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Preliminary exploration of the feasibility of move to sport: a co-produced movement and fitness intervention for secondary physical education

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ABSTRACT

Low and declining movement competency and fitness in children present a need to develop provisions to reverse this trend. Physical Education (PE) curriculum has been recommended as an opportunity to achieve this, however, this is often dominated by traditional games and presents challenges. This study aimed to conduct a preliminary exploration of the feasibility of a movement and fitness-focused intervention (Move to Sport; M2S), co-produced with nine PE teachers. Class-based and practical co-production sessions were recorded, transcribed and analysed using thematic analysis. Findings highlighted teachers recognised the demand for M2S and felt it would be best delivered at the end of primary and start of secondary school. Challenges included: (a) understanding how to combine movement-based and sport-specific approaches to delivering PE, (b) differentiation, and (c) modes of assessment. Future recommendations include conducting a feasibility trial of M2S in school and the assessment of the impact of M2S on children.

KEYWORDS

Movement competence; children; fitness; games-based assessment; pedagogy

Introduction

Worldwide, there are major concerns surrounding the current and future health and wellbeing of children (Inchley et al., 2017). Current evidence suggests low and declining levels of physical activity (Aubert et al., 2018), movement competence (Bolger et al., 2021) and aerobic and muscular fitness (Sandercock & Cohen, 2019), contributing to increasing levels of obesity in children (Jebeile et al., 2022). The prevalence and challenges associated with these concerns have been further exacerbated by the COVID-19 pandemic (Stavridou et al., 2021). Therefore, interventions specifically designed to increase children's movement competence and fitness are required.

Movement competence refers to an individual's ability to perform a wide range of movement skill tasks, where outcomes are underpinned by movement quality, control

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and coordination (Hulteen et al., 2018). Similarly, athleticism is the ability to repeatedly perform a range of movements with precision and confidence in a variety of environments, which require competent levels of motor skills, strength, power, speed, agility, balance, coordination, and endurance (Lloyd et al., 2015a). In recent years, academics (e.g. Robinson et al., 2015 and Lloyd et al., 2016) have advocated for incorporating movement competence and athleticism programmes into children's Physical Education (PE) to address declining physical activity, fitness and movement competence. Despite these recommendations, several barriers hinder the implementation of such programs in PE settings. These challenges include: (a) a perceived lack of value for health-related fitness (Lloyd et al., 2015b), (b) a tendency to focus on sport-specific skills and competition (Lloyd et al., 2015a), (c) a lack of knowledge and skills to implement movement competence interventions effectively (Till et al., 2022), and, (d) the lack of authentic movement assessment frameworks for use in PE (van Rossum et al., 2021). Challenges with implementing such interventions exist within PE and solutions to overcome these barriers need to be sought.

In the United Kingdom, the National Curriculum for Physical Education (NCPE) (Department for Education (DfE), 2013) aims to ensure all pupils; (a) develop competence to excel in a broad range of physical activities, (b) are physically active for sustained periods of time, (c) engage in competitive sports and activities, and, (d) lead healthy, active lives. It is proposed that PE curricula need to reflect a child's developmental needs (Kinchin & O'Sullivan, 1999; Penney & Chandler, 2000) and overcome the four barriers highlighted above, especially in terms of pursuing a marked deviation from the traditional use of sports-based curricula (O'Connor & Penney, 2021). Encouragingly, recent postulations have been offered, responding to the global shift in sports participation, regarding the re-classification of games to introduce a more diverse range of sports (e.g. rush and action sports) to broaden the learning and participation possibilities for young people and attune teachers to alternative contemporary movement forms (O'Connor et al., 2022). Dudley et al. (2011) found through their systematic review that providing teachers with sufficient and ongoing professional development in using movement-based interventions was amongst the most effective strategies in improving children's movement competence. However, limited research exists evaluating new PE curriculum approaches specifically targeting a dual approach to improving children's movement and fitness that is co-produced with teachers.

An increasing body of research supports the use of co-production as an effective approach to intervention development in education and public health (Graham et al., 2018; Smith et al., 2023). Co-production is a participatory research method that integrates end-users (in this case, PE teachers) throughout the design process, which could strengthen the contextual relevance, feasibility and sustainability of the intervention. This approach differs to traditional top-down models that can often fail due to limited stakeholder engagement and implementation challenges (Alfrey & O'Connor, 2020).

To overcome the problems outlined above, and through integrating theories of movement competence and fitness (i.e. MOGBA, Morley et al., 2021; RAMPAGE, Till et al., 2021) the authors developed a draft Move 2 Sport (M2S) programme. This aimed to (a) improve children's movement competence and fitness and (b) support a child's transition in PE between primary and secondary schools within the UK (age 11–12 years; Years 6-7). This second aim was deemed important as evidence suggests that this transition point is critical for children's retention in sport and physical activity (Riddoch

et al., 2004) and this age range is recognised as a key developmental stage for children's movement development transitioning from Fundamental Movement Skills (FMS) to Complex Movement Skills (CMS) (Goodway et al., 2019). CMS are mature movements that have been refined and combined in increasingly complex environments that can be used (and therefore developed beforehand) in a range of sports and physical activity movement settings (Goodway et al., 2019). By engaging teachers in the development of M2S, this study sought to co-produce a movement and fitness intervention that aligns with the realities of PE teaching, fostering greater teacher buy-in and practical applicability. Feasibility studies are needed so that researchers can evaluate whether a new intervention is appropriate for further testing (Bowen et al., 2009). A range of factors can affect the feasibility of new interventions; different settings, time, staffing expertise, training, space and equipment requirements have all been reported as limitations (Cools et al., 2009). During this initial phase of development, we wanted to examine whether M2S *can work*, before progressing in the future to examine if it works. Therefore, by embedding co-production principles in the development of M2S, this study aimed to; (a) explore whether M2S would fit within secondary PE, and (b) determine how M2S could be used in PE lessons.

Methodology

Study design

It is clear from previous research in similar fields that the successful implementation of an intervention is significantly enhanced when end (knowledge) users, in this case, PE teachers, are integrated within the design phase as early as possible (Jess et al., 2016). This study employed a co-production approach to design and refine the Move to Sport (M2S) intervention. Our co-production approach followed the typology of integrative knowledge transfer in which academic researchers work with knowledge users throughout the research process, with the aim of making research more impactful (Graham et al., 2018). This study adhered to the principles outlined by Smith et al. (2023) for co-production, emphasising adequate resourcing and power sharing throughout the process. Adequate resourcing was considered in terms of how much time teachers could afford to participate in the research project and when the sessions would run, explained in more detail in the 'Procedures' section below. Power sharing was deemed important to de-escalate any preconceived hierarchies in the academic-practitioner space and was used as a principle at every stage in terms of decision making (e.g. deciding on which activities would be used, when and in which sequence would activities be used during M2S delivery). This co-production design approach was chosen to engage PE teacher as key stakeholders, acknowledging their expertise and practical insights to develop and evolve M2S as a proof of concept prior to any assessment of feasibility of use, efficacy or randomised control trials (Kendig, 2016).

Co-production of M2S took place during three twilight sessions with the participants. This approach mirrored the iterative consultation phases outlined by Duncombe et al. (2023) to co-design workouts for a PE intervention with pupils. To assess the viability of M2S (i.e. *can it work*) in the present study, its feasibility was evaluated based on two key areas from Bowen's feasibility framework (2009) that capture participants'

Table 1. Description of the modified version of the feasibility framework used within the co-creation phase of M2S (adapted from Bowen et al., 2009).

