Teacher-Mediated Inclusion in Physical Education: Experiences of Working with Students with Autism

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ABSTRACT:

Inclusion in physical education (PE) classes is becoming more important to ensure equal learning opportunities for students with Autism Spectrum Disorder (ASD). But lack of consistency in teacher preparedness and school environments creates barriers. This study examines how teacher factors influence inclusive practices in PE. The research adopted a quantitative approach and surveyed practitioners (N = 200) who teach PE. The questionnaire measured teacher self-efficacy, inclusion training, support and inclusive practices. A multiple regression analysis was used to explore the predictive factors. Results suggest that teacher self-efficacy, prior inclusion training and institutional support are significant predictors of inclusive practices, with self-efficacy being the strongest predictor. A large

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portion of the variance in inclusive teaching practices is accounted for, revealing the complexity of inclusion readiness. These findings support the value of professional learning and school structures that support inclusive practice. The study has practical implications for enhancing teacher self-efficacy, providing more training, and supporting school administrators to create an inclusive environment to improve PE outcomes for students with ASD. Our findings inform best practice in inclusive education (Ainscow, 2020; Block et al., 2021; Lindsay et al., 2020; Qi & Ha, 2022; Sharma et al., 2021).

Keywords: Autism Spectrum Disorder; Inclusive Physical Education; Teacher Self-Efficacy; Inclusive Practices; Multiple Regression

1. Introduction

1.1 Background

The momentum towards inclusive education has been accelerated globally as a human rights and pedagogical priority, especially for those with Autism Spectrum Disorder (ASD), who face challenges engaging in the school community. Physical education (PE) is one such context. While PE provides an active environment for motor skill, social skill and communication development, it also presents increased challenges with sensory, social and structured participation difficulties inherent in ASD (Block et al., 2021; Qi & Ha, 2022). While policies advocating for inclusion have improved, implementation of inclusion in PE is not always effective. Common teacher-reported barriers include a lack of training and adaptive strategies, class-size ratios and lack of support (Lindsay et al., 2020; Sharma et al., 2021). These challenges lead to decreased participation and engagement of students with ASD in PE. Thus, teacher-mediated inclusion has been recognised as a key construct, underscoring the role of teachers in creating inclusive learning opportunities. Teachers' teaching choices, beliefs and responsiveness impact students' learning (Ainscow, 2020). In the dynamic and often unstructured nature of PE activities, teachers play an even more pivotal role in facilitating participation, adapting tasks and supporting peer inclusion. One critical factor in this process is teacher self-efficacy, which refers to the confidence in performing teaching tasks. Teachers with higher levels of self-efficacy are more likely to embrace inclusive teaching approaches and are more resilient in difficult teaching contexts (Tschannen-Moran & Hoy, 2001). Furthermore, teacher training in inclusive education provides teachers with strategies and school support systems that enable inclusive practice (Florian & Black-Hawkins, 2019; Haegele et al., 2020).

1.2 Problem Statement

Despite education policies on inclusion that promote equity, there remains a gap in practice in PE. Teachers' implementation of inclusion practices for ASD students is not always effective due to a lack of preparation and other variables. More importantly, the influence of teacher factors (teacher self-efficacy, training and institutional support) on inclusion practices has not been quantified. This affects strategies to promote inclusion in PE.

1.3 Research Gap

The majority of inclusive PE research has produced qualitative evidence, which has explored teachers' beliefs, views and difficulties (Haegele & Sutherland, 2015; Morley et al., 2021). While this type of research provides valuable contextual information, there is a lack of quantitative studies that examine the predictive relationships between teacher-related factors and inclusive practices. In addition, little research uses sophisticated statistical models such as multiple regression to control for these relationships. In terms of approaches to research, there is also a need for structured

measures of variables such as teacher self-efficacy and institutional support in the context of PE.

1.4 Research Objectives

The following objectives guide this study:

1. To examine the relationship between teacher self-efficacy and inclusive practices in physical education.
2. To assess the influence of inclusion-specific training and institutional support on teachers' inclusive practices.
3. To develop and test a multiple regression model predicting inclusive practices among PE teachers working with students with ASD.

1.5 Research Questions

1. To what extent do teacher self-efficacy, inclusion training, and institutional support predict inclusive practices in physical education?
2. Which teacher-mediated factor is the strongest predictor of inclusive teaching practices in PE settings?

1.6 Hypotheses

H1: Teacher self-efficacy has a significant positive effect on inclusive practices in physical education. H2: Inclusion-specific training has a significant positive effect on inclusive practices in physical education.

H3: Institutional support has a significant positive effect on inclusive practices in physical education. H4: Teacher self-efficacy, inclusion training, and institutional support collectively predict inclusive practices in physical education through a significant regression model.

