than teachers with lower levels of SE [17]. PE teachers are capable and confident when teaching students in their classes; however, this confidence and

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ability decrease when teaching students with disabilities in inclusive PE classes [18, 19]. This is expected as most of them have taken only one adapted PE course during their physical education teacher education (PETE) program and have limited experience with inclusion [7].

Implementing specifically-designed intervention programs to improve the SE and skills of pre-service PE teachers for teaching general PE classes that include students with disabilities is the key to addressing current PETE programs' weaknesses. For instance, Foley *et al.* [20] investigated how an intensive sports camp designed for students with visual impairments impacted the SE of pre-service PE teachers in teaching students with a range of disabilities (intellectual, physical, and visual) in PE contexts. The results showed that the program significantly increased the pre-service PE teachers' SE scores regarding teaching students with intellectual, physical, and visual disabilities. For future research, Foley *et al.* [20] recommended that researchers implement qualitative research methodologies to gain a more comprehensive understanding of which aspects of intervention programs provided the most effective ways of raising pre-service PE teachers' SE. Literature also recommended that researchers conduct qualitative studies to clearly understand the factors that influence SE of pre-service PE teachers [21, 22]. In fact, qualitative research on adapted physical activity (APA) and adapted PE is limited [23 - 25]. Therefore, to address this research method, this qualitative study aims to explore in-depth Saudi pre-service PE teachers' experiences participating in a 6-week APA intervention program and its impact on their SE towards including students with physical disabilities (PD) in general PE classes. The main aim of the APA intervention program was to improve the level of SE among pre-service PE teachers towards the inclusion of students with PD in general PE settings.

## 2. MATERIALS AND METHODS

### 2.1. Participants

The participants in the study were pre-service PE teachers in their fourth year of a PETE program at a university in Saudi Arabia. This cohort was chosen because the participants were close to graduating and taking teaching positions the following year. Of the 35 eligible participants, six participants (17.14%) who completed the 6-week APA intervention program ( $M_{age} = 22.3$  years) agreed to be interviewed in this study. A small sample of participants enabled an in-depth understanding of the phenomenon of the people in perspective for this study [26]. Most participants ( $n = 5$ ) reported that they have neither a family member nor a friend with a disability. All participants have taken the adapted PE course. One participant reported having previous experience teaching students with intellectual disabilities. Overall, two participants reported having observed PE teachers teaching students with disabilities, whereas one had been persuaded to teach PE to students with disabilities.

### 2.2. Adapted Physical Activity (APA) Intervention Program

The APA intervention program contains inclusive PE skills recently described by Alhumaid *et al.* [27]. This program aimed to increase the level of SE among pre-service PE

teachers in teaching students with PD in general PE settings. The program consisted of six sessions of 3 hours per session; one session a week (total of 18 hours). The program was conducted on-campus (*e.g.*, a gymnasium) and off-campus (*e.g.*, a Paralympic sport club gymnasium).

### 2.3. Measure

Face-to-face, in-depth, individual, semi-structured interviews were conducted with participants regarding their participation in the 6-week APA intervention program. The benefit of adopting semi-structured interviews as a research method is that they enable interviewers and interviewees to co-create shared understandings through their inherently open-ended nature [28].

In the present study, we followed suggestions by Creswell [29], Jacob and Furgerson [30], and McGrath *et al.* [31] in structuring and formatting the interviews. For example, McGrath *et al.* [31] suggested that interviews start with relatively easy warm-up questions to encourage the participant to feel comfortable. In addition, Jacob and Furgerson [30] suggested that interviewers should prepare a script to guide the process during the interviews. Moreover, the semi-structured interview guide was created based on Bandura's [32] Self-Efficacy Theory sources and previous studies [6, 33], the present study's objectives and the participants' participation in the APA intervention program. For example, it featured questions such as 'How would you describe your experience in the intervention program?'; 'Explain how your SE has been changed from the beginning of the program to the end?' Towards the end of the interview, participants were asked one question about their feelings about the intervention: 'Do you have any additional concerns or comments that you would like to add about the intervention?'

