

## **Acceptability of the 'Promoting Pupils' Physical Literacy' (3PL) intervention: Insights from PE Teachers and Pupils in Grades 4 and 5**

### **Author Information**

*Olivia Mandal Møller<sup>1</sup>, Thea Toft Amholt<sup>1</sup>, Paulina Melby<sup>1,2</sup>, Mette Kurtzhals<sup>1,3</sup>, Anne Sofie Borsch<sup>4</sup>, Peter Elsborg<sup>1</sup>, Peter Bentsen<sup>1,5</sup>*

*<sup>1</sup>Center for Clinical Research and Prevention Copenhagen University Hospital – Bispebjerg and Frederiksberg, the Capital Region of Denmark, Copenhagen, Denmark*

*<sup>2</sup>Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark*

*<sup>3</sup>Department of Nutrition, Exercise and Sports, University of Copenhagen, Copenhagen, Denmark*

*<sup>4</sup> Section for Health Services Research, Department of Public Health, University of Copenhagen, Copenhagen, Denmark*

*<sup>5</sup>Department of Geosciences and Natural Resource Management, University of Copenhagen, Denmark*

*Corresponding Author:*

*Olivia Mandal Møller*

*Email: [olivia.moller@sund.ku.dk](mailto:olivia.moller@sund.ku.dk)*

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### **ABSTRACT**

**Purpose:** Physical activity (PA) levels are declining among children in Denmark and globally. Interventions based on PA aim to address this issue by enhancing children's fundamental movement skills, knowledge and motivation for PA. The Danish intervention 'Promoting Pupils' Physical Literacy' (3PL), adapted from an Irish intervention, was implemented in two Danish public schools among children aged 9-11 years. This study investigated the acceptability of the 3PL intervention from the perspectives of pupils and teachers. **Methods:** Data were generated through semi-structured interviews with physical education teachers ( $N = 4$ ), four focus groups with pupils ( $N = 20$ ) and participant observation of four PE lessons.

The Theoretical Framework of Acceptability guided data generation and analysis. Braun and Clarke's thematic analysis approach was used to identify themes. **Results:** Three themes were identified: (1) teachers' previous and current experiences influenced their acceptance of the intervention, (2) pupils' motivation to participate in PE increased due to 3PL, and (3) pupils and teachers found the intervention's theoretical foundation meaningful and useful. **Conclusion:** The 3PL intervention was acceptable to pupils and teachers, suggesting that it was successfully adapted to the Danish context. Further research should investigate the effects on pupils' PL, alongside enhanced teacher support for implementation.

**Keywords:** Feasibility, Health Promotion, Physical Activity, PE Lesson, School Children

## 1. INTRODUCTION

Regular physical activity (PA) is beneficial for preventing non-communicable diseases while promoting mental health and well-being (World Health Organization, 2018). However, regular PA is decreasing among children and youth worldwide (Aubert et al., 2018). In Denmark, only 26% of children meet the Danish Health Authority recommendation of 60 minutes of daily moderate to vigorous intensity physical activity (MVPA) (The Danish Health Authority, 2023). Since health behaviours established in childhood often persist into adulthood (Frohlich & Potvin, 2008), creating sustainable health behaviours early is critical. Physical literacy (PL) is important for sustaining lifelong PA engagement (Whitehead, 2013). Defined as *'the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for maintaining purposeful physical pursuits/activities throughout the life course'* (Whitehead, 2013, p. 29), PL equips individuals to be physically active throughout life. Globally, schools are perceived as key settings for promoting children and adolescents' health (van Sluijs et al., 2021). Yet, school-based interventions targeting PA have little to no effect on daily MVPA (Jones et al., 2020; Neil-Sztramko et al., 2021). With a holistic approach, school-based interventions targeting PL show promise in improving pupils' knowledge and understanding of PA, fundamental movement skills (FMS) and daily MVPA (Belton, McCarren, et al., 2019; Coyne et al., 2019). PL-based PE has been found to enhance pupils' enjoyment and engagement (Gavigan et al., 2021; Telford et al., 2021), while physical education (PE) teachers are fond of PL for supporting children's active participation (Houser & Kriellaars, 2023). However, challenges such as participant engagement and administrative barriers can hinder the feasibility of interventions (Belton et al., 2019; Bremer, Graham & Cairney, 2020; Coyne et al., 2019; Strobl et al., 2020).

