

Creating Active Schools: What Influences Continuous Implementation Following Adoption?

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Background: Evidence on the long-term implementation and sustainability of whole-school physical activity programs remains limited. The Creating Active Schools (CAS) program incorporated the CAS Framework to support schools to focus on organizational and cultural change for physical activity. This study evaluates the medium-term implementation of CAS, after 2 academic years. **Methods:** A qualitative descriptive approach was employed. After 2 years of implementation, 35 participants from 30 Bradford schools, including school staff, CAS Champions, and Bradford CAS locality leads took part in semistructured focus groups. Thematic analysis followed a codebook method, combining inductive, data-driven insights with deductive themes based on McKay et al's implementation evaluation roadmap, and aligned to the Consolidated Framework Implementation Research. **Results:** The program increased the reach compared with the first year, with more staff buying into CAS and gaining confidence as advocates of physical activity. Schools shifted from creating new initiatives to embedding and sustaining previous efforts, and some schools required repeated doses to reinstate CAS as a priority where there had been high staff turnover or superficial initial buy-in. Core components of CAS that mitigated negative influences from the wider educational system, included peer-to-peer learning, and inter and intraknowledge exchange arising from the communities of practice. Collectively, these factors contributed to the combined agency within the school to implement CAS. **Conclusions:** The medium-term implementation of whole-school physical activity programs is contingent on understanding the broader educational context and system influences. This study underscores the importance of communities of practice and supportive structures in sustaining school-based physical activity initiatives.

Keywords: whole-school physical activity, physical activity promotion, children, implementation science, implementation outcomes, implementation determinants

Key Points

- This is the first study within the UK to provide a more nuanced understanding of the longitudinal implementation of a place sensitive whole-school physical activity program.
- Findings illustrate the complexity of maintaining and sustaining school-based physical activity initiatives beyond the period of initial implementation and the need to continually monitor implementation over time.
- This study demonstrates that programs need to be developed to be contextually specific to ensure that its components are specifically aligned with the priorities and resources of the participating schools.

Extensive evidence supports the health benefits of physical activity particularly in promoting healthy development among children and adolescents.^{1,2} However, physical inactivity remains prevalent.³ Whole-school physical activity programs are identified as one of 8 investments that work for physical activity.⁴ However, despite an abundance of physical activity interventions,⁵ school-based programs

designed to increase children's physical have failed to effectively shift the dial on inactivity, and persistently high levels exist among children and youth globally.³ The implementation of school-based physical activity initiatives is challenging⁶ and there is a lack of understanding of mechanisms that support effective and sustainable interventions, and how they can be translated into practice.⁷

Schools are increasingly being recognized as complex adaptive systems⁸ which acknowledges the school context as a contributing factor to intervention effectiveness.^{9,10} Recently, there have been calls for school-based programs which are contextually relevant and support autonomy so that they are fit for purpose and their implementation can be optimized.¹¹ However, there is also a need to refine our understanding of the relational and dynamic features of the broader context which may shape the mechanisms through which a program works. Previous studies on

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implementing school-based interventions have identified key constructs across various domains particularly concerning initial adoption and the facilitators and barriers of different approaches.¹² However, context-specific and key components for implementation of programs are still underexplored.¹³

Creating Active Schools (CAS)¹⁴ is one example of a whole-school physical activity program, which has been developed as a place-based approach which uses asset-based co-development to create organizational and cultural change for physical activity. As such, implementation flexes to the needs of the system depending on individual school contexts, stakeholders relationships, and local knowledge. The program is underpinned by the COM-B model of behavior change, which identifies 3 key drivers—capability, opportunity, and motivation—as necessary conditions for change.¹⁵ To support these drivers, CAS combines several interconnected implementation strategies, including adopting and training CAS Champions, school-based action planning, and structured Communities of Practice (CoP). These CoPs serve as ongoing forums for both formal and informal learning, peer support, and knowledge sharing across school staff and wider stakeholders as identified in the framework. Together, these components aim to build collective capacity and foster cross-sector collaboration to embed physical activity into school ethos, policies, environments, and everyday practices. The implementation model is also informed by implementation science, supporting the iterative exploration of uptake and sustainability across schools.¹⁶

While several factors have been identified as predictors of whole-school implementation (eg, resource availability/quality and supportive school climate),¹⁷ there are a limited number of studies which have investigated the factors related to the sustainability of school-based physical activity interventions arising from long-term implementation.¹⁸ Often, studies only address individual or school-level outcomes at 6 months postintervention with few having sufficient follow-up¹⁹ or implementation ceasing after a year. For example, a recent systematic review and meta-analysis of randomized controlled and controlled studies identified that 96% of existing school-based programs last <3 years.²⁰ Consequently, it remains unclear if and how these interventions are sustained over time and what this looks like in practice.

Previous research with primary schools implementing CAS demonstrated positive cultural change for physical activity after 9 months (one academic year), facilitated by supportive implementation processes and the formal and informal CoP which provided “safe spaces” for cross-school support.²¹ However, it is important to consider the extent to which these impacts are sustained in the longer term and the stakeholder behaviors and program components that facilitate these impacts. Thus, the aim of the current study is to identify the determinants and outcomes for implementation in the medium term²² after 18 months (2 academic years).

