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Understanding how leisure centre managers decide whether to deliver exercise programmes for people with chronic health conditions

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Executive Summary

The purpose of this project was to help facilitate the spread of exercise interventions for chronic health conditions through raising awareness of leisure sector issues that researchers need to be aware of. Many exercise interventions are delivered in NHS settings, but leisure centres and similar community facilities can provide the space and the expertise to deliver interventions in a more accessible way, allowing both NHS- and self-referral. However, understanding of the sector and how best to meet its needs is not well-understood by researchers. By interviewing professionals working in the sector, and carrying out an online survey, we were able to establish priorities, barriers and opportunities for researchers to work more closely with the sector.

Key findings

- This has been a time of considerable change with leisure providers having lower budgets, local authorities taking on responsibility for public health, and demands for greater accountability.
- Survey respondents reported that budgets needed to stretch further than in previous years, and that public health was a strong and increasing focus.
- There is considerable variety in the provision of local authority leisure services, particularly regarding outsourcing/in-house delivery and quality of relationships with other parties such as Clinical Commissioning Groups (CCGs) and GPs.
- Evaluations and evidence bases are key to service provision; providers were expected to provide data on services to public health departments, although collecting this was challenging due to lack of resources and expertise.
- There was considerable interest in being involved with new innovations: this is popular with instructors and helps give a competitive edge, but involves extra work, including the evaluation that respondents found challenging, with little support for delivery.
- Several interviewees described working with local university undergraduate and postgraduate students: students provided evaluation expertise and in turn had the opportunity to work on a ‘real life’ project, while facilities greatly valued their input.
- Evaluation tools did not always translate well from hospital to leisure contexts; lengthy and/or intrusive surveys, and questions on socioeconomic background sometimes served to disengage those taking part in exercise. There may therefore be scope to develop well-validated survey tools which overcome these issues.
- Time lags with funding, and costs of direct procurement, make it very difficult for the sector to work with more senior academics on a funded basis. As grants from many funders do not include the cost of delivering interventions, activities may be limited by cost.

- Clear instructions on how to deliver an intervention make it much easier for providers to allocate resources. Combined with an existing evidence base, this gives providers the confidence to try new interventions.
- Providing cost-effective training for instructors is important for researchers wanting to roll out new interventions.
- Overall, organisations wanted to work more with researchers. Those with experience of doing so were more positively disposed to researchers: they welcomed the reduction in evaluation workload, felt able to stay up-to-date with new ideas through the projects, and felt researchers had good knowledge of practicalities although needed to make more effort to engage. Those not working with researchers felt that reports on interventions needed to be more accessible, and that researchers' understanding of practicalities was low.

Recommendations

- Researchers will need to be proactive in approaching the leisure sector if collaboration is to take place
- Researchers need to be aware of the demands being placed on the leisure sector by changing stakeholder relationships and reducing budgets
- Researchers may need to consider being creative with how they engage with the sector, as traditional funding routes may not be practical

Background

Exercise, defined as “planned, structured and repetitive bodily movement done to improve or maintain one or more components” (Caspersen, Powell, & Christenson, 1985), has long been recognised as being beneficial for mental and physical health. It reduces the risk of a wide range of conditions, including CHD, Type 2 Diabetes and Alzheimer’s disease (Reiner, Niermann, Jekauc, & Woll, 2013). It also has a therapeutic effect on many conditions, including mild to moderate depression, (see Josefsson, Lindwall, & Archer's systematic review, 2014), glycaemic control in Type 2 Diabetes (Yang, Scott, Mao, Tang, & Farmer, 2013), and autonomic function in COPD (Mohammed, Derom, Van, Silva, & Calders, 2017). In autism, it may have the effect of self-regulation (Lang et al., 2010) to help cope with over-stimulating environments, while for cancer patients it can help reduce fatigue (Lipsett, Barrett, Haruna, Mustian, & Donovan, 2017).

Benefits extend beyond therapeutic effects. Exercise interventions for osteoarthritis have clear economic benefits by reducing pain and increasing function enabling patients to work and need lower levels of care from others (Hurley et al., 2007), and exercise can help reduce costs of healthcare for people with Type 2 Diabetes as part of a wider lifestyle intervention (Espeland et al., 2014).

Psychosocial benefits are also documented for exercise interventions. For cancer patients, exercise can improve quality of life as well as muscular and aerobic fitness without causing harm (Segal et al., 2017), and for osteoarthritis there are benefits for social function, depression and anxiety (Hurley et al., 2014). Health-related quality of life is improved by exercise for uraemia patients (Wu, He, Yin, He, & Cao, 2014), while social benefits are a motivator to exercise in HIV (Li et al., 2017).

Given the physical, economic and psychosocial benefits of exercise interventions, take-up of programmes is to be encouraged. Models of delivery, however, vary geographically and often involve the co-ordination of several stakeholder groups: in the UK for example, this includes local authorities, Clinical Commissioning Groups (CCGs: these are clinician-led with responsibility for local health care provision) and social enterprises specialising in health and leisure provision. Around one third of UK local authorities now outsource the running of facilities such as leisure centres to specialist social enterprises.

While many exercise interventions are delivered by physiotherapists within medical care settings, various schemes are also run by leisure providers. GP referral schemes are widespread in the UK, but success levels vary, with only small increases in physical activity, although there seems to be some economic benefit (Campbell et al., 2015). Such referrals take place for a wide variety of conditions, and evaluation is likely to include those who have little interest in becoming active alongside who were active prior to their condition developing, and keen to become active again (Hurley et al., 2014). In the latter example, while exercise is more expensive than usual care, it is more cost-effective with regard to benefits for osteoarthritis patients especially when delivered in

group settings (Hurley et al., 2007). More generally, if participants in referral schemes adhere to their programmes, exercise interventions are cost-effective according to a study of almost 800 people (Edwards et al., 2013).

Community delivery can increase accessibility since it allows self-referral to run alongside referral from medical practitioners. Evaluation and evidence bases are important for funding and other resources to be allocated accordingly. Complex interventions (i.e. those with more than one element, such as education and exercise, or multiple outcomes, or tailoring) are difficult to evaluate, with issues arising with implementation, measures and sample sizes (Craig & Michie, 2013). However, complex interventions appear to be particularly efficacious since participants not only have clear instruction on what they need to do, but explanations of why, and exercises can be adapted to specific needs (Hurley et al., 2014). Hurley et al.'s mixed methods synthesis identifies key factors of successful interventions including tailoring, explanations and personal instruction. Research projects developing interventions are widespread in academia, but community take-up is often slow, in part due to the multiple stakeholders involved and difficulties establishing an evidence base. The Five Year Forward View (NHS, 2014) emphasises disease prevention, but also suggests that community settings should be utilised more widely, and that partnerships should be developed between organisations to help deliver public health requirements with a local focus. The report advocates "evidence-based intervention strategies" (p. 11), but does not directly recognise the role of exercise as part of these strategies.

Guidance for stakeholders in delivering exercise initiatives has been produced (Bird & Ward, 2015) and collaboration is encouraged (Giles-corti, Sallis, & Sugiyama, 2015), but given the varied frameworks in different localities, there may not always be clear pathways for delivery. The Exercise is Medicine global initiative from the American Medical Association and American College of Sports Medicine (www.exerciseismedicine.org) encourages the 'joining up' of stakeholder groups including primary care, health and fitness institutions, academia and government. At present, experience and understanding of community delivery appears limited:

> "[active living i.e. sports/exercise] scholars understand little about the sectors they seek to influence – transportation, urban planning, and parks and recreation" (Giles-corti et al., 2015, p.234)

This study was devised to explore current practice in delivering exercise interventions through community leisure provision, and to better understand current limitations and opportunities for academic researchers with efficacious interventions that could be offered in community settings. Exercise interventions can increase function and quality of life for people with chronic health conditions, also reducing care costs. Many NHS interventions could be delivered in the community in settings such as leisure centres, where self-referral becomes possible and access is therefore increased. However, our experience as health researchers embarking on this project was

that leisure facilities have different remits and drivers to the NHS, and interventions need to be framed in a way that makes them attractive to decision makers in this sector.

The project therefore aimed to understand better the factors in play for community exercise provision by local authorities, and how researchers could work alongside the leisure sector to increase intervention provision.

Methods

Design

A mixed methods approach was used. Five people were interviewed prior to an online survey being circulated, in part to ensure relevant areas were considered in the survey. These interviews were collated with four post-survey interviews for thematic analysis, while the survey provided quantitative data regarding priorities and trends in leisure provision.

Participants

The first five interviewees were recruited through personal connections and snowballing. Survey respondents were recruited via emails with survey links. Contact details were purchased from a list provider: 1659 email addresses were provided, consisting of 501 Indoor Leisure Chief Officers, 58 Chief Executives, and 1100 Leisure Centre Managers across England. The survey included an invitation to take part in follow-up interviews, and all those expressing an interest were contacted in order to recruit further interviewees.

Procedure

Interviewees were interviewed by phone using a semi-structured interview schedule, and interviews were recorded using a Sony ICD-TX50 digital recorder and transcribed by the lead researcher to increase familiarity with the content. All participants completed a consent form prior to taking part and were given the opportunity to ask questions.

The survey was hosted by Qualtrics survey software and accessed through an anonymous link. Informed consent was incorporated into the survey, so participants could not progress to the main part without providing informed consent and indicating they had read the information about the study. Interview and survey participants were able to withdraw at any point if wished. The survey has been reproduced in the Appendix.

Survey measures

The initial five interviews indicated several areas that needed including in the survey. Budgetary pressures, changes in infrastructure and an increased emphasis within local authorities' remits for public health and involve with Clinical Commissioning Groups (CCGs) were important issues, and questions were incorporated to ensure these topics were covered.

Information was collected regarding the workplace of respondents (leisure centre, office or other), and the area type of facility location (city, suburbs, rural, allowing for a combination of responses), along with geographical location. Survey questions asked about budgets, public health focus, requirements for hosting new classes, and whether the respondent had been involved in working with academic researchers on projects before. The final set of questions explored attitudes to researchers; there were two sets of questions tailored for those with and without experience of working with researchers, and the survey automatically directed respondents to the appropriate set. Free text fields were included in each section and at the end of the survey for further comment.

Ethics

Ethical approval for the study was given by the Faculty Research Ethics Committee of Kingston University and St. George's, University of London Joint Faculty of Health, Social Care and Education.