Research on PL interventions varies greatly in outcome variables, design, and settings, limiting consistent conclusions about their efficacy (Liu & Chen, 2021). Additionally, few interventions are both theoretically driven and evidence-based. One promising example is the Irish, theory-based intervention 'Youth-Physical Activity Towards Health' (Y-PATH) (Belton et al. 2014), which modified PE pedagogy to emphasize PL by creating a motivational climate and psychosocial elements to improve attitudes and self-efficacy (Belton et al. 2014). Given its success, we systematically adapted Y-PATH to the Danish school context, targeting pupils in 4<sup>th</sup> and 5<sup>th</sup> grade. The adaptation process, described in detail by Kurtzhals et al. (2022), followed the Medical Research Council (MRC) guidance for developing complex interventions (Skivington et al., 2021) as well as the ADAPT guidance for context adaptation (Moore et al., 2021). The MRC framework identifies a feasibility phase to identify problems related to acceptability, delivery and adherence, thereby aiding further intervention refinement (O'Cathain et al., 2015; Skivington et al., 2021). Thus, the adaptation of Y-PATH involved assessing acceptability of the intervention to determine its appropriateness for a Danish school context (Bowen et al., 2009).

Summing up, PL appears highly promising for life-long engagement in PA, but PL interventions are still emerging, especially in Denmark. As a result, there is a need for more knowledge on successfully context-adapting PL interventions. This study aims to investigate the acceptability of the 'Promoting Pupils' Physical Literacy' (3PL) intervention in a Danish primary school setting.

## **2. METHODS**

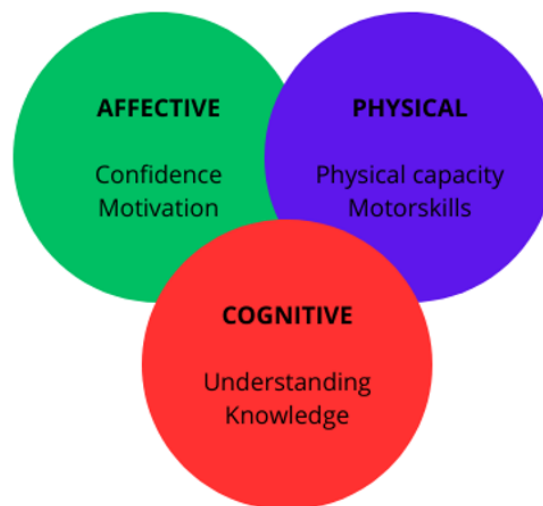
### **2.1 Intervention procedure**

3PL consisted of components for parents, pupils and teachers to create a motivational climate in PE lessons and increase awareness of PL among teachers and parents. 3PL was implemented in two schools: one located in an urban area and one in a rural area, selected due to differences in size, socioeconomic background, housing densities, and access to sports facilities and green areas. In each school, all 4<sup>th</sup> and 5<sup>th</sup> graders (nine to 11 years) participated in the intervention, which lasted throughout the school year 2023-24. This age group was chosen due to the demand from the Ministry of Education of working with motor skill development aspects of PE during these years (Ministry of Children and Education, 2019) and due to the teachers' possibility of altering PE lessons in middle school (Amholt et al., 2024). A total of four PE teachers participated in a four-hour in-person course as well as a four-module online course, where the concept of PL, motivational learning climate, and the lesson plans for the intervention were

presented by researchers. The lesson plans consisted of a six-week structured lesson plan with activities intended to enhance the three domains of PL (see Figure 1). After approximately six weeks, the researchers held an online meeting with the teachers, who shared their thoughts, experiences, and any doubts. Hereafter, teachers were expected to plan PE lessons throughout the school year based on the course knowledge and intervention materials. The intervention builds on the principles of the 'add-in' approach to school health promotion, as it integrates activities into the national PE curriculum without adding to the school's main goals or teachers' workload (Bentsen et al., 2020).

### Figure 1

*Three Domains of Physical Literacy (PL)*



A Venn diagram illustrating the overlap between the three domains of PL and the elements within each domain. The cognitive, affective, and physical resources and their attributes synergistically enable physical activity throughout life (Melby et al., 2022).

## 2.2 Theoretical Framework of Acceptability

The MRC framework highlights the importance of examining acceptability from the perspectives of the intervention users (in this case, both PE teachers and pupils) (Skivington et al., 2021). In this study, The Theoretical Framework of Acceptability (TFA) is used to investigate the acceptability of

the 3PL intervention in a Danish primary school setting. TFA was developed by Sekhon et al. (2017) to assess the acceptability of healthcare interventions. The authors (2017, p. 4) defined acceptability as a 'multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention'. In the TFA, acceptability consists of seven component constructs including affective attitudes, burden, ethicality, intervention coherence, opportunity costs, perceived effectiveness, and self-efficacy. The constructs constitute the cognitive and emotional responses that are likely to influence engagement with the intervention (Sekhon et al., 2017).