Dimension	Area of interest	Sample outcome
Demand	Explores whether participants are likely to use the intervention	Perceived demand, intention to use (how will they use it?)
Acceptability	Examines how participants react to the intervention and how they would use it	Satisfaction, perceived fit within organisation

initial responses to the new intervention: demand and acceptability (See Table 1 for further description).

Our research team is composed of eleven members, all of whom work at the same University and have shared interests in developing and evaluating pedagogical approaches to use within PE. All members of the team are educators at heart and have current or past experience of working with children in PE settings. Each of us are involved in the teaching of PE to undergraduate or postgraduate students. Led by David and Kevin, each member of the team was involved in the design and delivery of the M2S project. This involved the present study and led to a further study to evaluate the feasibility of M2S being used by teachers. Throughout the formation of the research and during our interactions with participants, we remained acutely aware of how our preconceived knowledge, values and background could shape our inquiry (Cohen et al., 2018).

Start to move (S2M)

To effectively support the introduction of a new approach to provision within a PE curriculum, Alfrey and colleagues have noted the critical role that resources can play in ensuring its success (Alfrey et al., 2017). Resources can include materials designed to support teachers in introducing a curricular approach and can also be regarded as artefacts (Lambert et al., 2021). Artefacts reflect the unfinished nature of an overarching policy, such as a curriculum, and are used in a variety of ways to enact curriculum transformation as seen through the eyes of policy actors (Penney, 2013). This study adopted two previously developed artefacts as a starting point for the co-production of M2S with teachers. Firstly, RAMPAGE (Till et al., 2021) was used as a framework for organising lessons within M2S, utilising the acronym; Raise, Activate, Mobilise, Prepare, Activity, Games, Evaluate as key aspects of the lesson, as illustrated in Figure 1 (see Till et al., 2021 for a detailed review of RAMPAGE).

Secondly, MOGBA (Morley et al., 2021) was designed for 8–12 years olds to develop movement competence. MOGBA is a series of 14 activities aimed at developing locomotor, object control and stability skills as CMS (see Morley et al., 2021 for more details). The MOGBA activities (see an example of how to play an activity in Figure 2 and how to assess it in Figure 3), are designed as innovative, dynamic and fun activities that are non-sport-specific.

Recruitment and participants

Invitations to be part of the M2S project were sent to 74 local schools using existing school networks. Seven secondary schools responded to the invitation with nine teachers

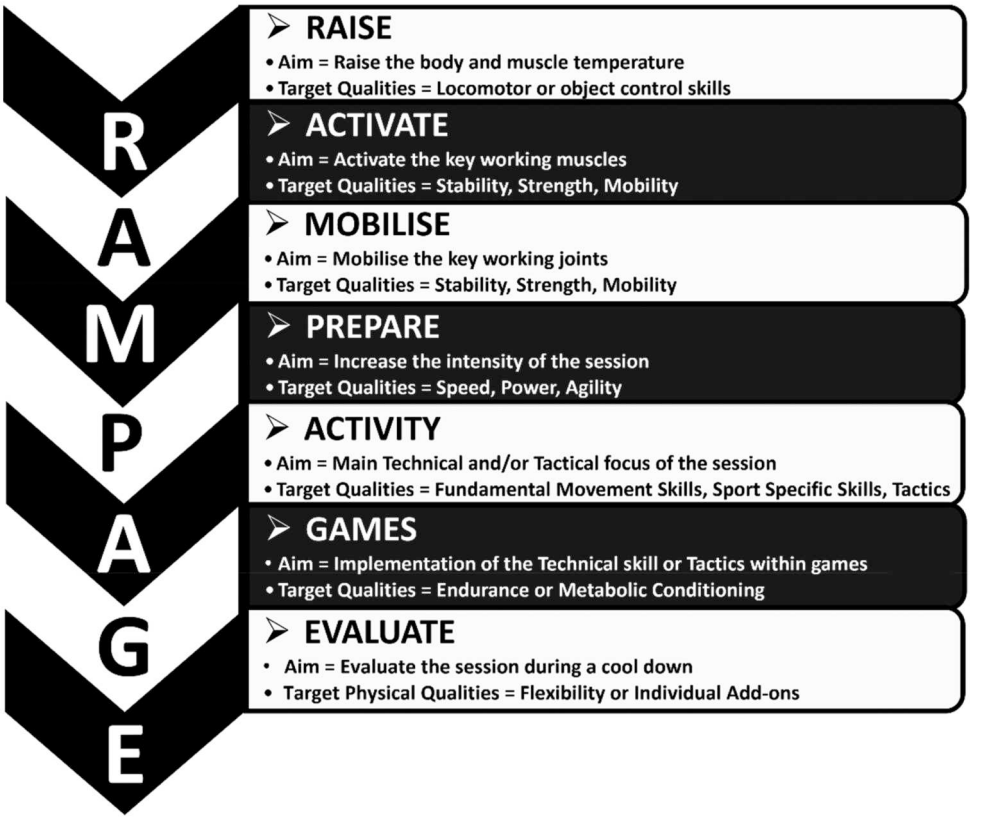

Figure 1. A RAMPAGE session plan template.

volunteering to participate (males, n = 6; females, *n* = 3). Participant characteristics are shown in Table 2. Pseudonyms have been used to protect their anonymity. Ethical approval was granted by the Research Ethics Committee of the authors' instituion. Prior to data collection, written consent from all participants was obtained.

Procedures

In alignment with Smith et al.'s (2023) recommendations for ensuring the inclusion of participants in co-production, participating teachers were polled to explore the most convenient time, frequency and duration for them to be involved in the project. Following this, they were invited to three, two-hour, 'twilight sessions' held at the end of the school day across the space of six weeks to co-produce a M2S programme that could be delivered as a sequence of PE lessons. The three twilight sessions were conducted at the authors' university campus and involved classroom-based and practical activities using principles of co-production for participants to combine the RAMPAGE framework and MOGBA activities to create the M2S programme. All sessions were digitally audio recorded.

Session one

The first twilight session aimed to; (a) introduce the participants to the concept of M2S principles in a classroom setting, (b) practically involve and demonstrate to the

