# A sports-based intervention for pupils excluded from mainstream education: A systems approach to intervention acceptability and feasibility

A.J. Brinkley [a,b,*], L.B. Sherar [b], F.E. Kinnafick [b]

[a] School of Sport, Rehabilitation and Exercise Sciences, University of Essex, CO4 3SQ, UK
[b] National Centre for Sport and Exercise Medicine, School of Sport, Exercise and Health Sciences, Loughborough University, LE11 3TU, UK

A R T I C L E  I N F O

A B S T R A C T

Pupil referral units educate young people excluded from mainstream education within England, UK. Exclusion is related to reduced continuation with education and training, unemployment, and an increased likelihood of entrance into the criminal justice system. Sport has been consistently used to improve reintegration into education. However, evidence surrounding sports interventions in this setting is sparse and/or lacks detail surrounding acceptability and feasibility. Systems-based approaches highlight the complexity of multi-component interventions. The current study aimed to independently evaluate the acceptability and feasibility of a co-produced sport-based intervention. The intervention used sport, mentorship, education, reflection, and role models to promote health, pro-social, behavioural, and educational outcomes. Conducted in one local authority pupil referral unit within the midlands, England, a sample of 38 pupils (n = 3 females), five support staff, eight teachers, eight mentors and three stakeholders participated in the evaluation. The intervention was evaluated through a multi-method approach which incorporated observation, interviews, visual methods, a pre-experimental study, and examination of school-level data. Data were analysed through an iterative process framed through inductive reasoning, and descriptive statistics. Layers of data were triangulated to produce a systems-map. Within a complex system of social networks and individual differences, the intervention components interacted to influence pupil health and behaviour. Findings suggested that sport is an acceptable and feasible conduit to support mentorship. Participation in sport can mitigate some challenges to engaging in reflection, education, and identifying role models. Challenges relating to acceptability and feasibility could be improved through adopting a robust co-production process beyond simple design centred 'co-creation', consideration of emotional and health literacy of pupil cohorts, and deliberation of the factors which shape long-term implementation and sustainability. Research should understand the extent to which our systems-map is replicable in a range of settings.

## 1. Background

Since 2015 the rate of permanent exclusion in England has ranged between 0.06 and 0.10% (Department for Education, 2019a, 2019b). Excluded young people are educated within alternative provisions (AP) such as pupil referral units (PRU) (Department for Education, 2019a, 2019b). Despite the efforts of APs and PRUs to educate young people, exclusion is associated with worse psychosocial and mental health trajectories and educational attainment, and anti-social behaviour, criminal activity, and substance abuse (Gill et al., 2017; McCluskey et al., 2019; Obsuth et al., 2017; Tejerina-Arreal et al., 2020; Viner & Taylor, 2007). Pupils who are permanently excluded are more likely to be NEET

(not in employment, education, or training) and enter into the criminal justice system (Lanskey, 2015). Over the life course each cohort excluded from education costs an estimated £2 billion to the UK economy (Gill et al., 2017).

### 1.1. Sport-based interventions within alternative provision

Participation in sport can reduce aggression and anger and improve outcomes associated with reintegration into mainstream education such as self-concepts, pro-social development, mental health, and psychological and subjective wellbeing (Armour & Sandford, 2013; Moeijes et al., 2018, 2019a; Sandford et al., 2008). Exclusive of PE (physical

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* Corresponding author. School of Sport, Rehabilitation and Exercise Sciences, University of Essex, CO4 3SQ, UK.
  *E-mail address:* andrew.brinkley@essex.ac.uk (A.J. Brinkley).

education), previous interventions have incorporated a range of structures, activities, and strategies, targeted a range of outcomes (e.g., health, behaviour, educational attainment), and are set within complex social- and organisational-systems, with the highest-quality including multiple interacting components (e.g., sports delivery, mentorship, reflection) underpinned by behaviour change theory (Hawe et al., 2009; Sandford et al., 2008). For example, a previous 14-week intervention implemented within a PRU using football alongside behavioural theory, found participation to successfully led to better re-integration of key stage 3 pupils (n = 10, 11–14 years) within education (Cullen & Monroe, 2010). While participation in a badminton and tchoukball intervention for 7-months with a PRU was found to improve health-related quality of life in key stage 4 (n = 16, 14–16 years) (Horner, 2019).

The evidence representing the evaluation of many interventions within APs and PRUs is however drawn from non-peer-reviewed reports of insight studies (Smith et al., 2021). This grey-evidence often lacks insight from the behavioural-system underpinning participation, robust intervention design and evaluation componentry, and multi-component approaches to impart education attainment (Skivington et al., 2021; van Sluijs et al., 2021). Moreover, often a *'what works best'* approach is followed where mainstream PE is implemented without considering the complex pupil-, parent-, school-, and global-level behavioural determinants present within an AP or PRU (Cullen & Monroe, 2010; van Sluijs et al., 2021). These factors can be considered through participatory processes which provide voice to participants in the design, evaluation, and implementation of research (Smith et al., 2022). These *'co-methods'* are recommended within complex interventions but are rarely adopted within populations of at-risk young people (Jennings et al., 2018; Skivington et al., 2021; Williams et al., 2020). Termed *'cobiquity'*, participatory research, practice and working is represented by a range of *'co-words'* (e.g., methods) which represent a plethora of misrepresented forms of co-production to greater or lesser extent (Williams et al., 2020). Indeed, a term with its origins in commercial or third-sector business is *'co-creation'* (Brandsen & Honingh, 2018).

Research defines co-creation as a limited process involving participants in the design phase of the research only (Brandsen & Honingh, 2018). However, reviews have argued specifically against defining various forms of what broadly represent *'co-production'*, and rather focusing on the typologies which underpin these practices, and the expected good practice working principles within these methods (Brandsen & Honingh, 2018; Smith, Williams, & Bone, 2022; Williams et al., 2020). To any extent, co-production should aim to provide participants with the autonomy to develop the design, structure, content, and outcomes of an intervention as a progressive and consistent process (Jennings et al., 2018; Williams et al., 2020). A recent review highlighted three typologies present within the co-production literature; (i) citizens contribution to public services, (ii) integrated knowledge translation, and (iii) equitable- and experientially-informed research (Smith et al., 2022). Equitable- and experientially-informed research is perhaps the most commonly adopted form of co-production by those designing complex interventions within sports-based health contexts, and represents a collaborative process with a diverse group of participants, actors, policymakers and stakeholders who's knowledge is valued to the same extent throughout an intervention (Smith et al., 2022). Robust, co-production should take place across an intervention as an evolving process, and not simply as a tokenistic function during the design phases (e.g., co-creation) (Smith et al., 2022; Williams et al., 2020). Given the diverse and situational nature of an AP or PRU this point should be stressed. Moreover, Smith and colleagues (2022) outline six working principles which provide consensus over what an effective co-production process should consider and be evaluated against. Indeed, co-production should be an adequately resourced process; *'power'* should be shared between experiential knowledge, expertise, and assets; differing knowledge and contributions are respected, valued and blended; relationships are built on a foundation of trust, respect, dignity, transparency, and humility; diversity is supported; and agonistic pluralism, reciprocity and mutuality are practiced (Smith et al., 2022).