### 2.4. Procedure

The participants who had agreed to participate in the study were contacted by phone to arrange and confirm the location, date, and time of the interviews. Before starting each interview, each participant was given a research information sheet detailing the structure of the interview and asked if they needed more information. After reading the research information sheet, they signed the consent form if they agreed to participate. A checklist to ensure that all questions were covered and the same basic line of questions was consistent was utilized for each participant [34]. All interviews took place in a conference room at the university. All interviews lasted approximately 25 minutes and were audio-recorded using a digital recorder. This helped check the accuracy/veracity of the data collected [35], and transcribed interviews were emailed to each participant. All participants agreed with the content of the interview. Pseudonyms such as Ahmed, Mohammed, Ali, Saleh, Saeed, and Khaled were used to protect the confidentiality and anonymity of participants in this study.

### 2.5. Interview Analysis

Two approaches were used to analyze the interviews. First, a deductive data analysis approach was applied using a theoretical approach. This method is justified by allowing basic

themes extracted from the data [36]. Second, the inductive approach was applied manually by identifying important themes. A model by Winfield *et al.* [37], which involved deductive techniques, was applied to obtain the structure of the final themes.

The transcripts were read twice for familiarization and coded using NVivo12 software. Then, three analysis phases were conducted to check for consistency. Specifically, the transcripts were coded using the NVivo for data abstraction in stage one. These nodes were defined using unique codes for the various statements represented as aspects and dimensions of conversation [38]. Later, these nodes were used to recognize and sort the general categories and themes emerging from the data [39]. Several nodes were created by applying NVivo software functions to determine the participants' most frequently occurring responses about each element. These words were analyzed by choosing stemmed words, which were found from the words cloud and treemap to demonstrate their regular usage by the participants and their significance in this analysis.

The second stage involved collating the main topics mentioned in the raw data themes as an inductive technique. We narrowed down their focus to applying the themes at this stage, where the inductive technique was used after grouping all codes of statements showing the most similar themes. In getting to stage three, the deductive technique provided the dimensions of the themes obtained from the second stage.

**3. RESULTS**

**3.1. Themes and Subthemes**

The data revealed six major themes and 12 subthemes (Table 1).

**Table 1. Themes and subthemes of a qualitative study.**

S.No	Themes	Subthemes
1.	Likes about the intervention program	a. The notion of inclusion b. The diversity of activities
2.	Dislikes about the intervention program	a. Time limitations
3.	Efficacy of the intervention program	a. Experience in teaching and including students with PD b. Control fears of dealing with students with PD
4.	The intervention program's activity-specificity	a. Teaching experience b. Simulation activity c. Participating in para-sports
5.	Readiness to teach students with disabilities in inclusive contexts	a. Effective preparation b. Poor preparation
6.	Suggestions to improve the intervention program	a. Time assigned for the program b. Other suggestions

**3.1.1. Theme 1: Likes About the APA Intervention Program**

In general, all participants found the APA intervention

program beneficial for several reasons and went into detail about what aspects they liked most. For example, the participants stated that they thought the APA intervention program was beneficial because it facilitated the inclusion of students with PD and their peers without disabilities. For example, Ahmed stated, "I liked the experience of giving an inclusive class between students with and without disabilities." The participants also reported they liked the APA intervention program because of certain included activities. For example, learning how to set up a sitting volleyball game and playing wheelchair basketball with para-athletes, as illustrated in Saeed's comment, "Also, I liked the idea of including students with and without disabilities in activities such as sitting volleyball and wheelchair basketball games."

**3.1.2. Theme 2: Dislikes About the APA Intervention Program**

When asked what they disliked about the APA intervention program, the participants raised several weaknesses and limitations. For example, the APA intervention program's time limitation was the most frequently mentioned weakness. Specifically, most participants stated that the APA intervention program's duration (18 hours) was insufficient to understand teaching practices adequately. For example, Saeed pointed out,

I think the time duration of the lesson that taught us how to include students with disabilities in general PE classes was not enough... The duration of the program was short. Expanding the program would make us more ready [to teach students with disabilities] and meaningful.

**3.1.3. Theme 3: Efficiency of the APA Intervention Program**

The major goal of the APA intervention program was to improve the level of SE among pre-service PE teachers towards the inclusion of students with PD in general PE settings. The participants were asked about factors related to their confidence level, such as their confidence in teaching those with and without PD to improve the level of SE among pre-service PE teachers. In this regard, two sub-themes were evident in the data: (i) how the APA intervention program enhanced participants' experience of teaching students with PD inclusively in PE classes; and (ii) how the APA intervention program helped participants control their fears and allay their concerns about teaching students with PD.

First, it is evident that the APA intervention program enhanced participants' experience teaching and including students with PD in general PE classes. All the participants reported that they felt the APA intervention program had developed and improved their experience of including and teaching students with PD, especially related to exercise activities. Mohammed's quote supports this: "I learned how to deal with persons with PD, how to do exercises and activities for them, and how to include them with their peers without disabilities."

