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## Understanding physical activity facilitators and barriers during and following a supervised exercise programme in Type 2 diabetes: a qualitative study

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### Abstract

**Aims** To assess barriers and facilitators of participation in a supervised exercise programme, and adherence to exercise after programme completion.

**Methods** Focus group discussions addressed factors which could facilitate attendance, current engagement in exercise, reasons for continuing or discontinuing regular exercise and ways to integrate exercise into daily life. Three focus groups, with a total of 16 participants, were led by a trained moderator; audiotapes were transcribed verbatim; transcripts were coded and themes were identified. Themes that recurred across all three focus groups were considered to have achieved saturation.

**Results** Motivation was the most critical factor in exercising both during and following the programme. Participants appreciated the monitoring, encouragement and accountability provided by programme staff. They voiced a need for better transition to post-programme realities of less support and supervision. Co-morbid conditions were apt to derail them from a regular exercise routine. They viewed the optimal programme as having even greater scheduling flexibility and being closer to them geographically. Post-programme, walking emerged as the most frequent form of physical activity.

**Conclusions** Adults with Type 2 diabetes require long-term monitoring and support for physical activity and exercise.

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**Keywords** diabetes, exercise

**Abbreviation** CHIP, Comprehensive Health Improvement Programme

### Introduction

Supervised exercise programmes improve glycaemic [1–3] and blood pressure [3–5] control, but attendance at these programmes is often less than optimal [4]. Furthermore, although post-programme adherence to exercise recommendations has not, to our knowledge, been specifically examined in diabetes, fewer than 50% of participants exercised regularly at 1-year follow-up among both adults with chronic pulmonary disease [6] and women with established cardiovascular disease [7]. We report here a focus group-based assessment of physical activity and exercise barriers and facilitators during and following a supervised exercise programme in

overweight adults with Type 2 diabetes. To our knowledge, no previous study has used a qualitative research approach to specifically address exercise facilitators and barriers in Type 2 diabetes both during and following a supervised exercise programme.

### Patients and methods

#### Participants

Participants had engaged in a supervised exercise programme through our previous trial [4] comparing the effect of dietary counselling alone with exercise on weight and cardiovascular risk factors. During the trial, exercise programme participation did not enhance weight loss or glycaemic control but significantly improved blood pressure control and fitness [4]. Those randomized to dietary counselling alone were offered enrolment in a supervised exercise programme following the trial.

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Among the 42 trial participants, those who had completed the final assessment and participated in at least one exercise class, either during or following the clinical trial, were invited by telephone to participate in a focus group discussion (18 months after the trial). Three possible dates were provided and \$15 (Canadian) was offered to offset travel costs. Protocols of the original clinical trial and the present focus group-based study were approved by the Institutional Review Board of McGill University. Among the 32 trial participants invited, 16 attended focus group discussions.

### Supervised exercise programme

Exercise sessions were held at a cardiac rehabilitation centre (McGill Comprehensive Health Improvement Programme; CHIP) with small groups of six to 10 individuals under the supervision of an exercise physiologist. During the 60-min sessions, participants stretched (15 min) and exercised (45 min, treadmills, stationary bicycles, cross-trainers), wearing a polar heart rate monitor. An exercise physiologist ensured they remained within their pre-established target zone (65–85% of maximum heart rate achieved during baseline exercise stress testing). Sessions occurred three times each week during weeks 1–8; twice per week during weeks 9–16; and once weekly during weeks 17–24. As the number of supervised sessions was reduced, participants were instructed to replace these with independent exercise.

### Materials

The semi-structured interview guide included: (i) a brief introduction; (ii) ground rules for the discussion; and (iii) five questions to structure the discussion (Table 1).

### Focus group sessions

Focus group sessions were facilitated by a health research clinical psychologist (MDC). A co-facilitator (Christopher Mill) tracked verbal/non-verbal communication. To inform participants of the key results of the previous clinical trial and to focus the discussion on exercise facilitators/barriers, participants were shown a slide that illustrated study outcomes for those who had attended the programme 75% of the time. Each question was discussed for approximately 15 min. Sessions were audio-taped and subsequently transcribed verbatim by a research secretary.

**Table 1** Focus group questions

1. How would you explain the finding that some patients were not able to attend at least 75% of the sessions?
2. From your experience with the exercise programme, what might have facilitated attending at least 75% of the sessions?
3. What types of exercise are you presently doing?
4. Why have you decided to continue (or stop) exercising?
5. How have you managed to integrate exercising in your daily life?