## 1.2. The evaluation of interventions within alternative provision

Acceptability and feasibility are core constructs of evaluating complex interventions (Skivington et al., 2021). This is particularly important given sports-based interventions within APs are undoubtedly complex, systems-based, and under-researched (Hawe et al., 2009; van Sluijs et al., 2021). Indeed, there remains limited evidence exploring the acceptability and feasibility of interventions within APs and PRUs. Complex process evaluations investigate how interventions are implemented, function and are acceptable and/or feasible, and provide valuable contextual evidence to policymakers and practice-level stakeholders (Skivington et al., 2021). Investigating this complexity is key to effectively implementing an intervention into practice (Fynn et al., 2020; Morgan-Trimmer & Wood, 2016; Skivington et al., 2021). However, when conducted, these evaluations have often relied on quantitative data, and/or qualitative data which neglects the voices, experiences, narratives, and attitudes of young people and those delivering the intervention (Bunce et al., 2014; Morgan-Trimmer & Wood, 2016). This parsimony has often led to pilot interventions with a focus on efficacy, rather than the complex system of behavioural factors which shape acceptability and feasibility (Bailey et al., 2009; Cullen & Monroe, 2010; Morgan-Trimmer & Wood, 2016). Within complex interventions it is vital to understand the contextual factors which shape what works for who, where, and when (Fynn et al., 2020). Systems-thinking may provide a robust and rigorous framework for analysis to understand such contextual questions and to improve the translation of findings into practice and policy (Fynn et al., 2020).

Systems-thinking considers the complex interactions between behavioural determinants and time (Hawe et al., 2009; Koorts & Rutter, 2021; Rutter et al., 2017) and is therefore useful in designing, evaluating, and implementing complex interventions (Koorts & Rutter, 2021; Rutter et al., 2017). Systems-thinking can be applied as an overarching co-dependent approach whereby researchers work with stakeholders, deliverers, and participants to design, evaluate and/or understand the implementation of an intervention, or as an independent process to analyse data drawn from an evaluation (Carey et al., 2015). In both styles, the system which underpins participation in an intervention is modelled through engagement with stakeholders, deliverers, and participants (Carey et al., 2015). When applied as an analytical lens, system-thinking provides an effective tool to map the direct- and indirect-factors which unpin the acceptability and feasibility of an intervention (Carey et al., 2015). This can be achieved through pluralism, whereby layers of data (e.g., from observations, or interviews) are integrated to develop a systems-map (Rutter et al., 2017). Within sports-based interventions situated within an AP, systems-thinking incorporates the setting (e.g., the PRU, sports-centre, city), intervention components (e.g., sport, mentorship), social-networks (e.g., pupils, teachers, mentors) and time (e.g., duration of intervention) (Hawe et al., 2009). Understanding the complexity within an intervention can highlight where behaviour can be most effectively changed, shape programme-theory, improve acceptability and feasibility, and refine future interventions and implementation strategies (Skivington et al., 2021).

## 1.3. Study objectives

Systems-thinking as an analytical lens was applied to investigate the acceptability and feasibility of a multi-component sport-based intervention delivered within an AP. As such, we partnered with stakeholders (Fit4Life CIC) to independently evaluate the Active Link intervention, a co-produced programme which aimed to foster educational attainment, healthy and pro-social behaviour, and psychosocial and mental health and wellbeing. The purpose of our research was to investigate how indirect- and direct-factors across the intervention's setting, componentry,

and social network shaped acceptability and feasibility. Our systems-approach was an independent product of the evaluation and not implemented formatively to inform those designing, managing, and delivering the intervention.

## 2. Materials and methods

### 2.1. Overview of the intervention and evaluation design

The co-production process and intervention was designed, managed, and delivered by Fit4Life CIC. The current study presents an independent evaluation of these processes. Intervention development began in April 2019, with a non-defined series of design-centred co-production (termed *co-creation* by Fit4Life) workshops with pupils, teachers and staff, and parents and guardians. This approach followed what best represents equitable and experimentally informed research (Smith et al., 2022). These were used to plan aims, objectives and measurement outcomes, design intervention content, and explore behavioural determinants influencing participation. The initial design was then formulated by Fit4Life (see Fig. 1). This was revised during two subsequent co-production workshops conducted at the initial phases of the intervention with pupils. Differing young people were involved throughout different stages of co-produced intervention process. The Active Link intervention was delivered weekly between September 2019 and March 2020.

Central to Active Link was a weekly 2-h sports session. Thirty-two offsite sessions were planned with 22 being delivered prior to the COVID-19 pandemic and associated school closures. Active Link was delivered by an active sports partnership mentorship team alongside the support of external delivery partners. Sports included football, dodgeball, badminton, boxing, climbing, dance, and wheelchair basketball. Sports sessions consisted of warm-up and training activities and full games. The intervention also included education sessions, mentorship, and pupil reflection. Education sessions covering mindfulness, health behaviour, crime (e.g., gang-related violence), and inspiration via role models were planned by the stakeholders for mentors to deliver before the sports session each week. Mentors were trained in working with at-risk young people (n = 6) by an active partnership and mentors supported pupils through group and individual reflections in progress

diaries (bestme™ diary). Before 'half-term', a 'reward activity' such as go-karting and bowling was offered to pupils who demonstrated good behaviour (subjectively defined by teachers and mentors) in each intervention session.

### 2.2. Data collection

**The settings and participant sampling.** Pupils attending a mixed-gender multi-centre PRU located within a local authority within the Midlands participated in the intervention and evaluation. PRU cohorts fluctuate daily, however on average the participating PRU educated ~45, mostly male, pupils aged between 11 and 16 years (school years 7–11). The PRU was located in the highest percentile of deprivation according to the English and Welsh Indices of Deprivation 2019. Pupils were sampled via total population sampling. With the support of centre staff and teachers' and following, parents or guardians consent via email and letters, pupils were recruited face-to-face by class or individually by the researcher. Rolling recruitment was conducted as pupils were referred to the centre. Centre support staff, teachers, mentors and Fit4Life stakeholders were recruited face-to-face. Information was provided on the purpose of the study and the methods used and ethical approval for this research was provided by an Institutional Ethical Board and conformed with the Delegation of Helsinki (Rickham, 1964). Pupils provided assent to participate. Within our data, names are replaced with pseudonyms.

