'Playing' with Evidence: combining creative co-design methods with realist evidence synthesis

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997.7. 'Playing' with Evidence: combining creative co-design methods with realist evidence synthesis

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ABSTRACT   Breaking the cycle of declining physical function and physical activity can improve health and independence for people with long-term conditions. Services within primary care are well placed to empower individuals and communities to achieve this. However, the best approach is uncertain, and must consider needs of people with long-term conditions and complexities of service delivery. This study aimed to understand how to reduce decline in physical function and physical activity in people with long-term conditions. We used realist methods integrated with co-design to provide an explanatory account of what works (or does not), for whom and in what circumstances, to generate ideas about service innovation, and provide recommendations for primary care.

A key aspect was tracking evidence from different sources, presenting it creatively by converting it into physical games, enabling stakeholders to 'play with' and make-sense of it, to inform co-design work, enabling them to draw upon their own experiences and a wider understanding.

In this article, we focus on the game activities, adding to the co-design games' literature and suggest that this expands participants' knowledge base beyond their experiences, empowering them to contribute more to the process and creating a strong link between the realist and co-design methods.

Keywords: co-design, co-design games, realist synthesis, participation, evidence informed co-design

Introduction

Challenges of getting research into practice are well documented (Davies and Powel 2015) and there is growing consensus that co-produced research may be a mechanism to address this (Greenhalgh et al. 2016). Successful implementation of evidence and research findings requires additional forms of knowledge and evidence about service users, service delivery and the varying contexts in which services exist (Rycroft-Malone et al. 2004) and new ways of considering how evidence is applied in practice. Co-produced research combines these different forms of evidence to create knowledge that is sensitive to real world requirements of users, professionals, services and organisations in their different contexts. Co-design is one approach to co-producing research, where stakeholders participate as experts of their own experience and are guided through a collective design process, that supports the synthesis of evidence into tangible forms and mobilises knowledge (Langley et al. 2018; Langley. 2015).

The authors engaged in a co-produced research project to deliver physical activity based interventions in primary care for people with long-term conditions, to maintain their physical function. It was found that combining realist and co-design approaches through the use of co-design games, empowered participants to fully engage and contribute not just as experts of their own experiences, but also with a greater understanding of the experiences of other stakeholders and an appreciation of wider academic research evidence. Within the project, this arguably led to richer insights and more context-appropriate interventions. More widely, this raises interesting questions for how stakeholders are positioned within co-design, the contributions they can make to the design process and to each other.

Background

In England, long-term conditions affect over 15 million people (NHS Digital 2016). The prevalence of long-term conditions rises with age (Barnett et al. 2012), and as they accumulate, worsening physical function reduces health and independence (Zubritsky et al. 2013). Long-term conditions contribute the biggest burden to the NHS, involving over 50% of GP consultations, 65% of out-patient visits, and 70% of in-patient bed days (Department of Health 2012). The benefits of physical activity in the management of long-term conditions are clear, particularly for improving physical function (e.g. Puts at al. 2017), but physical activity promotion is poorly done in practice (Williams & Law 2018).

Combining co-design and realist methods

Enabling people to be active and sustain function is complex. It depends upon local environments, resources, and the beliefs and values of people; those with long-term conditions and healthcare professionals. Realist approaches are well-suited to evaluate complex contexts, providing explanatory accounts of 'what it is about a programme (or intervention) that works for whom, in what circumstances, in what respects, over which duration' (Pawson 2013). A realist programme theory specifies what mechanisms (M) will generate the outcomes (O) and what features of the context (C) will affect whether or not those mechanisms operate. In realist language, 'context' is more than 'where' something happens. It refers to distinctive features of the individual, local,

environmental situation that may influence the mechanism (e.g. the local geography and resources available, including a person's inner resources or individual circumstances). Context, Mechanism, Outcome (CMO) statements are the distinctive product of realist methods.

