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A mixed methods study of the development of a combined group and individual format of Alexander Technique lessons for low back pain.

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A mixed methods study of the development of a combined group and individual format of Alexander Technique lessons for low back pain.

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Abstract

Objective: To develop and explore the acceptability of a mixed course of individual (1:1) and group lessons in the Alexander Technique (AT) for low back pain.

Design: Single centre study, mixed methods.

Setting: Members of the public in the Brighton area, (community recruitment) and patients from 6 Hampshire GP practices (NHS recruitment).

Participants: People with chronic or recurrent low back pain.

Interventions: Iterative development of a course of 10 AT lessons (6 group, 4 individual).

Outcomes. Semi-structured interviews with patients and AT teachers analysed using inductive thematic analysis. Descriptive analysis of RMDQ (Roland Morris Disability Questionnaire), Days in Pain and Days Interference with normal activities during the last week, all measured over 12 weeks.

Results: Thirty nine participants with low back pain were included (24 community recruitment, 15 NHS). Some participants had reservations, preferring only individual lessons, but the majority found the sharing of experience and learning in groups helpful. There was also concern regarding group teaching amongst some AT teachers but having tried the course, most also found it acceptable. Overall RMDQ score among participants fell from 10.38 to 4.39 a change of -5.99 (community -6.98; NHS -4.49) by 12 weeks. 29/39 (74%) of participants had a clinically important reduction in RMDQ score of 2.5 or more.

Conclusion: Some patients and practitioners had reservations about group AT lessons, but most found groups helpful. Further development is needed, but the course of individual and group lessons has the potential to provide clinically important benefits efficiently among patients known to improve little and slowly.

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Strengths and Limitations of this study

Strengths

- Iterative preliminary development of a novel course of mixed individual and group lessons of the Alexander Technique (AT)
- Similar inclusion criteria to previous studies of AT to permit some comparisons
- Use of mixed methods to gain insights into the key perceptions and issues of acceptability for the course

Limitations

- Preliminary descriptive data from a sample allowing historical comparisons but no concurrent controls

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Introduction

Back pain has an estimated lifetime prevalence of 59% to 90% with an annual incidence of around 5% of the population.[1] In the UK 12.5% of all sick days are related to low back disorders[2] and persistent or major recurrent back pain has a poor long term prognosis.[3] Alexander Technique(AT) is included in the NICE systematic review section on self-management as a postural therapy[4]: AT aims to correct posture and upright support mechanisms through increasing a subjects awareness of their harmful habits of body use and allowing them to consciously move in a different way.[5] These mechanisms involve coordination of the trunk, head and limbs and motor control of postural muscles which are usually are operating poorly in individuals with chronic back pain[6-9]. In the ATEAM trial 6 lessons resulted in a 1.4 difference compared to usual care in the Roland Morris Disability Questionnaire (RMDQ), whereas the Minimum Clinically Important difference for the RMDQ is of the order of 2-2.5.[5;10] Longer courses of one to one lessons in the ATEAM trial were effective (RMDQ -3.4 compared to usual care) but not likely to be cost effective when compared with other options that utilise group environments such as physiotherapy.[5] Therefore, introducing AT group lessons alongside individual teaching may be a promising way to increase effectiveness without compromising cost efficiency.

There is no previously published research of group teaching of Alexander Technique for back pain. Group physiotherapy and acupuncture have been studied, and groups were not seen as inferior to individual treatment by participants. [11;16] The perception of group solidarity and common struggle with illness was valued by participants in both group physiotherapy and other group interventions including acupuncture and group exercise trials.[11-16;18] In the group environment participants also have the opportunity to share tips and advice with one another with utility in this process. [16;18] However, participants may not benefit from the social aspect of group lessons due to the severity of their own physical or mental state. [12] It is also possible that where disruptive individuals are present or participants do not get on with one another the group environment will be of diminished value. [16]

Understanding and addressing potential barriers to uptake and implementation is essential for developing a new intervention. In particular, there are not only issues for participants in engaging with AT group lessons, but for AT teachers there may be important barriers [17] as Alexander Technique is traditionally delivered as a longer 1:1 intervention. We report the qualitative and quantitative results from the preliminary development of a mixed course of group and individual lessons of Alexander Technique.

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Methods

Overall study design

This was a mixed methods study. Qualitative work was nested in the development and preliminary testing of the intervention. We chose an uncontrolled before and after design for the quantitative data since we have good data from two previous studies[5;20] that for this population there is only a modest improvement in control groups over the medium or longer term.

Development of the intervention.

The groups sessions included some hands on work with each participant, during which the teacher explained to the group what she/he was doing. Each participant was also given a book explaining AT to read in their own time (*Body*, *Breath and Being;* ISBN: 8601416773865), and mp3 talks developed by CN to explain aspects of the technique. Participants were encouraged to practice AT techniques in between lessons.

The first group course consisted of 8 participants taught by two teachers (one primary the other assisting). Two initial group lessons (90 minutes each) were followed by alternating individual lessons (40 minutes) and group lessons.

Based on the experience of teaching this course the format was altered for all subsequent courses: group lessons were made shorter (60 minutes) since participants struggled to concentrate 90 minutes; to reduce initial misunderstandings in group lessons the course started with individuals lessons; and group size was also reduced (4-6 participants) and groups were taught by a single teacher both to improve efficiency and avoid logistic difficulties of coordinating two teachers. See Appendix A.

Participants and recruitment

People with low back pain

Two primary pathways were used to recruit participants - community recruitment and NHS recruitment. Community sample: We used local paper advertisements, fliers placed in public places (e.g. community centres) and direct referral by study AT teachers in the Brighton area. NHS Recruitment**:** GP practices wrote to a random selection of patients who had seen the GP for back pain during the last 5 years. Potential participants were screened for eligibility by the trial manager and offered a place on the next available group course.

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Eligibility criteria:

Inclusion criteria: Aged 18-65; Ability to understand English (since outcomes validated in English); chronic or recurrent back pain (at least one previous episode recorded on GP electronic records; current episode at least 3 weeks in duration); and RMDQ score of 4 or more.

Exclusion criteria: Previous lessons in AT; Unable to reliably answer outcome questions (e.g. severe and unstable mental illness, dementia or learning difficulty); unable to sit down due to pain; pregnancy; age over 65 (major pathology more likely); current nerve root pain below the knee (sciatica); previous spinal surgery or planned major surgery; pending litigation for back pain; terminal illness; and any 'red flag' criteria suggesting sinister pathology.