**Qualitative methods: A multi-methods approach.** To explore the acceptability and feasibility of the intervention, a multi-methods approach was adopted over a 6-month period (Seawright, 2016). We utilised multiple data collection methods to understand how the setting, social network, and contextually interlinking componentry of the intervention shaped pupil, mentor, teacher and stakeholder experiences of acceptability and feasibility. Central to our data collection was overt participant observation through a complete-observer lens which evolved to a participant-observer lens as rapport was developed with participants (Angrosino, 2011). Observation offered rich interpretations through observing the lived experiences, senses, conversations, and perceptions of participants and is therefore recommended in the evaluation of complex interventions (Bunce et al., 2014; Morgan-Trimmer & Wood, 2016). Observations were supported with semi-structured
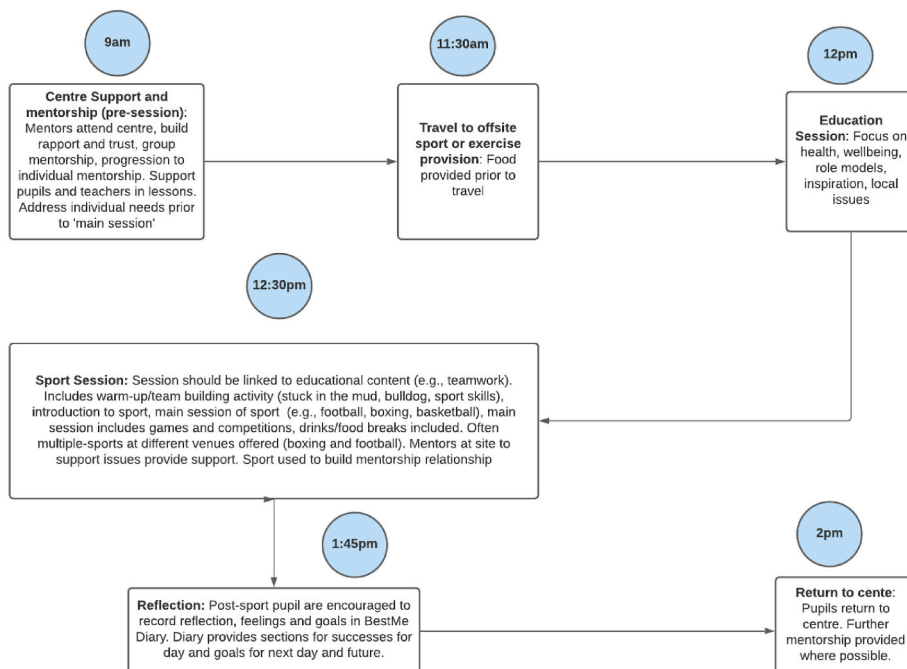


**Fig. 1.** Intervention session overview.

interviews exploring acceptability, feasibility, and the system present within the intervention with staff (n = 6), teachers (n = 6), mentors (n = 6), and a Fit4Life stakeholder (n = 1); unstructured conversations with pupils (several times each week); and visual methods such as photography, drawing, and document review. Visual methods are known to be useful in how an environment is recalled, reflected upon (Phoenix, 2010). Data were collected via field notes and by a digital voice recorder. Observational notes and recordings were reflected upon in a journal whereby comprehensive detail was provided on the day's experiences, activities, and events. Each method was used to provide insight and clarity on critical events within the intervention. This process of reflection critically considered the *what's, when's, who's, where's, and how's* of delivery and participation in Active Link. Eighty hours of observational data and 20 hours of interview, data were recorded.

**Pre-experimental and school-level data.** Pupils completed self-report measures of mental health and wellbeing (Warwick-Edinburgh Mental Wellbeing Scale) (Tennant et al., 2007), self-esteem (Self-Esteem Scale) (Rosenberg, 2015), self-confidence (General Self-Efficacy Scale) (Schwarzer & Jerusalem, 1995), physical activity participation (IPAQ-A) (Hagströmer et al., 2006), motivation (Behavioural Regulation in Exercise Questionnaire-3) (Markland & Tobin, 2004), and were asked to wear an ActiGraph GT3X accelerometer on the right hip using an elasticated band for all waking hours for 7 days to assess physical activity at baseline and 3-months following the start of the intervention. Data were recorded as accelerometer counts averaged across 15s intervals (epoch). Raw Actigraph data files were reprocessed to outcome variables, using data reduction software (KineSoft, V.3.3.67, Loughborough, UK). Non-wear time was classified as 60-min of consecutive zero counts, allowing for 2 min of non-zero interruptions (Troiano et al., 2008). Mean total volume of activity per day (counts per valid wear minute/school day/total day/weekday/weekend day); mean minutes of moderate to vigorous physical activity (MVPA); mean minutes of sedentary time; and the proportion of children meeting the UK physical activity guidelines (Department of Health and Social Care, 2019) were derived from the accelerometer data using the Evenson intensity cut points (Evenson et al., 2008) over school day, total day and weekday and weekend day. A 6-month follow-up data collection was cancelled due to the COVID-19 pandemic. Provision-level data (i.e., SEND; special educational needs and disabilities, attendance, learning complications and difficulties, disability, PRUs or APs tenure, year expelled, and pupil ages, ethnicity, and educational attainment) were collected through a data linkage.

### 2.3. Credibility and reflexivity

Multi-method research presents meaningful challenges to reflexivity (Chamberlain et al., 2011; Williams, 2018). Indeed, multi-method research requires the researcher to become *bricoleur* (Denzin, 2010). A bricoleur utilises a range of methods, theory (e.g., behaviour change theory, systems-thinking), whilst remaining critically reflexive (Denzin, 2010). Moreover, further complicating the study, the researcher (AB) had limited practical experience of a PRU, nor had been permanently excluded, and therefore was an outsider within this population (Gregory & Ruby, 2011). Research has identified challenges to building rapport and the disclosure of information within PRUs (Kljakovic & Kelly, 2019). Therefore, the researcher entered the field of study openly, non-judgmentally and attempted to immerse himself in the context, experiences, and practice of participants through attending classes, sports sessions, mentorship, and further activities within the school. The purpose of this was to gain social acceptance and understand how the lived experiences of pupils were shaped by the content of the intervention (Angrosino, 2011). However, this approach held challenges for positional reflexivity. Indeed, through unreflexive immersion, the researcher could have shaped the data based on the stories of participants rather than with critical consideration of their context and situation (e.g., assuming a sport within a PRU directly influences the

education of every pupil) (Barrett et al., 2020). To address challenges to reflexivity, feelings, cognitions, and attitudes representing the application of methods and analysis and integration of the data were documented through an reflexive journal. Here, the position of the researcher was accounted with regard to constructing the data (Barrett et al., 2020). Moreover, this process was supported with critical friends whereby the context, experiences and interpretations of the research were discussed (Barrett et al., 2020).