Co-design also addresses difficult problems (Buchanan 1992), and has many similarities with realist methods. Both methods accept complexity, are iterative, participatory and draw upon multiple evidence sources. However, realist methods traditionally focus on 'what is'; whilst co-design methods focus on 'what ought to be'. In line with this, we applied realist methods to interrogate existing evidence to understand what had been tried before, what had worked, for whom and in what context in a realist synthesis of evidence. Often, the insights from this academic research would be used to define the parameters of a subsequent, separate, co-design process, using stakeholder's lived experiences to solve these pre-selected problems. However, in this project we wanted to blur these boundaries; between research and co-design, between understanding the problem and developing solutions, and between researchers and co-design participants, to build stronger links between 'what is' and 'what could be.' We aimed to empower co-design participants to have a broader appreciation of the evidence (more in line with co-design's democratic principles) so that all participants (health services researchers, service users, primary care professionals and physical activity providers) had equal agency in the creation of the final product. This allowed evidence from the realist synthesis to blend with experiential, organisational and contextual evidence to create a novel prototype intervention.

This is in contrast with the prevailing position within healthcare (Kidd & Carel 2014) and healthcare research (Rose & Kalathil 2019), where participants are (at best) confined to sharing their own experience and knowledge, not credited with the ability to make sense of other forms of evidence. Key to our co-design, was recognising that enabling a wider appreciation of evidence (experiential, contextual and research) required not just 'traditional' information sharing, but a mode that enabled 'sense-making'. This is where we drew on co-design research of 'games' and 'play' to facilitate reflection and mutual learning between diverse stakeholders.

Co-design games

Design games are not novel. Vaajakallio (2012) describe them as:

> '…tools for co-design that purposefully emphasise play-qualities such as playful mindset and structure, which are supported by tangible game materials and rules. Instead of being a well-defined method, it is an expression that highlights the exploratory, imaginative, dialogical and empathic aspects of codesign. {…} The means for reaching these objectives are drawn from design practice (e.g., **tangible mock-ups** and **user representations**) and from the world of games (e.g., **role-playing**, **turn-taking**, **make-believe**) to deliberately trigger participants' imaginations as a source of design ideas…'
>
> (Bold emphasis added by authors)

Vaajakallio and Mattelmäki (2014) list other articles, expanding on co-design games. They outline that event-driven applications of co-design (similar to ours), bring co-design participants together with

> '…predetermined structure, tasks and facilitation… [they] don't produce final design solutions but co-construct [shared] understandings about context, people's experiences, potential designs and dreams….'

Supported by Standers and Stappers (2014), they suggest this requires games spanning three time frames; now, the near future and the speculative future. Importantly, for these authors the first time frame (now) is based purely on the experiences of the co-design participants, and not any wider body of knowledge describing this world. Therefore, their games draw out descriptions of personal experience rather than feed in wider evidence.

We expanded this use of co-design games to bring in a wider range of evidence beyond the experiential capacity of the co-design partners. For these forms of evidence, the co-design games take on additional roles of reflecting on, sorting and sense-making, giving the participants the opportunity and structures to rationalise the wider evidence of 'what is' in the context of their own experiences, before using it to inform their ideas about 'what could be.'

Our application of co-design games aligns with the principles of co-produced research (Greenhalgh et al. 2016) by taking a systems perspective through a creative approach focused on improving human experience, while tackling issues of power and hierarchies present in all co-design activity, particularly health research.

This article reports these activities and discusses reflections and learning to aid others in future work. This way of thinking may help to provide stronger links between realist research and co-design, harness greater creative potential of research and co-design participants and support translation from theory to practise.