Methods

Intervention

The CAS program was developed to support the implementation of the CAS framework.¹⁴ While the framework identifies the multiple components of a whole-school approach to physical activity, the program is an implementation support strategy that focuses on a process of change and supports mobilization across 4 areas: (1) policy, (2) environments, (3) stakeholders, and (4) opportunities. CAS draws on the schools’ assets (eg, facilities, environments, staff, capacity), to make organizational and cultural changes to promote physical activity.

A total of 57 Bradford schools were invited to participate in September 2021 through 3 different delivery models, all of which provided different amenities and funding opportunities. The CAS Bradford team recruited CAS Champions from local schools and public health teams to provide external support to schools and facilitate engagement. For example, they onboarded schools to the program and supported them through the CAS annual cycle, trained in-school CAS leads (responsible for implementing CAS within their individual school) and developed interschool CoP. For further description of the delivery models, initial implementation of CAS in Bradford and the CAS program logic model, refer to Morris et al,²¹ Helme et al,²³ and [Supplementary Material S1](#) (available online).

Study Design

This qualitative descriptive study aimed to assess the implementation of the CAS program within Bradford schools, 2 school years after adoption. The study was underpinned by a contextualist epistemology.²⁴ It used semistructured focus groups to gather contextually rich data and understand the diversity of experiences associated with implementing CAS in the medium term. The ethical approval of this study was obtained from the Ethics Committee of the local Institution.

Selection and Recruitment

For a comprehensive assessment of CAS implementation, focus group participants included the in-school CAS leads, CAS Champions, and Bradford CAS locality leads. Each stakeholder group was recruited at different points to coincide with program activities. The 2 CAS locality leads were invited to collect data on the strategic implementation of CAS across the locality. Additionally, the in-school CAS leads were recruited via the winter CoP (N = 26). Finally, the CAS Champions (n = 9) were recruited during a Bradford-based CAS Champion training day. All invited stakeholders agreed to participate.

Data Collection

All focus groups were conducted by members of the authorship team (Chalkley, Daly-Smith, E.C.M. Silva, Morris, Helme, Archbold), trained in qualitative interview techniques. Two semistructured focus group guides were developed to facilitate discussions and understand school-based implementation. One, for Bradford CAS locality leads and CAS Champions and the other for the operationally based in-school CAS leads. Questions were informed by the Consolidated Framework for Implementation Research²⁵ and structured into 5 themes: (1) differences in the implementation of CAS from the first year of implementation, (2) identification of key ingredients for implementation, (3) perceived effect(s) of CAS at the school level, and (4) how outcomes changed during the second year of implementation (see [Supplementary Material S2](#) [available online]).

Data were collected in November 2023. Discussions were audio recorded and transcribed verbatim into Microsoft Word (Microsoft), where the data were deidentified and referred to by an identification code before the transcripts were checked against the recordings for accuracy. In addition, the researcher took field notes, which were used to supplement and improve the accuracy of the transcripts. Average duration was 60 minutes, ranging from 39 to 110 minutes.

Data Analysis

Analysis included codebook thematic analysis, guided by a data-driven inductive approach. In addition, a deductive approach was used, guided by a priori themes based on McKay et al’s²⁶

implementation evaluation roadmap, and definitions adopted from an earlier study.²¹ The transcripts were read and reread to generate initial coding ideas and notes. A coding template was generated in Microsoft Excel with rows representing a priori themes. E.C.M. Silva and Chalkley led the analysis whereby data were copied into the matrix from transcripts and referenced. Initial perceptions and interpretations were captured in analytic memos and codes were collected under the a priori themes before comparing coding clusters together. Coding was hierarchical with variation in each theme being coded under subthemes. Candidate themes and subthemes were openly discussed with members of the authorship team (Helme and Daly-Smith) and challenged by critically probing for explanations until consensus was achieved. The inclusion of supporting quotations from participants interviewed enhanced trustworthiness.²⁷

Results

Thirty-five stakeholders representing 30 Bradford schools participated in the focus groups. Of these, 21 were in-school CAS leads, 7 were members of the senior leadership team (SLT) 7 were school staff, 5 were CAS Champions, 2 were Living Well CAS Champions, and 2 were Bradford CAS locality leads. Twelve of the participants from the current study also participated in the 9-month implementation evaluation of CAS²¹ (see Table 1).

Data were coded across the 16 a priori themes (presented in bold below to guide the reader and demonstrate alignment through the findings). One additional theme of perceived effectiveness and impact was identified to capture participants' descriptions and anecdotal accounts of CAS on various school-level and individual-level outcomes. While not an aim of this study, we thought it useful contextual information to include and have reported data relating to this theme as a supplementary file (see [Supplementary Material S3](#) [available online]). Due to the initial adoption phase of the program occurring in the first year of the project, no data from the current study were coded to the adoption theme (Table 2).

CAS Continues to Be Implemented

CAS was perceived as established in many schools across Bradford as the majority of focus group participants reported that schools were still implementing CAS and engaging with its components 2 years after completing the onboarding process. For instance, P22 (In-school CAS lead) suggested that: "I feel like CAS has really moved our school forward. And I'd say in the past year, we've made some really big progress. So, this year we've planted active champions, so the children are now leading with their own ideas and ways to be active. They're involved in play leaders; they are involved in choosing active enrichment equipment to use for classes in lessons. So, I feel like it's really, really going well the past few years." Participants also suggested continuous implementation on opportunities for physically active lessons, "I also think the [physically active lessons] approach has been massive as well, just in terms of having that as an offer and the training for our staff" P15 (In-school CAS lead). [Supplementary Material S4](#) (available online) presents more examples of initiatives implemented.