### 2.4. Analysis

Qualitative data were transcribed verbatim and/or uploaded into QSR NVivo (Version 11.4.3) for initial analysis. An iterative process framed through inductive reasoning was used to code and analyse the data. Inductive reasoning is a form of scientific reasoning where the interpretation of data is informed by relevant theory (Creswell & Poth, 2017). Seven themes were socially constructed from the data. These included the 'intervention setting', 'pupil demographic and health markers', 'social factors', 'co-creating, developing and adapting an intervention', 'acceptability and feasibility of the co-creation process', 'intrapersonal behavioural processes', and 'Active Link intervention components'. Quantitative data was analysed using JASP (Version 0.13.1) where descriptive statistics (M±SD, skewedness and kurtosis, frequencies, percentages) were calculated for all study variables. Most study variables were not normally distributed (±1.96 z-scores), and there was extensive missing data at follow-up due to the constraints imposed by COVID-19 restrictions. For these reasons, baseline data is reported only. To develop a systems-map, a layered approach to the triangulation of data was applied (Carey et al., 2015; Denzin, 2017; Farmer et al., 2006). Contemporary thinking on triangulation proposes a *methods approach*, in which multiple methods are used to explore research questions from a differing perspective (Denzin, 2017; Flick, 2016). Indeed, rather than *confirming* findings within a postpositivist philosophy, a methods approach to triangulation accepts that methods and data represent changeable phenomena and realities (Denzin, 2017; Farmer et al., 2006; Flick, 2016). This approach enriches the analysis process through a comprehensive understanding of the question studied and highlights inconsistencies and divergences in the data (Denzin, 2017; Farmer et al., 2006; Flick, 2016), and therefore is particularly useful when applying a systems lens. Evidence indicates that through layering, comparing, and contrasting data, a pluralistic approach to analysis can be adopted (Chamberlain et al., 2011; Williams, 2018). A systems-thinking lens to our analysis presented an ideal analytical technique to remain pluralistic. Indeed, through critical comparison and contrast and inductive reasoning a systems-map was hypothesised, identified, specified, and drawn via Kumu™ (see kumu.io) (Carey et al., 2015). Critically, data were compared and contrasted to establish links between themes and sub-themes. Links represented by the data were directed as either directional (i.e., one theme influences another) or to have mutual betweenness (i.e., themes influence each other) (Rutter et al., 2017). Links between themes and sub-themes which were influenced (e.g., strengthened or weakened) by time (e.g., duration of the intervention) were identified. Critical discussions between investigators and a sub-sample of participants (e.g., stakeholders, teachers, delivery partners) were undertaken to understand how themes and sub-themes interlink, amend and revise the map, and to increase trustworthiness of the systems-map (Smith & McGannon, 2018).

## 3. Results and discussion

### 3.1. Participant data

Thirty-eight pupils (n = 3 females) (15.1 ± 1.0 years), eight teachers, eight mentors and three Fit4Life stakeholders participated in the evaluation. A sub-sample of 20 males (40% of PRU) (i.e., year 9; n = 3, year 10; n = 7, year 11; n=8) agreed to participate in the pre-experiential

study. All pupils were classified as reporting a condition associated with SEND (9% of year 11's reported a physical disability and 13% reported a learning difficulty). The majority of the PRU identified as BAME (69%) (73% of year 9's; 89% of year 10's; 45% of year 11's). Pupils had been educated between 2 and 3 years (due to transitions exact range not available from school data) within a PRU setting with most being permanently excluded between the ages of 13–14 years (year 9). *'Pupil Premium'* is a UK Government scheme designed to fund the pupils most disadvantaged in society and therefore indicator of low social economic status. Within our sample, 64% were allocated Pupil Premium funding (year 9; 78%, year 10; 50%, year 11; 64%). Baseline health and motivation data is presented in Table 1. Our data is consistent with AP population data (Department for Education, 2019a, 2019b). The ActiGraph GT3X was worn for an average of $4.5 \pm 2.3$ days. Thirty two percent of pupils provided 7 days of valid data and, 6% provided 5days, (13% 4 days, 25% 3 days, and 1%) 2 days. At baseline pupils on average accrued $308.9 \pm 82.1$ min of physical activity per day ($202.1 \pm 73.6$ min light intensity; $44.2 \pm 18.3$ min moderate intensity; $39.1 \pm 23.5$ min vigorous intensity). 83% of pupils met the current physical activity guidelines (Department of Health and Social Care, 2019). Pupils spent more time participating in incidental modes of physical activity than enriching activities such as sport (Moeijes et al., 2018). Pupils on average self-reported participating in 160 min of sport, 111 min of housework, 150 min of cycling, and 315 min of walking each week (Department of Health and Social Care, 2019; Teixeira et al., 2012). Pupils reported mental health, self-esteem, and -confidence scores above the median value as a cohort. However, Year's 10 and 11 reported poorer mental health and wellbeing than Year 9 pupils. In contrast, Year 9 pupils reported lower levels of self-esteem and -confidence than their older peers. Data collected from the BREQ-3 showed that pupils regulated their physical activity participation through introjected (i.e., guilt, threat) and integrated (i.e., belonging, connection, self-concepts) regulation, and to a lesser extent through external (i.e., control, reward) and intrinsic (i.e., love, enjoyment) regulation (Teixeira et al., 2012). PRU attendance declined as age increased.

### 3.2. A systems approach to the acceptability and feasibility

A simplified systems-map is presented in Fig. 2 and a complete digital version is available online (see www.tinyurl.com/4fu5ev2h). Singular arrows highlight direct influence (i.e., one factor influence another), while multi-directional arrows indicate nodes with mutual betweenness (i.e., both factors influence each other to some extent). A double line indicates the influence of time (e.g., trust and rapport take time to build as a result of mentorship).