### **2.3 Design, procedure and participants**

To assess acceptability of the intervention, we applied three types of qualitative methods, namely individual interviews with PE teachers, focus groups with pupils, and participant observation of PE lessons. First author (OM) conducted four individual semi-structured interviews with the teachers (N = 4) and four focus group interviews with four to six pupils per group (N = 20). For the focus groups, we asked teachers to select five different pupils. Additionally, OM conducted participant observation in four PE lessons i.e., one per class. Using three types of qualitative methods enabled us to elucidate the research question from different angles. Data generation in each class began with participant observation in a PE lesson and informal conversations with the pupils and teachers. This was followed by focus groups with pupils, taking place in a classroom. At the end of the school day, OM conducted interviews with the teachers. Two PE teachers from each school (two female and two male) participated in the intervention. One of the teachers had seven years of experience, two had 20 years of experience and one had 30 years of experience as PE teacher. The pupils were between nine and 11 years old, and 55% were female.

### **2.4 Data Generation**

#### Individual interviews

The individual interviews with teachers lasted between 30 and 45 minutes. All interviews took place in a school classroom. The interview guide for the individual interviews with PE teachers was based on the TFA framework. Inspired by their generic TFA questionnaire (Sekhon et al., 2022), we adapted the questions to fit our specific context of investigation. The interview guide was altered following consultations with the research team and PL experts. We explored the seven components of acceptability – affective attitude, burden, ethicality, intervention coherence, opportunity costs, perceived effectiveness, and self-efficacy – regarding the overall

intervention as well as more specific parts with questions such as “How does the intervention align with the way you like to be a PE teacher?”

#### Focus groups

The focus groups with pupils lasted between 15 and 30 minutes and were guided by a semi-structured topic guide. The topic guide was inspired by TFA, yet some of the components were not relevant or possible to explore among the pupils as recipients of the intervention. To examine the pupils’ affective attitude, we asked the question “How do you think the PE lessons have been this school year?”

#### Participant observation

OM attended PE lessons as a curious and engaged participant observer, while ensuring minimal disruption. OM and TA created a field note template with three focus points: ‘use of intervention materials’, ‘motivational climate’ and ‘acceptability’ plus a section for additional observations. ‘Use of intervention materials’ covered cognitive, physical, and emotional aspects related to the domains of PL, documenting how teachers integrated PL in lessons. ‘Motivational climate’ focused on competence, relatedness, and autonomy, drawing from self-determination theory (Ryan & Deci, 2000). This focus point aimed to observe whether and how the motivational climate was fostered as intended. Finally, ‘acceptability’ examined the use of materials, how pupils engaged with activities, and whether the teachers modified activities.

## 2.5 Data analysis

All interviews were audio recorded, transcribed verbatim, de-identified, and uploaded together with field notes into NVivo by OM for thematic analysis (Braun & Clarke, 2006). Participants were assigned pseudonyms. Following Braun and Clarke’s (2006) steps, the analysis began with data familiarization, followed by systematic coding. Subsequently, themes were identified, developed and refined to ensure internal coherence and meaningful grouping (Braun & Clarke, 2006). A primarily deductive approach was used, guided by TFA, but we remained open to unexpected dimensions in the data despite the overall deductive approach. Peer debriefing was led by the first author, OM, with members of the research teams to ensure trustworthiness (Guba, 1981).

## 2.4 Ethical considerations

The 3PL study was pre-registered at [clinicaltrials.gov](https://clinicaltrials.gov) (ID: NCT05822024), April 2023 and the protocol was assessed by the Regional Committee on Health Research Ethics, Capital Region, Denmark (ID: 2106200699). The

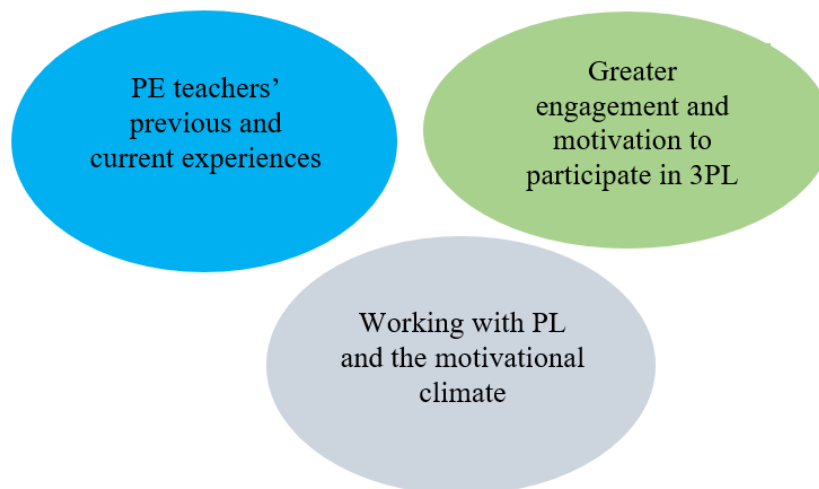
committee determined that, in accordance with Danish law, the protocol did not qualify for ethics review, as all non-biomedical research projects fall outside the scope for ethics assessment. All data and any associated personal information were processed in adherence to the Danish Data Protection Act. In the present study, informed consent was obtained from PE teachers and parents or legal guardians. Teachers provided consent both written and orally and consent to conduct focus group interviews were obtained from the pupils' parents and orally from the pupils themselves.