### Focus group data analysis

Transcripts were manually coded and cross-verified (MDC and DC) using standard methods [8]. Neither coder (MDC or DC) was involved in the original trial. Analyses were data driven [9]. Transcripts were read and annotated using the co-facilitator's notes and reread to annotate key items. Text responses were coded according to which questions they addressed and reviewed through a continuous process of comparing text segments across the groups, seeking similar or repeated ideas. Coders then met to arrive at a consensus regarding initial coding. Disagreements were resolved by review of coded text segments and discussion. The final step involved conceptualizing the broader ideas that emerged from the transcript coding as themes. Specific quotations were extracted to illustrate the themes identified and are given below. The coding of these themes was open [10]. Themes consistent across all three groups were classified as having achieved saturation.

### Results

Of 32 participants invited, 18 agreed to participate in a focus group and, of these, 16 actually presented for a focus group session (two ultimately reported scheduling conflicts). Reasons for non participation included physical ailments (three), lack of time (four), lack of interest (one) or were unspecified (six). Of the 16 focus group participants, eight had been randomized originally to the dietary counselling plus supervised exercise group and eight to the dietary counselling alone group. Seven were women; mean age was 52.5 years (range 39–65 years); and diabetes duration was approximately 3.5 years (0.17–13 years). Six were professionals. One was a smoker and two had a previous history of cardiovascular disease. Demographic characteristics were generally similar to those described previously for trial participants [4]. The number of participants in each focus group was similar (six in group 1; five in groups 2 and 3). Focus group sessions were held in December 2006 and January 2007.

#### Theme 1: individual motivation (responses to questions 1, 2 and 4)

Participants underscored the importance of motivation and the difficulty they found in sustaining motivation both during and after programme completion:

'...my attendance dropped in the last month or two, and I think my motivation went down a little bit cause I had really good results, but I just had a really hard time keeping up the motivation to exercise all the time.'

For some, tangible health benefits were important motivators:

'...results, results, feeling better you know... mentally and physically, both.' AND 'I continue my exercise because I have to lose a lot of weight, and I see a lot of results.' AND 'I haven't lost that much pounds up to now, but I have found that continuing the exercising

I feel lighter and more fit. I am conditioned now.' AND 'And then even after I started getting sleep apnea, what made me start again was the only thing that could control my blood sugar.'

Staying off certain diabetes medication was also an incentive:

'Not being on medication was a stronger incentive than having a better wardrobe...' AND '...One doctor told me that I have to exercise. He checked my results and he said "I'll give you more pills if you don't exercise".' AND 'I'm kind of on a mission now to exercise because the doctor tells me she is going to put me on insulin if I don't exercise.'

However, for many participants awareness was not sufficient:

'General knowledge of the area, consciousness is not enough' AND '...When I check my blood, I see the difference if you don't exercise so you know it's an investment that I am making on that part of my life... The only thing is my motivation... not there all the time.' AND 'Well I know I am in denial. I know all the facts...'

Even close personal experience of the often severe negative outcomes of poorly controlled diabetes is not enough to motivate some people to do things differently:

'My brother was diabetic, and had his leg amputated. I mean I should be like... hum... But some reason I am not!' AND 'I hear you my sister is diabetic, and she is on insulin, and my brother is diabetic...'

### **Theme 2: the importance of supervision/support in exercise programme participation (responses to questions 1 and 2)**

Participants described how having someone sit and watch them through the exercises provided the encouragement they needed to attend the sessions and successfully complete a routine:

'I needed them... they sat there and they watched, and they went and they checked you and they motivated me...' AND 'She was so nice, and she said, "let's go, let's go you can", because I never did exercise before and I thought I would never do it, and she always pushed me to doing it.' AND 'When somebody is looking at us... for me, I tell you the supervision and the exercise. The supervision is key.' AND 'That is why I liked the programme. You had to show because it was supervised. I had to come...'

Participants also described how they felt that programme staff truly cared about them to the point that some would even push themselves to show the staff how much they appreciated their support:

'I think it's just rewarding to have somebody follow me and teach me things that I didn't know, and I worked around my work schedule so that I would be there because I know that there are people that are taking their time to show us things, they are willing to do it, and it was beneficial to me.'

They equally mentioned the significance of having professionals to turn to for support:

'When you are first diagnosed with diabetes it's pretty scary, and to have all the support that was a real comfort.'

Participants also described how difficult it was to continue exercising in the absence of supervision after programme completion:

'Going on into this rhythm, which when you are out of this programme and you are on your own. AH! Do I feel like going? I don't feel like going! I'll go tomorrow, and then tomorrow never comes. Actually, (the programme) gave you discipline'.

### **Theme 3: difficulty of transitioning (responses to questions 1, 2 and 4)**

Participants explained how public gyms do not have the expertise to accommodate their needs:

'They (public gym) wanted me to get on a ball system. I got stenosis and I gave them a definition of stenosis. There is no physical check-up. Nothing. It's selling membership, and that's not what we need...' AND 'I had a lot of trouble going from CHIP which was to me class A programme and being dumped... to find yourself in another place...'