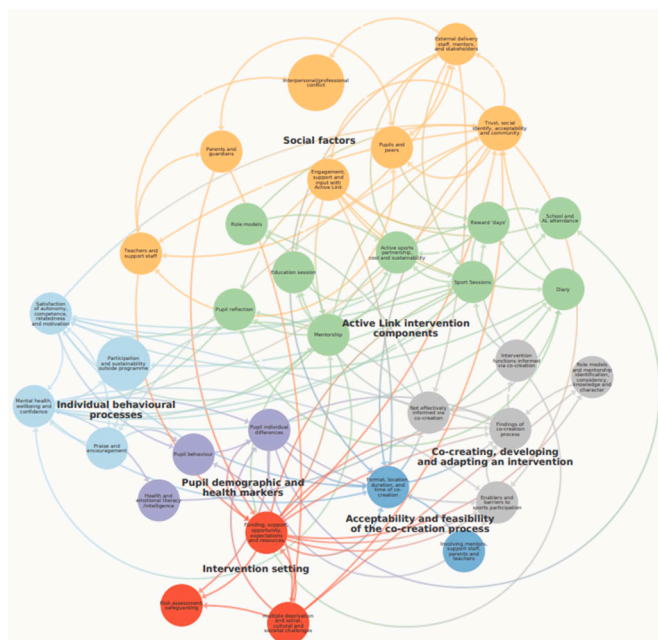**Intervention setting.** The wider community in where the



**Fig. 2.** Intervention systems-map.

intervention was situated was an area of high multiple deprivation and crime, where limited financial and societal opportunity was available for sport and employment. These factors create a system which increases school and social exclusion (Gill et al., 2017) and reduces the social acceptability and the feasibility of sports-based interventions (Moeijes et al., 2018; Sandford et al., 2008). This system of societal-, policy- and environmental-level factors challenges participation in community sport and increases the risk of engaging in criminal activity or NEET (Moeijes et al., 2018, 2019b). While *'universal opportunities'* (e.g., community sports participation schemes) did exist for vulnerable young people due to gang influences, crime, and poverty, recognising and participating in these schemes was sparse with low social acceptability (Uijtdewilligen et al., 2011):

> 'There are some opportunities to play sport out there, but they're very limited … We're dealing with so much stuff out there, you know …. you've got marginalised and disadvantaged young people that are turning to the gangs because that's their family, that's all they've got, that's the only person that's, you know, giving them something to eat and that. And, you know, these kids go they're thinking they're going to make mega-money. They're not going to make any money

**Table 1**
Participant baseline data.

| | Age | Mental Health and Wellbeing | Self-Esteem | Self-Confidence | PRU Attendance (%) | Intrinsic Regulation | Integrated Regulation | Identified Regulation | Introjected Regulation | External Regulation | Amotivation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total (n = 20)** | $15.1 \pm 1.0$ | $51.5 \pm 6.5$ | $3.0 \pm .5$ | $3.0 \pm .8$ | 69% | $1.8 \pm 1.2$ | $3.1 \pm 1.5$ | $2.1 \pm 1.5$ | $3.4 \pm 1.3$ | $1.8 \pm 1.2$ | $2.3 \pm .9$ |
| **Year 9 (n = 5)** | $13.8 \pm .4$ | $53.4 \pm 11.3$ | $2.5 \pm .1.0$ | $2.5 \pm .9$ | 78% | $2.9 \pm 1.8$ | $3.9 \pm 1.3$ | $2.5 \pm 2.2$ | $4.7 \pm .6$ | $2.5 \pm 2.2$ | $3.1 \pm .6$ |
| **Year 10 (n = 7)** | $14.3 \pm 1.1$ | $50.8 \pm 1.7$ | $3.4 \pm .3$ | $3.1 \pm .6$ | 74% | $1.2 \pm .3$ | $1.9 \pm .8$ | $1.3 \pm .6$ | $1.9 \pm .8$ | $1.3 \pm .4$ | $1.8 \pm 1.0$ |
| **Year 11 (n = 8)** | $15.6 \pm .3$ | $50.6 \pm 4.6$ | $3.1 \pm .6$ | $3.2 \pm .7$ | 56% | $1.2 \pm .5$ | $3.3 \pm 1.7$ | $2.4 \pm 1.5$ | $3.6 \pm 1.0$ | $1.6 \pm .9$ | $2.2 \pm .9$ |

Note: Data expressed in M(mean)±SD(standard deviation). PRU (Pupil Referral Unit).

from the gangs, it's only the ones at the top who make money from the gangs …. And unfortunately, because of all the cuts and all the rest of it, there's less of those positive families [sports clubs] to be able to engage those young people and get those young people involved in them and it's too easy for the gangs to actually groom these youngsters and keep these youngsters with them'

(Liv, Aged 46 years, Active Sports Partnership Manager)

Therefore, consistent with mainstream school recommendations, the provision (i.e., PRU) was the central setting to reach and deliver the intervention to pupils (Daly-Smith et al., 2020). PRUs are presented within government policy as a short-stay solution and are therefore under-funded (Department for Education, 2019a, 2019b). Funding influences the organisational-, educational- and social-system which contributes to physical activity participation in a provision (Uijtde-willigen et al., 2011). For example, a PRU provides a direct contrast to a mainstream provision where there are social spaces for mentorship and where sports participation is included within the curriculum. Insufficient resources and funding reduces treatment acceptability and feasibility:

'I sometimes say to parents, we've got the most vulnerable kids in the city, and they've given us the worst resources. I apologise for that building. Some of the behaviour I think is caused by that building. I've been in today and it's been quite depressing going back in today and it's the little corridors and a lot of blind alley bits … there is nowhere to socialise. There aren't enough classrooms for actually teaching the lessons really, let alone sports'

(Sarah, Aged 52, Director of Centre)

**Pupil demographic and health markers.** Previous research has demonstrated pupil behaviour, self-confidence, health, motivation, and emotional literacy varies on a temporal and situation basis (Atkinson & Rowley, 2019; Lawrence, 2011). Our data supports these assumptions showing variability in this data and individual pupil differences which influences the acceptability of the intervention. For example, an exam or a situation with a classroom could reduce self-confidence and subjective wellbeing, and such participation in the intervention:

'It went s**t fam [GCSE exam], I can't do it man …. I don't want to go today [the intervention]'

(Leo, age 15, Year 11 Pupil)

Acceptability varied over time and was influenced by the social- and/or environmental-setting a pupil was in (e.g., sport vs. PRU). Individual differences influenced acceptable engagement with the co-produced development of the intervention and participation in the programme. Behavioural (e.g., aggression, substance abuse), SEND (e.g., attention deficit hyperactivity disorder), and social (e.g., criminal, gang-related issues) differences created complex safeguarding challenges and enacted procedures within the PRU (e.g., additional advanced risk assessments to participate in activities offsite). The complexity of completing multiple-risk assessments, amongst balancing pastoral care, mentorship, teaching, and centre administration was a challenge for staff, mentors and Fit4Life stakeholders, and reduced the feasibility of the design and delivery of the intervention. Future interventions may consider that while a tailored need supportive approach (i.e., supporting autonomy, competence and relatedness) (Teixeira et al., 2012) may result in efficacy in the short-to medium-term in a closely controlled programme, it may be difficult to maintain long-term effectiveness during scale-up when resources, funding and staff are diluted and complex pupil needs are appreciated (Reis et al., 2016).