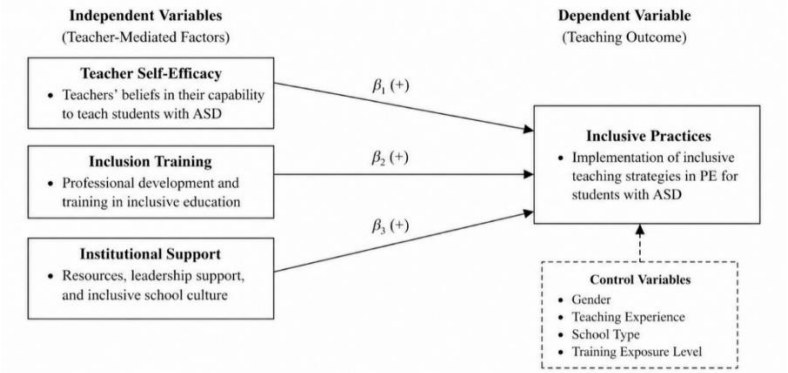

Figure 1. Proposed Regression Framework of Teacher-Mediated Inclusion

Our proposed research framework interprets the uptake and embedding of inclusive practices into teachers' professional repertoires as the dependent variable. It positions teacher self-efficacy, inclusion training and institutional/in-school support as the three independent variables, predicting positive relationships between each of them. We intend to use multiple regression to test these relationships. Theoretical perspectives from some critiques of current education systems and structures, highlighting teacher agency, as well as ecological perspectives of the institution as a key influence on teachers and their practice, underpin this framework. (Florian & Black-Hawkins, 2019; Ainscow, 2020; Morley et al., 2021)

2. Literature Review and Hypothesis development

2.1 Inclusion in Physical Education for Students with Autism

Physical education (PE) is an important area of learning for the holistic development of students with Autism Spectrum Disorder (ASD). PE supports the development of motor skills, social skills, and self-regulation - areas that are commonly impacted in ASD (Healy et al., 2020; Bremer et al., 2021). However, the fast-paced and interactive nature of physical education (PE) settings can also pose challenges, such as coordination and communication difficulties and sensory sensitivities (Haegele & Zhu, 2017). Evidence suggests that students with ASD are more likely to face challenges

in participation and engagement in PE compared to their peers, which can be a result of the lack of instructional strategies (Obrusnikova & Dillon, 2011). As such, inclusive approaches in PE require specific instructional adaptations, including simplifying tasks, peer partnering, and creating routines (Grenier et al., 2019). Teachers play a significant role in the delivery of these practices; their capacities and beliefs are key to inclusion (Block et al., 2021). Although inclusive education is advocated in policy, challenges remain in practice, especially in resource-limited contexts where time and workload are demands on teachers (UNESCO, 2020). This highlights the need to explore teacher-related factors affecting inclusive PE practices.

2.2 Teacher Self-Efficacy and Inclusion (H1)

Self-efficacy, derived from Social Cognitive Theory, is a person's confidence in their ability to plan and carry out actions needed to achieve teaching goals (Bandura, 1997). Self-efficacy is crucial in inclusive education as it influences teachers' teaching practices, motivation and willingness to implement inclusive approaches (Sharma et al., 2012). Research consistently shows that teachers with greater self-efficacy are more likely to engage in adaptive teaching strategies, effectively manage a diverse classroom, and create inclusive classrooms (Zee & Koomen, 2016; Savolainen et al., 2012). In the dynamic environment of PE classes, where teaching demands are diverse and unpredictable, self-efficacy is particularly important. Teachers with high self-efficacy regarding working with students with ASD are more likely to adapt activities, provide one-on-one support and promote peer engagement (Haegele et al., 2020). On the other hand, low self-efficacy leads to avoidance and using conventional teaching approaches that may be exclusionary for students with disabilities (Yada et al., 2018). Based on this research, self-efficacy is likely to influence inclusive practices in PE.

H1: Teacher self-efficacy has a significant positive effect on inclusive practices in physical education.

2.3 Professional Training and Inclusive Practice (H2)

Inclusive education training helps teachers gain knowledge, skills and teaching strategies to meet the needs of all learners. Training content may include training in differentiated instruction, classroom management, and understanding of disabilities, which are all critical for inclusion (Florian, 2017). Studies have shown that teachers with specific training in inclusion are more competent and confident in their inclusive teaching (Loreman et al., 2013). In PE, training is especially crucial in relation to adapting activities, managing safety, and making decisions on the fly (Lieberman et al., 2019). In addition, professional development has been associated with long-term improvements in inclusive practices, as it enables teachers to enhance their skills and implement effective practices based on the best evidence (Desimone & Garet, 2015). However, many PE teachers report a lack of access to such training, thereby limiting their capacity to include students with ASD (Morgan & Hansen, 2008). As such, training is expected to have a positive impact on inclusion in PE.