Second, the APA intervention program also helped the participants control their fears and allay their concerns about teaching students with PD. Specifically, two participants believed that the APA intervention program had supported

them in controlling their fears and nervousness in teaching students with PD. For example, Ali explained,

I also had a fear of dealing with students with disabilities in order not to cause any physical harm to them. However, after the start of the program, I saw things from a different perspective and more clearly. After that, I tried to get closer to the students with disabilities, and I saw a very positive reaction from them, and it was a joy. After participating in the program, I feel more confident that I can teach students with disabilities.

#### **3.1.4. Theme 4: The APA Intervention Program's Activity-Specificity**

The APA intervention program targeted Bandura's [32] four sources of SE: mastery experiences, vicarious experiences, verbal persuasion, and physiological states. The participants stated that most of the APA intervention program's activities improved their confidence towards including students with PD in terms of providing mastery experiences.

The extent of an individual's practical experience provides a real measure of how well they can perform a specific task, which also applies to teachers (*i.e.*, pre-service PE teachers). Specifically, the participants in the present study stated that having or gaining experience teaching students with and without disabilities significantly improved their SE in terms of inclusion. This sentiment was illustrated by Ahmed, who said, "The most effective thing is when we were doing teaching tasks; I mean the day that we started doing lessons in inclusion with students with and without disabilities." This was similar to Khaled's opinion "Honestly, the most effective activity for me is when I practiced teaching my peers with simulated PD and without."

The participants reported that the disability-simulation activity was hugely beneficial in helping them understand the limitations of students' disabilities. Further, some participants also reported that this activity reduced their nervousness and increased their feelings of comfort in dealing with students with disabilities. Several participants stated that they considered the physical disability simulation activity one of the most effective activities for enhancing their confidence and improving their level of SE towards including students with PD. For example, Saleh reported, "Honestly, when we tried using the wheelchair (in the simulation), this had a huge impact on my understanding (of teaching students with disabilities)."

Finally, the participants reported that one of the most beneficial aspects of participating in para-sports with para-athletes is realizing that persons with disabilities have great physical strength and can do many tasks successfully. Further, the participants reported several specific advantages of participating in PE activities with the para-athletes. For example, Saleh explained, "Also, the sitting volleyball activity was effective because we worked to modify the roles to suit the players with PD, so everyone was interacting and active."

#### **3.1.5. Theme 5: Readiness**

The theme of readiness revealed several mixed responses concerning class preparation. In particular, the participants reported how well the APA intervention program was designed

to include students with PD in general PE settings. Based on the participants' statements, we divided their responses into two sub-themes, namely, (i) effective and (ii) poor preparation, as detailed below.

The majority of the participants cited the positive impacts of the APA intervention program in terms of effective preparation. The following interview extracts illustrate this sub-theme. For example, Saleh said,

Yes, because the program material was clear and easy to follow. I did not have any background or experience in inclusion and teaching students with disabilities before the program; however, including students with and without disabilities has become easier after the program. In addition, I can now deal with anyone (with or without PD).

However, a few participants stated that the APA intervention program did not significantly influence their level of preparation for teaching students with PD. In other words, these participants expressed that they felt the APA intervention program had little effect on their level of preparation. For example, Saeed reported, "No, not that much; because some parts (of the program) did not include all aspects of teaching kids with PD."

#### **3.1.6. Theme 6: Suggestions to Improve the APA Intervention Program**

The participants provided five suggestions to improve future iterations of the APA intervention program. In order to simplify these five suggestions, we simplified them into (i) the amount of time assigned to the APA intervention program and (ii) other suggestions.

First, the participants reported that the amount of time (18 hours) allocated for the APA intervention program represented a major limitation, and three of the six participants suggested that increasing the APA intervention program's duration would provide the participants with a deeper level of experience of teaching students with PD. For example, Ali reported, "The program length, in general, was good, but the longer the program, the more information and experience we would have got."