**The influence of social factors.** Pupils and their peers, parents, teachers, support staff, and mentors, and Fit4Life stakeholders influenced the social acceptability within Active Link. These actors are known to contribute to the physical activity behaviour of young people (Uijtdewilligen et al., 2011). Engagement, support, and input within the intervention was central to its successful acceptability. However, how pupils engaged with the intervention was shaped by a shared social identity, the influence of social acceptability, and communication, rapport, and trust with staff. How young people identify with and perceive adults leading an activity are well known to shape participation (Uijtdewilligen et al., 2011). Initiated through praise and encouragement, playing sport and identification with a mentor's background was found to build communication, trust, and rapport, improve social acceptability of the programme, and contribute to individual behavioural processes known to lead to the maintenance of behaviour such as the satisfaction of needs for autonomy, competence and relatedness, and self-efficacy (Teixeira et al., 2012).

Social processes influencing the acceptability and feasibility of the intervention were not only present on the pupil-level. Mentors, teachers, support staff, Fit4Life stakeholders and external delivery staff debated and disagreed on the design, implementation, and delivery of intervention components (e.g., time and duration of delivery, reflection, education, diaries). In contrast to the sport sessions, which was well accepted, there was conflicting views on the function and effectiveness of when, where, and how the intervention should be delivered and elements of its componentry (e.g., diaries, reflection, and education sessions). This conflict of opinion between stakeholders, teachers, and deliverers led to reduced fidelity through inconsistent delivery and reduced treatment acceptability from the perspective of pupils:

'I think the big thing is just making sure that we're all on the same page and there's consistency. If I say one thing to one of my mentors, "Oh yeah, go and do this," and then the teacher turns around and tells them something different. So, it's just making sure that we're all on the same page with everything and the expectations of the school. Because I think at one stage the expectations of the school were we'd come in on a Tuesday, we'd just take over and that's it, they haven't got to do much and it's not like that. We need to be all doing it together. We all need to be consistent with things'

(Liv, Aged 46 years, Active Sports Partnership Manager)

**The acceptability and feasibility of co-creating, developing, and adapting the intervention.** The design-centred co-production process highlighted the importance of relatable, understandable, and empathic mentors who should be trained to work specifically with vulnerable young people. Implicitly, a equitable- and experientially-informed process was attempted (Smith et al., 2022). The co-creation process was transparent and led to the development of and implementation of intervention outcomes, components and functions which were initially identified by pupils, parents, and teachers (i.e., sport, mentorship). A success of the process was conducting co-creation throughout the early phases of the intervention (Jennings et al., 2018). These additional workshops provided transparency over the extent in which the intervention had been amended (e.g., you said, we did) as a function of the input from young people. Initial adaptations improving acceptability of Active Link included adapting sports and activities, including additional sports groups, tailored mentorship sessions, and removing components of sessions such as reflection diaries. However, equitable- and experientially-informed processes should go beyond tokenistic initial input from pupils, parents, teachers and stakeholders, but represent a consistent, regular and long-lasting approach to co-production. This includes the termination of any intervention (Smith et al., 2022). Notwithstanding, of a complex population facing challenging needs and a global pandemic, the extent in which the co-production process represented true equitable- and experientially-informed research is limited.

Co-production relies on the quality of data collected (Jennings et al., 2018; Williams et al., 2020). The collection of this data was influenced by the acceptability and feasibility of the methods adopted (e.g., workshops) and the setting (e.g., a church hall) in which it was collected. While the co-production process was well intentioned, it can be described as co-inspired or not meeting working principles for co-production (Jennings et al., 2018; Williams et al., 2020). Indeed, the extent in which the co-production process developed equitable

relationships, shared power, paid participants to participate or was reciprocity was limited (Smith et al., 2022). In many cases, the absence of these principles explicitly may be attributable to a lack of knowledge from stakeholders. For this reason, academic researchers within this field must do more to translate knowledge into practice through effective and widely reaching knowledge exchange processes. This could include translated information on forms of co-production, principles of practice and reciprocity, equitability, and social power.

Evidence has consistently argued that following a process which is inadequately designed or tokenistic (e.g., inspired by 'co-creation'), whereby a stakeholder uses social power and perceives 'what a participant wants' based on their own epistemology or limited primary data leads to poor acceptability and limited engagement (e.g., diaries, reflection, education) (Williams et al., 2020). To some extent, this critique may be attributable to the minimalist nature of the co-creation process itself. Whilst extensive data was collected on 'sport', perhaps due to a lack of an established equitable and trusting relationship less information was collected on perceptions of reflection, the function of a diary and the type of content delivered within an education session. Subsequently these intervention components were found to hold poor acceptability from the perspective of pupils. Consistent with a recent review this process may be improved through paying or rewarding participants, and indeed entering into the co-process with strong principles of reciprocity (Smith et al., 2022).

Future, stakeholders, and delivery partners may consider the extent to which a co-created component is designed by participants or their epistemology (Smith et al., 2022; Williams et al., 2020). The type of methods used to collect data must also be considered. This is particularly true given pupils within a PRU often have a diverse range of unique learning challenges and behaviours. Therefore, the type of task (e.g., involved critique), length of the task, style of delivery (e.g., large group) and location of delivery (e.g., limited space) interlinked to reduce acceptability. Findings indicate tasks that required emotional and health literacy also reduced acceptability. Evidence has indicated young males negotiate challenges surrounding masculinity when discussing topics relating to health and wellbeing (Seidler et al., 2016). Therefore, *how* to discuss health and wellbeing should be considered by future stakeholders. The extent in which the programme considered these diversities, and the role of social power in generating knowledge was limited (Smith et al., 2022).

Moreover, while extensive co-creation was completed prior to the intervention with parents and teachers, most of the co-creation process was conducted during the early phases of the intervention was conducted with pupils. Notwithstanding, this held strengths for modifying intervention content and supporting basic needs, however it limited the broader application of co-production. Previous evidence has indicated limiting a co-production to users and not the broader network of delivery-partners and stakeholders can hinder the development and implementation of interventions (Jennings et al., 2018; Williams et al., 2020). This led to some of the underlying behavioural and environmental factors which shaped implementation, fidelity, delivery, and participation being omitted and Fit4Life stakeholders to design an intervention where components such as diaries, reflection and education sessions were not directly informed by co-production. Future interventions working with young people may consider a more comprehensive process which more regularly engages with all participants, actors, and stakeholders within the intervention.

Mirroring best practice, within Active Link high-quality processes of co-production occurred when diversity and the influence of social power were appreciated (Smith et al., 2022). Indeed, here a small group of closely supervised but not guided pupils, focused on an engaging short task (Jennings et al., 2018). Successful co-production focused on key, understandable and important questions such as the structure of the intervention (e.g., type of sports), or a pupil derived interest (e.g., what they enjoy about sport). Co-production should provide young people with a chance to speak openly, an opportunity rarely offered to young

people permanently excluded from mainstream education (Department for Education, 2019a, 2019b). During Active Link this was facilitated in small-group settings. For pupils who reported low or changeable self-efficacy, -worth and -confidence, this satisfied basic needs and improved engagement (Teixeira et al., 2012).