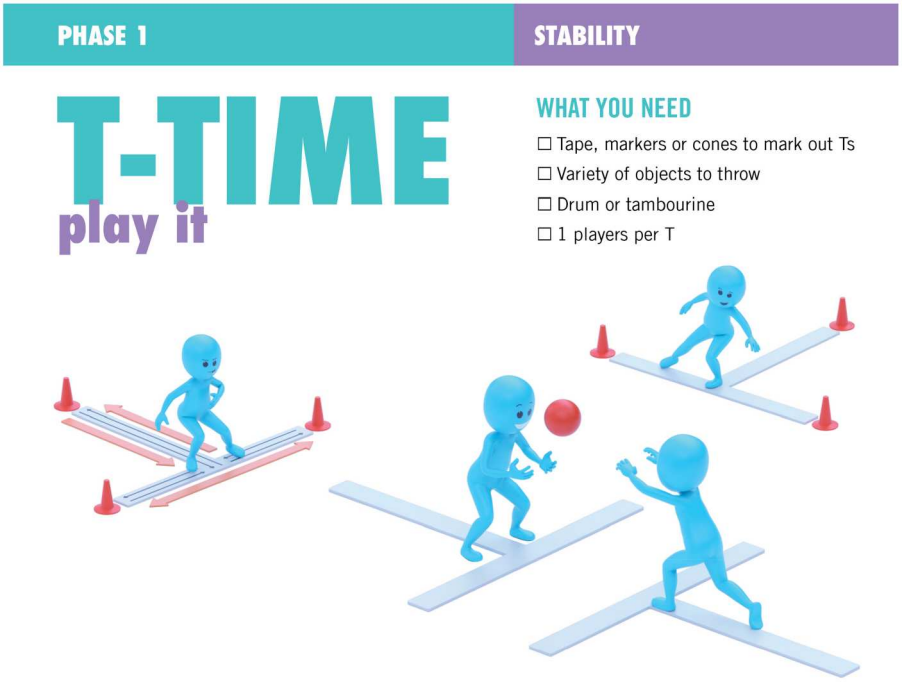

Figure 2. An example of a MOGBA activity (T-Time) 'Play it' side of card.

participants some of the proposed M2S activities to develop their understanding of the activities and how it could be developed further, and (c) afford teachers opportunities to discuss their experiences and the M2S activities in small groups, particularly in relation to the 'acceptability' and 'demand' dimensions of Bowen's (2009) feasibility framework. During the session, teachers were asked to reflect on the potential for them to use M2S in their own school environments, particularly in relation to the 'acceptability' and 'demand' dimensions of Bowen's (2009) feasibility framework. Researchers met at the end of this session to discuss progress made in relation to the intended outcomes of Session One and to establish Session Two outcomes based on these findings.

Session two

The aims of the second twilight were to; (a) revisit the aims and objectives of M2S in a classroom setting, (b) provide the participants with further opportunity to explore the M2S activities practically, and (c) start to select and organise activities within the RAMPAGE lesson structure (Figure 1). The participants were split into small groups to develop, adapt and deliver a M2S activity based on their contexts and school in mind. Specifically, participants were directed to discuss how they would incorporate all aspects of the MOGBA activity cards (e.g. play it differently, assessment) within the PE lessons. Across the session, discussions were recorded regarding the development of the M2S activities in the participants' groups and the organisation and structure of the lesson plan. In a similar manner to the relationship between Sessions One and Two, researchers met again at the end of Session Two to discuss the requirements for Session Three.

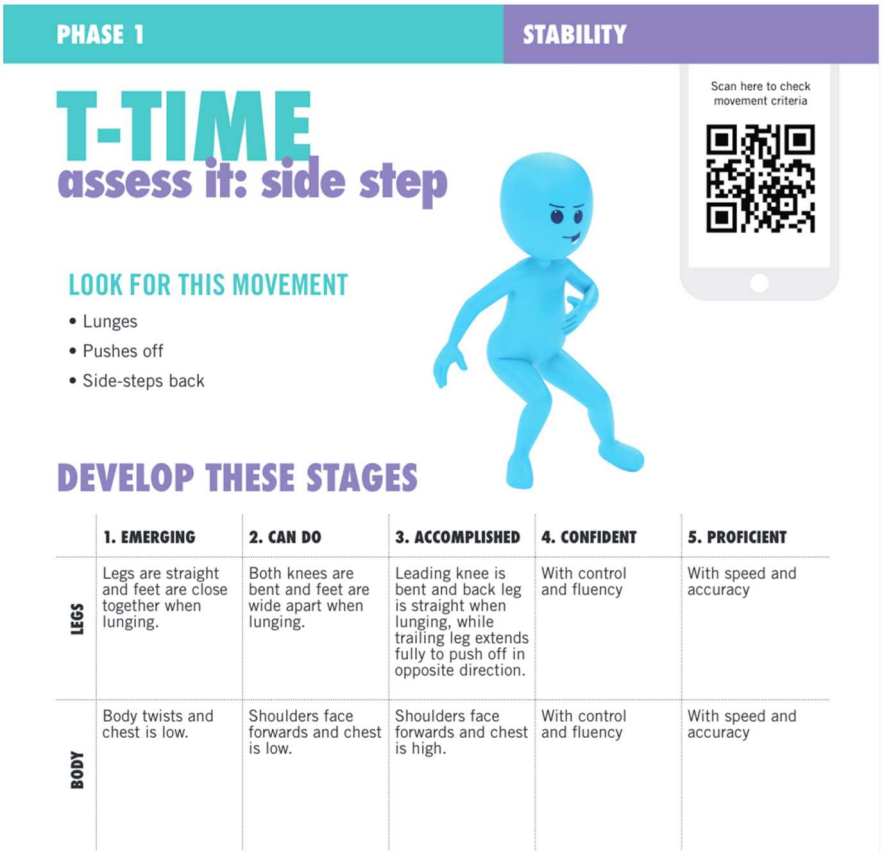

Figure 3. An example of a MOGBA activity (T-Time) 'Assess it' side of card.

Table 2. Participant characteristics.

Pseudonym name	Gender	Years experience teaching experience	Role	Qualifications
Grace	F	8	Head of PE	Sports development and SCITT
Rob	M	3	PE Teacher	Sports Coaching and SCITT
Ryan	M	15	PE Teacher	Sports Coaching SCITT
Matt	M	12	Head of PE	PGCE PgCert Innovation in Education
Ruby	F	4	PE Teacher	Sports Coaching and PGCE
Josh	M	1	PE Teacher	Sport and exercise science and SCITT
Vicky	F	3	PE Teacher	Physical Education and SCITT
Graham	M	14	Head of PE	Sports Science and PGCE
James	M	1	PE Teacher	Sports Coaching and SCITT

SCITT, School Centred Initial Teacher Training; PGCE, Post graduate Certificate in Education.

Session three

The final twilight session addressed any participant queries related to M2S. The overall aim was to allow participants to work in small groups to adapt, develop and deliver a lesson using M2S. This in turn would act as a starting point for

participants to use as their first PE lesson once the intervention stage commenced. The overarching aim of the three twilight sessions was to provide participants time to; (a) develop their understanding of M2S whilst adopting a critical stance within the co-production phase, and (b) to trial their learning and insights from the twilight sessions, through experimenting with the approach within their own PE delivery in their own schools, whilst seeking feedback from peers when doing so. Similar to the participatory strategies described by Vargas et al. (2022), continuous feedback loops were embedded within and between the twilight sessions, allowing for the progressive evolution of M2S based on participant input and practical trials that took place within the sessions.

Data analysis

Audio recordings of each of the twilight sessions were transcribed verbatim by a third party. At this stage, all transcripts were anonymised and pseudonyms given to ensure confidentiality.