H2: Inclusion-specific training has a significant positive effect on inclusive practices in physical education.

2.4 Institutional Support and Teacher Inclusion (H3)

Institutional support includes administrative support, resource provision, teamwork and policy enactment in schools. It sets up an enabling or disabling environment for teachers to practice inclusion strategies (Ainscow & Sandill, 2010). Research has demonstrated that when teachers feel supported by administrators and have access to sufficient resources (e.g. adapted equipment and teaching assistants), they are more inclined to use inclusive practices (Avramidis & Norwich, 2002). In PE, institutional support can include reduced class sizes, additional training and support from special educators or therapists (Hodge et al., 2016). But insufficient support has been shown to result in teacher burnout and less motivation to implement inclusion (Sokal & Sharma, 2017). This underscores

the holistic approach required for inclusive education, in which individual teacher actions need to be supported by institutional actions.

H3: Institutional support has a significant positive effect on inclusive practices in physical education.

2.5 Inclusive Practices and Student Outcomes (H4)

Inclusion is not only about equity but also student learning outcomes. There is evidence that successful inclusion in physical education can improve motor, social and well-being outcomes for students with ASD (Pan, 2008; Healy et al., 2020). Teacher-led strategies like individualised instruction, reinforcement, and peer support enhance participation and engagement during PE classes (Grenier et al., 2019). Additionally, inclusive settings foster social acceptance and reduce stigma, both for students with and without disabilities (Block et al., 2021). Theoretically, inclusion is a mediator of teacher-related factors into student outcomes. This implies that a combination of teacher self-efficacy, training, and support provided by school and district policies plays a role in teacher practices and ultimately in effective inclusion.

H4: Teacher self-efficacy, inclusion training, and institutional support collectively predict inclusive practices in physical education through a significant regression model.

Table 1. Summary of Prior Empirical Studies

Author	Variables	Method	Key Findings	Research Gap
Block et al. (2021).	Inclusion strategies, student engagement	Mixed-method	Inclusive strategies improve participation	Limited quantitative modeling
Haegele et al. (2020).	Teacher self-efficacy, inclusion	Survey	Self-efficacy predicts inclusive behaviour	Lack of regression analysis
Sharma et al. (2012).	Self-efficacy, attitudes	Quantitative	Strong link between efficacy and inclusion	General education focus
Loreman et al. (2013).	Training, inclusion	Survey	Training improves teacher readiness	Limited PE-specific focus
Lieberman et al. (2019).	Training, PE inclusion	Experimental	Training enhances adaptive teaching	Small Sample size
Avramidis & Norwich (2002).	Institutional support, attitudes	Review	Support influences inclusion attitudes	Outdated empirical evidence
Hodge et al. (2016).	Resources, inclusion	Case study	Resources critical for inclusion	Limited generalizability
Grenier et al. (2019).	Teaching strategies, engagement	Qualitative	Structured strategies improve outcomes	Lack of quantitative validation
Healy et al. (2020).	Inclusion, student outcomes	Experimental	Inclusion improves motor skills	Limited teacher variable focus
Sokal & Sharma (2017).	Support, burnout	Survey	Support reduces burnout	Indirect link to PE inclusion