Alexander technique teachers:

We emailed the UK database of teachers in the Society of Teachers of the Alexander Technique (STAT) to recruit volunteer teachers for qualitative interviews about the issues surrounding group teaching.

7 additional teachers who were STAT members local to the Southampton study centre or the Brighton Alexander Technique College were recruited to deliver the intervention.

Data collection:

All participants completed a questionnaire at baseline and at 3 months (final follow-up) including basic demographic information; Health-related quality of life (EQ-5D)[21]; Roland Morris Disability Questionnaire (RMDQ)[22]; Days in pain[23] and Days interference with activity over past week; overall improvement[24];modified enablement scale[25] ; and information regarding current/recent medication and treatment. Participants also completed a short weekly questionnaire prior to each lesson comprised of only our primary feasibility outcomes: RMDQ, Days in Pain, Days interference. The RMDQ was chosen as it is a standardized outcome measure for low back pain included in the COMET initiative.[26] Days in pain and days interference in normal activities were chosen in addition to the RMDQ as these were all used in the ATEAM and ASPEN studies[5;20] . Near the end of their course participants were also asked to take part in semi-structured qualitative telephone interviews about their experience of AT and of learning in a group format. Open ended prompts were used and adapted as the interviews progressed where new issues were identified. Interviews were transcribed verbatim before analysis.

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Analysis

Quantitative Analysis:

Descriptive statistics including means and standard deviations used to describe pre -post scores, and changes during the course for the primary outcomes (RMDQ, Days in pain, Day interference).

Qualitative Analysis:

The transcripts were coded and analysed using inductive thematic analysis.[19] JL led on the qualitative analysis, working closely with AG. JL conducted all interviews and read and reread the transcripts. Through initial coding an early coding frame was developed and discussed in detail with AG. Following agreement, the rest of the data were coded. From these codes, higher order themes were developed, drawing on frequent discussion between JL and AG. When themes had been developed they were discussed and agreed with the full group including PL and CN. This process was followed for both the participants with low back pain and for the AT teachers.

PPI input

JM and NG provided input to the initial development of the intervention, the protocol, patient materials, and study documents.

Results:

Forty-nine people with back pain were recruited.

Community recruitment: Between 01/04/2016 and 12/04/2017, we screened 34 volunteers; 27 were eligible, and 26 recruited. One participant withdrew before their course started. The remaining 25 participants attended one of 5 group courses (between 03/05/2016 and 26/06/2017).

NHS recruitment: 6 GP practices recruited participants between 24/10/2017 and 09/05/2018. 729 invitations were sent with 141 replies:

A) Interested and Eligible on the RMDQ: **60**

B) Interested but not Eligible on the RMDQ: **26**

C) Not interested: **55**

43 patients were screened; 26 were eligible and 23 agreed to participate.

Of those 23, 8 withdrew prior to commencing their group course; either due to the timing of their response to the invitation or the timing of the course dates themselves. The size of this study meant

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3 that we had no alternative courses to offer. 15 participants attended one of four group courses
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5 between 01/01/2018 and 25/06/2018.
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7 One participant was also found to be ineligible after initial screening (their initial responses were
8
9 incorrect) and so their data has not been included.
10
11 *Quantitative findings*
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13
14 Most participants were female (75%), in employment (70%), married or living with a partner (65%),
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16 and had a range of educational levels (Table 1).
17
18 [Insert Table 1 here]
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21
22 Follow-up for the primary outcome (RMDQ) was documented in 31/39 (79.5%) participants who
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24 were active at baseline for the weekly data prior to lessons and 30/39 (76.9%) for the final follow-up
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26 questionnaire at 12 weeks.
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28 [Insert table 2 here]
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32
33 Overall RMDQ Score fell from 10.38 to 4.39 a change of -5.99 (community -6.98; NHS -4.49) by 12
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35 weeks. Overall 29/39 (74%) of participants had a reduction in RMDQ score of 2.5 or more;
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37 community volunteer recruitment 17/24 (71%) and NHS recruitment 11/15 (73%). For the data
38
39 collected at each lesson there was an overall consistent downward trend in RMDQ scores across
40
41 recruitment groups **(see figure 1 and table 2)**
42
43 Overall mean days in pain fell from 5.56 to 3.20(-2.36: community -2.31; NHS -2.47) with a consistent
44
45 downward trend in days in pain throughout the course. **(see table 2)**
46
47 Mean days interference in normal activities fell from 1.64 to 0.74 a change of -0.95 (community -
48
49 1.20 overall change; NHS -0.41), with an overall downward trend across the weeks (**see table 2**).
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51 [insert figure 1]
52
53 *AT Teacher Interviews*
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55 Our email was sent to 816 STAT members of whom 29 initially volunteered to be interviewed, and
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57 25 consented and were interviewed. We also interviewed the 7 teachers who taught group courses
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59 as part of the current study. Characteristics and group teaching experience can be seen below in
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table 3.

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[Insert Table 3 here]

All teachers who volunteered had at least some group teaching experience (whether AT or non-AT) although it was made clear in our initial email that this was not necessary for inclusion in the interviews. The sample is also predominantly female although this may be as a result of the overall gender distribution in the profession.

Low back pain participant interviews

A total of 32 participants were interviewed, 21 from the community recruitment phase and 11 from the NHS recruitment phase. The majority of participants interviewed were female, married or living with a partner and from a wide educational background.

[Insert table 4 here]

Qualitative findings

We developed three central themes regarding attitudes to group AT teaching. Of these, two originate from both AT teacher and participant interviews. The third originates from AT teachers alone.

1) *Group Teaching is Better than No Teaching*

The perception that some access to AT was better than no access was prevalent amongst the teachers. Teachers tended to take the view that although group teaching is not as optimal as private lessons in terms of depth of learning or rate of progression, it still has some merit as in practice many people will not have the money or interest in attending a course of private lessons.

Group teaching was seen as good for providing students with a theoretical introduction to the technique and effective when focused on imparting some basic AT skills to students (particularly semi supine) as well as practical everyday advice about body use.

> *T05 "I'd really stress that actually, actually group work isn't necessarily the best way, but at the same time, with the groups I've found, I have found people have had benefits very quickly."*

This is echoed in the participant interviews. Some participants expressed a preference for individual lessons - and a small number would have opted for a course of pure individual lessons if possible. Regardless, these participants had an overall positive experience of the course and some raised the

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fact that they understood costing was an issue therefore were willing to accept the inclusion of group lessons in practice.