Braun and Clarke's (2006) six-stage process was adhered to through the course of constructing themes and sub-themes. For stage 1, the transcriptions of the twilight data were read by two authors (TVR and DM) to familiarise themselves with the data. For Stage 2, the same two authors used an adapted version of Bowen et al. (2009) feasibility framework using the dimensions of Acceptability and Demand, in a similar adaptive way to previous studies (Goss et al., 2021) as illustrated in Table 1, to generate initial codes. For stage 3, selective coding took place and individual units of meaning attached to each theme (i.e. feasibility dimension) were represented by a short phrase (e.g. within the dimension of Acceptability, one passage of text was deemed to show that children enjoyed the games aspects the most). To review themes (stage 4), the same two authors re-read the transcripts and completed coding frameworks for each feasibility dimension to ensure the reliability of coding and that codes represented meaning within each theme (i.e. Demand: *area of interest* (i.e. documents the estimated use of the program)) and, *sample outcome* (i.e. Perceived demand, intention to use (how will they use it?)). Stages 5 and 6 comprised defining themes and finalising the thematic framework to produce the findings. To do this, a visual representation of each theme and attached sub-themes were constructed using PowerPoint (Microsoft). This allowed themes and sub-themes to be compared by the research team, resulting in duplicated sub-themes being removed or amalgamated (e.g. the sub-theme of *expanding M2S for primary school children* in Demand was re-positioned in the Acceptability theme within the *When to use M2S* sub-theme), ensuring reliability and alignment with participants feedback.

Our findings are represented through thick textual descriptions that engender honesty and transparency as hallmarks of quality in qualitative research (Tracy, 2010). Aligning with the principles of authenticity in research outlined by Guba et al. (2017), the participants' voices and perspectives are extensively represented through verbatim extracts from the twilight sessions. Here, we 'show' the data and invite readers to construct their own knowledge and explore the ways and extent to which these data resonate with them (Smith, 2018), before we move onto the analytical 'tell' in the Discussion.

Table 3. Teachers' preliminary perceptions of the feasibility of M2S.

Dimension	Theme
Demand	Children's movement deficit exacerbated by COVID-19
	Differentiation
	Assessment opportunities
Acceptability	Addressing the relationship between movement and sport Challenges of using a movement-based approach in PE
	When to use M2S?

Findings

The themes constructed during data analysis are represented in Table 3 and used to structure our findings.

Demand

Themes that emerged in relation to *demand* highlighted the need for M2S to address growing concerns about declining movement competence among children, which were exacerbated by the COVID-19 pandemic. Teachers highlighted that children were arriving at secondary school with poor levels of movement competence making it difficult for them to engage with traditional forms of PE dominated by sports.

Children's movement deficit exacerbated by COVID-19

As a way of providing clarity and a starting point to everyone involved in the process of M2S co-production, one of the lead researchers provided a working aim of M2S as providing:

> activities specifically designed to improve movement competence, improve health and improve physical performance and reduce the risk of injury whilst developing the confidence and competence of all children

On hearing this, two teachers suggested the demand for M2S had been accentuated due to the residual impact of COVID-19, suggesting:

> I think confidence is a big thing for students particularly after coming out of lockdown, so the younger year groups, the sevens and eights who haven't done as much and they don't have the confidence or the competence in the basic skills to be able to do it. (Grace)

> COVID has played a big part in kid's lack of skills; we see it more with the kids, is that they've come back and they've not done anything for 18 months or two years. (Rob)

A broader recognition of a skills deficit, beyond that caused by the pandemic was conveyed:

> It's, like, physical capabilities; some of the Year 9 kids we teach, it's frightening in terms of how poor they are at just even knowing where their limbs are going and their ability to just move and run without even looking at catching and things like that. (Josh)

Differentiation

The sub-theme of differentiation was prominent in the discussions as teachers were expressing their intention to use M2S activities to suit children with varying levels of

movement competence and abilities. Differentiation opportunities were discussed early on in the practical activities and teachers seemed comfortable in providing variations to the proposed activities, as routine. One teacher's intention to use M2S was defined by how he might differentiate his approach:

> So you can add in different pieces of equipment; so it might be a basketball coming in, might be a football coming in, you can have new constraints such as you can now move with the ball etc., depending on the regulation of the sport that you're trying to obviously put in there as well. So yeah, just looking at those fundamental movement patterns again within that game situation as well. (Josh)

The significance of a sport being a focal point and affecting this teachers' intention to use M2S continued to emerge:

> We did talk about didn't we, how you can easily make it like sports; different as well in terms of you could be putting netballs in the middle, and they could run out and take them back, or if it was rugby and then start to grade how they're actually picking it up, how they place it down. But ultimately, it's looking at running and we don't focus on that bit too much. (Josh)

Other teachers referred to differentiation by ability:

> We were thinking to adapt it; if these are like high ability groups and these were low ability, we could make those wider because they're playing against the same, we could make those goals a bit smaller, adding more people so two people versus two, that sort of thing. (Vicky)

Evaluating the potential use of M2S in his school, one teacher provided further recognition for the appropriateness of M2S with lower ability groups throughout all of secondary school:

> I think with our low ability sets it would probably work like up to Year 10, I could do some of those games with my Year 10s and they'd be quite happy doing that. (James)

A teacher in another group at the same twilight seemed to be grappling with the notion of differentiating the activity to integrate the 'fundamentals of movement' into his activity:

> It's [the activity] about running fundamentals and looking at that technique, so when we initially set it up we set up as gates dotted all around the track. So you could change direction and move, but then after discussion and talking about the activity itself, it's looking at the running fundamentals of the movement, so we wanted to get that in play. (Matt)

Task differentiation was another proposed approach, through using the different 'phases' of M2S activities:

> With Corner Ball, you've got your easy level one or two maybe, and then if you wanted to advance it and progress even more, you could even have a progression of corner-ball to make that medium difficulty, and then your square-ball to make that harder, or extremely hard or whatever, for those that are really advanced. (Ryan)

Assessment opportunities

Participants recognised a wealth of opportunities for M2S to support assessment practices in PE, particularly by integrating peer and self-assessment approaches. Given the challenge of assessing movement in PE settings, teachers appreciated that M2S could provide structured, games-based assessment opportunities within PE lessons.

One teacher emphasised how M2S provided opportunities for peer assessment within the lesson:

> Yeah, it's child-friendly, isn't it. So, I'd get them to do the peer assessment during, so that they can assess where they need to develop before … otherwise, leaving it all at the end leaves a lot to review for assessment. That's how I'd do it. (Vicky)

Peer and self-assessment approaches were also mentioned as a way of allowing students to recover in between the intensity of activities:

> In your double lesson, you've got to keep the kids going, so as long as we're talking about using that peer assessment or that self-assessment, as long as they get like a two, three, four minute downtime where we're talking about what it actually looks like and what they should be doing, then they're ready to go again. (Grace)

There was also feeling that being able to assess within games would enable opportunities to provide individualised feedback to students:

> we discussed as well about the opportunities that we have to step back as a teacher and let them play the game. That's when you can assess as well. So you can walk round the groups and talk to individual students, and give them feedback based on their movements within the game, and try and remind them of teaching points, or whatever it may be. (Rob)

Another teacher noted the relationship between assessment and planning when considering how they would use M2S:

> So, we talked about doing an assessment or a first assessment, kind of informal assessment, if you like. Maybe more for the member of staff than the student, so that we can see what they maybe need to focus on, because we said we wouldn't plan the full six weeks at once. I personally would plan one, look at what they need to improve on, and then look at the second and third sessions, and re-implement what I thought was an area to improve. (Graham)

Ways in which M2S could be used to help participants work on self- and peer-assessment, within the student success criteria of describing various movements was also mentioned:

> One of our success criteria is being able to describe how to perform a particular action … because it's [M2S] quite student-friendly in terms of a one, two or a three, and putting it on the board so that they can actually self and peer assess during the lesson. So, you could do it at the end of the T-time, and then again at square-ball, so what do you need to improve on, and getting them involved in their assessment. (Grace)

The use of criteria-based assessment and its use as a way of preparing students for further study is mentioned again during another modelling activity:

> We kind of talked about how that [T-Time] would look as an LO [Learning Objective] and a success criteria, and in terms of our success criteria, because we do full cohort at B Tech and there's quite an emphasis on being able to recall technique for the different assignments that they do. (Grace)

Acceptability

Themes that emerged in relation to *acceptability* were related to how M2S addresses the relationship between movement and sport by integrating the teaching of movement

competence within the PE curriculum. Teachers were enthusiastic for the way that M2S focuses on the development of movement skills and could provide an alternative approach to the traditional sport-dominated approach in secondary school PE. Teachers felt that M2S would be well placed in secondary school PE, particularly in Year 7 as children transition from primary school.