The participants made other important suggestions about enhancing the APA intervention program to meet their needs. These included equipment, APA intervention program content, number of participants, and the venue allocated for the APA intervention program. For instance, Ahmed said, "The equipment on the program was good, but we wanted to use other equipment. For example, I wished there was more equipment during the teaching activity. We only used simple equipment like balls, cones, ropes, and things like that." In addition, Saeed pointed out, "I think that the fewer participants (on the program), the better. We will get much more benefit." Khaled concurred, "In terms of the venue where some of the program activities were held, I think it would be much better if we had a bigger venue so that everyone can be more comfortable, especially if some people are in wheelchairs." Next, Mohammed opined, "I think that we should have less theory and more practical activities because we gain more benefits from it (practical activities)." Finally, in terms of

improving the intervention program content, Ali expressed,

“O.K., to improve the program content, first, I think that the program should have different categories; like how to teach children and adults. For example, it is easy to work with young people because they learn very quickly. However, with the children, we face obstacles when dealing with them. Therefore, it would be better in the future if the program included all these (age categories) to better prepare us to work with students with disabilities.”

#### 4. DISCUSSION

This study aimed to provide an in-depth exploration of participants' experiences in a 6-week APA intervention program. In particular, it aimed to explore how this APA intervention program affected participants' SE towards including students with PD in general PE classes. The results suggested that the APA intervention program improved the participants' SE levels toward including students with PD in general PE settings.

Generally, the findings suggest that specific aspects of the APA intervention program increased the participants' level of SE in teaching students with PD. This finding concurs with Reina *et al.*'s [6] pre-test/post-test study that sampled 229 participants and found that a similar intervention program in Spain was efficacious in raising in-service PE teachers' SE towards teaching students with disabilities. Further, other studies [12, 14] have underlined that well-designed intervention programs have more potential to succeed if they focus on specific aspects of raising SE based on the sources of SE. Six themes were identified in this study. Each of these themes is discussed in turn.

##### 4.1. Likes About the APA Intervention Program

The findings highlighted that the participants expressed positive attitudes towards the idea of inclusive education. This result agrees with previous studies' findings [40 - 42]. Further, Folsom-Meek and Rizzo [43] posit that teachers' attitudes significantly affect how they interact with and teach students with disabilities in general PE classes. In this regard, the present study's finding that the participants expressed positive attitudes towards inclusive PE is likely to reflect the APA intervention program's positive impact on their feelings toward inclusion. The participants agreed that the APA intervention program provided both persons with and without PD an opportunity to learn and interact in beneficial ways.

##### 4.2. Dislikes About the APA Intervention Program

Literature has reported that PETE programs fail to provide adequate training for pre-service teachers. For example, several studies from Ireland, Spain, the United Kingdom, and Switzerland [44 - 47] suggest that PE teachers felt they did not receive enough training in teaching students with disabilities in PE classes during their undergraduate studies. Therefore, these results may explain the present study's findings in which several participants stated that they felt the APA intervention program should have been longer. In particular, in terms of the APA intervention program's duration, while the participants reported that it should be longer, a previous study by Reina *et*

*al.* [6] that tested an intervention of the same duration (18 hours) found that participants reported that the 18-hour program was perfectly acceptable. A possible explanation for these contradictory results might be that the Reina *et al.* [6] intervention program involved in-service PE teachers, whereas the present study's APA intervention program targeted pre-service PE teachers. Therefore, in-service PE teachers are likely to have more experience teaching students with disabilities [48] than undergraduate pre-service teachers. Thus, it is logical that pre-service PE teachers may require a longer, more intensive intervention program than in-service teachers.

##### 4.3. The efficiency of the APA Intervention Program

Researchers have recommended providing pre-service PE teachers with more experience teaching students with disabilities [40, 48, 49]. Concurrent with the literature, the participants in the present study also reported improvements in their inclusive teaching skills, abilities, and SE in teaching students with PD following the APA intervention program. Consequently, this result confirms the widely held view in the literature that practical experience positively influences individuals' confidence and abilities toward including students with disabilities in general PE settings [24, 50, 51].

Next, in terms of the impact of the participants' physiological and emotional status [52] on their SE towards teaching students with disabilities, these aspects appear to be closely linked to their eventual success or failure. Moreover, Miesera *et al.* [53] examined the impact of pre-service teachers' concerns about their attitudes and SE in terms of teaching inclusive classes. The authors concluded that respondents with fewer concerns expressed more positive attitudes and had a higher level of SE towards teaching successfully in inclusive settings. Similarly, participants in the present study also stated that they were concerned about teaching students with disabilities before participating in the APA intervention program. These concerns could be related to their previous experiences; for example, observing unsuccessful inclusive classes [54], having to teach students with disabilities without professional supervision [55], lack of skills required for inclusive PE [56], or lack of support [57]. However, all the participants in the present study reported feeling much more confident teaching inclusive classes for students with and without PD after participating in the APA intervention program. Therefore, in light of Miesera *et al.*'s [53] results, it is likely that the participants in the present study indicated positive attitudes and high levels of SE towards the inclusion of students with PD due to the APA intervention program. The present study's finding is also in accordance with other studies [55, 58, 59] that suggested participants with no previous experience in inclusive teaching felt anxious when teaching in inclusive contexts.