> *GREAT46: "Um, no, no, I thought they were excellent. I mean, if, if it was my first choice I'd say all private lessons, but I think for more people to have the treatment more quickly maybe, then the combination is probably really good... Yeah, because that would, you know, we wouldn't want to delay other people having the course."*

2) Group teaching is valuable and has different strengths to individual teaching.

This view was also prevalent amongst teachers and there was some significant cross over with the 'Group Teaching is Better than No Teaching' theme; many teachers held that although private lessons might be superior in the final analysis group teaching still has its own strengths.

Generally, those who expressed this attitude see group teaching and individual teaching as each having their own strengths and weaknesses. Some would go as far as to saying that group and individual teaching are not directly comparable and therefore the best approach in any given case is a matter of which is best suited to an individual student. It is worth noting however that most of the teachers who held this attitude would still recommend that students have at least some private instruction alongside group lessons.

> *T026: "I've changed my mind about it. I think you can teach a lot in a group session... ...even [compared] to individual and what the feedback I get from the people from the groups, they - you know, some of them, they have been actually able to explore the technique even in more depth"*

This was mirrored in the participant interviews with a majority expressing views akin to this. These participants tended to value the group support and solidarity highly and liked having the opportunity to share experiences and problems with the group. They valued the dual learning environments; focusing on their own specific problems in individual lessons and using group lessons as an opportunity to observe and interact with other participants and learn from one another's experiences.

> *GREAT15: "Yeah, I think the, the mix of having one-to-ones and also sort of group sessions is really um interesting as well. I really liked having, I benefited from obviously having the one-to-ones, but equally having that opportunity to share experiences with people was, I think, um invaluable actually"*

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Many of these participants felt that the balance between group and individual lessons was an ideal approach for them. However, others would have preferred a greater proportion of individual lessons as they found they learned more one to one. Despite their preference for individual lessons these participants did find the group lessons useful in ways that individual teaching alone would not have provided.

> *GREAT41: "Um, I preferred the one to one sessions, to be honest. But actually, the group sessions was good to… I mean, I, the thing is you're listening to everyone else's problems and issues, which is fine. Um, because it sort of, you pick up tips from other people, and how they've overcome it and things."*

Participants generally expressed an understanding that this was just a starting point for learning the Alexander Technique and that they could go into much more depth with further study.

> *GREAT12: "Because it, I do understand it and I think ten lessons probably is only scratching the surface. You know, I realise like probably I really should try and have another 10/20, but it's expensive and I'm not too sure that I will do that."*

3) Group teaching damages the AT profession.

A smaller but significant subsection of teachers interviewed expressed sympathy with this view. This attitude is partly supported by concern amongst these teachers that the current quality of AT group teaching present in the profession is very poor. Large groups of beginners in group lessons that have had no experience of private lessons is perceived to be common within the profession at this time.

These teachers see a great deal of danger in the propagation of group teaching. They tend to express the view that if people attend only group lessons they will not have learnt the technique to any practical degree of depth and will subsequently come away impression of the technique that is both substandard and false. As a result the reputation of the technique as a whole will suffer the more group teaching becomes popularized.

> *T24: "the teachers are so keen on it because they say something is better than nothing, but something isn't better than nothing. Driving around in a half maintained car isn't better than not driving."*

In fact some teachers would say that any attempt to teach people Alexander Technique in groups (at least exclusively) is a non-starter almost by definition. Alexander Technique has to be learnt in a one

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on one setting as it requires the constant physical attention of a teacher to achieve the kind of embodied learning needed for the technique to be effective.

T028 "It's just not the Alexander Technique [laughs]. If you've not got your hands on someone. I just don't' think we're giving them the full shilling, they're not, they're not, it, it's a compromise, put it that way."

Discussion

This study reports the initial development of a course of group and individual lessons for the Alexander Technique for back pain, and exploration of its acceptability among both patients and Alexander teachers .

Strengths and weaknesses

A strength of this study was the iterative development of this intervention based on feedback from teachers and participants. The inclusion criteria and key outcomes were very similar to previous RCT's of Alexander Technique (ATEAM + ASPEN) so that we can provisionally compare the findings to the previous trials. We have also shown the viability of two distinct recruitment pathways. Finally, we have used mixed methods to gain better insight regarding patients' and practitioners' views regarding acceptability of the intervention. The small sample size and preliminary format warrants some caution regarding quantitative outcomes. The study was also uncontrolled so we cannot exclude non-specific changes over time, but since we know from the ATEAM and ASPEN studies that participants with these inclusion critera improve very little over time, we can be cautiously confident the intervention has the potential to be effective.

The drop out rate pre-course start in the NHS recruitment group was higher than anticipated, but was very likely due to the lack of flexibility inherent in running a small feasibility study. We had no secondary course to offer if participants could not make the dates of the course in their area. We also had no replacement teachers immediately available that could be mobilised if a study teacher withdrew from the team - as one did causing a group cancellation. These issues would be remediable in a larger more flexible study – particularly with regards to flexibility around course dates available to participants.

The group teaching incorporated in this intervention should not be considered 'typical' within the AT profession at present – and a number of teachers interviewed remarked on this. The groups sessions

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included hands on work and the numbers were kept small enough for this to be manageable for teachers. The groups were also accompanied by required reading and mp3 talks - again most groups do not do that. Furthermore the course as a whole was designed by CN to be effective for back pain sufferers, although it is feasible for the course to be adapted for other musculoskeptal problems (knee, hip, or neck pain).

Qualitative findings

The reception of this intervention by participants was mostly positive – in many cases finding some advantages to individual teaching alone. However, there is some concern regarding group teaching amongst AT teachers. Much of the resistance to teaching AT group lessons from some teachers seems to come from the perception that group lessons cannot deliver adequate results and will therefore increasingly damage the reputation of the profession the more group teaching supplants individual teaching. The disagreement seems to be primarily about potential harm; if group teaching doesn't have negative effects on the profession as a whole then giving students something in group sessions as opposed to nothing is desirable (and vice versa). Therefore, if an intervention that incorporates group teaching can be shown to be effective this may change many teachers' perceptions - and the quantitative data from the current study suggests that is plausible. Furthermore, it is important to ensure that participants understand that application of AT is a skill to be actively used and developed over time rather than a treatment in the conventional passive sense.

There remains the potential challenge of teaching the course for teachers with limited previous experience teaching groups (this is not included in AT teachers training). This, and the negative perceptions of some teachers (see above), highlights the importance of developing robust training materials for the course.