### 3. RESULTS

Based on the thematic analysis, the findings suggest that the 3PL intervention was widely accepted by both the PE teachers and the pupils. We identified three key themes (see Figure 2). Firstly, the teachers' previous and current experiences and routines in PE played a prominent role in their acceptability of the intervention, and the acceptability differed among teachers. Secondly, the pupils showed increased engagement and motivation in PL-focused lessons, due to experiencing self-efficacy, cooperating with peers, and learning new skills and knowledge. Lastly, the teachers enjoyed working with PL and the motivational climate, as they found these approaches supported pupil engagement.

#### Figure 2

*Key Themes identified*



#### 3.1 PE teachers' previous and current experiences

The PE teachers were content with their participation in the intervention, relating to the TFA construct *affective attitude*. They felt that the in-person course provided them with sufficient knowledge of both the intervention and the overall concept of PL, enabling them to conduct the PE lessons. In relation to the TFA construct *burden*, teachers who typically placed a strong emphasis on competition had more difficulty implementing the intervention, likely because the activities did not solely focus on competition. As a result, they had to alter their lessons. For example, one of the teachers found 3PL more challenging to integrate and commented:

“I’m not sure, I fully understood it [PL, ed.] from the beginning. So, there is some thinking within us that needs to be worked on.”

(Michael, PE teacher)

In relation to the TFA construct of *ethicality*, all PE teachers appreciated the aim to enhance pupils’ PL and thereby create inclusive, fun, and enjoyable PE lessons, as this resonated with their own desire to foster enjoyment. The following quote illustrates how the teacher Christina found inclusivity important and already part of her teaching:

“I actually think that I’ve always done this [create inclusive PE, ed.], you know, where you can join in your own way. I mean, I will do a lot to ensure that there are no children sitting and feeling left out.”

(Christina, PE teacher)

The PE teachers who generally focused greatly on inclusion experienced the intervention to be more ethical than those who incorporated more competition in their usual PE lessons. Teachers who perceived the intervention as less ethical had more difficulty using the supplied materials compared to those who described a greater alignment between the intervention and their usual teaching practices.

The teachers largely understood how the provided activities and lessons contributed to the pupils’ engagement, e.g., by emphasizing different variations of a volleyball stroke, which contributed positively to the teachers’ understanding of *intervention coherence*. To implement 3PL, some of the pupils’ usual games had to give way, which both pupils and teachers found unfortunate. They experienced this as an *opportunity cost* within the TFA framework. The teacher Anne felt that changing the PE lessons to target PL meant that pupils did not learn sufficient skills according to the official learning objectives. This relates to Anne’s *perceived effectiveness*, as she questioned the intervention’s ability to achieve its purpose regarding

improving skills and knowledge. However, all teachers experienced more pupils participating, which they perceived as a positive outcome:

“That they are participating must mean that the motivation is there, because now they can join in.”  
(Anne, PE teacher)

The teachers provided feedback and suggestions for improvements to the materials. Some of the teachers found the online course unnecessary as they were not presented with new knowledge, while others found the repetition helpful. Competition was a recurring topic, as some pupils and teachers enjoyed competition, while others did not, and the teachers would like to incorporate it more constructively. Lastly, all the teachers reported that the lesson plans were too long to accomplish in one PE lesson, and one teacher commented:

“I almost think that there have been too many activities. I haven't been able to complete a lesson plan [in one PE lesson, ed.]. But then I've just been able to split it into two.”  
(Christina, PE teacher)

### **3.2 Pupils were engaged and motivated to participate in 3PL lessons**

The pupils enjoyed the diversity of activities and felt that the PE lessons varied more than normally, relating to their *affective attitude* in TFA.

“I think it's more fun [than previous school year, ed.], of course it was fun in fourth grade, but now I just think it's a bit harder and a bit more fun because you do things that aren't just throwing balls around.”  
(Claire, pupil, focus group 4)

Cooperation in the activities was important for the pupils to enjoy and participate. Data generation revealed that children were less motivated and lost interest more quickly in individual activities compared to pair or group activities. In cases where the meaning of the activities was explained beforehand, the pupils experienced a great sense of *intervention coherence*, as they understood how and why an activity enhanced their physical abilities. The pupils expressed that they were motivated to participate in PE because they found the lessons adequately challenging and felt they were improving their knowledge and physical skills. This enhanced their perception of the lessons' effectiveness.

“It's more about exactly what we need to do with the body. Before it was just like run, run, run. Not how we should run. We have learned

something about how to run faster and longer and how to run the best.”  
(William, pupil, focus group 4)

The teachers had a great focus on explaining scaling options of activities to ensure each pupil could participate at their individual level.