Results and discussion

This section opens with background information regarding the participants' roles and location, then explores survey and interview findings in three sections related to the themes that emerged in the qualitative analysis:

- Environment of change
- Practicalities of delivering new schemes
- Researching collaboratively

Response rate

Five people took part in pre-survey interviews. A total of 1659 emails were sent with the survey link to a marketing list. There were 95 responses, with 9 unfinished records which were removed, leaving a sample of 85 surveys and 199 emails were undeliverable. Of 26 respondents who had expressed a possible willingness to take part in follow up interviews, only 4 agreed when contacted. All interview data was used for the qualitative analysis, with a total of 9 interviews.

Background

The nine interviewees included four individuals in management/co-ordination roles in social enterprises, three at local authorities, one freelance consultant and one individual working for a leisure providers' organisation. Survey respondents were mostly equally split between local authority employees and those working for social enterprises, with 'Other' including schools and universities, leisure trusts and charitable trusts (Figure 1).

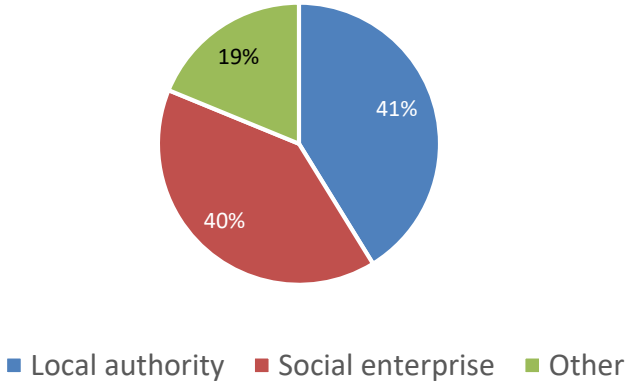

Figure 1: Survey Respondents' Employer

The majority of survey respondents were based in leisure centres, with another large group office-based. Those reporting 'Other' workplaces had portfolio roles or roles that involved working in multiple locations (Figure 2).

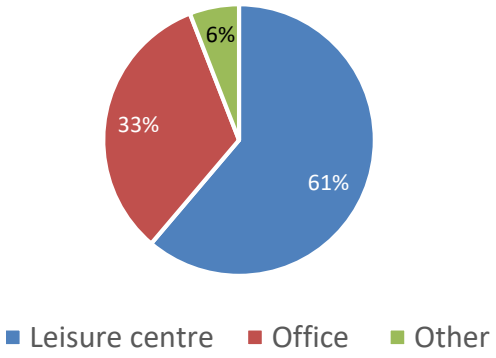

Figure 2: Survey respondents' workplace

Types of location for leisure facilities were spread across larger towns and cities, small towns and rural/village locations, with 'Other' responses being given by those working in or with several facilities in different kinds of locations (Figure 3).

The majority (37: 43.5%) were from London and the South East of England, 13 (15.3%) from South West England, 9 (10.6%) from the East Midlands, 9 (10.6%) from East Anglia, 7 (8.2%) from the

West Midlands, 5 (5.9%) from North West England, 3 (3.5%) from Wales and 1 (1.2%) from each of Yorkshire/Humberside and North East England (Figure 4).

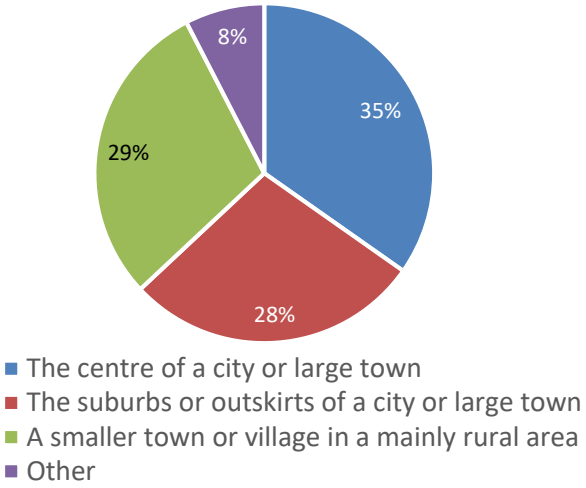

Figure 3: Location of facilities that survey respondents worked in or with

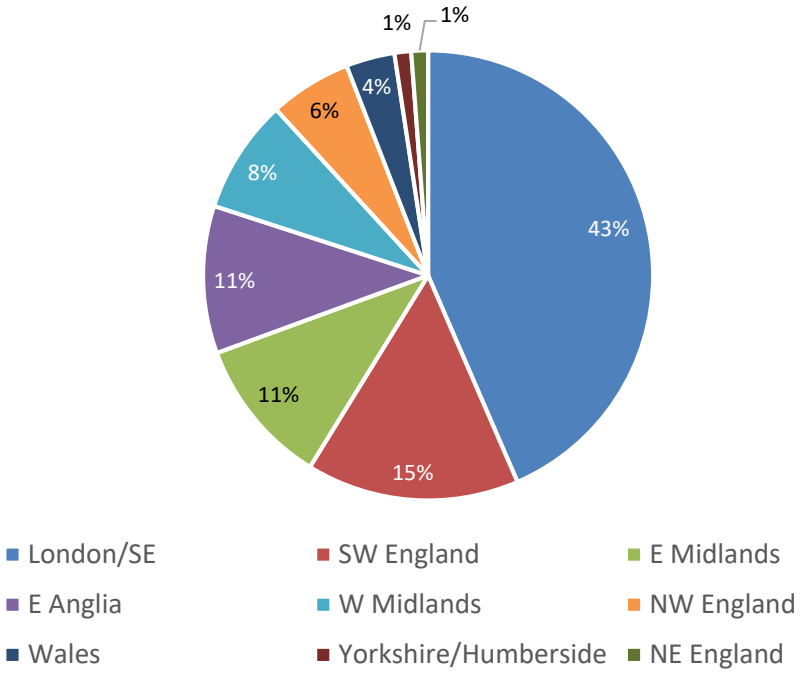

Figure 4: Geographical location of respondents

The majority of respondents were influential in decisions made regarding leisure offers at their facilities: 53 (62.4%) described themselves as decision makers, with 28 (32.9%) describing themselves as influencers. Only 3 (3.5%) considered themselves to have no influence. In terms of freedom to implement what they wanted in leisure facilities, 30 (35.3%) reported having lots of freedom, with 20 (23.5%) reporting moderate freedom and 3 (3.5%) describing themselves as constrained. However, 32 respondents (37.6%) did not answer this question.

The next sections describe the findings from the survey, following the themes that emerged in interviews. Survey and interview data are considered together to give a more rounded picture of the current environment.

Environment of change

Participants reported a number of changes to the operating environment in recent years. Key here were reductions in budget, and involvement of more stakeholders as public health moved into local authority remits, along with NHS-based clinical commissioning groups (CCGs) having increasing involvement with community delivery of health-related services. Challenges included an increased requirement for evaluation in order to obtain funding, and the need to build more stakeholder relationships and raise awareness of the public leisure sector's capabilities.

Increased involvement of local authorities with public health, and the advent of CCGs, had led leisure providers to need to engage more with public health agendas, rehabilitation and prevention, but some reported difficulties with communication and lack of understanding between different parties.

Participants reported a high level of focus on public health, increasing in the last few years (see Figure 5 and Figure 6). The emphasis on public health was evident too in changes in health agendas nationally:

> "Where the work has grown locally – well, not only locally, nationally – health and wellbeing is big across the country now [with] recognition from health professional and national charities … that physical activity can benefit people with long term conditions… we've noticed there has been a real kind of culture change around the importance of physical activity not only from health professionals but also from participants" (Interviewee 8)

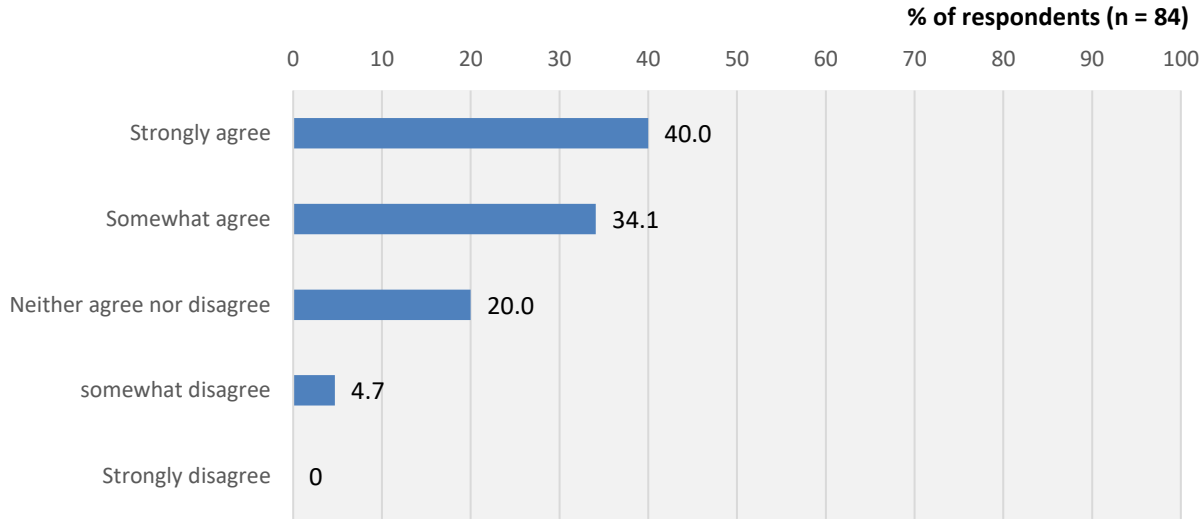

Figure 5: Responses to "I have increased my focus on public health in the last few years."