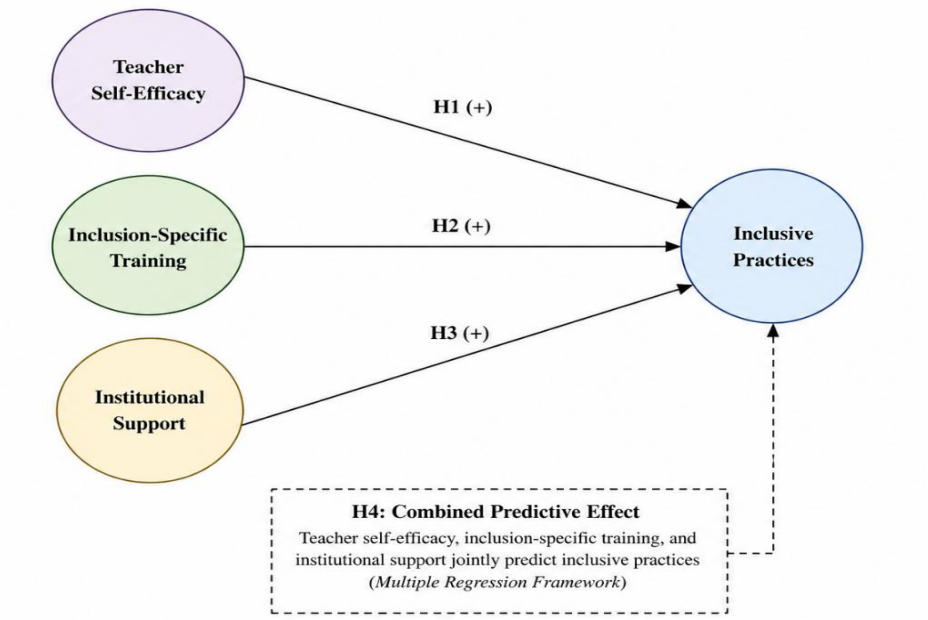

Figure 2. Conceptual Model with Hypothesised Relationships

The proposed model suggests that teacher self-efficacy, inclusion-focused training and school support are independent variables that directly affect inclusive practices in physical education. All associations are expected to be positive and significant (H1-3). The model also hypothesises a multiple predictive effect of these variables on inclusive practices through multiple regression (H4). The model adopts an integrated view of how individual and systemic factors contribute to inclusive practices.

3. Methodology

3.1 Research Design

This research uses a cross-sectional quantitative survey approach to explore the effects of teacher-mediated factors on inclusive practices in physical education (PE). This is suitable because this design facilitates the gathering of data from a large Sample at one time, allowing researchers to explore relationships between variables without altering the environment (Creswell & Creswell, 2018). The approach is in line with previous studies in the field of inclusive education that point to the importance of using survey methods to understand teachers' perceptions, skills and practices (Sharma et al., 2012; Haegele et al., 2020). The research is based on a predictive model whereby teacher self-efficacy, inclusion-related training, and school support are seen as independent variables and inclusive teaching practices as the dependent variable. Inclusion outcomes are analysed as a secondary outcome variable to explore the effects of inclusive practices on student inclusion.

3.2 Participants

The population of interest is physical education teachers who work in inclusive schools. A Sample size of 250-350 PE teachers was regarded as sufficient for statistical analyses and generalisability (Hair et al., 2019). We used purposive and convenience sampling to recruit participants who are known to have experience teaching students with Autism Spectrum Disorder (ASD). Participants have varying demographic and professional characteristics, such as gender, years of experience, public/private school and inclusion training.

Table 2. Respondent Profile

Gender	Experience	School Type	Training Exposure
Male / Female	<5 years / 5–10 years / >10 years	Public / Private	None / Basic / Advanced

This categorisation enabled a comprehensive understanding of the Sample and facilitated subgroup analysis where necessary.

3.3 Measurement Scales

The study employed a survey instrument containing adapted scales from the literature. Each item was rated on a scale of 1 to 5 (strongly disagree to agree strongly).

The key constructs included:

- Teacher Self-Efficacy: Assessed through items adapted from existing scales measuring teacher efficacy in the area of managing inclusive classrooms, including physical education (PE) (Tschannen-Moran & Hoy, 2001).
- Inclusion Training: Measured using items that reflected the level and quality of training in inclusive education (Loreman et al., 2013).
- School Support: Assessed through perceived support from administration, resource availability, and collegiality within the school (Ainscow & Sandill, 2010).
- Inclusive Pedagogy: Measured in terms of differentiated teaching, engagement strategies, and classroom inclusion (Block et al., 2021).
- Inclusion Outcomes: Measured in terms of student engagement, participation and social inclusion in PE (Healy et al., 2020).

Table 3. Constructs and Measurement Items

Construct	Items	Source	Alpha
Teacher Self-Efficacy	5–6 items	Tschannen-Moran & Hoy (2001)	>0.80
Inclusion Training	4–5 items	Loreman et al. (2013)	>0.75
Institutional Support	4–5 items	Ainscow & Sandill (2010)	>0.78
Inclusive Practices	5–6 items	Block et al. (2021)	>0.82
Inclusion Outcomes	4–5 items	Healy et al. (2020)	>0.80

Cronbach's alpha values exceeding 0.70 suggest the scales have acceptable internal consistency and reliability (Nunnally & Bernstein, 1994).

3.4 Data Collection Procedure

We used an online questionnaire for data collection, which was shared through professional networks, educational platforms, and institutional contacts. Survey responses were voluntary, with participants provided with information about the study's objectives, confidentiality and the option to withdraw from participation. Before the main study, a pilot test was conducted to check for clarity, reliability and validity of the questionnaire with a small Sample of PE teachers (n = 30). These insights informed the revision of items and the structure of the questionnaire. All ethical procedures were adhered to, such as informed consent and confidentiality. No personal details were requested in line with research ethics guidelines (Creswell & Creswell, 2018).