##### 4.4. The APA Intervention Program's Activity-Specificity

Peebles and Mendaglio [60] suggested that interviews could provide researchers with perspectives and explanations that cannot be caught in quantitative studies. In addition, continued investigation in this field will support teachers in understanding which experiences are most effective at promoting SE and preparing pre-service teachers for the

challenge of inclusive education. In the present study, when asked what participants felt had been the most effective activity for enhancing their confidence and SE teaching students with disabilities, most participants reported that the APA intervention program's practical teaching elements were the most effective. This result was expected as mastery experiences [32] have been identified as the most powerful source of SE. This result is consistent with previous studies that reported that Irish and Canadian pre-service PE teachers' level of SE improved after gaining practical experience teaching students with disabilities [48, 60, 61].

The Spanish Inclusive-T guide [62] suggests that participants should be able to perform simulations of several types of disabilities (*e.g.*, PD). Disability-simulation activities can enhance teachers' attitudes towards and empathy for persons with disabilities [63 - 66]. McKenney [67] also concluded that disability simulation activities helped to decrease participants' nervousness and increase their feelings of ease towards teaching persons with disabilities. In line with this finding, the participants in the present study mentioned that the simulation activity positively impacted their confidence toward inclusion. Participants experienced a simulated PD with a mentor with a PD as a real-life model. Consequently, the positive impact of this simulation highlights the importance of such approaches when designing an intervention program to improve teachers' SE towards teaching students with disabilities.

McCarthy and Campbell [68] and, more recently, Garcia and Gonzalez [69] suggested that the extent to which persons without disabilities are provided with opportunities for direct contact with persons with disabilities positively affects their attitudes towards the latter. This is significantly linked to the SE level of persons without disabilities [70, 71]. For example, interacting with para-athletes in sports activities can improve PE teachers' confidence toward including students with disabilities in general PE settings [72]. Moreover, such interactions are also effective at raising social awareness about the difficulties that para-athletes face during training and competition [62]. In the present study, the interview data are consistent with other findings in the literature in that having the opportunity to interact with para-athletes was one of the most effective activities for improving the participants' level of SE towards including students with PD. Therefore, PETE programs should provide these kinds of activities for pre-service PE teachers in order to increase their awareness and confidence in inclusive PE [73, 74].

#### 4.5. Readiness

The literature has reported that although pre-service PE teachers expressed positive attitudes toward inclusion, in reality, they are poorly prepared to include students with disabilities in their PE classes [60, 75]. Therefore, it is clear that having positive attitudes toward inclusion per se does not necessarily result in pre-service PE teachers feeling fully prepared to teach inclusive classes [76]. As a result, in the present study, we felt it was necessary to explore the extent to which the participants felt prepared to teach inclusive PE classes.

In this regard, the participants expressed mixed feelings regarding preparing for teaching in inclusive PE contexts following the APA intervention program. In particular, while most participants reported feeling well prepared after the APA intervention program, a few stated that they felt inadequately prepared. This finding is similar to that of Ahsan *et al.* [77], that pre-service teachers' readiness for inclusive education varied considerably. A possible explanation for these mixed levels of readiness might be that the participants' level of expectation about the demands of teaching in inclusive contexts differed between the participants in the two studies. Another possible explanation might be that other confounding or unknown variables may have impacted participants' preparation, such as having previous experience with persons with disabilities [60]. Hodge *et al.* [9] concluded that PE teachers with more experience demonstrated and expressed more preparedness in teaching students with disabilities than those with less experience.

Consequently, to clearly investigate an intervention program for pre-service PE teachers, we recommend that future research engage participants with no previous experience with disabilities to participate in the intervention program. Indeed, these differences (mixed feelings in terms of participants' preparation to teach in inclusive PE contexts) can be considered positive differences through which the influence of the APA intervention program is explored from more than one perspective. Therefore, this difference in the results may contribute to developing evidence-based recommendations that could benefit future intervention programs.