Addressing the relationship between movement and sport

There was a strong feeling across the sessions that M2S was acceptable as the movement-based approach it employed was in stark contrast with more traditional approaches that were being used in PE:

> We're very much in agreeance that this is a great step forward in terms of moving away from traditional sports and looking at some of the concepts through a physical literacy stance. So in terms of the resources that've been provided through Move 2 Sport, it does stand in line with how you would expect to teach a normal PE lesson, but it's very, obviously, driven towards the movement focus, and it's very physical based. (Matt)

Teachers also spoke of how the activities could be flavoured towards a specific sport by linking to extant activities in their current curricular provision:

> We did talk about didn't we, how you can easily make it like sports as well. in terms of you could be putting netballs in the middle, and they could run out and take them back, or if it was rugby and then start to [grade] how they're actually picking it up, how they place it down, but ultimately it's looking at running and we don't focus on that bit too much. (Graham)

Further acknowledging the positive impact that M2S could have in their school, another teacher talked about their intention to integrate M2S into their PE curriculum:

> I want to use Move 2 Sport as the catalyst to sort of start to look at just developing students' movement in the physical strand. I really like the resources, really like the idea, really like the concept, and I would be definitely interested in moving them into our PE curriculum (Matt)

Challenges of using a movement-based approach in PE

Despite the positivity around how M2S offers a novel approach to focus on movement development within the curriculum, some teachers struggled to understand how M2S would be delivered within their schools. For example, following a demonstration of one of the more complex Phase 3 activities presented, one teacher suggested:

> You need to try actually isolate what you're trying to assess because otherwise I think it gets a little bit diluted, like in there how you're looking at a lunge when actually it's – or the way we perceived it is you're actually spending more time like dodging and there's not that much lunging happening, so if there are ways to maybe isolate that bit, I don't know, we struggled. (James)

During the same conversation, another teacher raised concerns that the specific focus on movement within M2S could negatively impact engagement over time:

> My only question for myself, as a teacher, is whether the longer that it goes on, will they (the children) start to get a little bit bored because it is just movements? (Matt)

One teacher was clearly grappling with the notion of how he would introduce M2S, with its inherent movement-based approach, through the medium of specific sports:

> So what it's looking at is basically catching and receiving, and then trying to look for gaps obviously, depending how you build it up. So that's why we said we'd probably do it a little bit more with rugby how we said we'd do it but obviously, to start with so the kids don't get the concept of rugby we'd use footballs or tennis balls and such like that. (Josh)

Whilst participating teachers had polarised perspectives about how engaging M2S would be for their pupils, some spoke positively and enthusiastically about its use and recognised the way in which M2S could provide alternative approaches to PE content:

> Move 2 Sport's quite generic, it's quite fun, there's different resources, it's non-threatening, and that can really engage students into PE. (Graham)

When to use M2S?

Teachers had varied opinions as to the perceived fit of M2S within a child's schooling. One participant, a Head of PE, felt strongly that M2S is well suited to Year 7 children as they transition from primary school:

> I would be very keen to put these into the department and definitely put them into the key stage three curriculum, especially starting at year seven, using these resources from the get-go, looking at students' movement patterns from the off, assessing the students from the off. (Matt)

Similarly, another teacher noted that M2S could be used for baselining and grouping children as they transition into Year 7:

> We see Move 2 Sport as a really good tool for bridging that gap from primary school where they come in and they maybe haven't got that ability. It also works as a perfect tool for us to actually set our kids because of the nature of all the variety in the games. (Josh)

The use of M2S in early secondary school curriculum was mentioned by one teacher as a positive, contrasting solution to a games-based approach:

> When Year 7s come in that's a six-week block, it [MOGBA] is really good – it's not, right, let's go and do netball because some students maybe have done it before, some haven't. Or badminton, some kids have done it before, and using this, focusing on just skills and movement is a really good way to assess everybody rather than focusing on skill-based things in games. So, I think if we were to use this in the future, using it as that baseline assessment for students in Year 7 would be a good way to use it. (Vicky)

Other teachers, suggested that the resource would be well placed with younger aged children in primary schools:

> Obviously that link [to movement] might lend itself well to primary schools maybe a little bit better depending on the quality of the students that you're teaching. (Ryan)

> I think they're [the games] quite primary school-esque. For example, Raid, I would do that as a primary school teacher and I'd do it maybe first week of Year 7 and probably wouldn't do it again because I find it quite boring to teach. I don't think it's exciting for them. (Ruby)

Discussion

Demand

The findings of this study highlight the critical role of co-production in developing feasible interventions for teachers. Participants expressed demand for M2S in many forms. Teachers talked of a skills deficit within pupils, perhaps caused by the COVID-19 pandemic or as simply reflective of the status of children at the time. This is unsurprising given reports of the lack of movement competence exhibited by primary-aged children (e.g. Bolger et al., 2021). Reporting the impact of COVID-19 on children's movement competence has been relatively limited, however, Pombo et al. (2020) demonstrated a decrease in children's movement competency following COVID-19. Studies are also emerging that demonstrate the negative impact caused by the COVID-19 pandemic on children's physical activity levels (Dunton et al., 2020; Rossi et al., 2021), particularly for those involved in team sports (Yomoda & Kurita, 2021), which are prevalent within the UK's PE curriculum (DfE, 2013). Recognising this decline in children's PA caused by COVID-19 and given the positive association between movement competence and physical activity (Burton et al., 2023), it could be argued that levels of movement competence have fallen further due to the COVID-19 pandemic. This finding suggests teachers feel that addressing this decline in children's skills is even more pronounced than before, irrespective of national reporting that suggests physical activity levels have returned to pre-COVID-19 levels (Sport England, 2023).

A key advantage of the co-production process was its iterative, feedback-driven approach, which allowed teachers to shape the intervention based on their needs and contexts. Evidence of this is how teachers intended to use M2S employing a range of differentiation approaches. Differentiation by task, outcome and ability have been well-documented approaches within PE (Colquitt et al., 2017) and it seems teachers in this study are making sense of M2S in relation to their typical practices and how they enact the PE curriculum (Alfrey & O'Connor, 2020). One aspect of differentiation that is mentioned that is less prevalent in the literature and most pertinent to this study is how the activities are differentiated to provide movement development opportunities. The MOGBA activities have integrated differentiation support offering generic guidance on changing the challenge most often associated with the introduction of different equipment. A more movement-based approach to differentiation is also offered through support resources demonstrating how the activity can be differentiated in terms of the Space, Effort and Relationships a child is asked to consider within the activity (Goodway et al., 2019; Morley et al., 2021). Notions of differentiation seem to be central in teachers' thoughts during the co-production of the M2S resource. Further understanding of the nuanced, differentiated, approach that teachers use during their delivery is warranted during the implementation of M2S.