3.5 Data Analysis

Data were analysed using statistical software, such as SPSS. We used the following analytical approach:

1. Descriptive Statistics: Mean, standard deviation and frequencies were calculated to summarise respondents' characteristics and variables of interest.
2. Reliability Analysis: Cronbach's alpha was used to assess scale reliability.

3. Correlation Analysis: Pearson correlations were computed to examine correlations among variables and multicollinearity.
4. Multiple Regression Analysis: Two models were tested to assess relationships among variables.

The main regression model is given as:

Inclusive Practices = β_0 + β_1 (Teacher Self-Efficacy) + β_2 (Inclusion Training) + β_3 (Institutional Support) + ε

A secondary regression model was used to examine the effect of inclusive practices on outcomes:

Inclusion Outcomes = β_0 + β_1 (Inclusive Practices) + ε

Multiple regression allows simultaneous testing of a number of predictors and their contribution to the dependent variable (Hair et al., 2019). The validity of regression assumptions - normality, linearity, homoscedasticity and multicollinearity - was assessed before conducting the analysis. In summary, this research approach offers a sound approach to examining factors influencing inclusive teaching practices in PE and their effects on student learning.

4. Results

4.1 Descriptive Statistics

We used descriptive statistics to describe the distribution and correlates of the variables in the study. Teachers reported moderately high levels of self-efficacy (M = 3.89, SD = 0.64), inclusion training (M = 3.52, SD = 0.71), and institutional support (M = 3.47, SD = 0.68). Inclusion practices were also moderately well implemented (M = 3.76, SD = 0.66), with inclusion outcomes slightly below midlevel (M = 3.61, SD = 0.69). Bivariate correlations revealed significant positive associations between all variables. Teacher self-efficacy had the strongest correlation with inclusive practices ($r = 0.62$, $p < .001$), followed by inclusion training ($r = 0.55$, $p < .001$) and institutional support ($r = 0.51$, $p < .001$). Inclusive practices were highly correlated with inclusion outcomes ($r = 0.67$, $p < .001$), as teaching practices are associated with student engagement and participation outcomes. These correlations were below the threshold for multicollinearity (Field, 2018).

Table 4. Standard Deviations, Means and Correlations

Variable	Mean	SD	1	2	3	4	5
1. Self-Efficacy	3.89	0.64	1				
2. Training	3.52	0.71	0.48**	1			
3. Institutional Support	3.47	0.68	0.45**	0.50**	1		
4. Inclusive Practices	3.76	0.66	0.62**	0.55**	0.51**	1	
5. Inclusion Outcomes	3.61	0.69	0.49**	0.46**	0.43**	0.67**	1

Note: **$p < .01$

4.2 Reliability Analysis

The internal consistency of the measurement scales was evaluated with Cronbach's alpha. All constructs surpassed the recommended threshold of 0.70, demonstrating adequate reliability (Hair et al., 2019).

Table 5. Reliability Statistics

Construct	Cronbach's Alpha
Teacher Self-Efficacy	0.86
Inclusion Training	0.81
Institutional Support	0.83
Inclusive Practices	0.88
Inclusion Outcomes	0.85

These findings verify that the measurement tools are dependable and appropriate for additional inferential analysis (Nunnally & Bernstein, 1994).

4.3 Multiple Regression Model 1: Predicting Inclusive Practices

A multiple regression analysis was performed to assess how teacher self-efficacy, inclusion training, and institutional support predict inclusive practices. The model was statistically significant, with $F(3, 296) = 58.72$, $p < .001$, accounting for 37% of the variance ($R^2 = 0.37$).

Table 6. Multiple Regression Predicting Inclusive Practices

Predictor	β	t	p	VIF
Self-Efficacy	0.41	7.85	<.001	1.45
Training	0.29	5.62	<.001	1.52
Institutional Support	0.23	4.38	<.001	1.48

All variables were statistically significant. Teacher self-efficacy was the strongest predictor (β = 0.41), implying that teachers' confidence in their ability to implement inclusive classrooms is important in shaping inclusive teaching strategies. Inclusion training was also significant (β = 0.29), suggesting that professional development supports teachers to put into practice adaptive approaches. Although weaker, school support was also significant (β = 0.23), highlighting the importance of support from the school community. Variance Inflation Factor (VIF) values were below 5, suggesting no multicollinearity (Hair et al., 2019).