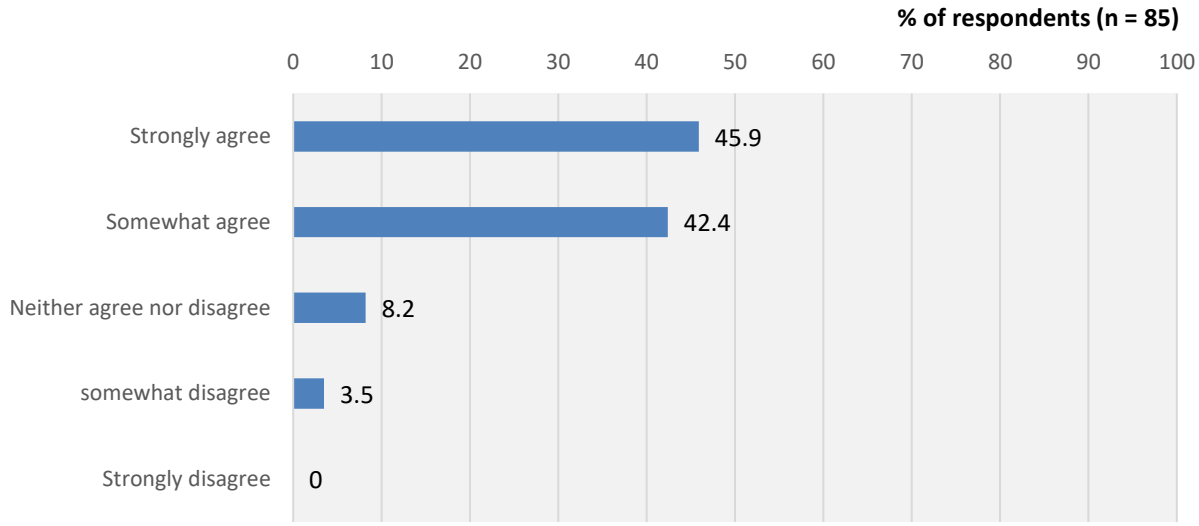

Figure 6: Responses to "Public health has a strong focus within my remit" (n = 85)

Levels of engagement with Clinical Commissioning Groups (CCGs) and similar organisations influencing delivery were low to moderate, with only 6 (7.1%) respondents describing it as a substantial part of their role. Twenty (23.5%) reported regular contact, 38 (44.7) occasional contact and 18 (21.2%) stated they were not involved. Three (3.5%) described their contact as 'Other'. Interviewees described communications with CCGs and other stakeholders (GPs and Public Health departments in particular) as sometimes problematic:

> "To establish communication between for example the hospital, GP clinics, and the leisure centres is not easy. There is no direct route." (Interviewee 6)

> "[CCG contact is] very hit and miss…we have quite little contact here with ours whereas other boroughs seem to have a much closer relationship so it's something that we're trying to build here." (Interviewee 9)

Interviewee 8 was now managing to build a relationship with the CCG, after some initial difficulties:

> "Nobody seems to be in post for a long period of time so you do work with the CCG and they'd be moved on to a different area or leave the CCG so you could never build up a relationship. That seems to have steadied over the last 18 months so we've got more kind of permanent contracts now." (Interviewee 8)

Interview participants described Public Health Teams as not always in step with leisure providers. Unfamiliarity with fitness instructor qualifications, particularly more advanced knowledge was cited as a challenge:

> "Somebody in public health will know absolutely what the standards of training and academic path of a physiotherapist is, but do they know how skilled somebody is when they're a level 4 fitness professional who's also taken additional modules in rehabilitation." (Interviewee 1)

There was also some description of leisure centres as more focused on profit than on public health agendas, due to being targeted on profit and loss and focusing on the activities most popular with the public:

> "Some of the other decision makers in the leisure centres don't fully understand health and the benefits of health for people with long term conditions and it's not a priority for them" (Interviewee 2)

Public Health departments were also gatekeepers for funding but there was not always agreement on what this should include:

> "The difficulties that we've had in doing that [cancer rehab in the community] is actually getting public health to acknowledge that it is actually a public health issue as well as being a

general health issue and actually this is something that they should help us support or fund." (Interviewee 7)

Furthermore, Public Health requires evidence and data collection that leisure providers reported that they struggled to collect, due to difficulties with resources, appropriate expertise, and also issues with service users becoming disengaged when asked to complete long and/or intrusive surveys (this is covered in more detail in the section entitled

Researching collaboratively).

"Initially when I first came into the council we had much more local income and funding wasn't so much an issue and how as a in recent years with budget constraints and with the transfer of public health into county council it has meant that we have had to prove that our activities and our services that we deliver are very efficient but also are making a difference to people's lives .. it is a much more difficult process to get funding now." (Participant 7)

"Definitely difficult and it definitely takes up quite a lot of time itself to get those funds especially now where things have to be really so specific… you have to be able to show obviously the need and the demand, and .definite group it's going to target" (Participant 9)

"If they're putting in a tender or they're looking at delivering whether it's small scale or large scale, having the academic rigour behind and doing something that's not easy for us." (Participant 4)

Survey responses further indicated difficulties evaluating the schemes, with 67.1% of respondents agreeing strongly or somewhat that it was an issue (Figure 7).

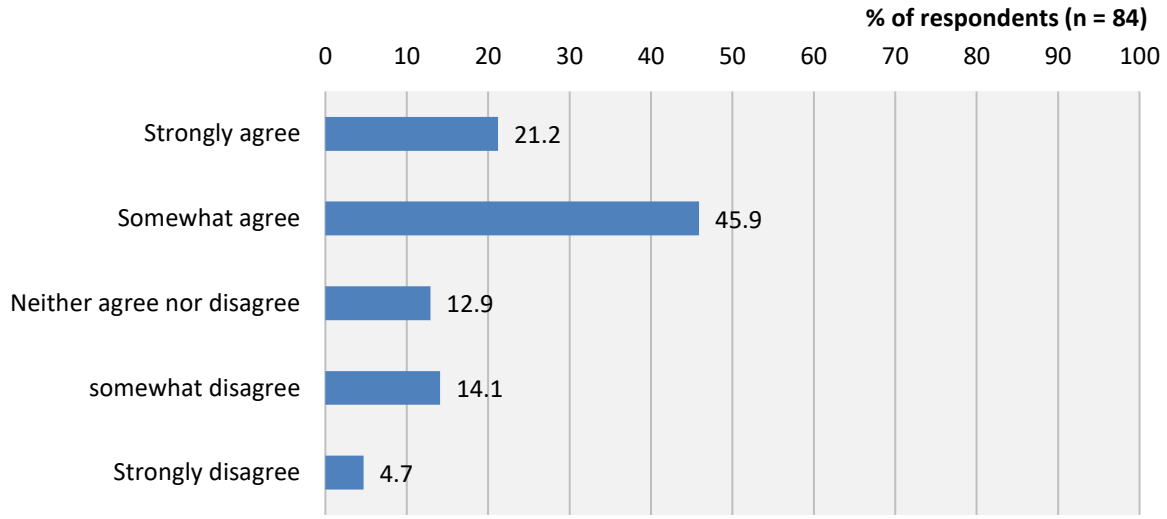

Figure 7: Responses to "Evaluating the schemes is difficult"

The majority of respondents were aware of funding streams (see Figure 8) although there appeared to be some doubt in the responses. The difficulty was with the work and expertise required to compile a bid.

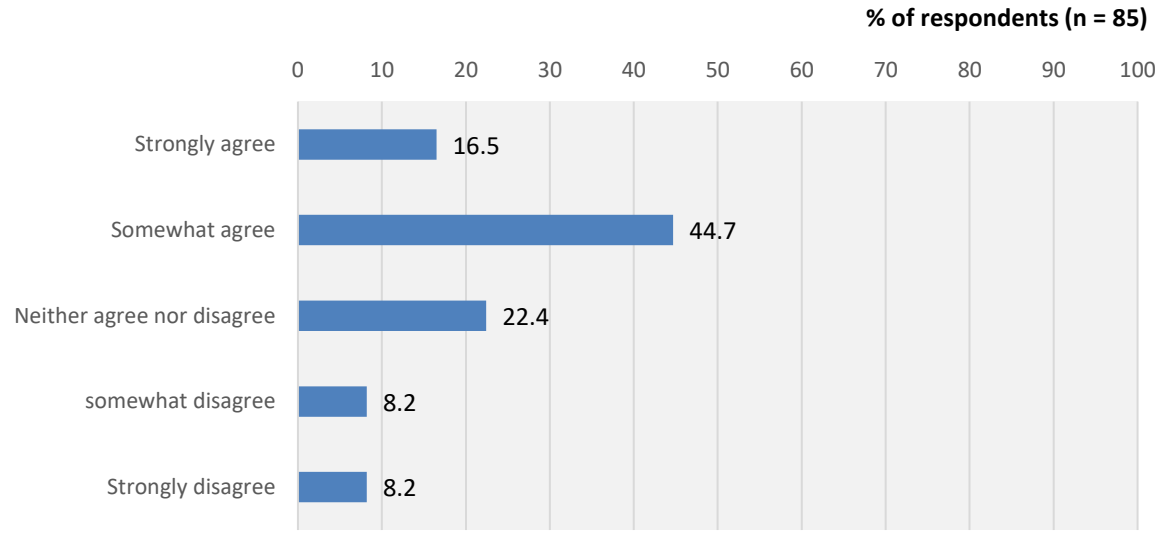

Figure 8: Responses to "I know of extra funding streams that I might be able to tap into for delivering certain services"

Two of the interviewees had become involved with their local universities to help with evaluation, with projects feeding into undergraduate and postgraduate dissertation work:

"I think if there is a way of local authorities or public health services are actually aware that they can tap into your local university to help you deliver on this, it gives amazing, it's really great." (Interviewee 7)

A further challenge with the changing environment was inflexibility with some outsourcing. Local authorities are increasingly outsourcing to social enterprises and similar organisations which can bring benefits in terms of scale and accessibility to funding. However, some contracts were very lengthy (up to 15 years was reported), limiting flexibility as agendas changed:

"[They have] leisure contracts which have been contracted by a sports team who … don't have the expertise around exercise programmes for people with long term conditions, and so they might not embed that within the contract … it's a 10, 15 maybe even 25 year contract and so then you have a difficulty of influencing." (Participant 2)

Budgetary constraints were widely reported in interviews, and explored in the survey: 88.2% of respondents reported increasing budgetary pressure (strongly or somewhat agreed with the statement "Budgets increasingly need to stretch further": see Figure 9: Responses to "Budgets increasingly need to stretch further").

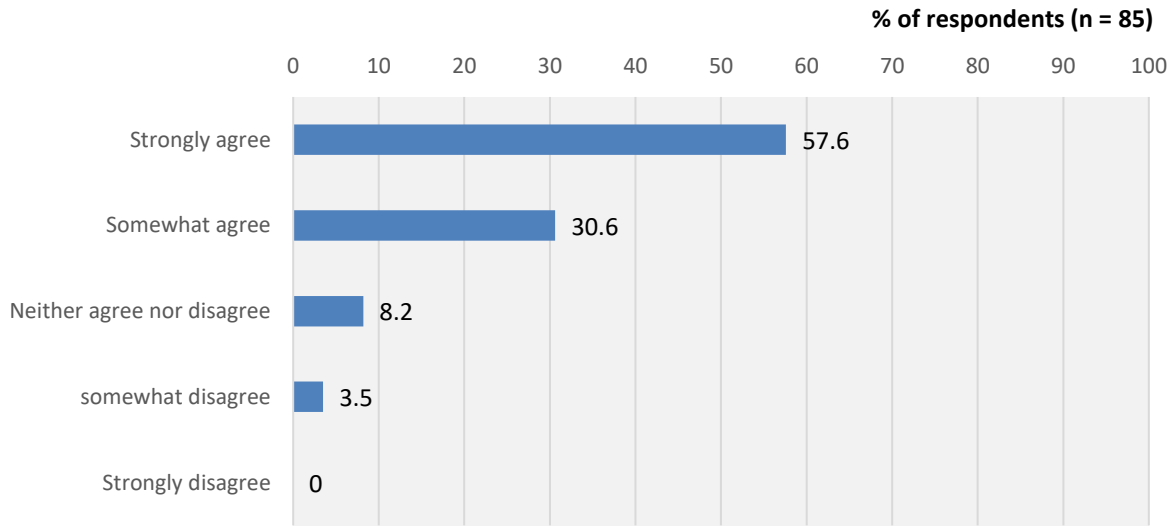

Figure 9: Responses to "Budgets increasingly need to stretch further"

For most (61.2%), making a surplus or profit was a priority, but not all respondents were required to do so (Figure 10).