Following a period of rapid growth and development during the first year, focus shifted to embedding and sustaining changes made, rather than initiating further initiatives, for example: "I would say it's slowed down for us. In the first year, we had a lot to do and we did a lot. Last year was more embedding that, not doing anything grand" P36 (In-school CAS lead).

The dose delivered by CAS Champions and in-school CAS leads focused on maintaining capacity for current provision and initiatives already underway. Some schools required repeated doses to reinstate CAS as a priority where there had been high staff high-turnover or superficial initial buy-in. For instance,

Since last year, lots of staff left. The CAS champion comes and does the initial sort of presentation, introducing it to the school. [...] We need to revisit that kind of presentation to the school. P25 (In-school CAS lead)

This included repeating staff training to compensate for changes within the school which had negatively impacted implementation, such as high levels of staff turnover, and reduced budget.

SLT buy-in was repeatedly mentioned as a prerequisite for successfully implementing CAS and influencing cultural change in schools. CAS Champions and In-school CAS leads reported using meetings, training workshops and events, as strategies to reinforce SLTs' awareness and commitment to the program. For instance,

I think CAS as a thing, definitely with SLT, we're getting them on board. As a school, I think that target is a big part of it, which has really helped. Because otherwise, if we were just thinking "let's just increase physical activity in school," unless it was actually a recognized thing, it might not have had investment. So I think CAS has helped. P15 (In-school CAS lead)

Consequently, some in-school CAS leads were able to successfully leverage SLT support to overcome some of the challenges experienced in the first year of implementation such as limited reach and permeation of CAS into other areas of the school. Thus, participants suggested that CAS has become more embedded in school culture. Whereas previously, the concept of CAS may have been conflated with physical education (PE), one participant described the change in mindset in allocating the responsibility to CAS and physical activity provision among staff:

Whereas before, it was just the responsibility of the PE lead or the CAS lead, now, everybody's understanding is better, which means everybody feels responsible for making children more active. P16 (In-school CAS lead)

The CAS program and annual cycle meant that schools could work toward both short and longer term goals relating to their physical activity provision in a more sustainable way. As a result, some CAS Champions reported that the level of support needed by schools was reduced and became more self-directed as schools took ownership of implementing their improvement plans:

In schools I support, I've noticed that CAS has become a lot more embedded and part of daily life now, rather than something that we're having to drive. Two out of the three have been taking much more of a lead themselves on it, rather than me pushing them. P8 (CAS Champion)

In this sense, participants reported that opportunities have been part of the whole day, not just during PE or after school clubs. "Whereas before it might have been active was sport, now I think people see it as being active is movement, is playing, is being in non-PE lessons. It's just kind of expanded what being active really means. I think people's awareness has changed. P16 (In-school CAS lead)."

Similarly, the **cost** of continuing to implement and maintain CAS initiatives was reported to be less in the second year. Participants recalled that in the first year of the implementation,

Table 1 Description of CAS and School Role of Participants in Year 2

CAS role	Participant	Sex	School role
Bradford CAS locality leads	P1	Female	N/A
Locality leads are members of the locality delivery team with responsibility for the strategic leadership of CAS within the locally defined area. They recruit, train, and support the CAS Champions and report to the CAS National Program Lead.	P2	Male	N/A
Living Well RIC Facilitator	P3	Female	N/A
Living Well (Reducing Inequalities in the Community) is a partnership between Bradford Council and West Yorkshire Health and Care Partnership. Living Well facilitators are professionals with expert subject knowledge who work with schools to help them implement health and well-being initiatives. These individuals have dual responsibility as a CAS Champion (see below) as part of their RIC Facilitator role.	P4	Female	N/A
CAS Champions	P5 ^b	Female	PE teacher
CAS Champions provide external support for an allocated set of schools to implement CAS. They have specialist knowledge and experience of the educational system and the promotion of physical activity. For example, they onboard schools to the program and support them through the CAS annual cycle, train in-school CAS leads, and develop interschool CoP.	P6 ^b	Male	N/A
	P7	Female	Teacher and PE lead
	P8 ^a	Male	PE teacher
	P9 ^a	Male	Teacher and PE lead
In-school CAS leads	P10	Male	PE lead
A member of school staff responsible for implementing CAS within their individual school	P11	Female	Teacher
	P12	Female	SLT
	P13	Female	SLT
	P14	Male	Teacher and PE lead
	P15	Male	Teacher and PE lead
	P16	Female	Teacher and PE lead
	P17	Male	Teacher
	P18	Male	PE lead
	P19 ^b	Male	Teacher and PE lead
	P20	Male	Teacher and PE lead
	P21 (P9) ^a	Male	Teacher and PE lead
	P22	Male	Teacher, SENCo and PE lead
	P23	Female	SLT and PE lead
	P24	Female	SLT and PE lead
	P25 ^b	Female	Teacher and PE lead
	P26	Female	Teacher and PE lead
	P27 ^b	Male	PE lead
	P28	Male	PE teacher
	P29	Male	Teacher and PE lead
	P30	Female	Teacher
	P31	Male	Teacher
	P32	Male	SLT
	P33 (P8) ^a	Male	PE teacher
	P34 ^b	Male	Teacher and PE lead
	P35 ^b	Male	SLT
	P36 ^b	Male	SLT

Abbreviations: CAS, Creating Active Schools; CoP, Communities of Practice; N/A, not applicable; RIC, reducing inequalities in the community; SENCo, Special Educational Needs Co-ordinator; SLT, Senior Leadership Team.