Approach

The full method is described in our protocol paper (Law et al. 2020), summarised below in Figure 1. Here we describe two specific elements; the initial theory building workshops and the first (of four) co-design workshops. Preliminary CMO statements preceded the co-design of the resources. However the refinement of the CMOs and the co-design of the resources proceeded iteratively, both informing each other.
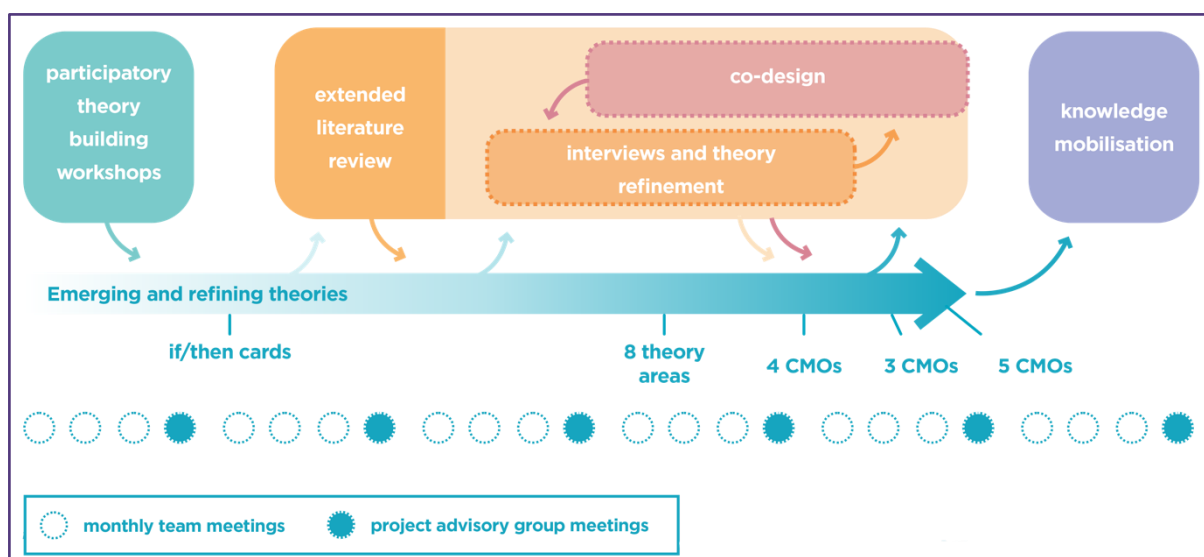
Figure 1: Summary of the full method.

Theory building workshops

Two participatory theory-building workshops were the first activities in the project. The workshop was repeated in different locations in the UK with similar stakeholder numbers and representation at each (Table 1).

Table 1. Table of participants at two theory building workshops * = also had long-term condition

Stakeholder representation	Theory-building workshop 1 (N = 11)	Theory-building workshop 2 (N = 14)
Health services researcher, joint PI of project	n = 1	n = 1
Academic GP, joint PI of project	n = 1	n = 1
Public contributor, long-term condition	n = 5	n = 6
GP	n = 1	n = 1
Leisure centre manager	n = 1	-
Sport and outdoor recreation division of local council	n = 1	-
Health and social care public representation group	n = 1	-
Practice manager	-	n = 1
Researcher, social care	-	n = 1
Occupational therapist	-	n = 1
Third sector organisation	n = 1*	n = 1
Physiotherapist	-	n = 1
Engagement officer	-	n = 1

We used LEGO® SERIOUS PLAY® as a participatory method for these workshops, enabling expression and creativity through building models and sharing. This method embodies the key elements defining co-design games (tangible mock-ups, user representations, role-playing, turn taking and make-believe). Each individual created and described models in response to these questions: 'What does physical function mean to you?' and 'What are your experiences of maintaining physical function?' This gave participants an opportunity to share their experiences, and appreciate and make sense of others. Within the workshops, the participants were led through a process of building individual models, then combining their models to create a shared understanding. The aim was not to reach consensus, but to represent discordant views and experiences equally in the final, shared model.

This shared model produced nascent theories about what worked (and did not) for different people in varied circumstances. This helped to inform key topic areas in the subsequent realist review of literature for wider evidence to support, challenge and explain these working theories.

These early emergent theories from both workshops and realist review were accumulated and developed into thirty *'if… then…'* statements and further categorised into levels (Table 2). These statements were converted into two decks of cards; '**If**..' and '…**then'** cards.