Perceptions of overall utility comparing group vs. individual lessons from both teacher and patient interviews seem to cluster around the view that groups have benefits you don't get from individual lessons alone. However, if you have to choose only one format then individual lessons will be more effective overall. Teacher attitudes to a mixed intervention are much more positive than to group teaching in isolation - even with some enthusiasm for this approach. Interviews with participants also supported previous Qualitative research for group interventions.[11-16;18] Most prominent was the value participants placed on group solidarity and the potential for learning interactively by engaging with one another's experiences.

Quantitative findings

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The quantitative outcomes are promising. In both sets of patients (volunteer; NHS) there were substantial and clinically important improvements in RMDQ (respectively 6.17 and 5.2 reductions in RMDQ by 3 months). Since two previous trial data sets (ASPEN and ATEAM) document that this population improve little and slowly, the results suggest that the net effect over and above usual care (a reduction in 1 RMDQ score in the control group of the ATEAM study, and similar in the ASPEN study) is likely to be reductions in RMDQ of the order of 4-5.5 compared to usual care. Even allowing for the fact that initial studies can slightly over-estimate likely effect sizes it is plausible that the intervention could achieve the MCID for between group differences in a full trial. There were also reductions in days in pain reported in the previous week in both groups from 5-6 days per week at the beginning to 3 days per week by 12 weeks, and a reduction in days where normal activities were prevented from 1.64 days to 0.74 days per week.

Conclusion

Overall the qualitative analysis points towards acceptability for the most part amongst participants and AT teachers – although some maintain reservations. The quantitative data suggests that an intervention of this design could be a viable way of increasing effectiveness vs a short course without greatly increasing cost. Even based on the current data from the first version of this intervention, a mixed course of individuals and group AT lessons appears to have the potential to produce clinically important changes in function and pain efficiently and is likely to be acceptable to participants and practioners.

Future research.

Further iterative development of the materials for patients and teachers should improve engagement, acceptability and likely effectiveness to prepare the intervention for a full trial in low back pain.

A similar course of individual and group AT lessons could also be developed for other common causes of musculoskeletal pain such as knee, hip or neck pain.

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Acknowledgements.

Ethical approval was given by both University of Southampton (reference numbers: 24008 and 18780) and NHS ethics committees (REC committee: 17/EM/0185 IRAS number: 214897); all participants provided gave written informed consent prior to participation.

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Contributorship: PL had the original idea for the study; all authors developed the protocol; CN developed the course and course materials, trained the teachers, and ran several of the groups; JL managed all aspects of the study on a day to day basis, interviewed patients and teachers, analysed the qualitative and quantitative data, and wrote the first draft of the paper; AG supervised the qualitative work; all authors contributed to revisions of the paper.

PPI. We are very grateful to Nigel Gibson and Jane Magpie, our PPI collaborators, for their very helpful input to both the study design, outcomes, and patient documents.

Competing interests: No author has competing interests

Data sharing: data available from Professor Little on request with a proposal for use of the data

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Table 1. Baseline characteristics

		Count (N=40)
Participant Gender	Male	10 (25%)
	Female	30 (75%)
Marital Status	Single	6 (15%)
	Married	18 (45%)
	Living with partner	8 (20%)
	Divorced	4 (10%)
	Separated	1 (2.5%)
	Widowed	1 (2.5%)
Current Employment Status	Full time	8 (20%)
	Part time	8 (20%)
	Self-employed (full time)	5 (12.5%)
	Self-employed (part time)	7 (17.5%)
	Homemaker	2 (5%)
	Retired	4 (10%)
	Not in paid employment due to disability	1 (2.5%)
	Not in paid employment due to long term sickness	1 (2.5%)
	Unemployed	2 (5%)
	Student	1 (2.5%)
Age finished full time education.	13-16	8 (20%)
	17-18	6 (15%)
	19-21	11 (27.5%)
	22+	11 (27.5%)

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Table 2. Primary outcomes in low back pain participants (Baseline and final 12 week follow up).

RMDQ Score									
	Combined Recruitment			Community Recruitment			NHS Recruitment		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Baseline	39	10.38	4.446	23	11.13	4.684	16	9.31	3.979
12 Week Follow Up	31	4.39	3.639	20	4.15	3.731	11	4.82	3.601
Days in Pain (during the past week)									
	Combined Recruitment			Community Recruitment			NHS Recruitment		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Baseline	39	5.56	2.162	23	5.57	1.996	16	5.56	2.449
12 Week Follow Up	30	3.20	2.413	19	3.26	2.535	11	3.09	2.300
Days Interference with Usual Activities (during the past week)									
	Combined Recruitment			Community Recruitment			NHS Recruitment		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Baseline	36	1.64	2.332	20	1.75	2.381	16	1.50	2.338
12 Week Follow Up	31	0.74	1.673	20	0.55	1.317	11	1.09	2.212

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(figure 1)