^aIndividuals that participated in 2 focus groups: CAS Champions and In-school CAS leads. ^bParticipated in data collection for Morris et al²¹ study.

schools required more investment, especially in materials and resources to support initial actions. However, once in place, the focus turned to implementing changes to support the social and cultural environment of the school. For instance,

I feel like the funding was a good way to raise the profile, push it initially by, you know, having these physical changes within school to promote physical activity. Now, the aim of the end of

the past year or so has been more the culture and mindset of the school. P19 (In-school CAS lead)

Participants reflected that the quality and specificity of support provided in the second year of implementation was higher, as relationships between the in-school CAS lead and CAS Champion were more established and the needs of the schools were better understood. Many participants reported that this was facilitated by

Table 2 Implementation Outcomes and Determinants of the Second Year of CAS Implementation

Themes	Definitions ^b	Subthemes
Implementation outcomes		
Dose delivered	Intended CAS components delivered by the delivery team	Refreshers: Ongoing Training Sessions Investment in Buy-In: Building Support and Engagement The change was Slow but Meaningful: Prioritizing Sustainable Progress
Reach	The proportion of the intended priority audience (schools and school staff) participating in CAS	Awareness and Buy-In Increased Ownership of CAS in Bradford Increased
Fidelity	The extent to which CAS is implemented as prescribed in the intervention protocol—by the delivery team	Network and Open Afternoons facilitated adherence Profile Toolkit used to track the progress and set new goals
Sustainability	Whether CAS continues to be delivered and/or individual behaviour change is maintained	Quality over Quantity: Prioritizing Long-Term Impact Embedded and Sustain Phase: Ensuring Lasting Integration CAS Champions Seen as Essential for Support and Continuous Commitment of Schools
Implementation determinants		
Context	Aspects of the larger social, political, and economic environment that may influence CAS implementation	Volatility in Educational System: High Staff Turnover Staff Capacity Constraints Given Multiple Roles Multi Academy Trusts Structure Rigidity Impacted on Initiatives OFSTED Influenced on School Priorities Regarding PA Financial Pressures Given Budget Reductions SENCo Challenges to Support Neurodiverse Pupils
Acceptability	Perceptions among the delivery team that CAS is agreeable, palatable, or satisfactory	Evidence-Based Approach Supports continuing Acceptability, Compatibility, and Commitment to CAS
Compatibility	The extent to which CAS fits with the mission, priorities, and values of schools	
Adaptability	The extent to which CAS can be adapted, tailored, refined, or reinvented to meet local needs	The flexible approach of CAS built autonomy and External Validity
Feasibility	Perceptions among the delivery team that CAS can be successfully used or carried out within schools	Impacts of Time Constraints and Workload burdens Pressure from Inspections and Curriculum Structures Need for Buy-In from Wider School Staff to Facilitate Implementation
Cost	Money spent on the design, adaptation, and implementation of CAS	Cost Efficiency: Utilization of Existing Resources Reduced Cost
Culture	Schools' norms, values, and basic assumptions around selected health outcomes (physical activity)	Mindset Shift: Schools Prioritizing PA and Holistic Child Development SLT Buy-In Establish a Supportive Culture in Schools and Sustainable Actions Challenges in increasing buy-in of the wider school community Reluctance to take risks influenced by OFSTED
Dose satisfaction	Delivery team's satisfaction with CAS (and encompassing components) and with interactions with the support system	Varied Engagement Levels between schools Positive Perception of the Network and Communities of Practices Satisfaction with Autonomy, Profile Tool and Reflective Practices
Complexity	Perceptions among the delivery team that CAS is relatively difficult to understand and use; number of different intervention components	Practical Examples of Peers and Evidence Facilitate Understanding
Self-efficacy	Delivery team's belief in its ability to execute courses of action to achieve implementation goals	Evidence-Based Practices Build Confidence and Professional Growth Increased Confidence of CAS Champions and in-school CAS leads In-school CAS leads feel empowered to Advocate for Physical Activity

(continued)

Table 2 (continued)

Themes	Definitions ^b	Subthemes
Perceived effectiveness and impacts ^a	Anecdotal effectiveness on whole-school physical activity aligning with the CAS framework (PESO)	Outdoor Environment and PA Opportunities Enhanced Inclusion of Initiatives in the School Improvement Plan Increased Engagement of School Staff Integration of Pupil Voice Positive Perception of PA, Mental Health, and Children's Behaviors

Abbreviations: CAS, Creating Active Schools; PA, physical activity; PESO, policy, environment, stakeholders and opportunities; SENCo, Special Educational Needs Coordinator; SLT, Senior Leadership Team.
^aNew added theme. ^bDefinitions from Morris et al.²¹

their participation in the CoP events, which were identified as contributing to CAS becoming more embedded within schools.