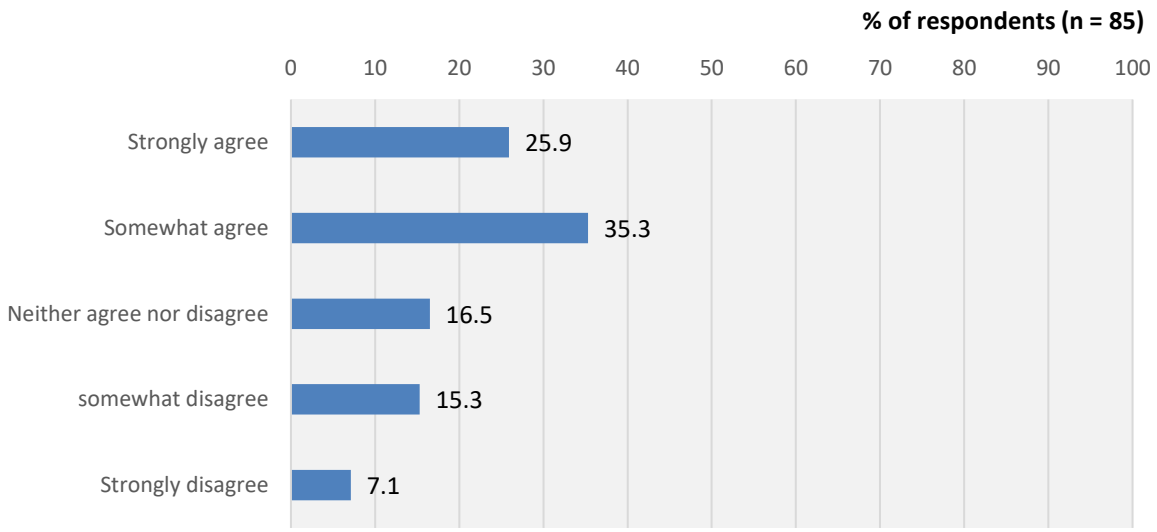

Figure 10: Responses to "Making a surplus or profit is a top priority"

When asked what approach they had to surplus/profits for community health schemes, almost half only needed to break even, while just under a quarter needed to make a profit. A fifth were able to allow a loss because of public health benefit. Several participants reported other situations: community health was not targeted, or there were set budgets for delivery (see Figure 11).

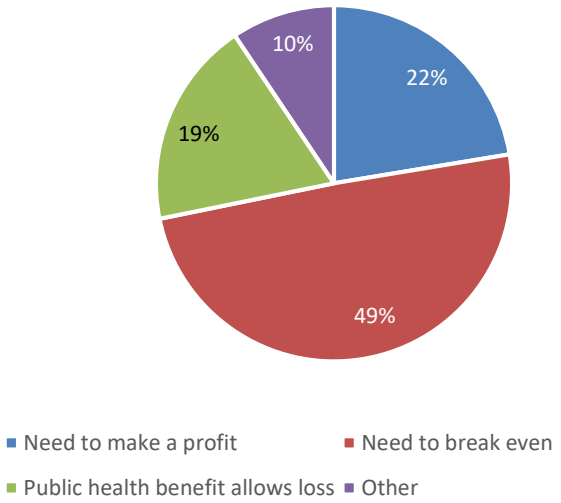

Figure 11: Required financial outcomes for community health schemes

Practicalities of delivering new schemes

The second key theme to emerge concerned the practicalities of delivering new schemes. A slight majority of participants (56.5%) considered it a lot of extra work (Figure 12), while over 60% wanted to see an evidence base before implementing a scheme (Figure 13), and almost 80% wanted schemes to have a clear pathway for referrals to ensure take-up (Figure 14).

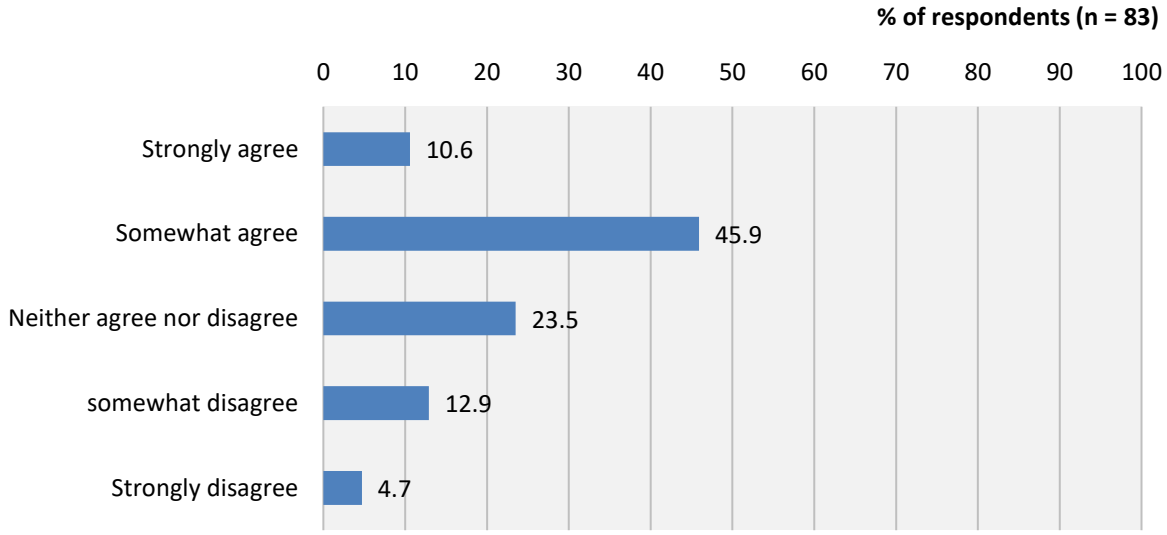

Figure 12: Responses to "It's [delivering a new scheme] a lot of extra work"

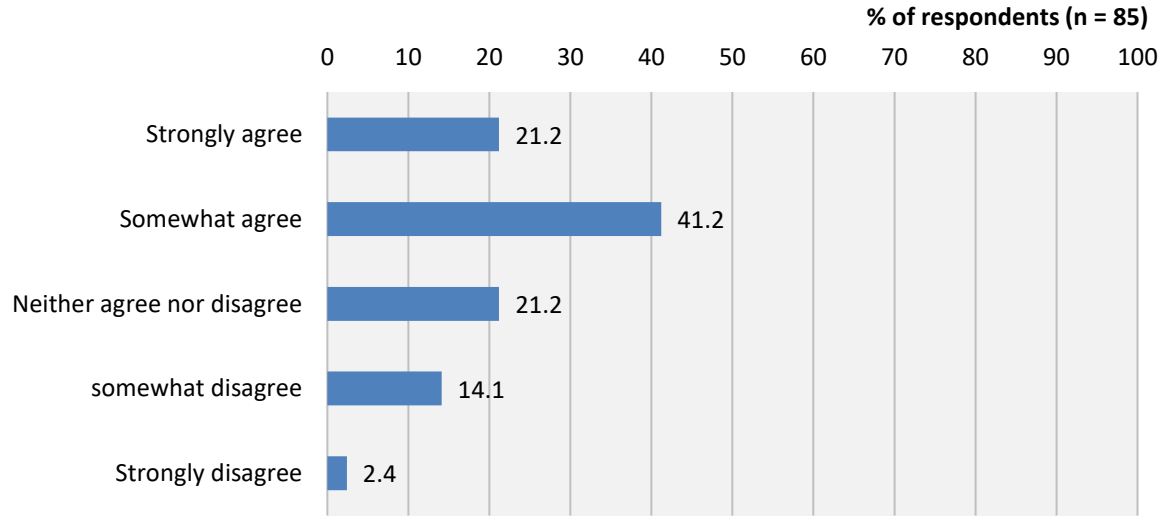

Figure 13: Responses to "I would only consider a class or scheme for a chronic health condition if it already had a strong evidence base"

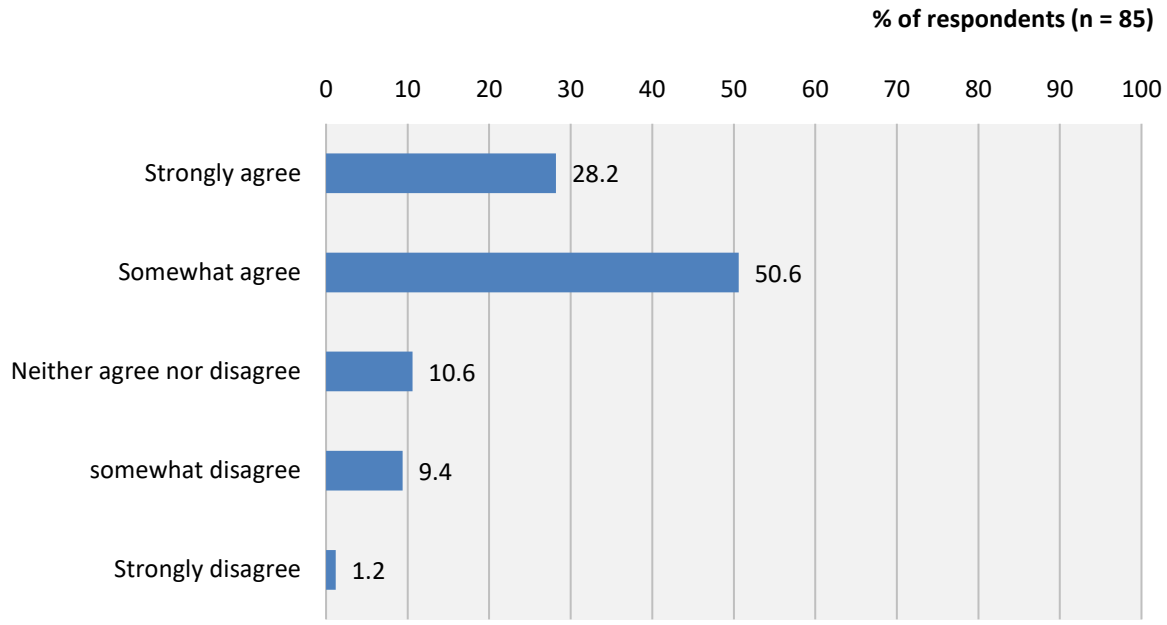

Figure 14: Responses to "I would only consider a class or scheme for a chronic health condition if there was an established pathway (i.e. route by which participants were referred to or were recommended to try the scheme)"

The majority of respondents (62, or 72.9%) were currently running classes or schemes for chronic health conditions, and a further 18 (21.2%) had run classes or schemes in the past while 2 (2.4%) planned to do so. Three (3.5%) had not done so and had no plans to do so.