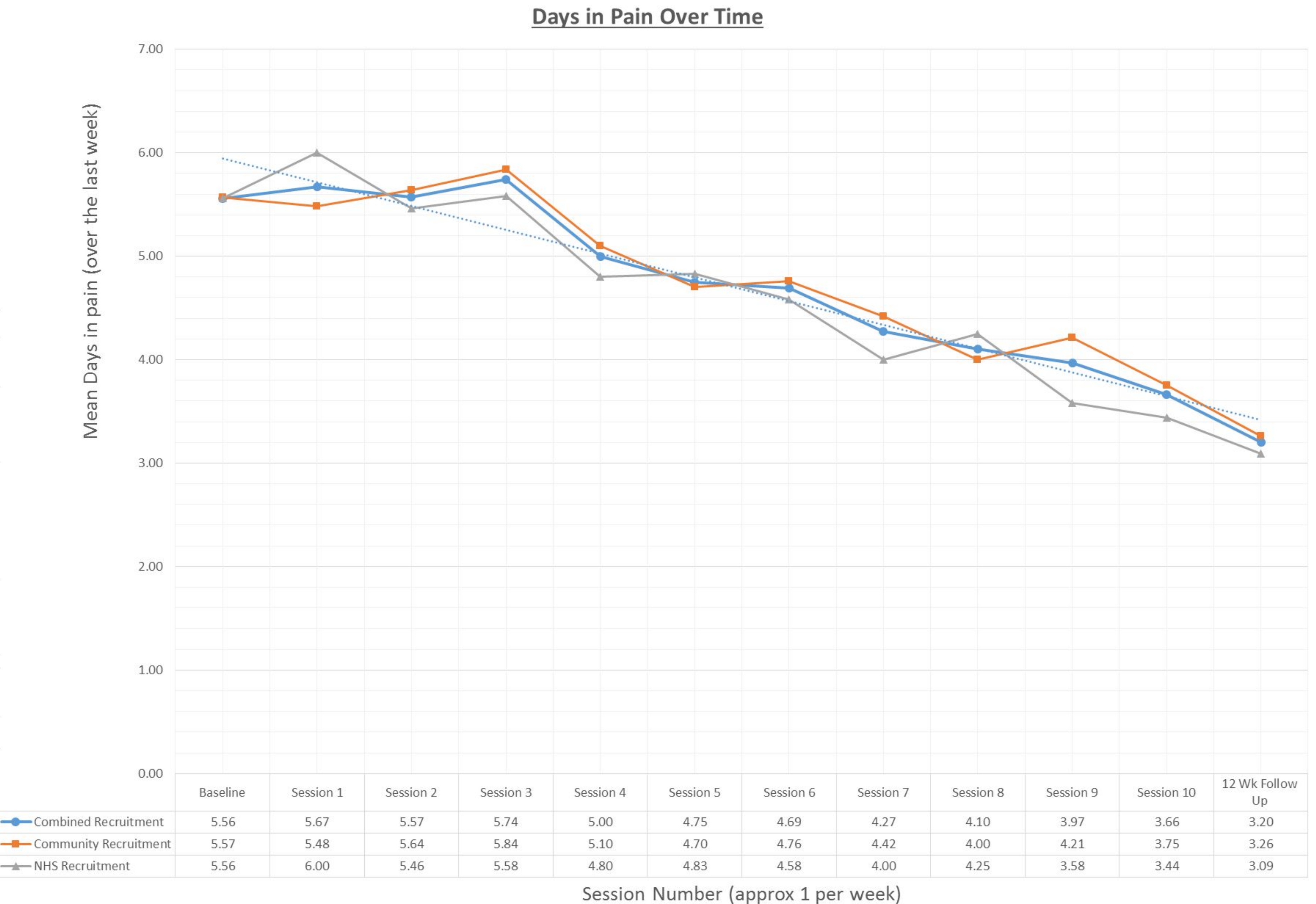

Table 3

Characteristics of AT teacher sample.

Responses:

	Yes	No
Experience Teaching AT Groups Specifically for Back Pain	18 (56%)	14 (44%)
Experience Teaching AT Groups (non-back pain)	29 (91%)	3 (9%)
Experience Teaching Groups In Other Subjects	11 (34%)	21 (66%)
Senior Role in Stat	8 (25%)	24 (75%)
Gender	Male: 7 (22%)	Female: 25 (78%)

Number of years since qualification to teach AT	0<5	5<10	10<20	20+
	7 (22%)	8 (25%)	9 (28%)	8 (25%)

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Table 4 Participant Interviewee Characteristics

		Count (N=32)
Participant Gender	*Male*	*5 (16%)*
	Female	*27 (84%)*
Marital Status	*Single*	*6 (19%)*
	Married	*14 (44%)*
	Living with partner	*5 (16%)*
	Divorced	*3 (9%)*
	Separated	*1 (3%)*
	Widowed	*1 (3%)*
Current Employment Status	*Full time*	*3 (9%)*
	Part time	*8 (25%)*
	Self-employed (full time)	*4 (12.5%*
	Self-employed (part time)	*6 (19%)*
	Homemaker	*2 (6%)*
	Retired	*4 (12.5%)*
	Not in paid employment due to disability	*0*
	Not in paid employment due to long term sickness	*1 (3%)*
	Unemployed	*2 (6%)*
	Student	*1 (3%)*
Age finished full time education.	*13<16*	*5 (16%)*
	17<19	*5 (16%)*
	19<21	*10 (31%)*
	22+	*8 (25%)*

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Appendix A.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Session 1: Individual Lesson	Session 2: Individual Lesson	Session 3: Group Lesson	Session 4: Group Lesson	Session 5: Group Lesson	Session 6: Individual Lesson	Session 7: Group Lesson	Session 8: Individual Lesson	Session 9: Group Lesson	Session 10: Group Lesson

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Findings from the development and implementation of a novel course consisting of both group and individual Alexander Technique lessons for low back pain..

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Findings from the development and implementation of a novel course consisting of both group and individual Alexander Technique lessons for low back pain..

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Abstract

Objectives: 1)To develop of a mixed course of individual and group lessons in the Alexander Technique (AT) for low back pain.

2) To explore its:

i. effectiveness and ii. acceptability to both participant AT teachers and patients

Design: Single centre study, mixed methods.

Setting: Members of the public in the Brighton area (community recruitment), and patients from 6 Hampshire GP practices (NHS recruitment).

Participants: People with chronic or recurrent low back pain; AT teachers.

Interventions: Iterative development and implementation of a 10 lesson (6 group;4 individual) AT course.

Outcome measures: Perceptions from semi-structured interviews analysed using inductive thematic analysis. Descriptive analysis of RMDQ (Roland-Morris-Disability-Questionnaire over 12 weeks.

Results: Thirty-nine participants with low back pain were included and thirty-two Alexander technique teachers were interviewed. Some participants had reservations, preferring only individual lessons, but the majority found the sharing of experience and learning in groups helpful. There was also concern regarding group teaching amongst some AT teachers, but most also found it acceptable. By 12 weeks RMDQ score among participants fell from 10.38 to 4.39, a change of -5.99. 29/39 (74%) of participants had a clinically important reduction in RMDQ score of 2.5 or more.

Conclusion: Some patients and practitioners had reservations about group AT lessons, but most found groups helpful. Further development is needed, but the course of individual and group lessons has the potential to provide clinically important benefits efficiently among patients known to improve little and slowly.