While program implementation continued, participants recognized that the level of engagement with CAS and its fidelity likely varied between schools and fluctuated throughout the year, as “it’s really dependent on what the school is looking at as a priority as a whole” P3 (Living Well RIC Facilitator). For example, there was inconsistent use of the profiling tool, with some participants reporting completion time remained as a barrier, as one participant described:

I mean, let’s face it, the profiling tool itself is a large document. And our message through CAS champions, and through our training sessions is that once you’re using that, you’re implementing it, you’re evolving, and you’re evaluating as you go along. You don’t have to go through the whole thing all the time, because that is a very much off putting element of it, because of the time involved. P5 (CAS Champion)

For others, the comprehensiveness of the profile tool meant that the insight gained from year 1 was still relevant, enabling them to take an evidence-informed approach to review their provision. Those in-school CAS leads who reprofiled in year 2 were complimentary about the data insights and how it helped track and monitor the actions taken. One participant recalled:

What I love about CAS is obviously we have the profile tool, with the questionnaire. I aim to do that twice, three times a year to check where we are. So I remember doing it the first time, again this time last year, and the score that came out was about 39%, which, you know, wasn’t the worst. But when I did it again, in the summer the score was 50%. P20 (In-school CAS lead)

Elements That Increased the Satisfaction and Fidelity to the CAS Program

Participants expressed a high level of acceptability related to CAS. This was largely due to its flexible approach and belief that it supported staffs’ ability autonomy to plan their school’s provision and work in a place-sensitive way. This was particularly important for securing its longevity and sustained implementation beyond the first year. An example of the place-sensitive nature of CAS within Bradford was the development of open afternoons, whereby the in-school CAS lead would showcase how they had developed a priority area within their school, and the learning gained from doing so, to other Bradford CAS schools. The open afternoons also supported staff buy-in, and motivation as other in-school CAS leads could attend with colleagues from their school, as one participant described:

It’s easier to get SLT to then go and see it because it is local, which is a big thing. If you send them a link to something they won’t always look at it but if you say I’m going to a school, come with me. So the open afternoons are really good as well. P15 (In-school CAS lead)

In particular P15 suggested that the visibility given to CAS by showcasing practice in this way was seen as key to contributing to peer-to-peer learning and providing tangible solutions. This was especially useful for those who initially perceived CAS as a complex program and difficult to understand:

CAS has been accepted in lots of similar and obviously different contexts. Because they are in a very similar context you can translate directly to your context. P15 (In-school CAS lead)

Furthermore, the open afternoons were useful for helping in-school CAS leads judge the feasibility of potential actions for their school. Thus, practical examples and shared evidence-based practices supported the compatibility of CAS with their school, its needs, and specific context.

It’s just adapting your surroundings and what works for us might not work for others and just trying to convince your senior management to buy into or to understand what it is. Back it with research and they’ll buy into them. P14 (In-school CAS lead)

Additionally, the CoP facilitated termly in-person meetings between the CAS Champions and the in-school CAS leads of the same and different schools. Meetings focused on sharing evidence-based practice relating to the implementation of CAS across schools in the network and peer-to-peer learning. Participants reported that they provided protected time for planning and a rare opportunity to go off the school site thereby facilitating networking within and between schools:

I would say the networking and all the meetings that we come to gives me the ideas to then drive improvement and development, you know, making the school more active. Whether it’s actually doing it from the toolkit, to the champion, to the implementation. P28 (In-school CAS lead)

Thus, they facilitated knowledge sharing for effective practice in different contexts and environments across a variety of priority areas. This was reported to build staffs’ individual and collective capability for implementing physical activity. Furthermore, many participants also provided examples of where they had continued to support one another independently and informally, sharing information via email and arranging meetings. This occurred not only

among CAS Champions but also among in-school CAS leads. As such, the in-school CAS leads reported being more self-directed and/or using the CoP as a source of support rather than the Bradford CAS locality lead or the CAS Champions.

The CoP provided an opportunity for participants to learn about research findings related to whole-school physical activity and understand how it could be applied to their own day-to-day practice. Consequently, it was described as cultivating school staff's reflective practice and helping to establish an evidence-based approach to developing physical activity within schools. Not only did this provide CAS with a level of credibility and gravitas, but participants reported an increase in self-efficacy and professional growth. For example, the in-school CAS leads reported feeling empowered and confident to check and challenge school practices and to advocate for physical activity to their SLT, as one participant described:

When you go to have the meetings with the school leaders, you're more confident now because you've not just aware of your school, and your setting, but I'd like to link that to the research as well in terms of that blend of research and practice. So you go to a community of practice or an event, conference, whatever, and you hear the research element. And it's like, you know how to answer those awkward questions from school leaders in terms of "so show us the impact, show us the evidence." P6 (CAS Champion)

Challenges to CAS Implementation

Many participants identified persistent barriers to implementation, which appeared to be systemic and related to the wider educational context within which the schools were operating. This context was described as particularly volatile, with postpandemic pressures, and the current cost-of-living crisis placing unprecedented financial pressure on schools:

I feel the thing that's become far tighter for schools, increased energy costs, so many increased costs, without necessarily the backing behind it to pay for those things, then it's a challenge for them, isn't it? And it's a restrictor in what they do and what they choose to do. P1 (Bradford CAS locality lead)

Consequently, many schools experienced high levels of staff losses, some due to redundancies, and across diverse roles, including teachers, teaching assistants, and PE leads as one participant described:

One of the schools had, I can't remember how many members of staff it might have been eight team members of staff, most of which were LSAs (learning support assistants)/ TAs (teaching assistants), made redundant. So there's literally no additional support available. P3 (Living Well RIC Facilitator)