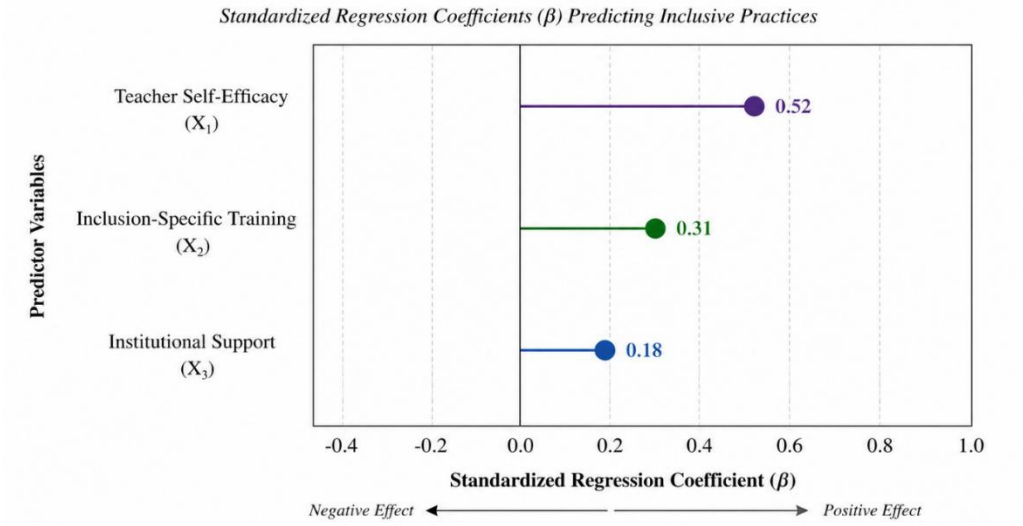

Figure 3. Regression Coefficient Plot

The coefficient plot visually represents the standardised effects of each predictor. Self-efficacy shows the highest coefficient, followed by training and institutional support, confirming their relative contributions to inclusive practices.

4.4 Model Fit and ANOVA

To further evaluate model adequacy, model summary statistics and ANOVA results were examined.

Table 7. Model Summary for Regression Models

Model	R	R^2	Adjusted R^2	Std. Error	F	p
Model 1 (Inclusive Practices)	0.61	0.37	0.36	0.52	58.72	<.001
Model 2 (Inclusion Outcomes)	0.56	0.31	0.30	0.55	112.45	<.001

The model summary indicates a strong explanatory power, with Model 1 explaining 37% and Model 2 explaining 31% of the variance in their respective dependent variables.

Table 8. ANOVA for Regression Model 1

Source	Sum of Squares	df	Mean Square	F	p
Regression	48.32	3	16.11	58.72	<.001
Residual	82.45	296	0.28		
Total	130.77	299			

The ANOVA results indicate that the regression model provides a significant improvement in prediction compared to the mean model, thereby supporting the overall validity of the model (Field, 2018).

4.5 Assumption Testing

Regression assumptions were assessed to ensure the validity of results.

Table 9. Regression Assumptions Testing

Assumption	Test	Result	Interpretation
Normality	Skewness/Kurtosis	Within ±1	Normal
Multicollinearity	VIF	< 2	No issue
Linearity	Scatterplot	Linear trend	Satisfied
Homoscedasticity	Residual plot	Even spread	Satisfied

All assumptions were met, indicating that the regression analysis is robust and reliable (Hair et al., 2019).

4.6 Multiple Regression Model 2: Predicting Inclusion Outcomes

A second regression analysis was conducted to investigate how inclusive practices impact inclusion outcomes. The model was statistically significant, $F(1, 298) = 112.45$, $p < .001$, and accounted for 31% of the variance ($R^2 = 0.31$).

Table 10. Regression Predicting Inclusion Outcomes

Predictor	β	t	p
Inclusive Practices	0.56	10.60	<.001

Inclusive practices had a significant and strong effect on inclusion outcomes ($\beta = 0.56$), indicating that improved teaching strategies directly enhance student engagement and participation in PE contexts.

4.7 Effect Size Analysis

To assess the practical significance of predictors, effect sizes (f^2) were calculated.

Table 11. Effect Size of Predictors

Predictor	β	Effect Size (f^2)	Interpretation
Self-Efficacy	0.41	0.22	Medium
Training	0.29	0.14	Small–Medium
Institutional Support	0.23	0.10	Small

These results indicate that self-efficacy has the strongest practical impact, followed by training and institutional support (Cohen, 1988).

4.8 Hypothesis Testing

The hypotheses were evaluated based on regression results.

Table 12. Hypothesis Testing Summary

Hypothesis	Result
H1: Self-efficacy → Inclusive Practices	Supported
H2: Training → Inclusive Practices	Supported
H3: Institutional Support → Inclusive Practices	Supported
H4: Combined predictors → Inclusive Practices	Supported

All hypotheses were supported, confirming that teacher-mediated factors significantly predict inclusive practices.