The teacher Anne says that they should try to practice the more difficult strokes that they are not familiar with yet, but it’s completely okay to practice the strokes they already know if they are not yet comfortable with the others.  
(Field Note, class 4)

The pupils experienced *self-efficacy* as they voiced a feeling of mastering the activities. Along with the sense of purpose of the activities and the element of cooperation, the pupils displayed enjoyment and engagement in the 3PL lessons.

### **3.3 Working with PL and the motivational climate**

PE teachers were fond of the theoretical foundation of the intervention, that is, the concept of PL along with the motivational climate. They emphasized that the concept of PL and the motivational climate were used as tools to develop their lessons.

“Well, I think it’s a good course. I’m glad that we said yes, and I’m happy that we got selected. And to become wiser and further develop one’s own teaching. It’s quite interesting.”  
(Christina, PE teacher)

The teachers had a great focus on the three elements of the motivational climate namely competence, relatedness and autonomy. They experienced the pupils responding positively to the three elements, for example by letting them demonstrate stretching exercises. This increased the teachers’ sense of *intervention coherence*, as they could immediately observe the positive impact of these practices. In relation to *self-efficacy*, the teachers who already conducted PE similarly to the intervention expressed greater confidence in delivering the lessons compared to those who had a larger focus on skill acquisition. However, one teacher highlighted the difficulty in emphasizing the emotional domain of PL, as she found the cognitive and physical domains easier to work with:

“We have a lot of the cognitive stuff; it will be easy to keep. And the physical aspect with motor skills and so on, that’s also included. But the emotional stuff, motivation, and self-confidence, we’ll probably have to think about that, how to include that. Maybe we could use some feedback on that.”  
(Anne, PE teacher)

However, for the other teachers, motivating the pupils was easy, while providing them with knowledge about PA was more challenging. These aspects relate to the construct of *intervention coherence* as the teachers required more materials and expert support to enhance PL.

#### 4. DISCUSSION

The aim of this study was to investigate the acceptability of the 3PL intervention in a Danish primary school setting. Overall, the PE teachers predominantly found the intervention acceptable. The pupils all reported positive and fun experiences within PE lessons and the intervention was acceptable for them. Some elements of 3PL could be improved to increase acceptability even more, such as the content of the online course and the length of the lesson plans.

The teachers in our study were all fond of working with PL, particularly enabling pupils to participate at individually challenging levels. This aligns with Houser and Kriellaars' (2023) Canadian study, where teachers appreciated PL-enriched pedagogy and the emphasis on a wide range of activities. In accordance with our findings, the Canadian PE teachers pointed to the importance of individualized approaches to ensure the development of a child's PL regardless of their starting point. The Canadian PE teachers identified aspects of PL as their goal of PE (Houser & Kriellaars, 2023), which we also found in our study, indicating that PL is an acceptable goal to be included in the Danish PE curriculum and as a teaching approach. A study by Eveland-Sayers et al. (2022) conducted in the United States found that a six-week PL intervention in primary school increased self-efficacy for and desire to participate in physical activities among students with unhealthy BMIs, resonating with the pupils in our study, who experienced self-efficacy as a result of the 3PL lessons.

In our study, the teachers were willing to adapt and change their PE lessons in accordance with 3PL, as they found the intervention meaningful. In Germany, Strobl et al. (2020) found that teachers in one of the included schools were not willing to reflect and change their teaching methods, which the authors suggested may derive from a lack of readiness to change existing processes and beliefs. Despite some of the teachers in our study perceiving PL as more difficult to implement than others, they all displayed readiness to implement the intervention through their engagement with the materials and their reflections on PE.

The pupils in our study identified reasons that made the PL-focused PE lessons enjoyable, aligning with the findings of Gavigan et al. (2021). In

their *Moving Well-Being Well* intervention in Ireland, children highlighted success in participating, playing with peers, challenges, and recognizing the value in games as contributors to their enjoyment (Gavigan et al., 2021). The authors emphasized the importance of children understanding the purpose of activities. When children perceive the value of an activity, such as improving their skills, they become more engaged and motivated (Gavigan et al., 2021), which echoes our findings. Pupils in our study wanted to know *why* and *how* the activities improved their skills, emphasizing the importance of how teachers present activities, as the facilitation influences the pupils' experiences and efforts in PE (Hovdal et al., 2023). Constructive competition, structured fairly and focused on skill development can also enhance pupils' experiences (Aggerholm et al., 2018; Hovdal et al., 2023). Future 3PL interventions should prioritize facilitation and purpose-driven explanations to boost engagement and enjoyment.

The use of the TFA enabled us to investigate the teachers' acceptability of 3PL, highlighting the crucial role of teachers in delivering school-based interventions (Naylor et al., 2015). Our findings demonstrate that the TFA is useful for examining the experiences and perceptions influencing why teachers adhere to an intervention. To increase acceptability, the in-person course could include a practical session for teachers to gain hands-on experience with 3PL lesson plans and PL as a pedagogical approach, improving their self-efficacy. Teachers with greater confidence in their ability to meet expectations are more likely to implement interventions as planned (Durlak & DuPre, 2008).