For some, this included their in-school CAS lead and/or their CAS Champion which limited their ability to continue to implement CAS or prevented it altogether. Those who were able to continue implementing reported that there was less time to do so and their ability to respond to competing demands negatively impacted the feasibility of implementation in some schools. Resultantly, some participants felt that they were not able to engage in CAS as much as they had planned or wanted to:

Something that I find hard is workload, as well as being [CAS] lead, I'm also a SENCO (special educational needs co-ordinator) and year six teacher. So I think it's hard to

sort of monitor the things that we implement. P22 (In-school CAS lead)

One reason given was that participants felt that the staff changes disrupted the momentum and/or priority being given to CAS particularly due to the need to revisit training and staff meetings to onboard new members:

It doesn't take a lot to rock a school's boat, you only need a few members of staff to leave and they stall, they pause for a while. And for some schools, it feels like they're starting again when they get going again. P1 (Bradford CAS locality lead)

Participants reiterated the need to increase the buy-in of all stakeholders, in the sense of sharing the responsibility to reduce burden and increase sustainability: *But if it did filter down better, and everybody knew about the message and was it was a priority like that, then it would be less workload.* P25. Conversely, some participants reflected that this provided an opportunity to reinforce key messages and that "taking smaller steps" might prove more fruitful in the long term as CAS was more likely to be implemented in a sustainable way:

We have a new headteacher, quite a few changes basically over the last year and a half. And now we are trying to get it through the system and getting everything embedded. So it taking it all in and trying to embed more. P14 (In-school CAS lead)

Additional pressures reported by participants related to the demands of accountability defined by the Office for Standards in Education, Children's Services and Skills (OFSTED) inspections and the rigid curriculum structures enforced by some Multi Academy Trusts, reinforcing the performative culture within schools. Participants suggested that the demands and accountabilities of these bodies dictated school priorities which prioritized learning- and educational-based outcomes above all else. As such, some in-school CAS leads felt there was a sense of hesitancy and resistance among some SLT to do anything outside of the norm for fear of repercussion:

We were going through all these wonderful things about what I wanted to do and just one by one, they just got shut down. P20 (In-school CAS lead)

However, where there was strong SLT support and buy-in, implementation of CAS was valued and prioritized in school. One participant described their participation in CAS as "being ahead of the curve" (P15), where the headteacher had been keen to embrace the focus on whole-school physical activity. Similarly, other participants reported support from a Multi Academy Trusts and a positive experience from a recent the office for standards in education, children's services and skills inspection where their physically active learning work arising from CAS was showcased, and actively championed by the headteacher:

I've gone from my head, not even knowing the word CAS, not willing to support me doing CAS to now, you know, he's spoken about it in whole staff meetings, he's telling everyone what's been put in place to when Ofsted visited it was on the agenda. P5 (CAS Champion)

Discussion

This study assessed the implementation of CAS, identifying the determinants and outcomes related to implementation in the medium-term, 2 years after initial adoption. It builds on the initial

insight gained from the implementation of CAS after one academic year.²¹ Findings demonstrated the need to identify and understand the role of the broader educational context and wider system, and the influences they exert, on the implementation of whole-school physical activity. Despite challenges associated with the volatile educational system within England, the majority of schools were continuing to implement CAS after 2 years. CAS had greater reach and permeability within the schools compared with the first year of implementation, with more individual staff members reported to be buying into the program and growing confidence to be a CAS and physical activity advocate. Implementing new initiatives gave way to embedding and sustaining those from the first year within the school system. Core components of CAS that provided protection from, and compensated for, any negative influence from the wider educational system, included the peer-to-peer learning, and inter and intra knowledge exchange arising from the CoP. Collectively, these factors were perceived to contribute to the combined agency within the school to implement CAS, see Figure 1. Key aspects of the implementation of CAS in the medium term shall now be discussed in more detail drawing on the wider literature.

Outer Setting and Wider Context

Key active and dynamic forces were found to be operating for and against implementation efforts. These included the negative impact

of regulatory systems and curriculum pressures on school priorities and physical activity. While not new or unique to CAS,²⁸ it was found to be compounded by the myriad of other pressures that teachers and SLT were also facing described as operating within a “perfect storm.” These included, the post pandemic recovery,²⁹ the impact of rising costs on schools, namely higher energy costs and higher than expected staffing costs,³⁰ additional financial pressures created by the current demographic decline in primary pupil numbers³¹ and teacher recruitment and retention challenges.³² Collectively, these were believed to contribute to an increasingly volatile climate within the education system which served to isolate physical activity from other priorities in the school.

Encouragingly, participants reported the importance of the CoP as facilitating their participation in CAS by acting as a buffer to the negative influences from the wider context. The CoP promoted knowledge exchange within and across schools within the locality allowing members to contribute discuss and share knowledge relating to the implementation of CAS and developing their Physical Education, sport, and physical activity provision more broadly. CoPs are regarded as one of the most effective means for facilitating professional learning for physical activity within schools.³³ Initially, the CoP was established as a core component of CAS in the form of events and network meetings and open afternoons. However, they became more established, it also became more collaborative and integrated, with members