Table 2. Examples of 'if…then' statements derived from Lego Serious Play workshops and early realist review

Level: Individual patients	
Physical	
If physical activity advice is tailored to patients' own priorities for functioning…	…**then** they are more likely to start and continue physical activities
If a functional approach is adopted to the management of long-term conditions…	…**then** interventions will be more relevant and tailored towards functional limitations that are meaningful to the individual
Psychological	
If being physical activity is linked to freedom, well-being and joy associated with having physical function…	…**then** people with long term conditions will better identify with the reasoning for being physically active and be more likely to continue
If people have built and engrained physical activity 'identify' through previous experiences…	…**then** they will be more likely to be motivated to pursue physical activity opportunities
Social	
If people feel supported by family and friends…	…**then** they are more likely to start and continue physical activity
If people with long term conditions are labelled/stereotyped less…	…**then** perceived and actual restrictions will reduce, encouraging improvements in physical activity and physical function
Level: Local engagement outside of practice	
If people have access to a variety of physical activity opportunities…	…**then** they will be more likely to pursue opportunities to be more physically active
If there are sufficient place on exercise referral schemes and physiotherapy clinics…	…**then** people will receive timely interventions to improve physical function
Level: Whole practice	
If there is a culture of physical literacy in the practice…	…**then** patients are more likely to receive interventions that promote physical activity
If there are relevant features and cues within the built environment…	…**then** physical activity and physical function will improve
Level: Health professional consultations with people with long-term conditions	
If self-efficacy and goal-setting are promoted as part of routine care…	…**then** physical activity interventions will be more meaningful to patients and uptake and adherence will increase
If pacing is used in physical activity promotion, incorporating periods of rest and recuperation…	…**then** patients with low energy levels and low fitness levels are more likely to persist with physical activity interventions

Through the realist synthesis, these 'if…then' statements were emerging into candidate Context, Mechanism, Outcome (CMO) statements.

Co-design workshop one

The co-design process began during the realist synthesis. 11 participants attended workshop one, including research team members, professionals from primary care, physical activity providers and people with long term conditions representing services users. An illustrated story board presenting the work to-date was printed at large scale and wall mounted for all to view.

After welcoming and introductory activities, participants divided into three groups. We started with card games followed by reflective discussions in the smaller groups. It was communicated to participants that the statements displayed on the cards represented early working theories arising from the project activity and would be continuously refined by both co-design work and on-going realist review. The groups started with two decks; 'if' and 'then' cards. Participants took turns drawing a card from each deck, sharing the statements and discussing whether they matched. Some clearly matched or mis-matched. Others were less clear, creating discussion as individuals drew on their own experiences and wider knowledge to argue for or against the statements.

In the second activity the smaller groups laid out all cards in both decks to identify matching pairs. These were shared and compared with the other smaller groups, expanding the discussion.

These two activities were repeated with three decks of 'C', 'M' and 'O' cards. The resulting combinations of 'if…then' cards and 'CMO' cards were recorded and discussions noted on flip charts.

Following this workshop, the illustrated storyboard was updated, giving a visual summary of card pairs and the group discussions. This illustrated story board was continually updated and brought back to subsequent co-design events (Figures 2 and 3), acting as gentle, constant, visual prompt of our shared knowledge evolution; the collective sense-making process.