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Strengths and Limitations of this study

Strengths

- Iterative preliminary development of a novel course of mixed individual and group lessons of the Alexander Technique (AT)
- Similar inclusion criteria to previous studies of AT to permit some comparisons
- Use of mixed methods to gain insights into the key perceptions and issues of acceptability for the course

Limitations

- Preliminary descriptive data from a sample allowing historical comparisons but no concurrent controls.
- Small study population

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Introduction

Back pain has an estimated lifetime prevalence of 59% to 90%, with an annual incidence of around 5% of the population.[1] In the UK 12.5% of all sick days are related to low back disorders[2] and persistent or major recurrent back pain has a poor long term prognosis.[3] Alexander Technique(AT) is included in the NICE systematic review section on self-management as a postural therapy.[4] AT aims to correct posture and upright support mechanisms through increasing a person's awareness of their harmful habits of body use, allowing them to consciously move in a different way.[5] These mechanisms involve coordination of the trunk, head and limbs and motor control of postural muscles which are usually operating poorly, and with poor postural awareness, in individuals with chronic back pain[6-9,10,11]. In the ATEAM trial 6 lessons resulted in a 1.4 difference compared to usual care in the Roland Morris Disability Questionnaire (RMDQ), whereas the minimum clinically important difference for the RMDQ is of the order of 2-2.5.[5;12] Longer courses of one to one lessons in the ATEAM trial were effective (RMDQ -3.4 compared to usual care) but not likely to be cost effective when compared with other options that utilise group environments such as physiotherapy.[5] Therefore, introducing AT group lessons alongside individual teaching may be a promising way to increase effectiveness without compromising cost efficiency.

Understanding and addressing potential barriers to uptake and implementation is essential for developing a new intervention. In particular, there are not only issues for participants in engaging with AT group lessons, but for AT teachers there may be important barriers - particularly any reduction in one on one lesson time-[13] as Alexander Technique is traditionally delivered as a longer 1:1 intervention, including 'hands-on' assessment and guidance, in order to address students individual body use in detail. In addition to concerns about lack of individual teaching time hands on work (light touches to direct attention and prompt changes in body use) is a critical part of AT teaching.[14]

There is no previously published research of group teaching of Alexander Technique for back pain. However, there are some small-scale studies documenting the potential effectiveness of teaching Alexander Technique in groups. A class based AT intervention for 23 music students was found to reduce both playing related and non-playing related pain. Students reported that increased body awareness had led to these benefits.[15] A small group (6-8) AT intervention including some hands-on work was found to improve functional reach in a sample of 12 women over 65 versus a control group of 5.[16] An intensive two week group intervention including hands-on work for balance in an elderly sample of 19 individuals found some improvements in balance measures.[17] Finally, a

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fourteen-week class based intervention of AT was found to reduce tension in a sample of undergraduate piano students.[18]

Group physiotherapy and acupuncture have also been studied, and groups were not seen as inferior to individual treatment by participants. [19;20] The perception of group solidarity and common struggle with illness was valued by participants in both group physiotherapy and other group interventions including acupuncture and group exercise trials.[19-21] In the group environment participants also had the opportunity to share tips and advice with one another which enhanced their learning. [20;21] However, participants may not benefit from the social aspect of group lessons due to the severity of their own physical or mental state. [12] It is also possible that where disruptive individuals are present or participants do not get on with one another the group environment will be of diminished value. [22]

The development of the course was the primary aim of this study, but as it happened only modest changes were made. We report the qualitative and quantitative results from the preliminary development of a mixed course of group and individual lessons of Alexander Technique.

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Methods

Overall study design

This was a mixed methods study. Qualitative work with AT teachers, both those participating in the intervention, and the wider group of teachers, was nested in the development and preliminary testing of the intervention in order to understand what the likely acceptability of the course would be to the AT profession and make alterations as necessary. By using similar inclusion criteria and outcome data to two previous studies that had good data on the natural history[5;7] , where there was a modest improvement in control groups, some provisional comparison could be made.

Development of the intervention.

The groups sessions included some hands on work with each participant to provide indivualised feedback on body use, during which the teacher explained to the group what she/he was doing. Each participant was also given a book explaining AT to read in their own time (*Body*, *Breath and Being*)[23], and mp3 talks developed by CN to explain aspects of the technique. Participants were encouraged to practice AT techniques in between lessons.

The first group course consisted of eight participants taught by two teachers (one primary, the other assisting). Two initial group lessons (90 minutes each) were followed by alternating individual lessons (40 minutes) and group lessons.

The initial course structure was agreed based on extensive discussion with our AT collaborators. Following the earliest interviews with teachers about the experience of teaching this course the format was altered for all subsequent courses: group lessons were made shorter (60 minutes) since participants struggled to concentrate for 90 minutes; to reduce initial misunderstandings in group lessons the course started with individual lessons; and group size was also reduced (4-6 participants) and groups were taught by a single teacher both to improve efficiency and avoid logistic difficulties of coordinating two teachers. No further alterations were made to the course following this as feedback from participating teachers was that the new format was now fit for purpose. Interviews with non- participating teachers did not result in any changes being made to the course as they tended to either approve of the format as was or disagree fundamentally with the premise of including group teaching to increase cost effectiveness. For the finalized course format see appendix A.

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Patient and Public Involvement (PPI)

Two PPI collaborators were involved in discussion of the research questions, outcome measures (particularly the importance of functioning as the key outcome), design of the study (whether a control group was necessary), initial development of the intervention, and commenting on study documents. Our PPI collaborators were not involved in the recruitment to, or the further conduct of, the study - but we gained feedback from study participants regarding the acceptability of all study procedures. A summary of the results will be sent to all participants.

Participants and recruitment

People with low back pain

Two primary pathways were used to recruit participants - community recruitment and NHS recruitment. Community sample: We used local paper advertisements, fliers placed in public places (e.g. community centres) and direct referral by study AT teachers in the Brighton area. NHS Recruitment**:** GP practices wrote to a random sample (to ensure a representative sample were invited) of patients who had seen the GP for back pain during the last 5 years. Potential participants were screened for eligibility by the trial manager and offered a place on the next available group course.

Eligibility criteria:

Inclusion criteria: Aged 18-65; ability to understand English (since outcomes validated in English); chronic or recurrent back pain (at least one previous episode recorded on GP electronic records; current episode at least 3 weeks in duration); and RMDQ score of 4 or more.

Exclusion criteria: Previous lessons in AT; unable to reliably answer outcome questions (e.g. severe and unstable mental illness, dementia or learning difficulty); unable to sit down due to pain (prevents elements of at practice); pregnancy; age over 65 (major pathology more likely- particularly cancer); current nerve root pain below the knee (sciatica); previous spinal surgery or planned major surgery; pending litigation for back pain; terminal illness; and any ‘red flag’ criteria suggesting sinister pathology.

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Alexander Technique teachers:

In order to explore the acceptability of the course to the AT profession we emailed the UK database of STAT teachers to recruit volunteer teachers for qualitative interviews about the issues surrounding group teaching in this format.

Teachers who were Society of Teachers of the Alexander Technique (STAT) members local to the Southampton study centre or the Brighton Alexander Technique College were recruited to deliver the intervention. These teachers were also interviewed.