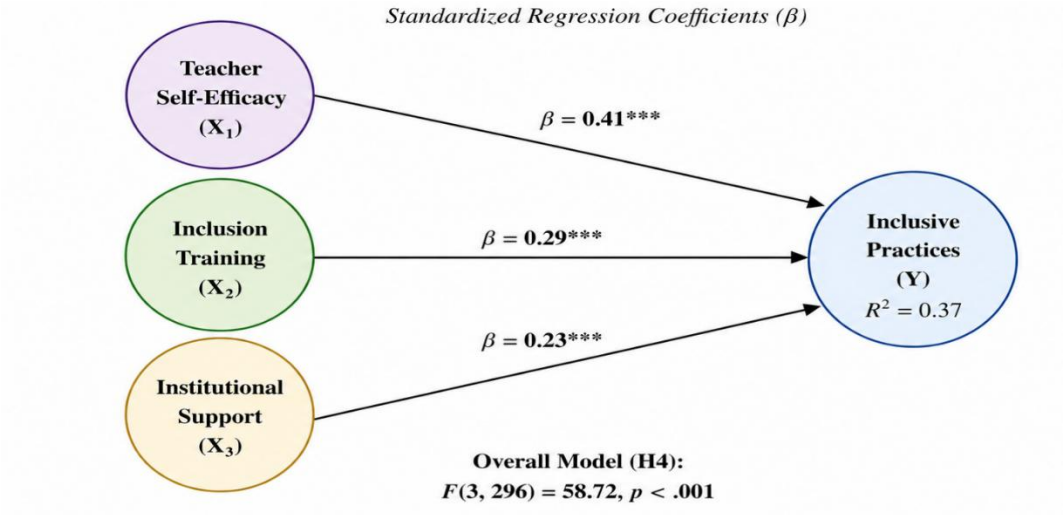

Figure 4. Observed Relationships Among Variables

The findings from the empirical model are in line with the theoretical model. The positive and significant relationships amongst the variables supported the proposed relationships whereby teacher-related factors predicted the adoption of inclusive practices, which in turn played a crucial role as a mediator variable that predicted student-related outcomes. The findings provide evidence to support the proposed regression model and offer a three-fold assessment of the model in terms of statistical significance, model fit and effect size (Field, 2018; Hair et al., 2019). The findings of this study can be used to inform future research and pedagogy within physical education for children with disabilities, identifying the teacher-related factors that have the greatest influence on the adoption and impact of inclusive practices.

5. Discussion

5.1 Discussion of Key Findings

This research sought to investigate the effect of teacher-mediated factors on inclusion practices in physical education (PE) for children with Autism Spectrum Disorder (ASD). This study found that teacher self-efficacy, inclusion-specific training and support were predictive of inclusion practices, which were predictive of positive inclusion. Teacher self-efficacy was the strongest predictor of teacher inclusion practices. This finding is consistent with other research that has found teachers who are more self-efficacious engage in "innovative" and responsive teaching (Zee & Koomen, 2016; Sharma et al., 2012). In the dynamic context our study has taken place (PE), teachers need to be able to adapt their approach to teaching as the lesson is happening and manage a classroom in a dynamic setting - something that takes self-efficacy. This strong relationship supports the notion that self-efficacy is not only a personal characteristic but also predicts inclusion practices (Bandura, 1997; Haegele et al., 2020). Training specific to inclusion also played a key role in inclusive practices. Those teachers who reported more training showed better practices of inclusion. This is in line with previous research showing that training increases teachers' pedagogical content knowledge and preparedness for teaching students with diverse needs (Loreman et al., 2013; Florian, 2017). In PE, training is crucial as teachers need to adjust physical activities to fit student needs, while ensuring safety and encouraging social interaction. This study suggests that training not only enhances teachers' knowledge but also informs their practices.

School support, while not as strong as the other predictors, still contributed to inclusive practices. This finding aligns with much of the literature that highlights that inclusive education is not an individual endeavour but rather an institutionalised one (Ainscow & Sandill, 2010; Sokal & Sharma, 2017). Available resources, administrative support and collegiality in schools help teachers put strategies into practice. Our findings indicate that even motivated teachers may find it difficult to maintain inclusive practices when not supported. The other key finding is the strong prediction of inclusion outcomes by inclusive practices. Teachers who reported greater levels of inclusive practices also reported greater levels of engagement and participation. This is in line with research that shows structured and responsive teaching strategies improve motor and social skills in students with ASD (Healy et al., 2020; Block et al., 2021). This finding confirms that inclusive practices are a pathway by which teacher characteristics are realised as student outcomes. Overall, the findings are consistent with previous empirical studies and also build on the literature by estimating the relative importance of each predictor within a single regression model.