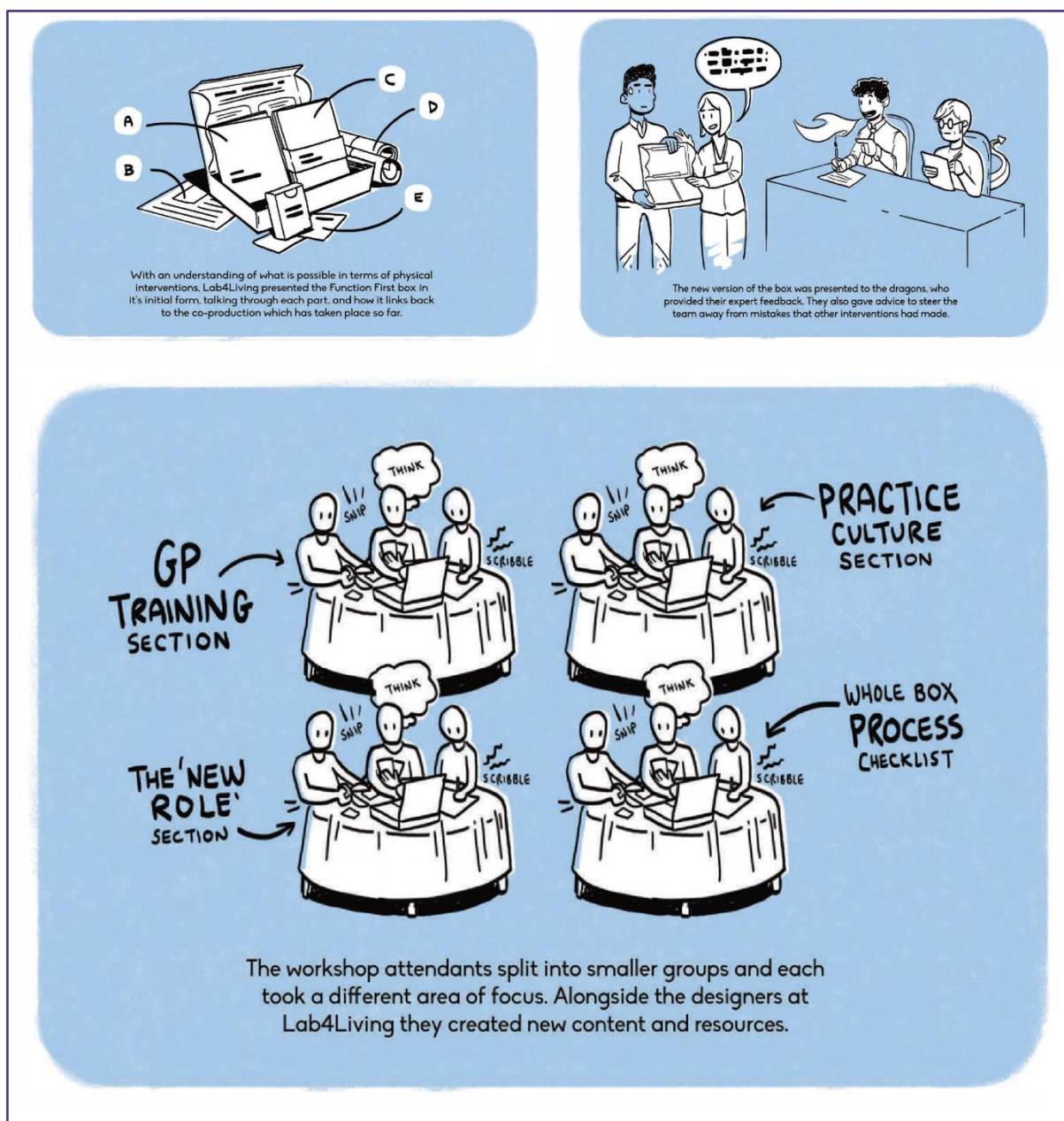Figure 2: Extracts from the illustrated project process.

Figure 3: Further extracts from the illustrated project process

Outcomes to date

Five CMO statements, underpinned by evidence from participatory theory building, realist synthesis, interviews and co-design, were developed (Figure 3).

ƒ (Context, Mechanism) = Outcome

CMO 1 changing practice culture through alignment

(C) primary care settings are characterised by competing demands, and improving physical activity and physical function is often not prioritised in a busy practice

(M) however, if the practice team culture can be aligned to promote and support the elements of physical literacy, then

(O) physical activity promotion will become more routine and embedded in usual care.

CMO 2 providing resources

(C) physical activity promotion in primary care is inconsistent and uncoordinated

(M) if specific resources are allocated to physical activity promotion (in combination with a practice culture which is supportive), then

(O) this will improve opportunities to change behaviour.