Data collection:

Near the end of their course student participants were also asked to take part in semi-structured qualitative telephone interviews about their experience of AT and of learning in a group format. Open ended prompts were used and adapted as the interviews progressed where new issues were identified. Interviews were transcribed verbatim before analysis.

All participants completed a questionnaire at baseline and at 3 months (final follow-up) including basic demographic information; Health-related quality of life (EQ-5D)[24]; Roland Morris Disability Questionnaire (RMDQ)[5,7,12,25]; days in pain[5,7,26] and days interference with activity over past week; overall improvement[5,7,27]; modified enablement scale[5,7,28,]; and information regarding current/recent medication and treatment. Participants also completed a short weekly questionnaire prior to each lesson comprised of only our primary feasibility outcomes: RMDQ, Days in Pain, Days interference. The RMDQ was chosen as it is a standardized outcome measure for low back pain included in the COMET initiative.[29] Days in pain and days interference in normal activities were chosen in addition to the RMDQ as these were all used in the ATEAM and ASPEN studies[5;7] .

Analysis

Qualitative Analysis:

The transcripts were coded and analysed using inductive thematic analysis[30] The transcripts were read and re-read. Through initial coding an early coding frame was developed and discussed in detail by the qualitative researchers. Following agreement, the rest of the data were coded. From these codes, higher order themes were developed, drawing on frequent discussion. When themes had been developed, they were discussed and agreed with the full research group. This process was followed for both the participants with low back pain and for the AT teachers.

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Quantitative Analysis:

Pre- and post-test scores of three outcome measures were analysed for means and standard deviations : RMDQ, Days in pain, Day interference.

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Results

Community recruitment: Between 01/04/2016 and 12/04/2017, we screened 34 volunteers; 27 were eligible, and 26 recruited. One participant withdrew before their course started. The remaining 25 participants attended one of 5 group courses (between 03/05/2016 and 26/06/2017).

NHS recruitment: 6 GP practices recruited participants between 24/10/2017 and 09/05/2018. 729 invitations were sent with 141 replies:

- **A)** Interested and eligible on the RMDQ: **60**
- **B)** Interested but not Eligible on the RMDQ: **26**
- **C)** Not interested: **55**

43 patients were screened; 26 were eligible and 23 agreed to participate.

Of those 23, 8 withdrew prior to commencing their group course; either due to the timing of their response to the invitation or the timing of the course dates themselves. The size of this study meant that we had no alternative courses to offer. 15 participants attended one of four group courses between 01/01/2018 and 25/06/2018.

As such, of 49 initial recruits 40 went on to receive the intervention. However, one participant was also found to be ineligible after initial screening (their initial responses were incorrect) and so their data has not been included. See Figure1 for study population flowchart.

AT Teacher Interviews

Our email was sent to 816 STAT members of whom 29 initially volunteered to be interviewed, and 25 consented and were interviewed. We also interviewed the seven teachers who taught group courses as part of the current study.

All teachers who volunteered had at least some group teaching experience (whether AT or non-AT) although it was made clear in our initial email that this was not necessary for inclusion in the interviews. The sample is also predominantly female although this may be as a result of the overall gender distribution in the profession (see table 1). The sample included 8 teachers who fulfil a senior role in STAT.

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Table 1

Characteristics of AT teacher sample.

	Yes	No
Experience Teaching AT Groups Specifically for Back Pain	18 (56%)	14 (44%)
Experience Teaching AT Groups (non-back pain)	29 (91%)	3 (9%)
Experience Teaching Groups In Other Subjects	11 (34%)	21 (66%)
Senior Role in Stat	8 (25%)	24 (75%)
Gender	Male: 7 (22%)	Female: 25 (78%)

Number of years since qualification to teach AT	0<5	5<10	10<20	20+
	7 (22%)	8 (25%)	9 (28%)	8 (25%)

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Low back pain participant interviews

A total of 32 of 39 participants (82%) were interviewed, 21 from the community recruitment phase and 11 from the NHS recruitment phase. The majority of participants interviewed were female, married or living with a partner and from a wide educational background.

Qualitative findings

We developed three central themes regarding attitudes to group AT teaching. Of these, two originate from both AT teacher and participant interviews. The third originates from AT teachers alone.

1) *Group teaching is better than no teaching*

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The perception that some access to AT was better than no access was prevalent amongst the teachers. Teachers tended to take the view that although group teaching is not as optimal as private lessons in terms of depth of learning or rate of progression, it still has some merit, as in practice many people will not have the money or interest in attending a course of private lessons.

Group teaching was seen as good for providing students with a theoretical introduction to the technique and effective when focused on imparting some basic AT skills to students (particularly semi-supine, a type of AT practice that involves lying flat on ones back with bent knees) as well as practical everyday advice about body use.

> *T05 "I'd really stress that actually, actually group work isn't necessarily the best way, but at the same time, with the groups I've found, I have found people have had benefits very quickly."*

This is echoed in the participant interviews. Some participants expressed a preference for individual lessons - and a small number would have opted for a course of pure individual lessons if possible. Regardless, these participants had an overall positive experience of the course and some raised the fact that they understood costing was an issue therefore were willing to accept the inclusion of group lessons in practice.

> *GREAT46: "Um, no, no, I thought they were excellent. I mean, if, if it was my first choice I'd say all private lessons, but I think for more people to have the treatment more quickly maybe, then the combination is probably really good… Yeah, because that would, you know, we wouldn't want to delay other people having the course."*

2) *Group teaching is valuable and has different strengths to individual teaching.*

This view was also prevalent amongst teachers and there was some significant crossover with the 'group teaching is better than no teaching' theme; many teachers held that although private lessons might be superior in the final analysis group teaching still has its own strengths.

Generally, those who expressed this attitude see group teaching and individual teaching as each having their own strengths and weaknesses. Some would go as far as to saying that group and individual teaching are not directly comparable and therefore the best approach in any given case is a matter of which is best suited to an individual student. It is worth noting however that most of the teachers who held this attitude would still recommend that students have at least some private instruction alongside group lessons.

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T026: "I've changed my mind about it. I think you can teach a lot in a group session... ...even [compared] to individual and what the feedback I get from the people from the groups, they - you know, some of them, they have been actually able to explore the technique even in more depth"

This was mirrored in the participant interviews with a majority expressing views akin to this. These participants tended to value the group support and solidarity highly and liked having the opportunity to share experiences and problems with the group. They valued the dual learning environments; focusing on their own specific problems in individual lessons and using group lessons as an opportunity to observe and interact with other participants and learn from one another's experiences.