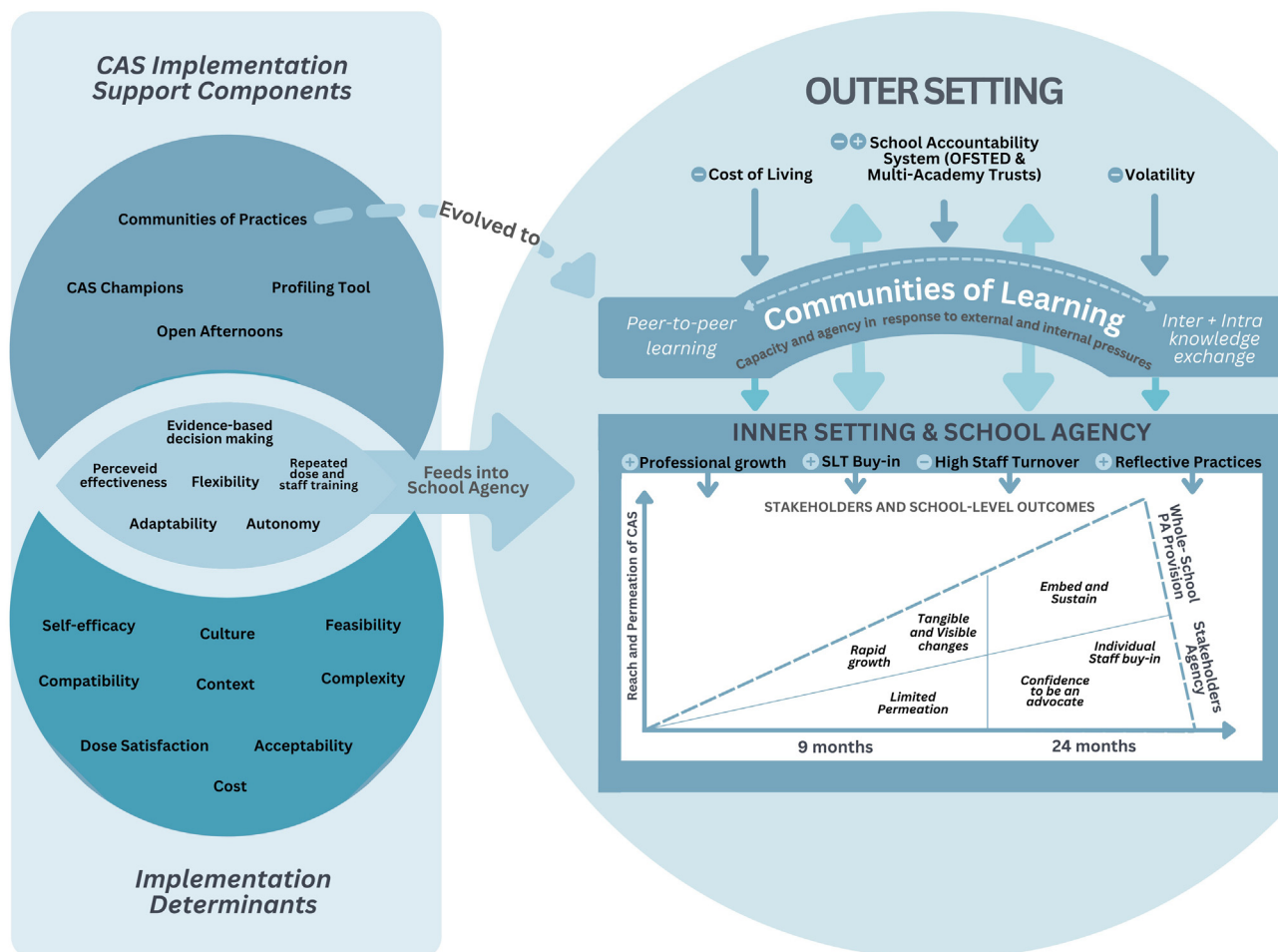


Figure 1 — A conceptual model of the influences on the implementation of CAS in the medium-term. CAS indicates Creating Active Schools.

autonomously creating a space within the outer setting that facilitated peer-to-peer learning and intraknowledge and interknowledge exchange.

Sustaining CoPs through collective capacity building is acknowledged as a CoP development strategy.³⁴ The distributed leadership through the establishment of thematic leads and action plans for different themes (eg, physically active learning, outdoor play, etc) represented an evolution of the CoP to a Community of Learning for CAS,³⁵ to one where members actively collaborated, and evolved together through continuous learning by fostering deeper reflection, experimentation, and collective problem-solving. This promoted the stimulation of new ideas and collaborations, and the embedding of these into a formal, coordinated system,³⁶ reflecting a maturation of the system within which CAS is embedded. Consequently, we would suggest that distributed leadership among member schools is needed to increase capacity and motivation for sustained involvement in CAS, and to reduce organizational resistance to change in school practices.

Inner Setting and School Stakeholder's Agency

At the school level, our findings showed that school stakeholder's participation in the community of learning contributed to school agency. The community of learning provided a safe space for school stakeholders to test and learn ideas thus increasing the level of risk they were prepared to accept in adopting new practices. The In-school CAS leads were able to act autonomously in the development and delivery of their schools' physical activity provision and reinforce practices and policies that support whole-school physical activity.

Previous literature has described how CoP help position SLT and teachers as agents in their own professional development based on their understanding of the school's need and knowledge of their local context.³⁷ Doing so in this way helped to build a positive school culture for physical activity which protected against any negative influences on the implementation of CAS (eg, high staff turnover). The support provided by the CoP aligns with the 3 dimensions of the conceptual implementation model to facilitate research-based practice proposed by Hofmann.³⁸ First, the CoP gave rise to identifying proximal "problems of practice," making connections between specific barriers within the contexts in which schools operate. Second, they served as a forum to offer insights into the processes necessary for change to occur, increasing staff agency. Finally, the CoP contributed to presenting and mitigating the potential risks associated with those changes, promoting greater security among participants by openly sharing what other schools had trailed and the risks involved. Consequently, the social relations between members of the school community and school structures that supported whole-school physical activity were perceived to be more embedded and sustained 2 years post adoption of CAS compared with the first year of implementation.