A strength of this study is the multiple data generation methods. Focus groups were chosen to encourage more in-depth answers as pupils could engage with and build on each other's answers (Halkier, 2018). Moreover, focus groups help reduce the power imbalance that exists between adults and children, as the pupils are in the majority compared to the researcher (Eder & Fingerson, 2001). Participant observations prior to focus groups helped us understand the pupils' interactions with each other, the teacher and the activities, which helped inform and facilitate the focus groups. However, the presence of OM might have affected the PE lessons (Skovdal & Cornish, 2015). Interviews with teachers, offered insight into their experiences with 3PL, and the different data generation methods, allowed us to explore acceptability from different angles. Another strength was the systematic development of the interview guides from TFA. For the teacher interviews, the guide included all seven TFA constructs enabling an in-depth understanding of their acceptability. For pupils, the interview guide was more loosely based on TFA, but focus groups revealed it could have included more constructs, as pupils' experiences related to multiple constructs.

A limitation of the study is the small sample size. For a larger-scale implementation of 3PL, further investigation into feasibility would be warranted to provide more robust and generalizable findings. Another limitation is the potential selection bias in choosing pupils for the focus groups. While we asked teachers to randomly select five pupils, we cannot guarantee this was done. Teachers may have selected pupils with more positive attitudes toward PE, potentially biasing the findings. We cannot rule out that the teachers have withheld information regarding their experiences due to social desirability. Furthermore, the study was conducted within the first six weeks of the intervention, during which teachers might not yet have formed a comprehensive impression of 3PL.

TFA has provided us with a holistic approach to exploring acceptability, however, it also presented limitations. It does not account for adverse effects or unintended consequences of the intervention. While developing the interview guides based on TFA ensures all components are included, other perceptions may be overlooked. Tailoring TFA by adding or changing constructs could help generate more nuanced data for specific contexts (Paynter et al., 2023). In a qualitative study, the components in TFA are more intertwined than in quantitative studies, where components are often clearly operationalized. For example, we observed an overlap between the components *affective attitude* and *ethicality*, which TFA does not consider.

## 5. CONCLUSIONS

The 3PL intervention was well accepted by PE teachers and pupils. Teachers gained knowledge of PL and the principles of a motivational learning climate, which they applied in PE lessons, leading to increased pupil participation. Pupils felt more motivated and improved their physical skills and knowledge. These findings suggest that 3PL shows promise for adaptation to the Danish context.

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### 6.2 Conflict of Interest (de-identify in blinded manuscript)

The authors declare no conflicts of interest.

### 6.3 Contribution of Authors (exclude in blinded manuscript)

Conceptualization [TTA, PM, MK, PE, PB], data generation and analysis [OMM], writing – original [OMM], writing – review and editing [OMM, TTA, PM, KM, ASB, PE, PB]. The final manuscript is approved by all authors.

## 7. REFERENCES

- Aggerholm, K., Standal, Ø. F., & Hordvik, M. (2018). Competition in Physical Education: Avoid, Ask, Adapt or Accept? *Quest*, *70*(3), 385-400. <https://brage.inn.no/inn-xmlui/handle/11250/2581552>
- Amholt, T. T., Kurtzhals, M., Melby, P. S., Stage, A., Issartel, J., O'Brien, W., Belton, S., Bølling, M., Nielsen, G., Bentsen, P., & Elsborg, P. (2024). Feasibility and acceptability of the Promoting Pupils' Physical Literacy (3PL) intervention and its effectiveness research design: A study protocol. *PLoS One*, *19*(1), e0294916. <https://doi.org/10.1371/journal.pone.0294916>
- Aubert, S., Barnes, J. D., Abdeta, C., Abi Nader, P., Adeniyi, A. F., Aguilar-Farias, N., Andrade Tenesaca, D. S., Bhawra, J., Brazo-Sayavera, J., Cardon, G., Chang, C.-K., Delisle Nyström, C., Demetriou, Y., Draper, C. E., Edwards, L., Emeljanovas, A., Gába, A., Galaviz, K. I., González, S. A., ... Tremblay, M. S. (2018). Global Matrix 3.0 physical activity report card grades for children and youth: Results and analysis from 49 Countries. *Journal of Physical Activity and Health*, *15*(s2), S251–S273. <https://doi.org/10.1123/jpah.2018-0472>
- Belton, S., Issartel, J., McGrane, B., Powell, D., & O'Brien, W. (2019). A consideration for physical literacy in Irish youth, and implications for physical education in a changing landscape. *Irish Educational Studies*, *38*(2), 193–211. <https://doi.org/10.1080/03323315.2018.1552604>
- Belton, S., McCarren, A., McGrane, B., Powell, D., & Issartel, J. (2019). The Youth-Physical Activity Towards Health (Y-PATH) intervention: Results of a 24 month cluster randomised controlled trial. *PLOS One*, *14*(9), e0221684. <https://doi.org/10.1371/journal.pone.0221684>
- Belton, S., O'Brien, W., Meegan, S., Woods, C., & Issartel, J. (2014). Youth-physical activity towards health: Evidence and background to the development of the Y-PATH physical activity intervention for adolescents. *BMC Public Health*, *14*(1), 122. <https://doi.org/10.1186/1471-2458-14-122>
- Bentsen, P., Bonde, A. H., Schneller, M. B., Danielsen, D., Bruselius-Jensen, M., & Aagaard-Hansen, J. (2020). Danish 'add-in' school-based health promotion: Integrating health in curriculum time. *Health Promotion International*, *35*(1), e70–e77. <https://doi.org/10.1093/heapro/day095>
- Bowen, D. J., Kreuter, M., Spring, B., Cofta-Woerpel, L., Linnan, L., Weiner, D., Bakken, S., Kaplan, C. P., Squiers, L., Fabrizio, C., & Fernandez, M. (2009). How we design feasibility studies. *American Journal of*