They further added that moving from a supervised programme into public programmes was discouraging because they did not have a trained professional to follow them, encourage them along as well as reassure them that they were doing the right thing:

'I joined the Y and it wasn't the same thing. After 6 months, I said you know what it's boring... the biggest factor what I found that I needed someone there you know...'

Some participants spoke about the fear of being left alone and not knowing where or who to turn to in order to keep with an exercise programme:

'When you walk out of this (CHIP), I'm really afraid of what is going to happen. When I get out of here... over the long term, I'm afraid all this is going to be undone. I just realized that it happened and it wasn't on purpose.'

Participants discussed the importance of giving thought to the sustainability of such programmes (CHIP):

'I saw what the CHIP programme and the disciplines that they had instilled in me accomplished. I got my weight down. Unfortunately, when the programme stopped, I said where do I go from here?'

Although there were some participants who were able to continue with the support of family or friends, others felt that they were left on their own. They suggested that patients in supervised programmes might therefore benefit from a transition component that shows them how to manage their lives while maintaining an exercise programme:

'Maybe we should have some follow-up every 3 months or every 6 months... for a meeting or even to know where we end up and what's the results you know.'

Participants also added that an additional benefit would be for the developers of such supervised programmes (CHIP) to do some preliminary work in recommending public gyms:

'CHIP should have a package programme... at least being able to say to people like us... ok we're going to show you what you have to do. We're going to check you out and then after that, we're going to give you some place that you can go to that we approved of how they operate. And you are going to be allowed if you want to call one of our trainers to update your programme...'

#### Theme 4: derailment of exercise participation (responses to questions 1 and 4)

Participants noted that health concerns not related to their diabetes often impeded them:

'I have discovered... I was suffering or probably have been suffering from sleep apnea...' AND 'I have difficulty... you know my knees...' AND 'I just didn't want to go there because I had a big cold and I just wanted to go to bed. That was the main reason why sometimes I didn't go.' AND 'I have rheumatoid arthritis. I have pain 24/7 in my arms and in my legs, in my lower back. So the day that I am off (from work), I just want to rest...' AND 'They found a tumour in my kidney and I started to worry, and this threw me off.'

Participants in two focus groups discussed how good weather encouraged their exercise behaviours:

'Last year I bought a dog, and I walk the dog. But since the winter, I really stopped walking the dog. During the summer, I walked a lot with the dog' AND 'In the winter, I figured I would go for walks from the mountain, but I am afraid of the ice... So basically the season is a problem for people... this winter is a problem.' AND 'I found that winter is the worst month for exercising... I can't do this all the time but during the summer months, I get out and do more. Don't you find you are more active? You do more.'

#### Theme 5: programme characteristics (responses to questions 1, 2 and 4)

Although participants acknowledged that no programme would be able to accommodate everyone, juggling competing responsibilities such as work and family was noted to be a barrier: 'It had to be work with me definitely... I think the last one was 6 to 7 or 5 to 6.' AND 'I have my own business also and sometimes I could not go because I'm busy. I have to prepare.' AND 'I worked the whole day... I was just really tired I could not make it, and I could not work on Saturday because they had different times.'

One participant made reference to lack of having a babysitter as limiting her participation:

'I think it was a question of timing. For my kids, I had no babysitter...'

Also worth noting is that some participants recognized how often patients place other responsibilities such as work before their health:

'...All of us seem to be so conscientious about work, our families, our obligations to others that we put our health secondary.'

Other participants noted that being part of the CHIP programme gave them a reason to become organized around managing competing responsibilities (family and work). Once the programme came to an end, however, they seemed to give up:

'Why I stopped? Fatigue, the crazy race, the work, the supper to prepare, the kids, the wash... I do have a husband that helps me a lot... but I don't want to go anywhere. But I would stop when I was going to the CHIP programme. I would go and all the other stuff could wait or my husband would take over. I would take time to deal with the other stuff.'

Some participants mentioned the importance of not having easy access to the programme site:

'There was a bus strike and it did affect a lot of participants... it did affect me one day because I didn't have access, my husband wasn't able to bring me.' AND 'Maybe for somebody that lives very far away you know, asking them to come all the way from the East end to come to these sessions.'

Participants also discussed how the programme schedule made it at times difficult to adjust with their own routine:

'Part of the problem was finding time to eat.' AND 'When mine were in the afternoon, I wasn't mentally available as I was in the morning.'

For others, diversity of physical activities (or lack thereof) proved to be a barrier:

'I have never been on a treadmill, and I was the treadmill for 6 months, and that was really boring. I was on the treadmill maybe too long.' AND 'I would have preferred a few more variety in exercise.'