Schemes for chronic health conditions were seen as a way to attract people to leisure centres who might not normally visit them, and around half of survey respondents felt they provided a competitive edge (Figure 15).

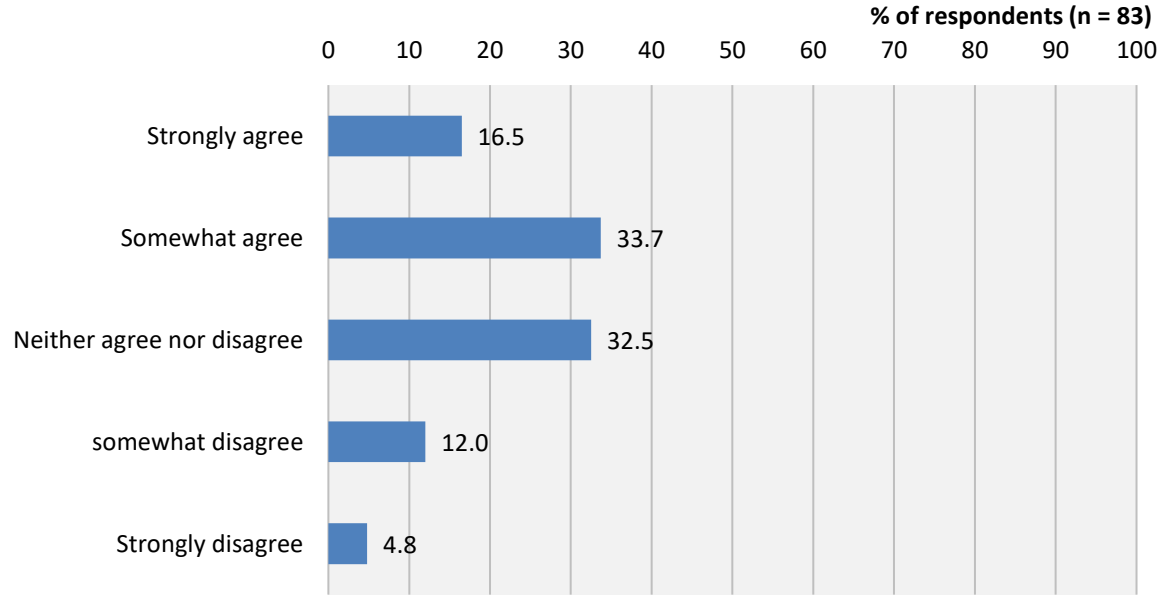

Figure 15: Responses to "Running these schemes gives us a competitive edge"

Public health policy was supported in principle, but it was felt that the costs and sustainability were overlooked:

> "Those policies [from Sport England], and they were all evidence based, very rigorous, neither of those touched on a broader point around the financial issues going on with local authorities, the mass pressures and cuts in local authority budgets as well as increasing pressures on public health and adult social care." (Interviewee 4)

The interviewee emphasised the need for researchers to carry out cost-modelling alongside any research project, while another interviewee described an intervention where costs were an issue:

> "I think it's turned out to be quite expensive so it doesn't seem to have taken off in the way they were hoping it would" (Interviewee 2)

although the project was seen positively:

> "It was very clear to me what it was, what the product was, something about that that I feel that researchers need to address when they're translating it from evidence into practice." (Interviewee 2)

Long-term sustainability was central to interventions being implemented and maintained, and this is an area that researchers need to consider when developing interventions:

> "They want some kind of sustainability and if it's affordable for the trust really … there needs to be a longer term view about that service or session becoming self-funding." (Interviewee 4)

One of the main benefits to implementing new schemes was the involvement of staff with something new and interesting, including the additional training they might require. A number of interviewees described this as being beneficial to retaining skilled instructors, and helping give them a competitive edge. As can be seen in the survey responses in Figure 16 and Figure 17, over 90% of respondents agreed that staff enjoyed being involved and appreciated training.

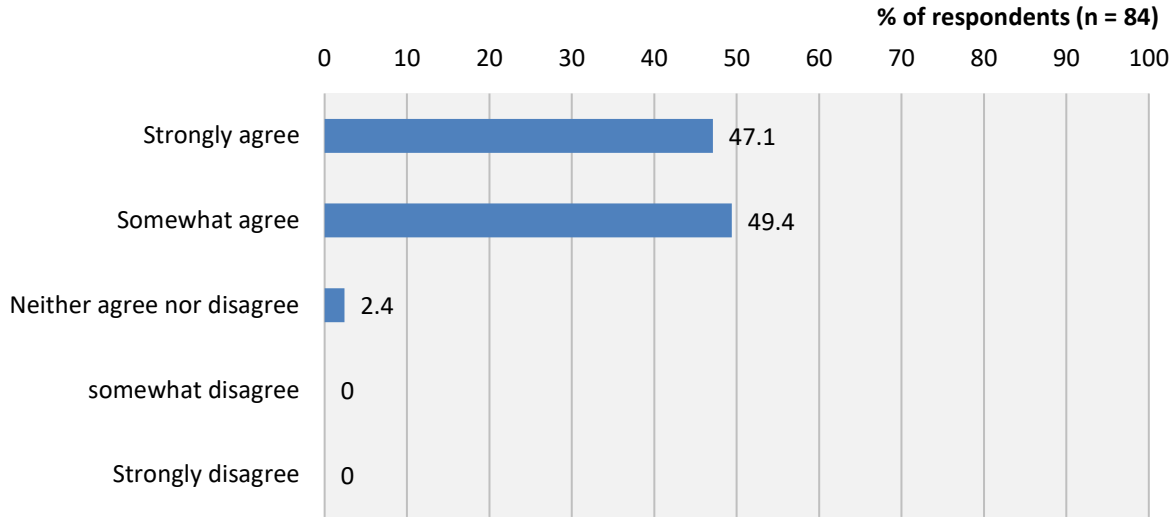

Figure 16: Responses to "Staff enjoy being involved with delivery"

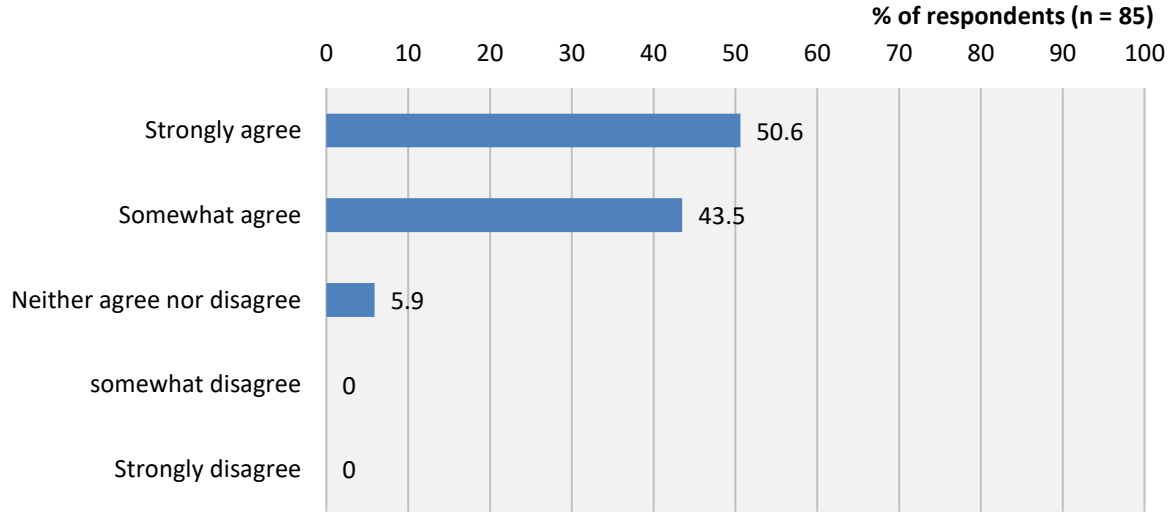

Figure 17: Responses to "Staff appreciate the extra training to deliver schemes"

Costs were a potential issue, with over 75% of survey respondents describing staff training as prohibitively expensive at times (Figure 18); researchers who develop interventions should therefore consider mechanisms to provide training in a cost-effective way. Only 31.4% of survey respondents felt they were well-supported to deliver new schemes (Figure 19), and again this is something researchers need to consider, and ensure that clear guidance is provided for those wanting to deliver services.