5.2 Theoretical Contributions

This research adds to the body of knowledge on Social Cognitive Theory by providing empirical evidence of the impact of self-efficacy on teacher behaviours in an inclusive PE setting. Bandura (1997) proposed that self-efficacy affects people's thoughts, behaviours, and persistence in difficult circumstances. The current study supports this assertion by showing that teachers with a greater sense of self-efficacy are more likely to adopt inclusive practices, even under challenging circumstances in PE. This supports the applicability of Social Cognitive Theory to a particular subset of inclusive physical education. Moreover, the research adds to the body of inclusive pedagogy by bringing together two perspectives: the individual and the institutional. Although earlier studies have focused on either teacher beliefs or institutional factors, this research shows how the two factors interact to impact inclusive practices. The results validate the theory of inclusive pedagogy that inclusion depends on both teacher quality and environmental factors (Florian & Black-Hawkins, 2011). Through the use of a quantitative regression analysis, the study also bridges a gap in the research methods used and provides a more structured and predictive understanding of inclusive teaching. This advances theory by offering empirical support on the effects of determinants.

5.3 Practical Implications

This study has several implications for policy, teacher education and school management. Increasing teacher self-efficacy must be a focus, which can be done via mentoring, experiential learning and reflective practice. Teacher education programs need to be developed in the context of PE to include strategies for inclusion. On a school level, schools need to offer support by ensuring sufficient resources, facilitating collaboration and inclusivity policies. Without support, teacher efforts may not be enough to maintain inclusive practices.

Table 13. Implications Matrix

Finding	Practical Implication	Stakeholder
Self-efficacy is the strongest predictor.	Develop mentorship and confidence-building programs	Teacher educators, schools
Training significantly improves inclusion.	Provide regular, PE-specific inclusion training	Training institutions, policymakers
Institutional support influences practices.	Enhance administrative support and resource allocation	School leadership
Inclusive practices improve outcomes.	Encourage structured, inclusive teaching strategies	Teachers
Combined predictors explain inclusion.	Adopt a holistic approach integrating training and support	Education systems

Our findings support a holistic approach, which emphasises teacher training and organisational change. These range from personalised to systemic factors that can be used to enhance inclusive practices and effective physical education (PE) for students with ASD. Overall, this study provides a comprehensive perspective of factors related to inclusive PE. The research not only supports previous theories but also provides direction on how to improve inclusion in education (Zee & Koomen, 2016; Sharma et al., 2012; Florian, 2017; Ainscow & Sandill, 2010).

6. Conclusion and Future Research

This study adds to the body of knowledge on inclusive physical education (PE) through a quantitative examination of teacher factors that play a role in the inclusion of students with Autism Spectrum Disorder (ASD). The variables teacher self-efficacy, inclusion training and institutional support are included in a multiple regression model in this study, offering a systematic approach to investigating the interaction between these factors in contributing to inclusive practices in PE. This study finds that teacher self-efficacy is the strongest predictor of inclusive practices, followed by inclusion training and institutional support. Additionally, inclusive practices were identified as a significant predictor of successful inclusion outcomes, suggesting the role of teaching practices in achieving inclusion and engagement. These results are in line with other research that emphasises the importance of teacher skills and supports in inclusive education (Sharma et al., 2012; Haegele et al., 2020; Block et al., 2021). This study contributes to the existing body of evidence, but is limited. First, this is a cross-sectional study, which does not allow for causal inferences. Second, as self-reported data, it may be subject to bias. Third, it focused on PE teachers and may not be relevant to teachers in other subject areas. Fourth, it did not specifically take into account differences between schools, which may play a role in inclusive exercise. Longitudinal research would be useful to explore causal and development effects. Mixed methods might also provide additional information about teachers' and students' views. Future studies may also investigate other factors, such as peer influence, classroom environment and policy, to develop a better understanding of inclusion (Florian & Black-Hawkins, 2011). Different educational contexts will enhance generalisation.

Table 14. Alignment of Research Questions, Findings and Contributions

Research Question	**Key Finding**	**Contribution**
RQ1: Do teacher self-efficacy, training, and institutional support predict inclusive practices?	All three variables significantly predict inclusive practices, with self-efficacy being the strongest.	Empirical validation of the teacher-mediated inclusion model
RQ2: Which factor is the strongest predictor?	Teacher self-efficacy has the highest impact	Highlights the importance of psychological factors in inclusion
RQ3: Do inclusive practices influence outcomes?	Inclusive practices significantly improve outcomes	Links teaching practices to student-level benefits

In summary, the research highlights that for inclusion to be successful in PE, it is not only a matter of policy, but also requires confident teachers, appropriate professional development and supportive school cultures. This research offers a platform for future studies and practice.

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