**Intervention components and individual behavioural processes.** The intervention was designed to support basic needs (Teixeira et al., 2012). The satisfaction of basic needs improves mental health and wellbeing, promotes self-efficacy and -confidence, and predicts more autonomous forms of motivation (Teixeira et al., 2012). Consistent (i.e., prior skill development) and novel (i.e., reduced ability gap) sports and warm-up activities delivered external to the PRU supported autonomy through offering choice and control and offered an opportunity for mentors to support competence via offering praise and encouragement (Teixeira et al., 2012):

'I thought Active Link was sick …. . I loved the programme, because it was something different and I feel I am good at sports. The mentors are really kind, funny and supportive, I loved it'

(Theo, aged 14 years, Year 10 Pupil)

Providing praise and encouragement improved rapport, trust, and communication, which in turn improved self-efficacy and -confidence, wellbeing, contributed to improved school attendance, and acted as a conduit to mentorship through shared experiences and natural informal conversations. Consistent with research, sports participation acted as a vehicle for intervention components (e.g., mentorship) (Corder et al., 2020; Kelly, 2013) through improved trust and rapport:

'For a lot of the boys it's something they like and it's something they know and feel comfortable with. So, giving them that, giving them football is good. And I think why I think we got a lot of pushback at the start is we were constantly putting them in unknown situations. "Oh right, we're going to do this sport today, we're going to do that sport," and you can see them all losing it a bit because they weren't ready to do something new, especially with people that are still quite new to them. So now that they're used to us and we're doing something they're used to you can see the relationships forming a lot better. I think sport is a good one because you're getting the best out of people, you're starting to see people's character, and when you start to get to know them you can start motivating them more'

(Dom, aged 26 years, Mentor)

However, whilst the sports provision was a success of the intervention, without the support of an active partnership and associated stakeholders this range of opportunity would have been unfeasible to deliver. This reinforces the importance of whole-systems interventions incorporating a range of partners, providers and stakeholders when promoting sport for at-risk young people (Daly-Smith et al., 2020).

The coaching, mentorship and leadership styles observed were varied, and dependent on coach education, familiarity, and respective experience (Lefebvre et al., 2021; Reid, 2002). Consistent with best practice in APs, mentors were democratic, which while not initially, throughout the intervention resulted in greater pupil acceptability (Atkinson & Rowley, 2019; Lefebvre et al., 2021; Reid, 2002). Democratic styles support basic needs, promote subjective wellbeing, and encourage participation (Chelladurai, 1980; Teixeira et al., 2012). In contrast, external coaches autocratic approaches to direct pupils within a 2 hour period (Chelladurai, 1980). This provided limited choice, 'coaching' or a supportive relationship, and while effective in session completion this style thwarted basic needs and led pupils with lower self-efficacy, behavioural complications or SEND to disengage (Teixeira et al., 2012). Future interventions within this population may consider briefing delivery partners, avoiding single sessions, or building rapport prior to sessions.

Mentorship was acceptable and feasible, but not when combined with education and reflection in a limited time frame. Moreover, forcing

pupils to participate in mentor-led education and reflections thwarted autonomy and resulted in disengagement from the intervention at the outset (Rogers, 2011). Our findings highlighted the importance of working with pupils in small groups or on a one-to-one basis. However, it should be noted mentorship is a time-intensive process. Future, research may seek to understand the cost-effectiveness of this process within longitudinal controlled trials. Working in a small, trusted group or on a one-to-one basis provides a setting for stronger relationship to be established between mentors and pupils, and pupil-centred difference to be appreciated (e.g., self-efficacy, self-confidence, gender, ethnicity, physical and cognitive differences, attitudes, personality, ability) (Reid, 2002). Moreover, mentorship was most acceptable when pupils identified with an empathic mentor. Empathy is a vital construct within mentorship (Kelly, 2013; Reid, 2002; Rogers, 2011):

‘They all bring their own different spin on it, so they’ve all got their strengths. You play to the strengths of what you’ve got within the team. They’ve all got different things that they bring to table. I think the biggest thing that they’ve got and the most thing that I think everybody needs to have when you’re mentoring is empathy. Not sympathy, an empathy. You’ve got to empathise with their situations and their surroundings and what they’re going on and you’ve got to be non-judgemental. So, I think those are the key things – listening, empathy with that, and being … And as well one of the big things I always say to them, right, is that kids don’t care what you know, they just need to know you care’

(June, aged 28, intervention mentor)

Mentorship and role models are closely related within literature (Kearney & Levine, 2020; Reid, 2002; Yancey et al., 2002). Indeed, a community-football intervention found successful mentors to also act as a role model (Cullen & Monroe, 2010). Evidence indicates at-risk young people select mentors or role model with a shared sociodemographic or cultural identity or heritage (e.g., gender, ethnicity, social economic status, education, family history) (Kearney & Levine, 2020; Yancey et al., 2002). Good evidence has linked mentorship to sustainable health, wellbeing, educational and social outcomes in at-risk young people (Beattie et al., 2021; Bricheno & Thornton, 2007; Kearney & Levine, 2020; Yancey et al., 2002). Mentors may have been effective role models as they shared characteristics and experiences with pupils. Sharing identifiable sociocultural characteristics may to some extent have allowed mentors to tailor their approach to the needs, situations, or challenges of individual pupils (Reid, 2002). However, direct personal comparisons were reported as less effective in mentorship. Rather, a shared background provided mentors with an appreciation of the challenges young people face and act as a role model:

‘What really annoys me sometimes about mentoring is you have to have a background, or you have to have come from the same area or … and I just think that’s bullshit. Like yeah, I got excluded in school. Half of them know, some of them know that I’ve been excluded from school, some of them know that I got arrested when I was younger. They just see me as Dom, you know, the person that’s going to probably laugh or joke or just give them advice or, you know what I mean, as they play football with us. And when they see that like overall, you’re just a genuine person that’s actually nice to them, they’ll have a lot more respect for me than saying “Oh yeah, I come from the road,” and that stuff. Like they don’t listen to you then’

(Dom, aged 26, Intervention Mentor)

Previous research conducted with young people has stressed the importance of role models which are identifiable and present (Bricheno & Thornton, 2007). Mentors were both identifiable and present for pupils given they lived in a similar area to pupils, shared a comparable story and had negotiated equivalent challenges to education or life. While previous research has identified the value of role models within the media (Kearney & Levine, 2020), a leader within a community can help young people negotiate challenges and encourage positive behaviour (e.g., participation in sport, attendance at school, further education):