CMO 3 Individual advice

(C) people with long-term conditions have varying levels of physical function and physical activity, different attitudes to physical activity and varying access to varying types and amount of local resources that enable physical activity

(M) if physical activity promotion is adapted to individual needs, priorities and preferences, and considers local resource availability, then

(O) this will facilitate a sustained improvement in physical activity

CMO 4 improving capability of practice workforce

(C) many primary care practice staff have a lack of knowledge and confidence to promote physical activity

(M) if staff develop an improved sense of capability through education and training, then

(O) they will increase their engagement in physical activity promotion

CMO 5 programme credibility

(C) if a programme is credible

(M) then trust and confidence in the programme will develop and

(O) more patients and professionals engage with the programme

Figure 3: The five CMOs derived from the project

The co-design process led to a set of physical and digital resources (Figures 4 and 5) that embody these five CMOs. Physical features of the resources can be specifically identified as representing each CMO statement.
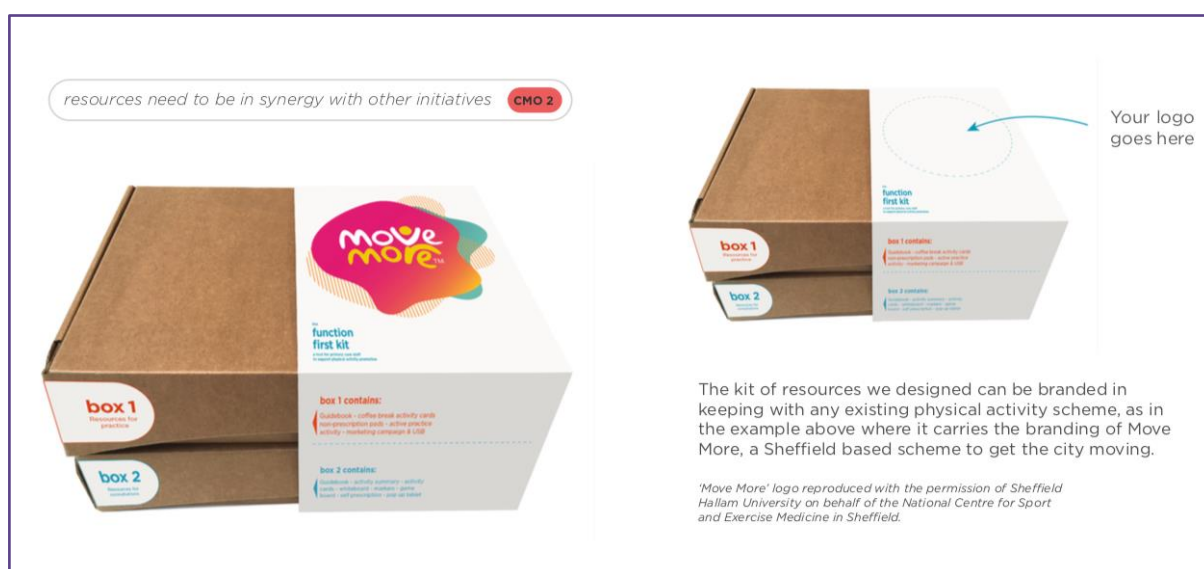