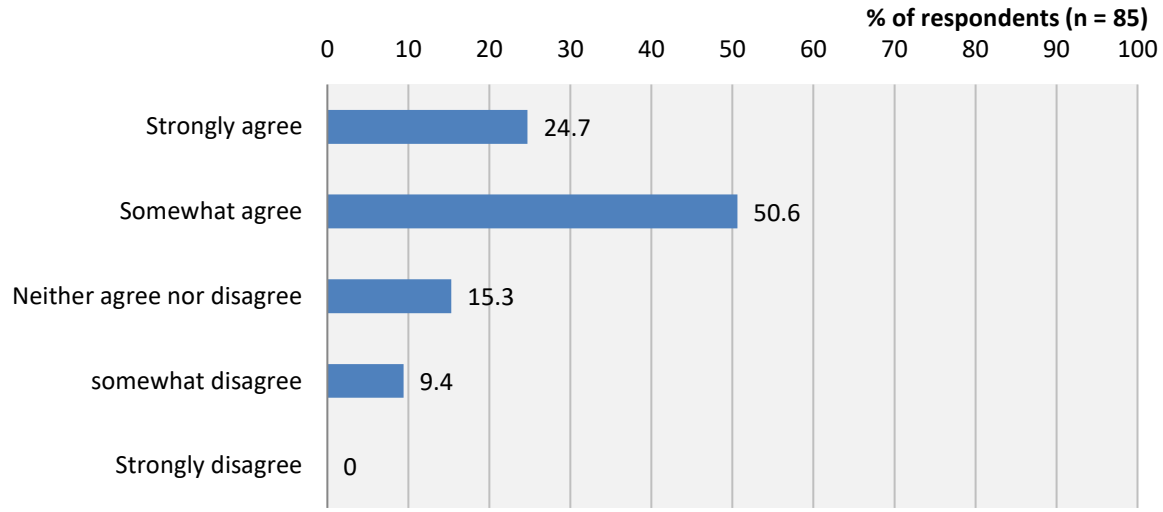

Figure 18: Responses to "Staff training for new schemes can be prohibitively expensive"

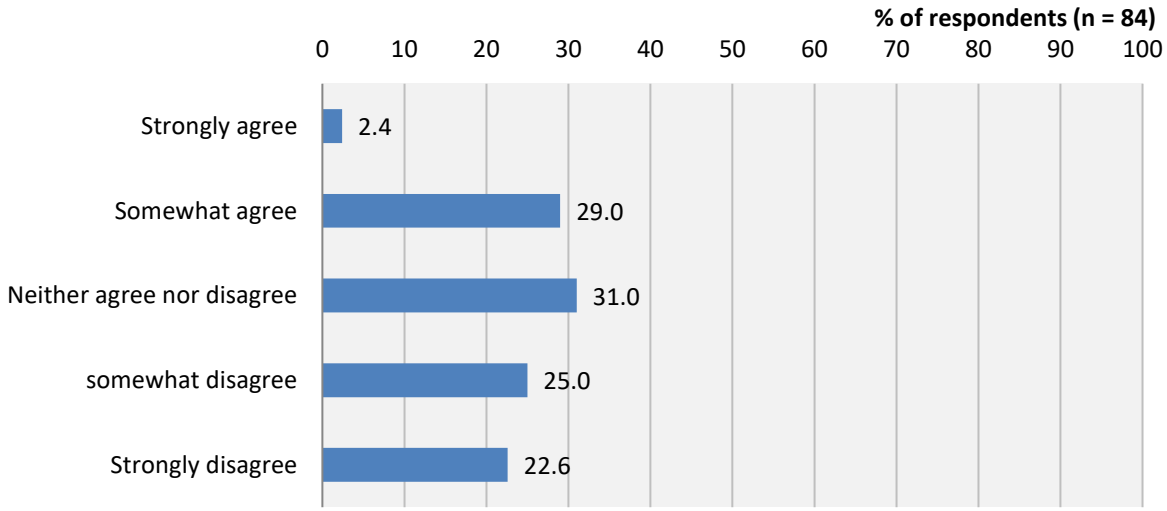

Figure 19: Responses to "We get a lot of support to do this kind of thing"

On a positive note, despite the budgetary constraints described by interviewees and survey respondents, the majority of survey respondents did not perceive staff shortages being an issue delivering new schemes (Figure 20).

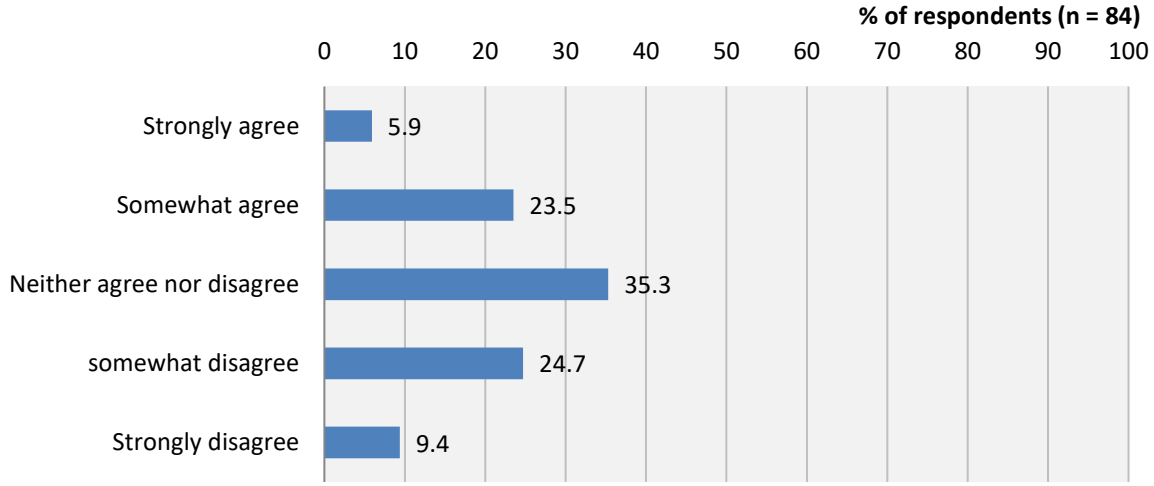

Figure 20: Responses to "Extra schemes can leave other activities short-staffed"

Researching collaboratively

The final theme to emerge was the need to work collaboratively with researchers. The previous sections identified areas of mutual benefit, particularly the involvement of students with evaluations, and also noted areas that researchers should consider when developing new interventions, particularly sustainability and cost-modelling, clarity on what a scheme is delivering, and staff training and/or guidance for facilities to be able to deliver an intervention effectively.

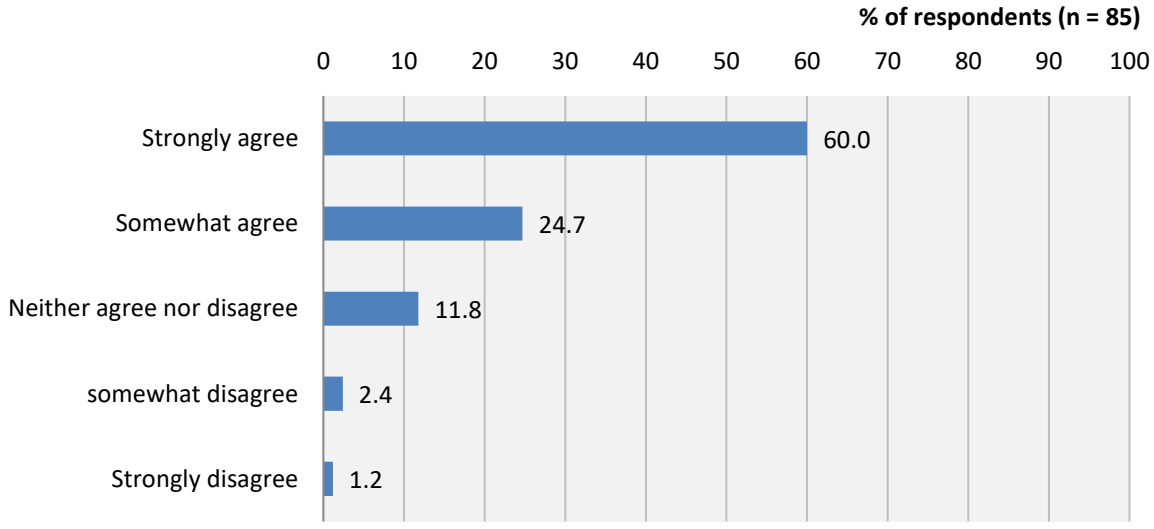

Figure 21: Responses to "I would like to be involved in developing and testing new interventions for chronic health conditions to help create an evidence base. (Assume practicalities such as cost and staffing are covered)."

Over two thirds of respondents (57: 67.1%) had had no involvement with university researchers when delivering an intervention for a chronic health condition. Only two (2.4%) described this happening regularly, with 19 (22.4%) reporting it happening occasionally and 7 (8.2%) unsure. The vast majority of respondents were keen to be involved with developing and testing new interventions for chronic health conditions (Figure 21). The 21 respondents who described having had involvement with university researchers were directed to specific questions relating to their experiences. Table 1 shows their responses with the mode highlighted.

Table 1: Responses from participants with university involvement

	Strongly agree (%)	Somewhat agree (%)	Neither agree nor disagree (%)	Somewhat disagree (%)	Strongly disagree (%)
Overall, it's a good thing for our facility/ facilities	52.4	42.9	4.8	-	-
Researchers should make more effort to engage with the leisure industry*	40.0	40.0	15.0	5.0	-
It involves a lot of extra work	-	61.9	19.0	14.3	4.8
It takes some of the evaluation workload away	25.0	50.0	15.0	10.0	-
Researchers' interests have been well-matched with leisure sector needs*	5.0	45.0	30.0	15.0	5.0
I like to have plenty of involvement with the research project	14.3	42.9	14.3	28.6	-
Researchers underestimate fitness instructors' level of expertise*	10.0	40.0	15.0	30.0	5.0
It helps us stay up to date with new developments*	30.0	40.0	25.0	5.0	-
It helps cover costs of trying new things	-	19.0	52.4	28.6	-
I've been able to access research reports easily when I've needed to*	10.0	30.0	45.0	10.0	5.0
The researchers I've worked with have good knowledge of the practicalities of delivery*	25.0	35.0	40.0	-	-
I usually leave the researcher(s) to get on with it	4.8	28.6	38.1	28.6	-

N = 21 except for * where n = 20.

Non collaborators were also directed to tailored questions, and their responses are shown in Table 2. Over two thirds of this group were unsure of how to get in touch with researchers, and a similar proportion agreed with the statement that researchers should seek out leisure sector collaborators. This suggests that more could be done in academia to embrace impact by approaching local leisure providers.