Assessment was mentioned by teachers in this study in a variety of guises and for a number of purposes. The co-production process allowed for a range of perspectives of how M2S could be used to facilitate assessment within lessons to be heard, including peer- and self -assessment. This seems reflective of existing evidence demonstrating the uncertainty surrounding the most appropriate way to assess learning in PE (Goss et al., 2021). The potential for M2S to be used as a formative assessment tool, more in line with the notion of Assessment for Learning, rather than Assessment of Learning

(Dinan-Thompson & Penney, 2015) was reinforced. Given M2S is a hybrid teaching approach, partially constructed around a movement-oriented assessment within the MOGBA activities, it seems logical that teachers were making sense of how M2S would be used for authentic assessment within their lessons. Where authentic assessment is enacted effectively, with teachers supported effectively in their instructional and assessment practices, children's FMS can be improved (Chan et al., 2016; Dudley et al., 2011). Where movement competence has been assessed previously, evidence suggests that PE teachers may obtain valuable information to improve their teaching effectiveness, and heighten their approaches towards curricular development (Logan et al., 2015). In light of concerns raised above about a decline in children's movement competence, providing teachers various ways to embed assessment through M2S is seen to be significant as teaching and learning could subsequently be designed to adequately and appropriately support children's development.

Acceptability

Teachers reacted positively to M2S with good levels of *acceptability*, suggestive of its appropriate placement in secondary schools. The general feeling from participants was that M2S was well placed to support the transition from primary to secondary school PE. Evidence suggests that children in children in primary schools (Morley et al., 2015) and at the start of secondary schools (Burton et al., 2023; Lander et al., 2017) exhibit low levels of FMS. This suggests that children go through primary school without receiving the necessary instruction and practice opportunities to develop competence in FMS (Okely et al., 2001). In secondary schools, where a curriculum is traditionally founded on games (Ennis, 2014; O'Connor et al., 2022), this skills deficit may be a barrier for participation in PE (Brian et al., 2020; Goodway et al., 2019), so it is expected that teachers would welcome this movement-focused approach.

Teachers in this study emphasised that M2S would be particularly useful in baselining and grouping children at the start of secondary school (i.e. Year 7 in England). In the absence of standardised PE assessment in primary school (Ní Chróinín & Cosgrave, 2013), secondary schools have access to limited information on children's competence in PE at this point of transition. Typically, objective fitness measurements have been used as a form of baseline assessment in PE but these do not provide an accurate picture of the abilities in the subject (López-Pastor et al., 2013). In light of recent evidence suggesting PE teachers require assessment that is time-efficient, simple and useful (Goss et al., 2021), teachers in our study have recognised the value of the assessment within M2S to provide an accurate and authentic measurement of children's competence. Furthermore, it was highlighted that M2S provides a platform to foster a link between movement skills and sports that is not typical within the traditional PE curriculum. This is not surprising given the M2S programme is underpinned by both the MOGBA and RAMPAGE frameworks, which prioritise the use of non-sport-specific and innovative games to engage young people in locomotor, object control, and stability skills and combined CMS (Morley et al., 2021a; Till et al., 2021). However, the findings provide a case to consider the support teachers may require to implement the M2S programme in a meaningful way so that pupils understand its relevance to specific sports and activities.

We recognise that a limitation of this study is the relatively small sample size of nine participants. Although the participants' schools were dispersed across the city and represented a diverse mix of socio-economic demographics, the small sample size may limit the generalisability of the findings. Therefore, future research could aim to include more schools and teachers.

Practical implications

The findings of this study highlight that there is demand for M2S by PE teachers to foster a crucial link between movement skills and sports, which is not common in traditional PE curricula. M2S is well placed to support the transition from primary to secondary school PE, where the curriculum is traditionally more focused on sports and sport-specific skills. Given the challenges surrounding movement assessment in PE (Goss et al., 2021), M2S could be used as a formative assessment tool. As there are no standardised assessments in primary PE (Ní Chróinín & Cosgrave, 2013), the assessment within M2S lends itself well to being used as a way to group or baseline children at the start of Year 7, as they transition from primary school. However, to ensure effective implementation, some teachers may require additional support to incorporate movement-based approaches within their existing models of PE (Dudley et al., 2011).

Conclusion

This study provides a preliminary exploration of the feasibility of M2S, a co-produced intervention with PE teachers who would subsequently teach M2S in PE in their schools. Using an adapted feasibility framework to analyse the data provided valuable insights into how the teachers perceived M2S across the dimensions of demand and acceptability, as it was being co-produced. The findings suggest that co-production is advantageous for intervention design and can strengthen PE curriculum innovation. This study demonstrates that involving teachers in the development of interventions fosters greater feasibility, supporting previous arguments for co-produced educational models (Alfrey & O'Connor, 2024).

The overarching perception of teachers in this study is that M2S is very much in demand, predominantly due to existing issues with children's movement deficit, exacerbated by COVID-19. The assessment function of M2S were generally well received, with multidimensional uses suggested including assessment and benchmarking opportunities. When teachers were asked to model their usage of M2S in practical activities they were challenged in effectively differentiating learning, particularly when considering how to combine a movement-based approach with an existing sport-based approach. It seemed teachers were constantly trying to ameliorate the perceived shortfall of sport-specific skills development caused by the focus on movement development.

The co-production methodology used within this study, specifically through integrative knowledge transfer (Smith et al., 2023), afforded a collegiate and highly interactive fusion of theoretical and applied perspectives. The ability of the project team to explore feasibility during co-production meant that any necessary changes can now be made to the intervention prior to the broader scaling of M2S within schools. Future recommendations are three-fold: firstly, a feasibility trial of M2S being delivered by teachers

in school is conducted; secondly, that M2S is used more broadly in both primary and secondary schools and its effectiveness and efficacy is tested to understand the impact it may have on participating children; and thirdly, that effective Continuing Professional Development (CPD), garnering lessons learned from the co-production process in this study and future feasibility trials, is designed and evaluated to ensure teachers have the requisite skills to deliver M2S in their schools.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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References

Alfrey, L., & O'Connor, J. (2020). Critical pedagogy and curriculum transformation in secondary health and physical education. *Physical Education and Sport Pedagogy*, *25*(3), 288–302. https://doi.org/10.1080/17408989.2020.1741536

Alfrey, L., & O'Connor, J. (2024). Transforming physical education: An analysis of context and resources that support curriculum transformation and enactment. *Physical Education and Sport Pedagogy*, *29*(1), 1–17. https://doi.org/10.1080/17408989.2022.2028759

Alfrey, L., O'Connor, J., & Jeanes, R. (2017). Teachers as policy actors: Co-creating and enacting critical inquiry in secondary health and physical education. *Physical Education and Sport Pedagogy*, *22*(2), 107–120. https://doi.org/10.1080/17408989.2015.1123237

Aubert, S., Barnes, J. D., Abdeta, C., Abi Nader, P., Adeniyi, A. F., Aguilar-Farias, N., … 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*(2), S251–S273. https://doi.org/10.1123/jpah.2018-0472