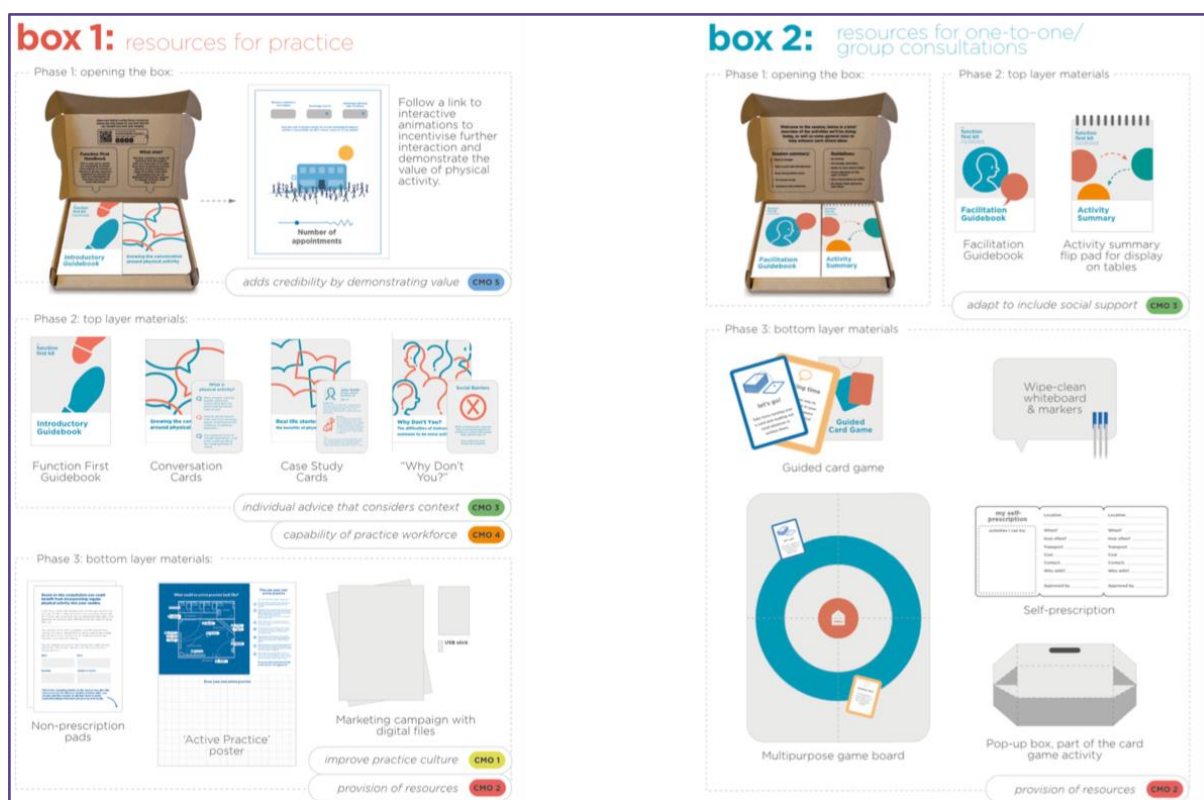Figure 4: Illustration of the two primary physical components of the intervention

Figure 5: Illustration of the intervention contents (note; attribution of CMOs to specific features)

Discussion

The development of the Function First prototype intervention was underpinned by a variety of forms of evidence, derived through rigorous research processes, and synthesised into material and digital forms through a co-design process. We identify specific features of these forms and describe the underpinning evidence from academic sources, service users and professionals. The components require further development, small scale piloting and refinement before the final intervention is ready for effectiveness testing. The intervention is intended to be used across a range of general medical practices, for individual patients with differing needs and capabilities.

Co-design games (Lego® Serious Play®) were used to draw out, share and collectively make sense of experiential evidence from service users and professionals working in primary care. Card games were used to give all co-design participants a wider appreciation of the formal and informal evidence derived from the realist review. These game formats allowed evidence to be shared across all participants, encouraged debate, and facilitated critical reflection until the findings made collective sense to all participants. This collective understanding enabled co-design participants to contribute more than just their own experience and knowledge to the co-design process, releasing greater creative potential yet also a deeper appreciation of real world constraints.

Participatory research and co-design have concentrated on involving a range of participants so their differing experiences and perspectives can be captured as a rich source of knowledge and evidence. However, the descriptions of these processes rarely discuss entrusting or empowering participants (often with varying prior experience of research or design) to make sense of the wider evidence base,

and to use this greater informed position to contribute more to the process. This may be a form of epistemic injustice (Fricker 2007) and simultaneously lost potential. The wider involvement of participants in this project was facilitated by gaming formats, design practices that made tangible products for consideration and the continuously present, evolving visual summary of the evidence journey at all the co-design events.

Conclusions

This research increased our understanding of how to support physical activity for people with long-term conditions managed in primary care. It also developed a prototype intervention, which needs further refinement. These contributions are reported elsewhere (Law et al. under review). In this article, the contributions we wish to highlight are:

1. The links between co-design and realist methods, and how they can address the research to practice gap, by converting theoretical knowledge and evidence into practical, usable forms.
2. The benefit of giving co-design and research participants a wider role in the interpretation of evidence.
3. The value of applying co-design games as a way of sharing wide bodies of knowledge and evidence; enabling participants to understand its relevance.

Beginning any participatory research or design endeavour with gamified, sharing and sense making activities for all participants may reduce epistemic injustices, level power inequalities and reward these endeavours with greater creative potential.

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