‘I was a bit of a rebel…. So yeah, I didn’t know any better, to be fair. Like I told you, I grew up without a dad, so I didn’t have that father role model. I didn’t have that father figure in my life. I had male family members and male relatives like my uncles and my cousins, but there wasn’t my dad. You have a constant, consistent male role model who teaches you to be a man or who can show you how to be a dad … … I think what it is, I’ll be totally honest with you, Andrew, I’m somebody who’s got my pulse on the community, especially the BME community because I come from that community. So a lot of people see me, so when they seem me they always say, you know … Like I get called a community leader now because I’m always on case with the young people. When somebody gets shot, when someone gets stabbed I’m one of the first people that gets called in Birmingham’

(Eddie, aged 37 Intervention Mentor)

Mentorship was less effective when directly initiated by mentors. An example of this is the use of reflective diaries. Here directed sessions of mentorship and reflection thwarted competence and autonomy and led to limited acceptability (Reid, 2002). The use of reflective diaries was a Fit4Life stakeholder designed process which appeared to lack acceptability and feasibility due to pupil emotional and health literacy. Consistent with the intervention’s co-creation process, research, and data from mentors, the diary often focused on health and wellbeing and not values which were identified as important by pupils (Seidler et al., 2016). A focus on health and wellbeing thwarts competence (e.g., low health and emotional literacy), while directed diaries (e.g., structured questions) fail to support autonomy (Teixeira et al., 2012):

‘The diaries have no direct correlation to the outcomes to the mentoring sessions. Even though you’ve had a great chat, you’ve focussed on a point, and it is related to an outcome on an Excel page and it’s all fantastic, somehow, you’ve still got to relate that diary to it. I also think, you know, you’re dealing with children that do very little writing in class and then you’re telling them to write about their feelings, and these lot are people that don’t talk about their feelings …. We’re kind of rushing a step, do you know what I mean? So you can tell them that, you know, this diary is going to make you [woke], it’s going to make you feel like you have a good understanding of yourself and setting goals. There’s so many words in those sentences we’re using they don’t fully comprehend’

(Dom, aged 26, Intervention Mentor)

Notwithstanding, reflection is an important process for young people and is linked with improved mental health and wellbeing (Lindstrom et al., 2021). Future interventions using reflection may consider ’how’ and ’why’ young people reflect on issues such as their health, wellbeing, and behaviour (Bagnoli, 2009). Indeed, art, music and drawing may provide an additional voice to pupils unable or unwilling to communicate via written words (Bagnoli, 2009). Education can also improve health and emotional literacy (Seidler et al., 2016). Education sessions covering health and wellbeing were planned by Fit4Life stakeholders throughout the intervention. However, these sessions were not directly informed by co-creation and resulted in reduced acceptability. Data from mentors indicates an inconsistent approach, a lack of a prior relationship, delivering pre-sport and focusing on health and wellbeing limited acceptability. However, when education sessions supported pupil’s autonomy to discuss issues within their lives (e.g., knife crime, gangs), mentors were able to successfully conduct sessions:

‘[Remember when] the time when there was a riot. And the young people were messing about and then I did a quick workshop and spoke just like what I’d normally do. That’s what I do, I just go into the centre and start talking about things that are affecting young

people, challenging things … [creating] round tables, just open and everyone can voice their opinion. You know, I do that casual. I do that standing without even thinking and it. And he came up to me after and said "That was amazing. I've never seen young people like this engaged over something like that before. Do you pay for this?" And I was just thinking to me this was just normal, this was just table talk'

(Eddie, aged 37, Intervention Mentor)

To improve engagement with the intervention 'reward-days' were adopted. In the short-term, reward days were feasible and socially acceptable. However, while supporting autonomy through offering choice in reward, this intervention component may be considered cost-prohibitive (estimated at £1200 per 'reward day'). Further, motivation via external regulation (i.e., motivation through fear or incentive alone) is known to be an antecedent of illbeing and limits behavioural maintenance over the long-term (Teixeira et al., 2012). Future interventions should select 'rewards' which are identified by young people yet remain cost-effective (e.g., membership to a sports-club). Promoting rewards which are not externally driven but rather promote value in a behaviour such as subsidised participation in sport may promote participation via identified regulation (Teixeira et al., 2012). Identified regulation is associated with the internalisation of motivation, wellbeing and maintained participation (Teixeira et al., 2012).

### 3.3. Strengths, limitations, and recommendations for research

Evidence evaluating sports-based interventions within APs is sparse. The current study presents a novel and robust approach to independently evaluate the acceptability and feasibility of these complex schemes. A strength of our approach is the use of multi-methods and the analysis of data via a system-based approach. Our multi-method approach utilised a range of methods to understand the lives and experiences of the intervention. These provide a stronger insight into acceptability and feasibility. Our systems-map visualises the factors which shape the acceptability and feasibility, and highlights a complex interlinking system. However, there are limitations. Most importantly, our study is a small exploratory evaluation study and therefore our map represents just one intervention and one of 348 PRUs (multi-site centres counted as one) (Department for Education, 2019a, 2019b). Applying our system as a foundation within smaller trials and at nationwide engagement events with individuals designing and delivering interventions and partners working with young people (e.g., teachers, support staff, parents) may be useful next steps. Moreover, it may be useful for researchers to adopt systems-approaches to examine the interlinking system which supports and challenges delivery and participation for young people excluded from both school and society. Researchers may consider systems-approaches which codependently function formatively with stakeholders and delivery makers to improve implementation. Adopting this approach within the present intervention may have better highlighted where change could have been effectively leveraged; where barriers exist; and where to best evaluate the programme tested. Further, the intervention was conducted within the early phases of the COVID-19 pandemic. This limited our data collection and measurement of some pupils over time, and ultimately, the intervention being terminated.

### 4. Conclusion

The current study presents a multi-methods evaluation of a multi-component sports-based intervention underpinned by co-production process centring on intervention design (i.e., co-creation). The intervention incorporated sport, mentorship, reflection, education, role models and reward days to promote positive changes in health, social, educational, and behavioural outcomes. The intervention was deemed acceptable across its delivery of sport and mentorship, but to a lesser

extent in its design and indeed the adoption of reflection, diaries, and education. While not acceptable in this intervention, these components may prove effective through extensive co-production processes which follow best practice. More specifically, it would be wise for researchers and practice-level stakeholders to implement an equitable and experientially informed research approach to 'co-production' (Smith et al., 2022). Researchers must do better in translating their research regarding forms of co-production, principles of practice and complexity into the practice of a range of third-sector organisations, schools, national governing bodies, and non-executive government agencies through effective and impactful forms of knowledge exchange to protect against the cobiquity, tokenism, and limited practice observed within the present study. Shaped by Fit4Life stakeholders and partners, the feasibility was sound, however, it remains unclear if the intervention could be delivered without the support of a well-funded active partnership and centrally funded CIC. It is important to understand the extent to which the system of behaviour identified within the current study is replicable in a range of programmes and settings.

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