Program Implementation

Contributing factors to the successful ongoing implementation of CAS, included participant's perceptions of the program's adaptability, flexibility, and the ongoing support provided by the CAS Champions. Collectively, these factors were believed to be particularly important for driving the increase in the program's reach and permeation throughout the schools and for maintaining the momentum in the second year. These factors also align with constructs in

implementation science, such as from the Diffusion of Innovations theory which suggests that elements related to adaptability (or reinvention), and perceived (or relative) advantage are important determinants to enhance adoption of an innovation.³⁹

While CAS continued to be implemented, participants suggested that engagement fluctuated throughout the year. This is common within school-based physical activity programs, where factors from both the inner setting (eg, school culture, leadership support, organizational capacity) and outer setting (eg, policy changes, cost of living) contribute to these fluctuations. Previous research has referred to the "dynamic tension" and trade-off between needing to establish best fit within different contexts. Consequently, school-based physical activity programs often evolve as a result and self-organize into a state of stability which aligns with the school's organizational capacity and existing policies and practices.⁴⁰ This was reflected within Bradford where some schools reported a change in the specificity and type of support required from the Bradford CAS locality leads and CAS Champions. Nevertheless, they were perceived to be central change agents in the implementation of CAS. The influential role of champions to support school-based physical activity is widely reported^{41–43} and our findings suggest that the quality of the relationships between the CAS Champions, SLT, and school staff was particularly important for the ongoing implementation of CAS. That is, the positive influence of an advocate for CAS with sufficient influence and autonomy to galvanize the whole-school and secure commitment from staff.

SLT buy-in was frequently mentioned as a contributing factor to ongoing implementation and ensuring that activities became embedded and sustained. Continued executive or leadership support has been found to be an essential element of health intervention sustainment in schools.^{13,17,44} However, our findings suggest that as autonomy to implement CAS within schools increased, the support provided by the CoP (as opposed to the Bradford CAS locality lead) became more significant. This supports the suggestion that the function of evidence-based strategies to support school-based implementation may be of more importance than the form that they take to better suit a given context.⁴⁵ While the CoP as a strategy share similarity with other school-based programs, such as cross-site sharing, networking, and feedback loops, CAS emphasizes informal and local engagement which allows for flexibility within schools. This flexibility contrasts with more formalized support structures, which may limit local adaptation. This is aligned with the 3 dimensions from Wenger's framework⁴⁶ given that this provides mutual engagement and share of repertoire, facilitating trust and collaboration across schools. We would recommend that school-based programs include strategies which invest in these relationships in the longer term.

Strengths and Limitations

This is the first study within the United Kingdom to provide a more nuanced understanding of the longitudinal implementation of a place sensitive whole-school physical activity program and serves to illustrate the complexity of maintaining and sustaining school based physical activity initiatives beyond the period of initial implementation. Moreover, it strengthens the argument that whole-school initiatives need to be developed to be contextually specific to ensure that their components are specifically aligned with the priorities and resources of the participating schools.⁴⁵ It also highlights the need for continued research to monitor implementation as it evolves over time to report on the process of change and its

outcomes. Such consideration is paramount to the successful implementation of evidence-informed physical activity interventions in schools.⁴⁷

A key strength of this work is the consistent use of both implementation and evaluation frameworks (namely Consolidated Framework for Implementation Research [18] and McKay's evaluation roadmap framework²⁶) to conceptualize and discuss school-based physical activity implementation over a long period of time. Thus, developing the evidence base iteratively, and informing the scaling of interventions in schools.⁴⁸ The use of qualitative methods to assess changes in reach and implementation was subjective particularly when interpreting perceived changes in stakeholder engagement. It is important to clarify that "reach" refers to the extent of participant's (schools and school staff) engagement in the program and rather than the total number of schools and staff. Perceptions of increased engagement may reflect shifts in individual participant involvement or in the degree to which they actively implement, rather than a broader, measurable increase in the overall number of school staff. In addition, the recruitment and data collection process benefited from using the captive audience at a CoP event. While this has the potential for selection bias in respect of recruiting those participants and schools which were more engaged in the program and continuing to implement CAS, the inclusion of CAS Champions contributed to providing an overview of the implementation process in a broad range of schools across the locality, especially those which were potentially not represented at the CoP. Furthermore, the turnover of leadership within the in-school champions/leads was not measured, and it remains unclear how much turnover occurred within this leadership group, which could have implications for the CoP network over time.

Conclusions

This study highlights the importance of identifying and understanding how the broader educational context and wider system influence the implementation of whole-school physical activity. The data show that CAS successfully shifted social norms within the system by cultivating a CoP that acted as a buffer against negative influences from the wider context. The CoP facilitated connections between school staff, which enhanced relational expertise and supported whole-school physical activity. These connections also helped schools develop agency, reinforcing the importance of physical activity as a priority. Our findings underscore the complexity of implementing and sustaining school-based programs in real-world contexts and emphasize the need for place sensitive approaches to anchor them in the realities of the educational system.

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