#### 4.6. Suggestions to Improve the APA Intervention Program

Qualitative studies aim to provide an in-depth exploration of respondents' subjective experiences of a phenomenon [30] and, in the present study's context, allow them to express their opinions freely about their participation in a particular APA intervention program [78]. Therefore, the present study's results underline that taking advantage of participants' experiences in an APA intervention program is worthwhile to improve the program's content for future research. Therefore, the participants were asked to suggest how the APA intervention program could be improved. The participants reported that being able to spend more time working with persons with disabilities would be highly beneficial. This finding is in line with a recent study, which found that the interaction with students with disabilities helped pre-service PE teachers to gain confidence in themselves [79]. Also, in this respect, the participants' claims are consistent with other studies [12, 51, 60], which suggest pre-service PE teachers need to spend more time with students with disabilities. In particular, Coates [80] and Tindall *et al.* [48] concluded that it is necessary to provide such experiences for pre-service PE teachers within the area of APA to improve their level of SE towards including students with disabilities.

The participants also gave other valuable suggestions to improve the APA intervention program's content. For example, one participant recommended that the APA intervention program include different age categories (*i.e.*, children and adult students). This suggestion is in line with a recent Saudi

study by Aldabas [81] that special education teachers showed low confidence in their preparedness toward teaching younger students with disabilities (*i.e.*, preschool and primary school). Moreover, another participant from the present study stated that the APA intervention program would be much better if it provided extra equipment such as sports wheelchairs. This finding is in line with the suggestions Bastos *et al.* [82] provided that PE teachers should improve their knowledge of para-sports (*e.g.*, equipment and rules). The present study's findings also support prior findings by Haegele *et al.* [83], who reported that the availability of equipment is a significant factor in order to promote the participation of students with disabilities in PE classes. In addition, another participant from the present study recommended spending less time on theory-based sessions and more on practical sessions. This claim may explain Haegele *et al.*'s [84] results, which concluded that their 2-day workshop intervention failed to reach its goal of improving teachers' attitudes toward inclusion because it mainly emphasized theoretical information such as knowledge of relevant legislation, disability definitions, and activity modifications. These results align with Clift and Brady's [85] suggestions that an inclusive program designed for pre-service teachers should move away from traditional theory-based courses and instead emphasize practical and collaborative practices.

Despite the strengths of this study, certain limitations must be acknowledged. The sample size is the first limitation of this study. As the present study's sample of pre-service PE teachers ( $n = 6$ ) is small, in the present study, we applied the concept of transferability from one context to another instead of large-scale generalizability [86]. Second, the sample comprised pre-service PE teachers who were purposefully sampled from those who participated in a 6-week APA intervention program. Indeed, this approach was applied based on the purpose of the present study. Lastly, female participants were not represented in this study because no PETE programs were available for female students at the time of data collection.

## CONCLUSION

Research has shown that pre-service APA intervention programs tend to be effective at raising pre-service PE teachers' SE towards teaching students with disabilities, specifically, students with PD. Also, strong SE beliefs result from practitioners' regular exposure to the task(s) in question. Given this, the present study's findings on the participants' experiences in the APA intervention program suggest that the 6-week APA intervention program improved participants' SE towards including students with PD in general PE classes. These findings support the notion that intervention programs designed to raise pre-service PE teachers' SE towards teaching students with disabilities in inclusive contexts are hugely important. Therefore, Saudi Arabian universities – as well as those in non-Western countries – offering APA and adapted PE courses should adopt such intervention programs as compulsory modules. Creating awareness and interactions to raise social consciousness about the challenges that persons with PD face during training and competition is necessary. More broadly, such commitments should also be supported by the relevant educational authorities in other countries to further

support the educational outcomes of teachers of students with disabilities and the students they teach.

## LIST OF ABBREVIATIONS

SE	=	Self-Efficacy
PETE	=	Physical Education Teacher Education
PD	=	Physical Disabilities

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the University of Malaya Research Ethics Committee (Reference: UM.TNC2/UMREC—452).

## HUMAN AND ANIMALS RIGHTS

No animals were used in this research. All human research procedures were followed per the ethical standards of the committee responsible for human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2013.

## CONSENT FOR PUBLICATION

Written informed consent was obtained from the participants.

## STANDARDS OF REPORTING

Strobe guidelines were followed.

## AVAILABILITY OF DATA AND MATERIALS

Not applicable.

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## CONFLICTS OF INTEREST

The authors declare no conflict of interest, financial or others.

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