They indicated flexible schedules:

'I guess the number one facilitator would be flexibility in session hours...'

and having more than one site offering the exercise programme:

'I guess if they offered the programme in the East... if they were able to move it around... to have more mobility...'

#### Theme 6: walking (responses to questions 3 and 5)

Walking was one activity that most participants endorsed, either as part of a planned exercise programme, a leisure activity, or a means of transportation:

'I go to the Multi Sports and I do 40 min of walking.' AND 'I do a lot of walking.' AND 'I got a dog, and walk it twice a day, but it's not like power walk like it should be.'

Walking was often easily integrated into people's day-to-day lives:

'I have to get my exercise done during the day so what I have been doing now on my lunch hour, I eat my lunch and then I go for a walk for half an hour...' AND 'We took a cruise and I walked a kilometer around the boat every morning...' AND 'I gave up my car after my first session (referring to CHIP programme). I take taxis in the winter, but I walk 6 blocks to catch a cab.' AND 'I still walk for instance if I have to go grocery shopping. I don't take the car or the bus. I'll go walking and make it delivery.'

## Discussion

In adults with Type 2 diabetes who participated in a supervised exercise programme, motivation was the most critical factor in exercising both during and following the programme. The aspect of the programme most appreciated was the monitoring, encouragement and accountability provided by programme staff. Participants voiced a need for better transition to post-

programme realities, which often include less support and supervision. Co-morbid conditions were apt to derail participants from a regular exercise routine. Participants' viewed the optimal programme as having even greater scheduling flexibility and being closer to them geographically. Walking emerged as the most frequent form of physical activity following the completion of the programme.

Three previous studies using qualitative methods to assess facilitators/barriers to exercise in adults with Type 2 diabetes focused on particular ethnocultural groups [11–13]. Participants in these studies did not have experience with a supervised exercise programme, but some of the issues that emerged from these studies were similar to those that we identified. Specifically, exercise barriers identified included co-morbidities; time constraints [11,12]; inclement weather [11]; and absence of support/supervision [13]. Other themes reported in previous studies which did not emerge in our analysis were family support as a facilitator [12] as well as barriers such as unsafe neighbourhoods [12] and cultural expectations (e.g. restrictions on women entering mixed-sex settings) [11].

Prochaska's transtheoretical model (TTM) [14] conceptualizes healthy behaviour adoption as occurring through the stages of pre-contemplation, contemplation, preparation, action and maintenance. Shifts between stages occur when the individual engages in a personal assessment of the pros and cons of change (decisional balance) and feels confident in his/her ability to change (self-efficacy). While decisional balance may have favourably impacted on some participants, self-efficacy as measured by the Diabetes Empowerment Scale appeared to decrease post-intervention in participants of the original clinical trial [4,15], perhaps because participants became more aware of the challenges of sustaining regular exercise. This issue is echoed in our focus group analyses wherein loss of support after programme completion was one of the most important factors identified by participants in their failure to continue exercise. The use of a 'buddy system' was suggested as a way to maintain motivation over time, an idea that has been described in diabetic patients [12], people at risk of diabetes [16] and non-diabetic groups [17]. One of the respondents suggested programme links with existing community resources for exercise to smooth the transition to post-programme realities.

Consistent with other studies [11–13,18], walking was the most common physical activity identified post-programme. Tudor-Locke's First-Step programme [19] seeks to increase walking in adults with Type 2 diabetes through group meetings and pedometer-based self-monitoring. In a trial testing this intervention, the intervention arm substantially increased walking volume at 16 weeks, but this was not sustained at 24 weeks. Moreover, there was a decline in self-monitoring following the last group meeting, suggesting that even walking programme participants require ongoing support.

Our study would have been strengthened by a larger number of focus groups to allow other barriers and facilitators to emerge. Although one could argue that the 18-month

period between trial completion and focus group participation may have resulted in reduced recall of programme experiences, it undoubtedly allowed for a more realistic picture of factors influencing exercise maintenance after programme completion.

Despite these limitations, our analysis clearly demonstrates that motivating adults with Type 2 diabetes to remain physically active requires ongoing monitoring and encouragement. There is a need to make the transition from supervised programmes to self-directed activities smoother and more effective. More research is needed to address the limitations of walking-based programmes. Healthcare providers may be well placed to review pedometer-based self-monitoring records and to encourage patients to seek support in maintaining their exercise behaviours. Beyond the clinician–patient relationship, creating opportunities for walking through public policy and urban planning efforts will be critical to support clinic-based efforts to reduce complications in those with Type 2 diabetes and ultimately prevent Type 2 diabetes.

## Competing interests

Nothing to declare.

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