Table 2: Responses from participant without university involvement

	Strongly agree (%)	Somewhat agree (%)	Neither agree nor disagree (%)	Somewhat disagree (%)	Strongly disagree (%)
The leisure industry should be working more closely with researchers developing new ideas	54.8	40.3	4.8	0.0	0.0
I would like researchers to keep me and my colleagues updated with new developments	51.6	41.9	4.8	0.0	1.6
I would like researchers to help us evaluate our schemes[c]	49.2	27.9	16.4	3.3	3.3
Reports on research need to be more accessible[e]	26.6	51.6	17.2	4.7	0.0
I would be concerned about extra workload that collaborating with researchers could generate[d]	6.3	46.0	25.4	15.9	6.3
Researchers should make more effort to engage with the leisure industry	22.6	43.5	30.6	3.2	0.0
I would like to collaborate with researchers developing exercise interventions for health conditions	38.7	41.9	16.1	3.2	0.0
Researchers don't understand the practicalities of delivering the ideas they suggest[b]	8.3	35.0	51.7	5.0	0.0
I know who to contact if I want to collaborate with researchers on projects[a]	3.7	5.6	22.2	42.6	25.9

N = 62 except for [a] n = 54, [b] n= 60, [c] n= 61, [d] n = 63, [e] n = 64

Suggestions were made regarding how this could be done, firstly making direct contact with leisure sector representatives, and secondly engaging with the trade press:

> "I would suggest that if are some good practical ideas that come out of research, then ring up people like me and set up meetings with people operating our leisure centres … I think if you went to some of the trade organisations, there's Leisure Management is one, the main publication, it's published online as well. If you want to know about a particular area or set of activities and raise that question with the editor of that particular magazine they'd be delighted to have something from academia that they could publish to invite all their readers to feedback and open up a new line of communication." (Interviewee 6, responsible for procurement)

Interviewees felt that researchers could collaborate more with the sector to develop and test ideas, particularly to ensure they were aware of the practicalities of delivery:

> "It would be really positive when researchers are looking at interventions or services that are being developed that they could be done, designed or have some consultation and engage with leisure providers … they could input their knowledge and their experiences and the actual practical issues or barriers or opportunities that arise." (Interviewee 4)

Those who hadn't engaged with researchers described difficulties with accessing research reports (Table 2) and a minority of those who had engaged felt the information was easily found (Table 1):

> "I think one area would be ideas, and part of that is things that have been tried elsewhere that we haven't thought of, as a conduit for spreading good ideas, I'm sure there's a lot in research that people on the coal face don't very often get to read." (Interviewee 6)

As previously mentioned, those who were working with universities already were focused on students, including undergraduates and postgraduates. Working with more senior academics was perceived as less practical due to the costs:

> "We had 10,000 pounds to do a local evaluation and they were going to cost about 50,000." (Interviewee 8)

There may also be issues with time lags with academic funding applications, along with the uncertain outcomes, although interviewees were not generally familiar with how the academic funding system worked. Traditional funding schemes may be a limitation in collaborative work, and the evidence indicated that successful collaborations were finding other routes to delivery:

> "That's the type of work he said that he could specifically do utilising a lot of the equipment that he's already got there, plus students, he said they would not then need to go out to find extra grants in order to deliver on these projects." (Interviewee 7, regarding evaluation of a scheme to reduce falls in older populations)

The collaborative work described by interviewees involved with local academics was almost entirely evaluative, rather than focused on developing new initiatives:

> "Moving forward we will need to make more of those links in order to show that our work is effective." (Interviewee 7)

> "We've used a lot of PhD and MSc students to come in and do some kind of evaluative projects." (Interviewee 8)

The use of validated measures was a particular skill identified in researchers that the leisure sector welcomed:

> "They're great at saying this is the project, what do you want individuals to get out of it or what have they told you they want to get out of it and universities will say it sounds like you need to use the IPAC or activity scale or that the Warwick and Edinburgh." (Interviewee 8)

Facilities found evaluating schemes challenging, in terms of staff resources and knowing what data to collect. This presented activities that fitted well with students' requirements for degree projects, leading to a mutually beneficial relationship:

> "They'd much rather work with real live cases rather than students having to make up cases for evaluation, so that's part of our work with the communities projects around street games, we're looking at utilising the undergraduates in order to help evaluate the processes that we offer." (Interviewee 7)

It was noted that this could mean that projects needed to focus on particular outcomes because of the students' backgrounds:

> "About 90% of students engage with us are not sports science students which surprised me to start with, they're more sort of health psychology … they'd be more interested in the reasons why people say yes or no to a programme and more around the behaviour change and motivation" (Interviewee 8)

However, there were some issues where well-validated survey questions did not translate well to leisure centre environments. Long, intrusive surveys were problematic, disengaging participants and sometimes being left blank:

> "The longer the questionnaire people need to fill out before they do anything, the less engaged they become … when you're sitting down with somebody to do a health consultation who's had like a cancer diagnosis for example, they're in a vulnerable and delicate position sometimes and the last thing they want to do is sit down and fill out 60 questions about all sorts of different things, and some of the questionnaires we've used in the past have been quite intrusive." (Interviewee 8)
>
> "All we've ended up with in the past is lots of questions where people have ticked prefer not to say, which doesn't mean anything." (Interviewee 8)

> "It's certainly very hit and miss how much information we actually get back, how willing people are …. on the one hand you're trying to encourage lots of people to come along and do something they wouldn't do normally, but then it's almost a barrier itself." (Interviewee 9)

This was not only down to the evaluation tools suggested by students, but an issue with the data required by CCGs:

> "We have a real kind of problem with CCG, public health, saying well we need these questionnaires filled out and our people on the front line finding that people won't fill them out because we give people these questionnaires and they get up and walk out" (Interviewee 8)

Information such as socioeconomic measures (for example, whether an exercise participant is a home-owner) were mentioned as poorly received by service users. This suggests that beyond the development of interventions, more effective evaluative tools, tailored to the leisure environment, would be a useful development and help facilities assess outcomes effectively.

Conclusion

Overall, the findings here indicate that collaborative work with academic and leisure sector involvement can be beneficial to both parties. There is a wider issue with a large number of different stakeholders with different priorities, and although some participants reported that communications are improving, there are still areas where there appears to be a lack of understanding of each other's agendas and the practicalities of delivering the necessary outcomes for all parties.

There is a huge opportunity for increased impact, and improvements in public health but this needs to go beyond evaluation and involve feeding back findings into scheme development to ensure health benefits are delivered in a sustainable and effective way.

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References

Bird, L., & Ward, D. (2015). *East Midlands Academic Obesity Programme Synthesis of UK Evidence Based Recommendations for Adult*. Available at http://eprints.nottingham.ac.uk/29881/1/Obesity%20report%20-%20PDF%20%28Jan%202016%29%202.pdf (accessed 12/10/2017)

Campbell, F., Holmes, M., Everson-hock, E., Davis, S., Woods, H. B., Anokye, N., … Kaltenthaler, E. (2015). Health technology assessment, *19*(60). http://doi.org/10.3310/hta19600

Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical Activity , Exercise , and Physical Fitness : Definitions and Distinctions for Health-Related Research. *Public Health Reports*, *100*(2), 126–131.

Craig, P., & Michie, S. (2013). Developing and Evaluating Complex Interventions : The New Medical Research Council Guidance. *International Journal of Nursing Studies*, *50*(5), 587–592. http://doi.org/10.1016/j.ijnurstu.2012.09.010

Edwards, R. T., Linck, P., Hounsome, N., Raisanen, L., Williams, N., Moore, L., & Murphy, S. (2013). Cost-effectiveness of a national exercise referral programme for primary care patients in Wales : results of a randomised controlled trial, 1–11.

Espeland, M. A., Glick, H. A., Bertoni, A., Brancati, F. L., Bray, G. A., Clark, J. M., … Ryan, D. H. (2014). Impact of an Intensive Lifestyle Intervention on Use and Cost of Medical Services Among Overweight and Obese Adults With Type 2 Diabetes : The Action for Health in Diabetes. *Diabetes Care*, *37*(September), 2548–2556. http://doi.org/10.2337/dc14-0093

Giles-corti, B., Sallis, J. F., & Sugiyama, T. (2015). Translating active living research into policy and practice : One important pathway to chronic disease prevention. *Journal of Public Health Policy*, *36*(January 2015), 231–243. http://doi.org/10.1057/jphp.2014.53

Hurley, M., Dickson, K., Walsh, N., Hauari, H., Grant, R., Stansfield, C., … Oliver, S. (2014). Exercise interventions and patient beliefs for people with chronic hip and knee pain: a mixed methods review (Review). *Cochrane Review (Draft Version: For Preview Only)*.

Hurley, M. V, Walsh, N. E., Mitchell, H. L., Pimm, T. J., Williamson, E., Jones, R. H., … E-mail, U. K. (2007). Economic Evaluation of a Rehabilitation Program Integrating Exercise , Self-Management , and Active Coping Strategies for Chronic Knee Pain. *Arthritis and Rheumatism (Arthritis Care and Research)*, *57*(7), 1220–1229. http://doi.org/10.1002/art.23011

Josefsson, T., Lindwall, M., & Archer, T. (2014). Physical exercise intervention in depressive disorders : Meta-analysis and systematic review. *Scandinavian Journal of Medicine and Science in Sports*, *24*, 259–272. http://doi.org/10.1111/sms.12050

Lang, R., Koegel, L. K., Ashbaugh, K., Regester, A., Ence, W., & Smith, W. (2010). Research in Autism Spectrum Disorders Physical exercise and individuals with autism spectrum disorders : A systematic review. *Research in Autism Spectrum Disorders*, *4*(4), 565–576. http://doi.org/10.1016/j.rasd.2010.01.006

Li, A., Mccabe, T., Silverstein, E., Dragan, S., Salbach, N. M., Zobeiry, M., … Brien, K. K. O. (2017). Community-Based Exercise in the Context of HIV : Factors to Consider when Developing and Implementing Community-Based Exercise Programs for People Living with HIV, *16*(3), 267–275. http://doi.org/10.1177/2325957416686836

Lipsett, A., Barrett, S., Haruna, F., Mustian, K., & Donovan, A. O. (2017). The impact of exercise during adjuvant radiotherapy for breast cancer on fatigue and quality of life : A systematic review and meta-analysis. *The Breast*, *32*, 144–155. http://doi.org/10.1016/j.breast.2017.02.002

Mohammed, A. J., Derom, E., Van, J., Silva, H. Da, & Calders, P. (2017). Evidence for aerobic exercise training on the autonomic function in patients with chronic obstructive pulmonary disease (COPD): a systematic review. *Physiotherapy*, *In press*. http://doi.org/10.1016/j.physio.2017.07.004

NHS. (2014). *Five Year Forward View*. Retrieved from https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf

Reiner, M., Niermann, C., Jekauc, D., & Woll, A. (2013). Long-term health benefits of physical activity – a systematic review of longitudinal studies. *BMC Public Health*, *13*(813), 1–9. http://doi.org/10.1186/1471-2458-13-813

Segal, R., Zwaal, C., Green, E., Tomasone, J. R., Loblaw, A., & Petrella, T. (2017). Exercise for people with cancer : a clinical practice guideline, *24*(1), 40–46. http://doi.org/10.3747/co.24.3376

Wu, Y., He, Q., Yin, X., He, Q., & Cao, S. (2014). Effect of individualized exercise during maintenance haemodialysis on exercise capacity and health-related quality of life in patients with uraemia, *42*(3), 718–727. http://doi.org/10.1177/0300060513509037

Yang, Z., Scott, C. A., Mao, C., Tang, J., & Farmer, A. J. (2013). Resistance Exercise Versus Aerobic Exercise for Type 2 Diabetes : A Systematic Review and Meta-Analysis. *Sports Medicine*, *17*. http://doi.org/10.1007/s40279-013-0128-8

APPENDIX

Survey content

Welcome to this short survey about services offered in leisure centres. You can find an information sheet about the survey here. The information you provide will help academic researchers developing exercise interventions for chronic health conditions to understand better the objectives of those involved with delivering exercise provision. We hope this will lead to more practical collaborations that improve public health.