Bolger, L. E., Bolger, L. A., O'Neill, C., Coughlan, E., O'Brien, W., Lacey, S., & Bardid, F. (2021). Global levels of fundamental motor skills in children: A systematic review. *Journal of Sports Sciences*, *39*(7), 717–753. https://doi.org/10.1080/02640414.2020.1841405

Bowen, D. J., Kreuter, M., Spring, B., Cofta-Woerpel, L., Linnan, L., Weiner, D., & 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

Brian, A., Getchell, N., True, L., De Meester, A., & Stodden, D. F. (2020). Reconceptualizing and operationalizing Seefeldt's proficiency barrier: Applications and future directions. *Sports Medicine*, *50*(11), 1889–1900. https://doi.org/10.1007/s40279-020-01332-6

Burton, A. M., Cowburn, I., Thompson, F., Eisenmann, J. C., Nicholson, B., & Till, K. (2023). Associations between motor competence and physical activity, physical fitness and psychosocial characteristics in adolescents: A systematic review and meta-analysis. *Sports Medicine*, *53*(11), 2191–2256. https://doi.org/10.1007/s40279-023-01886-1

Chan, C., Ha, A., & Ng, J. Y. (2016). Improving fundamental movement skills in Hong Kong students through an assessment for learning intervention that emphasizes fun, mastery, and support: The A+ FMS randomized controlled trial study protocol. *SpringerPlus*, *5*(1), 1–12. https://doi.org/10.1186/s40064-016-2517-6

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th Ed.). Routledge.

Colquitt, G., Pritchard, T., Johnson, C., & McCollum, S. (2017). Differentiating instruction in physical education: Personalization of learning. *Journal of Physical Education, Recreation & Dance*, *88*(7), 44–50. https://doi.org/10.1080/07303084.2017.1340205

Cools, W., Martelaer, K. D., Samaey, C., & Andries, C. (2009). Movement skill assessment of typically developing preschool children: a review of seven movement skill assessment tools. *Journal of Sports Science & Medicine*, *8*(2), 154–168.

Department for Education. (2013). *National curriculum in England: Framework for key stages 1 to 4*. https://www.gov.uk/government/publications/national-curriculum-in-england-physical-education-programmes-of-study

Dinan-Thompson, M., & Penney, D. (2015). Assessment literacy in primary physical education. *European Physical Education Review*, *21*(4), 485–503. https://doi.org/10.1177/1356336X15584087

Dudley, D., Okely, A., Pearson, P., & Cotton, W. (2011). A systematic review of the effectiveness of physical education and school sport interventions targeting physical activity, movement skills and enjoyment of physical activity. *European Physical Education Review*, *17*(3), 353–378. https://doi.org/10.1177/1356336X11416734

Duncombe, S. L., Stylianou, M., Price, L., Walker, J. L., & Barker, A. R. (2023). Making a HIIT: Methods for quantifying intensity in high-intensity interval training in schools and validity of session rating of perceived exertion. *Journal of Sports Sciences*, *41*(18), 1678–1686. https://doi.org/10.1080/02640414.2023.2291736

Dunton, G. F., Do, B., & Wang, S. D. (2020). Early effects of the COVID-19 pandemic on physical activity and sedentary behavior in children living in the US. *BMC Public Health*, *20*(1), 1–13. https://doi.org/10.1186/s12889-020-09429-3

Ennis, C. D. (2014). What goes around comes around … or does it? *Disrupting the cycle of traditional, sport-based physical education. Kinesiology Review*, *3*(1), 63–70.

Goodway, J. D., Ozmun, J. C., & Gallahue, D. L. (2019). *Understanding motor development: Infants, children, adolescents, adults*. Jones & Bartlett Learning.

Goss, H. R., Shearer, C., Knowles, Z. R., Boddy, L. M., Durden-Myers, E. J., & Foweather, L. (2021). Stakeholder perceptions of physical literacy assessment in primary school children. *Physical Education and Sport Pedagogy*, *27*(5), 515–530. https://doi.org/10.1080/17408989.2021.1911979

Graham, I. D., Kothari, A., & McCutcheon, C. (2018). Moving knowledge into action for more effective practice, programmes and policy: Protocol for a research programme on integrated knowledge translation. *Implementation Science*, *13*(1), 1–15. https://doi.org/10.1186/s13012-017-0700-y

Guba, E., Lincoln, Y., & Lynham, S. (2017). Paradigmatic controversies, contradictions, and emerging confluences revisited. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (5th ed.; pp. 108–150). Sage.

Hulteen, R. M., Morgan, P. J., Barnett, L. M., Stodden, D. F., & Lubans, D. R. (2018). Development of foundational movement skills: A conceptual model for physical activity across the lifespan. *Sports Medicine*, *48*(7), 1533–1540. https://doi.org/10.1007/s40279-018-0892-6

Inchley, J., Currie, D., Jewell, J., Breda, J., & Barnekow, V. (2017). *Adolescent obesity and related behaviours*. World Health Organisation: Regional Office for Europe.

Jebeile, H., Kelly, A. S., O'Malley, G., & Baur, L. A. (2022). Obesity in children and adolescents: Epidemiology, causes, assessment, and management. *The Lancet Diabetes & Endocrinology*, *10*(5), 351–365. https://doi.org/10.1016/S2213-8587(22)00047-X

Jess, M., Carse, N., & Keay, J. (2016). The primary physical education curriculum process: More complex that you might think!. *Education 3-13*, *44*(5), 502–512. https://doi.org/10.1080/03004279.2016.1169482

Kendig, C. E. (2016). What is proof of concept research and how does it generate epistemic and ethical categories for future scientific practice? *Science and Engineering Ethics*, *22*(3), 735–753. https://doi.org/10.1007/s11948-015-9654-0

Kinchin, G. D., & O'Sullivan, M. (1999). Making physical education meaningful for high school students. *Journal of Physical Education, Recreation & Dance*, *70*(5), 40–44. https://doi.org/10.1080/07303084.1999.10605933

Lambert, K., Alfrey, L., O'Connor, J., & Penney, D. (2021). Artefacts and influence in curriculum policy enactment: Processes, products and policy work in curriculum reform. *European Physical Education Review*, *27*(2), 258–277. https://doi.org/10.1177/1356336X20941224

Lander, N., Morgan, P. J., Salmon, J. O., & Barnett, L. M. (2017). Improving early adolescent girls' motor skill: A cluster randomized controlled trial. *Medicine & Science in Sports & Exercise*, *49*(12), 2498–2505. https://doi.org/10.1249/MSS.0000000000001382

Lloyd, R. S., Cronin, J. B., Faigenbaum, A. D., Haff, G. G., Howard, R., Kraemer, W. J., Micheli, L. J., Myer, G. D., & Oliver, J. L. (2016). National strength and conditioning association position statement on long-term athletic development. *The Journal of Strength & Conditioning Research*, *30*(6), 1491–1509. https://doi.org/10.1519/JSC.0000000000001387

Lloyd, R. S., Oliver, J. L., Faigenbaum, A. D., Howard, R., Croix, M. B. D. S., Williams, C. A., Best, T. M., Alvar, B. A., Micheli, L. J., & Thomas, D. P. (2015a). Long-term athletic development-part 1: A pathway for all youth. *The Journal of Strength & Conditioning Research*, *29*(5), 1439–1450. https://doi.org/10.1519/JSC.0000000000000756