- Preventive Medicine*, 36(5), 452–457.  
<https://doi.org/10.1016/j.amepre.2009.02.002>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.  
<https://doi.org/10.1191/1478088706qp063oa>
- Bremer, E., Graham, J. D., & Cairney, J. (2020). Outcomes and feasibility of a 12-week physical literacy intervention for children in an afterschool program. *International Journal of Environmental Research and Public Health*, 17(9), 3129. <https://doi.org/10.3390/ijerph17093129>
- Coyne, P., Vandeborn, E., Santarossa, S., Milne, M. M., Milne, K. J., & Woodruff, S. J. (2019). Physical literacy improves with the Run Jump Throw Wheel program among students in grades 4–6 in southwestern Ontario. *Applied Physiology, Nutrition, and Metabolism*, 44(6), 645–649. <https://doi.org/10.1139/apnm-2018-0495>
- Durlak, J. A., & DuPre, E. P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology*, 41(3–4), 327. <https://doi.org/10.1007/s10464-008-9165-0>
- Eder, D., & Fingerson, L. (2001). Interviewing Children and Adolescents. In J. F. Gubrium & J. A. Holstein (Eds.), *Handbook of interview research: Context & method*. Sage Publications.
- Eveland-Sayers, E.-S. (2022). Relationships between BMI and self-perception of adequacy in and enjoyment of physical activity in youth following a physical literacy intervention. *The Sport Journal*. <https://thesportjournal.org/article/relationships-between-bmi-and-self-perception-of-adequacy-in-and-enjoyment-of-physical-activity-in-youth-following-a-physical-literacy-intervention/>
- Frohlich, K. L., & Potvin, L. (2008). Transcending the known in public health practice. *American Journal of Public Health*, 98(2), 216–221.  
<https://doi.org/10.2105/AJPH.2007.114777>
- Gavigan, N., Belton, S., Meegan, S., & Issartel, J. (2021). Moving well-being well: A process evaluation of a physical literacy-based intervention in Irish primary schools. *Physical Education and Sport Pedagogy*, 28(2), 196–211. <https://doi.org/10.1080/17408989.2021.1967305>
- Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology*, 29(2), 75–91.
- Halkier, B. (2018). *Fokusgrupper [Focus groups]* (3rd ed.). Specialtrykkeriet Arco.
- Houser, N., & Kriellaars, D. (2023). “Where was this when I was in Physical Education?” Physical literacy enriched pedagogy in a quality physical education context. *Frontiers in Sports and Active Living*, 5.  
<https://www.frontiersin.org/articles/10.3389/fspor.2023.1185680>