The first few questions are regarding your consent to take part in this research, and are needed to ensure the study conforms to ethics requirements. The rest of the survey is in sections, with regular spaces for you to expand on your answers if you wish to. A progress bar at the top of the survey will show how far you are towards completing the survey. It should take around 10 minutes.

If you have any questions about the survey before you take part, please email Dr Rachel Hallett at r.hallett@sgul.kingston.ac.uk. Thank you very much for your help.

Consent Questions

I confirm that I am aged 18 or over

- ○ Yes (1)
- ○ No (2)

I confirm that I have read and understood the information sheet for this study (click here for link). I have been informed of the purpose, risks, and benefits of taking part.

- ○ Yes (1)
- ○ No (2)

I understand what my involvement will entail and any questions have been answered to my satisfaction.

- ○ Yes (1)
- ○ No (2)

I understand that my participation is entirely voluntary, and that I can withdraw at any time without prejudice.

- ○ Yes (1)
- ○ No (2)

I understand that all information obtained will be confidential with the exclusion of any information I disclose relating to illegal activities I have undertaken.

- ○ Yes (1)
- ○ No (2)

I agree that research data gathered for the study may be published provided that I cannot be identified as a subject.

- ○ Yes (1)
- ○ No (2)

Contact information has been provided should I (a) wish to seek further information from the investigator at any time for purposes of clarification (b) wish to make a complaint (you may wish to open the link to the information sheet by pressing control and clicking here, and saving the information page).

- ○ Yes (1)
- ○ No (2)

I understand that by responding that I agree to these points constitutes granting my informed consent.

- ○ Yes (1)
- ○ No (2)

I consent to participate in this research.

- ○ Yes (1)
- ○ No (2)

If you would like to have the option to withdraw your data from the study, please type a memorable word or number in the space below as your unique identifier. If you decide to withdraw your data, please do so within 4 weeks of completing the survey, or findings may already have been circulated.

How would you describe your role?

- ○ I work mainly based in a leisure centre (1)
- ○ I am mainly office-based, not within a leisure centre (2)
- ○ Other (3) _____

My employer is...

- ○ A local authority (1)
- ○ A social enterprise providing leisure services (2)
- ○ I'm freelance (3)
- ○ Other (4) _____

How would you describe the area where the leisure centre(s) you are involved with are situated? You can choose more than one answer.

- [ ] The centre of a city or large town (1)
- [ ] The suburbs or outskirts of a city or large town (2)
- [ ] A smaller town or village in a mainly rural area (3)
- [ ] Other (please describe) (4) _____

In which area of the country are you based?

- ○ East Midlands (3)
- ○ East Anglia (5)
- ○ London/South East England (1)
- ○ North East England (10)
- ○ North West England (9)
- ○ Scotland (7)
- ○ South West England (2)
- ○ Wales (6)
- ○ West Midlands (4)
- ○ Yorkshire/Humberside (8)

With regard to what the leisure centre(s) offer(s), do you consider yourself...

- ○ An influencer (1)
- ○ A decision-maker (2)
- ○ To have no influence on or involvement with decisions (3)

Display This Question:
If With regard to what the leisure centre(s) offer(s), do you consider yourself... = A decision-maker

How much freedom to you have to implement what you'd like to do in your facility/facilities?

- ○ I have lots of freedom (1)
- ○ I have a moderate amount of freedom (2)
- ○ I am a bit constrained (3)
- ○ I am very constrained (4)

How much contact do you have with organisations outside your own, such as CCGs (Clinical Commissioning Groups), that may affect what you deliver within your service?

- ○ It is a substantial part of my role (1)
- ○ I have regular contact, but it is not the main part of my role (2)
- ○ I have occasional contact (3)
- ○ I am not involved with external organisations such as CCGs (4)
- ○ Other (5) _____

The next section is about money and budgets.

How much do you agree with the following statements?

Making a surplus or profit is a top priority.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Budgets increasingly need to stretch further.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

I know of extra funding streams that I might be able to tap into for delivering certain services.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Which of the following best represents your approach to surplus/profits with community health schemes e.g. provision for people with chronic health conditions?

- ○ We need to be making a profit or surplus (1)
- ○ We need to break even but surplus or profits aren't important (2)
- ○ We can run at a loss because there is a wider economic benefit to public health (3)
- ○ Other (4) _____

Please add any other comments on budgets here.

_____

The next section has questions relating to public health.

How much do you agree with the following statements?

Public health has a strong focus within my remit.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

I have increased my focus on public health in the last few years.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Being a community hub, where non-exercisers can meet socially, is an important role for leisure centres.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

When we offer something specially for people who don't exercise regularly, it's difficult to let them know about it.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Please include any other comments on public health here.

_____

The next section is about the practicalities of offering new classes or schemes for chronic health conditions at leisure facilities.

How much do you agree with the following statements?

I would only consider a class or scheme for a chronic health condition if it already had a strong evidence base.

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

I would only consider a class or scheme for a chronic health condition if there was an established pathway (i.e. route by which participants were referred to or were recommended to try the scheme)

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

I would like to be involved in developing and testing new interventions for chronic health conditions to help create an evidence base. (Assume practicalities such as cost and staffing are covered).

- ○ Strongly agree (1)
- ○ Somewhat agree (2)
- ○ Neither agree nor disagree (3)
- ○ Somewhat disagree (4)
- ○ Strongly disagree (5)

Have you run classes or schemes for chronic health conditions?

- ○ Yes, we are currently running something (1)
- ○ Yes, we have run things in the past (2)
- ○ No, but we have plans to (3)
- ○ No, and there are no current plans to (4)

How much do you agree with the following statements relating to delivering classes/schemes for chronic health conditions?

	Agree strongly (1)	Agree somewhat (2)	Neither agree nor disagree (3)	Disagree somewhat (4)	Disagree strongly (5)	Not applicable (6)
It's a lot of extra work (1)	○	○	○	○	○	○
Staff enjoy being involved with delivery (2)	○	○	○	○	○	○
Staff appreciate the extra training to deliver schemes (3)	○	○	○	○	○	○
Evaluating the schemes is difficult (4)	○	○	○	○	○	○
We get a lot of support to do this kind of thing (5)	○	○	○	○	○	○
Running these schemes gives us a competitive edge (6)	○	○	○	○	○	○
Extra schemes can leave other activities short-staffed (7)	○	○	○	○	○	○
Staff training for new schemes can be prohibitively expensive (8)	○	○	○	○	○	○

Please add any additional comments about running schemes for chronic health conditions below (NB: the next section covers collaborating with academic researchers).

_____

This section asks questions about collaborating with researchers from universities to develop, apply and evaluate exercise classes and schemes for people with chronic health conditions.

Have you had involvement with researchers from a university delivering an intervention for a chronic health condition?

- ○ Yes, this happens regularly (1)
- ○ Yes, once or twice (2)
- ○ Not sure (3)
- ○ No (4)

Display This Question:If Have you had involvement with researchers from a university delivering an intervention for a chro... = Yes, this happens regularly Or Have you had involvement with researchers from a university delivering an intervention for a chro... = Yes, once or twice

How much do you agree with the following statements regarding collaboration with academic researchers?

	Agree strongly (1)	Agree somewhat (2)	Neither agree nor disagree (3)	Disagree somewhat (4)	Disagree strongly (5)	Not sure (6)	Not applicable (7)
Overall, it's a good thing for our facility/facilities (1)	○	○	○	○	○	○	○
It involves a lot of extra work (2)	○	○	○	○	○	○	○
It helps cover costs of trying new things (3)	○	○	○	○	○	○	○
It takes some of the evaluation workload away (4)	○	○	○	○	○	○	○
It helps us stay up to date with new developments (5)	○	○	○	○	○	○	○
I usually leave the researcher(s) to get on with it (6)	○	○	○	○	○	○	○
I like to have plenty of involvement with the research project (7)	○	○	○	○	○	○	○
The researchers I've worked with have good knowledge of the practicalities of delivery (8)	○	○	○	○	○	○	○
Researchers' interests have been well-matched with leisure sector needs (9)	○	○	○	○	○	○	○
I've been able to access research reports easily when I've needed to (10)	○	○	○	○	○	○	○
Researchers underestimate fitness instructors' level of expertise (11)	○	○	○	○	○	○	○

Researchers should make more effort to engage with the leisure industry (12)	○	○	○	○	○	○	○

Display This Question: If Have you had involvement with researchers from a university delivering an intervention for a chro... = Not sure Or Have you had involvement with researchers from a university delivering an intervention for a chro... = No

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	Agree strongly (1)	Agree somewhat (2)	Neither agree nor disagree (3)	Disagree somewhat (4)	Disagree strongly (5)	Not sure (6)	Not applicable (7)
I would like to collaborate with researchers developing exercise interventions for health conditions (1)	○	○	○	○	○	○	○
I would be concerned about extra workload that collaborating with researchers could generate (2)	○	○	○	○	○	○	○
I would like researchers to help us evaluate our schemes. (3)	○	○	○	○	○	○	○
I would like researchers to keep me and my colleagues updated with new developments (4)	○	○	○	○	○	○	○
The leisure industry should be working more closely with researchers developing new ideas (5)	○	○	○	○	○	○	○
I know who to contact if I want to collaborate with researchers on projects (6)	○	○	○	○	○	○	○
Researchers should make more effort to engage with the leisure industry (7)	○	○	○	○	○	○	○
Researchers don't understand the practicalities of delivering the ideas they suggest (8)	○	○	○	○	○	○	○

Reports on research need to be more accessible (9)	○ ○ ○ ○ ○ ○ ○

This survey is part of a project to help researchers developing exercise interventions for chronic conditions better understand the needs and priorities in community-based exercise provision. Please use the space below for comments regarding your experiences and what you feel could be improved

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Could you help out further?

If you might be willing to take part in a 30 minute phone interview to explore the survey findings in more depth, please enter your email below. You are under no obligation to take part if you subsequently decide you'd rather not. Full information will be provided before any interview takes place, and you will not be identified in any publications or communications about the research.

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Clicking on the forward arrow will submit your answers.