Lloyd, R. S., Oliver, J. L., Faigenbaum, A. D., Howard, R., Croix, M. B. D. S., Williams, C. A., Best, T. M., Alvar, B. A., Micheli, L. J., & Thomas, D. P. (2015b). Long-term athletic development, part 2: Barriers to success and potential solutions. *The Journal of Strength & Conditioning Research*, *29*(5), 1451–1464. https://doi.org/10.1519/01.JSC.0000465424.75389.56

Logan, S. W., Webster, E. K., Getchell, N., Pfeiffer, K. A., & Robinson, L. E. (2015). Relationship between fundamental motor skill competence and physical activity during childhood and adolescence: A systematic review. *Kinesiology Review*, *4*(4), 416–426. https://doi.org/10.1123/kr.2013-0012

López-Pastor, V. M., Kirk, D., Lorente-Catalán, E., MacPhail, A., & Macdonald, D. (2013). Alternative assessment in physical education: A review of international literature. *Sport, Education and Society*, *18*(1), 57–76. https://doi.org/10.1080/13573322.2012.713860

Morley, D., Rudd, J., Issartel, J., Goodway, J., O'Connor, D., Foulkes, J., & Miller, A. (2021). Rationale and study protocol for the movement oriented games based assessment (MOGBA) cluster randomized controlled trial: A complex movement skill intervention for 8-12 year old children within 'made to play'. *PLoS One*, *16*(6), e0253747. https://doi.org/10.1371/journal.pone.0253747

Morley, D., Till, K., Ogilvie, P., & Turner, G. (2015). Influences of gender and socioeconomic status on the motor proficiency of children in the UK. *Human Movement Science*, *44*, 150–156. https://doi.org/10.1016/j.humov.2015.08.022

Ní Chróinín, D., & Cosgrave, C. (2013). Implementing formative assessment in primary physical education: Teacher perspectives and experiences. *Physical Education and Sport Pedagogy*, *18*(2), 219–233. https://doi.org/10.1080/17408989.2012.666787

O'Connor, J., Alfrey, L., & Penney, D. (2022). Rethinking the classification of games and sports in physical education: A response to changes in sport and participation. *Physical Education and Sport Pedagogy*, *29*(3), 315–328. https://doi.org/10.1080/17408989.2022.2061938

O'Connor, J., & Penney, D. (2021). Informal sport and curriculum futures: An investigation of the knowledge, skills and understandings for participation and the possibilities for physical education. *European Physical Education Review*, *27*(1), 3–26. https://doi.org/10.1177/1356336X20915937

Okely, A. D., Booth, M. L., & Patterson, J. W. (2001). Relationship of physical activity to fundamental movement skills among adolescents. *Medicine and Science in Sports and Exercise*, *33*(11), 1899–1904. https://doi.org/10.1097/00005768-200111000-00015

Penney, D. (2013). From policy to pedagogy: Prudence and precariousness; actors and artefacts. *Asia-Pacific Journal of Health, Sport and Physical Education*, *4*(2), 189–197. https://doi.org/10.1080/18377122.2013.808154

Penney, D., & Chandler, T. (2000). Physical education: What future (s)? *Sport, Education and Society*, *5*(1), 71–87. https://doi.org/10.1080/135733200114442

Pombo, A., Luz, C., Rodrigues, L. P., Ferreira, C., & Cordovil, R. (2020). Correlates of children's physical activity during the COVID-19 confinement in Portugal. *Public Health*, *189*, 14–19. https://doi.org/10.1016/j.puhe.2020.09.009

Riddoch, C. J., Bo Andersen, L., Wedderkopp, N., Harro, M., Klasson-Heggebø, L., Sardinha, L. B., Cooper, A. R., & Ekelund, U. (2004). Physical activity levels and patterns of 9- and 15-yr-old European children. *Medicine and Science in Sports and Exercise*, *36*(1), 86–92.

Robinson, L. E., Stodden, D. F., Barnett, L. M., Lopes, V. P., Logan, S. W., Rodrigues, L. P., & D'Hondt, E. (2015). Motor competence and its effect on positive developmental trajectories of health. *Sports Medicine*, *45*(9), 1273–1284. https://doi.org/10.1007/s40279-015-0351-6

Rossi, L., Behme, N., & Breuer, C. (2021). Physical activity of children and adolescents during the COVID-19 pandemic: A scoping review. *International Journal of Environmental Research and Public Health*, *18*(21). https://doi.org/10.3390/ijerph182111440

Sandercock, G. R., & Cohen, D. D. (2019). Temporal trends in muscular fitness of English 10-year-olds 1998–2014: An allometric approach. *Journal of Science and Medicine in Sport*, *22*(2), 201–205. https://doi.org/10.1016/j.jsams.2018.07.020

Smith, B. (2018). Generalizability in qualitative research: Misunderstandings, opportunities and recommendations for the sport and exercise sciences. *Qualitative Research in Sport, Exercise and Health*, *10*(1), 137–149. https://doi.org/10.1080/2159676X.2017.1393221

Smith, B., Williams, O., Bone, L., & Collective, T. M. S. W. C. P. (2023). Co-production: A resource to guide co-producing research in the sport, exercise, and health sciences. *Qualitative Research in Sport, Exercise and Health*, *15*(2), 159–187. https://doi.org/10.1080/2159676X.2022.2052946

Sport England. (2023). *Active lives children and young people survey academic year 2022-23 report*. https://www.sportengland.org/research-and-data/data/active-lives

Stavridou, A., Kapsali, E., Panagouli, E., Thirios, A., Polychronis, K., Bacopoulou, F., Psaltopoulou, T., Tsolia, M., Sergentanis, T. N., & Tsitsika, A. (2021). Obesity in children and adolescents during COVID-19 pandemic. *Children*, *8*(2), 135.

Till, K., Eisenmann, J., Emmonds, S., Jones, B., Mitchell, T., Cowburn, I., & Lloyd, R. S. (2021). A coaching session framework to facilitate long-term athletic development. *Strength & Conditioning Journal*, *43*(3), 43–55.

Till, K., Lloyd, R. S., McCormack, S., Williams, G., Baker, J., & Eisenmann, J. C. (2022). Optimising long-term athletic development: An investigation of practitioners' knowledge, adherence, practices and challenges. *PLoS One*, *17*(1), e0262995. https://doi.org/10.1371/journal.pone.0262995

Tracy, S. J. (2010). Qualitative quality: Eight "big-tent" criteria for excellent qualitative research. *Qualitative Inquiry*, *16*(10), 837–851. https://doi.org/10.1177/1077800410383121

van Rossum, T., Foweather, L., Hayes, S., Richardson, D., & Morley, D. (2021). Expert recommendations for the design of a teacher-oriented movement assessment tool for children aged 4-7 years: A Delphi study. *Measurement in Physical Education and Exercise Science*, *25*(4), 283–293. https://doi.org/10.1080/1091367X.2021.1876070

Vargas, C., Whelan, J., Brimblecombe, J., & Allendera, S. (2022). Co-creation, co-design and co-production for public health: A perspective on definitions and distinctions. *Public Health Research & Practice*, *32*(2), 2. https://doi.org/10.17061/phrp3222211

Yomoda, K., & Kurita, S. (2021). Influence of social distancing during the COVID-19 pandemic on physical activity in children: A scoping review of the literature. *Journal of Exercise Science & Fitness*, *19*(3), 195–203. https://doi.org/10.1016/j.jesf.2021.04.002