- Hovdal, D. O. G., Haugen, T., Larsen, I. B., & Johansen, B. T. (2023). "It's not just about the activity, it's also about how the activity is facilitated": Investigating students' experiences in two competitive situations in physical education. *Scandinavian Journal of Educational Research*, 67(2), 294–308. <https://doi.org/10.1080/00313831.2021.2006306>
- Jones, M., Defever, E., Letsinger, A., Steele, J., & Mackintosh, K. A. (2020). A mixed-studies systematic review and meta-analysis of school-based interventions to promote physical activity and/or reduce sedentary time in children. *Journal of Sport and Health Science*, 9(1), 3–17. <https://doi.org/10.1016/j.jshs.2019.06.009>
- Kurtzhals, M., Melby, P. S., Elsborg, P., Nielsen, G., Amholt, T. T., & Bentsen, P. (2022). *Intervention adaptation protocol for the holistic school-based intervention, Youth-Physical Activity Towards Health, within a Danish context* [Preprint]. Open Science Framework. <https://doi.org/10.31219/osf.io/wd5ur>
- Liu, Y., & Chen, S. (2021). Physical literacy in children and adolescents: Definitions, assessments, and interventions. *European Physical Education Review*, 27(1), 96–112. <https://doi.org/10.1177/1356336X20925502>
- Moore, G., Campbell, M., Copeland, L., Craig, P., Movsisyan, A., Hoddinott, P., Littlecott, H., O'Cathain, A., Pfadenhauer, L., Rehfuess, E., Segrott, J., Hawe, P., Kee, F., Couturiaux, D., Hallingberg, B., & Evans, R. (2021). Adapting interventions to new contexts—The ADAPT guidance. *BMJ*, n1679. <https://doi.org/10.1136/bmj.n1679>
- Naylor, P.-J., Nettlefold, L., Race, D., Hoy, C., Ashe, M. C., Wharf Higgins, J., & McKay, H. A. (2015). Implementation of school based physical activity interventions: A systematic review. *Preventive Medicine*, 72, 95–115. <https://doi.org/10.1016/j.ypmed.2014.12.034>
- Neil-Sztramko, S. E., Caldwell, H., & Dobbins, M. (2021). School-based physical activity programs for promoting physical activity and fitness in children and adolescents aged 6 to 18. *Cochrane Database of Systematic Reviews*, 9. <https://doi.org/10.1002/14651858.CD007651.pub3>
- O'Cathain, A., Hoddinott, P., Lewin, S., Thomas, K. J., Young, B., Adamson, J., Jansen, Y. JFM., Mills, N., Moore, G., & Donovan, J. L. (2015). Maximising the impact of qualitative research in feasibility studies for randomised controlled trials: Guidance for researchers. *Pilot and Feasibility Studies*, 1(1), 32. <https://doi.org/10.1186/s40814-015-0026-y>
- Paynter, C., McDonald, C., Story, D., & Francis, J. J. (2023). Application of the theoretical framework of acceptability in a surgical setting: Theoretical and methodological insights. *British Journal of Health Psychology*, 28(4), 1153–1168. <https://doi.org/10.1111/bjhp.12677>

- Sekhon, M., Cartwright, M., & Francis, J. J. (2017). Acceptability of healthcare interventions: An overview of reviews and development of a theoretical framework. *BMC Health Services Research*, *17*(1), 88. <https://doi.org/10.1186/s12913-017-2031-8>
- Sekhon, M., Cartwright, M., & Francis, J. J. (2022). Development of a theory-informed questionnaire to assess the acceptability of healthcare interventions. *BMC Health Services Research*, *22*(1), 279. <https://doi.org/10.1186/s12913-022-07577-3>
- Skivington, K., Matthews, L., Simpson, S. A., Craig, P., Baird, J., Blazeby, J. M., Boyd, K. A., Craig, N., French, D. P., McIntosh, E., Petticrew, M., Rycroft-Malone, J., White, M., & Moore, L. (2021). A new framework for developing and evaluating complex interventions: Update of Medical Research Council guidance. *BMJ*, n2061. <https://doi.org/10.1136/bmj.n2061>
- Skovdal, M., & Cornish, F. (2015). Chapter 4: Participant observation. In *Qualitative research for development: A guide for practitioners*. Practical Action Publishing Ltd.
- Strobl, H., Ptack, K., Töpfer, C., Sygusch, R., & Tittlbach, S. (2020). Effects of a participatory school-based intervention on students' health-related knowledge and understanding. *Frontiers in Public Health*, *8*, 122. <https://doi.org/10.3389/fpubh.2020.00122>
- Telford, R. M., Olive, L. S., Keegan, R. J., Keegan, S., Barnett, L. M., & Telford, R. D. (2021). Student outcomes of the physical education and physical literacy (PEPL) approach: A pragmatic cluster randomised controlled trial of a multicomponent intervention to improve physical literacy in primary schools. *Physical Education and Sport Pedagogy*, *26*(1), 97–110. <https://doi.org/10.1080/17408989.2020.1799967>
- The Danish Health Authority. (2023). *Physical activity for children and adolescents (5-17 years)*. The Danish Health Authority.
- van Sluijs, E. M. F., Ekelund, U., Crochemore-Silva, I., Guthold, R., Ha, A., Lubans, D., Oyeyemi, A. L., Ding, D., & Katzmarzyk, P. T. (2021). Physical activity behaviours in adolescence: Current evidence and opportunities for intervention. *Lancet (London, England)*, *398*(10298), 429–442. [https://doi.org/10.1016/S0140-6736\(21\)01259-9](https://doi.org/10.1016/S0140-6736(21)01259-9)
- Whitehead, M. (2013). Definition of physical literacy and clarification of related Issues. *ICSSPE Bulletin*, *65*, 29-35.
- World Health Organization. (2018). *Global action plan on physical activity 2018–2030: More active people for a healthier world*. <https://apps.who.int/iris/handle/10665/272722>