GREAT15: "Yeah, I think the, the mix of having one-to-ones and also sort of group sessions is really um interesting as well. I really liked having, I benefited from obviously having the one-to-ones, but equally having that opportunity to share experiences with people was, I think, um invaluable actually"

Many of these participants felt that the balance between group and individual lessons was an ideal approach for them. However, others would have preferred a greater proportion of individual lessons as they found they learned more one to one. Despite their preference for individual lessons these participants did find the group lessons useful in ways that individual teaching alone would not have provided.

GREAT41: "Um, I preferred the one to one sessions, to be honest. But actually, the group sessions was good to… I mean, I, the thing is you're listening to everyone else's problems and issues, which is fine. Um, because it sort of, you pick up tips from other people, and how they've overcome it and things."

Participants generally expressed an understanding that this was just a starting point for learning the Alexander Technique and that they could go into much more depth with further study.

GREAT12: "Because it, I do understand it and I think ten lessons probably is only scratching the surface. You know, I realise like probably I really should try and have another 10/20, but it's expensive and I'm not too sure that I will do that."

3) *Group teaching damages the AT profession.*

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A smaller but significant subsection of teachers interviewed expressed sympathy with this view. This attitude is partly supported by concern amongst these teachers that the current quality of AT group teaching present in the profession is very poor. Large groups of beginners in group lessons that have had no experience of private lessons is perceived to be common within the profession at this time.

These teachers see a great deal of danger in the propagation of group teaching. They tend to express the view that if people attend only group lessons they will not have learnt the technique to any practical degree of depth and will subsequently come away impression of the technique that is both substandard and false. As a result the reputation of the technique as a whole will suffer the more group teaching becomes popularized.

> *T24: "the teachers are so keen on it because they say something is better than nothing, but something isn't better than nothing. Driving around in a half maintained car isn't better than not driving."*

In fact some teachers would say that any attempt to teach people Alexander Technique in groups (at least exclusively) is a non-starter almost by definition. Alexander Technique has to be learnt in a one on one setting as it requires the constant physical attention of a teacher to achieve the kind of embodied learning needed for the technique to be effective.

> *T028 "It's just not the Alexander Technique [laughs]. If you've not got your hands on someone. I just don't' think we're giving them the full shilling, they're not, they're not, it, it's a compromise, put it that way."*

Quantitative findings

Most participants were female (30/39), in employment (29/39), married or living with a partner (25/29), and had a range of educational levels.

Follow-up for the primary outcome (RMDQ) was documented in 31/39 (79.5%) participants who were active at baseline for the weekly data prior to lessons and 30/39 (76.9%) for the final follow-up questionnaire at 12 weeks.

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Table 2. Primary outcomes in low back pain participants (Baseline and final 12 week follow up).

RMDQ Score									
	Combined Recruitment			**Community Recruitment**			**NHS Recruitment**		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Baseline	39	10.38	4.446	23	11.13	4.684	16	9.31	3.979
12 Week Follow Up	31	4.39	3.639	20	4.15	3.731	11	4.82	3.601
Days in Pain (during the past week)									
	Combined Recruitment			**Community Recruitment**			**NHS Recruitment**		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Baseline	39	5.56	2.162	23	5.57	1.996	16	5.56	2.449
12 Week Follow Up	30	3.20	2.413	19	3.26	2.535	11	3.09	2.300
Days Interference with Usual Activities (during the past week)									
	Combined Recruitment			**Community Recruitment**			**NHS Recruitment**		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Baseline	36	1.64	2.332	20	1.75	2.381	16	1.50	2.338
12 Week Follow Up	31	0.74	1.673	20	0.55	1.317	11	1.09	2.212

RMDQ Score fell from 10.38 to 4.39 a change of -5.99 by 12 weeks. 29/39 (74%) of participants had a reduction in RMDQ score of 2.5 or more. For the data collected at each lesson there was an overall consistent downward trend in RMDQ scores across recruitment groups **(see figure 2 and table 2).**

Overall mean days in pain fell from 5.56 to 3.20, with a consistent downward trend in days in pain throughout the course **(see table 2).**

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Mean days interference in normal activities fell from 1.64 to 0.74 a change of -0.95, with an overall downward trend across the weeks (**see table 2**).

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Discussion

This study reports the initial development of a course of group and individual lessons for the Alexander Technique for back pain, and exploration of its acceptability among both patients and Alexander teachers.

Strengths and weaknesses

A strength of this study was the iterative development of this intervention based on feedback from teachers and participants. The inclusion criteria and key outcomes were very similar to previous RCT's of Alexander Technique (ATEAM + ASPEN) so that we can provisionally compare the findings to the previous trials. We have also shown the viability of two distinct recruitment pathways. Finally, we have used mixed methods to gain better insight regarding patients' and practitioners' views regarding acceptability of the intervention. The small sample size and preliminary format warrants some caution regarding quantitative outcomes. The study was also uncontrolled so we cannot exclude non-specific changes over time, but since we know from the ATEAM and ASPEN studies that participants with these inclusion critera improve very little over time, we can be cautiously confident the intervention has the potential to be effective.

The drop out rate pre-course start in the NHS recruitment group was higher than anticipated, but was very likely due to the lack of flexibility inherent in running a small feasibility study. We had no secondary course to offer if participants could not make the dates of the course in their area. We also had no replacement teachers immediately available that could be mobilised if a study teacher withdrew from the team - as one did causing a group cancellation. These issues would be remediable in a larger more flexible study – particularly with regards to flexibility around course dates available to participants.

The group teaching incorporated in this intervention should not be considered 'typical' within the AT profession at present – and a number of teachers interviewed remarked on this. The group sessions included hands on work and the numbers were kept small enough for this to be manageable for teachers. The groups were also accompanied by required reading and mp3 talks - again most groups do not do that. Furthermore the course as a whole was designed by CN to be effective for back pain sufferers, although it is feasible for the course to be adapted for other musculoskeptal problems (knee, hip, or neck pain). Although we do not have data on the use of additional resources (e.g. use of mp3 talks) we recommend that future trials retain these 'atypical' elements in order to maximise the effectiveness of this course.

Qualitative findings

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The reception of this intervention by participants was mostly positive – in many cases finding some advantages to individual teaching alone. However, there is some concern regarding group teaching amongst AT teachers. Much of the resistance to teaching AT group lessons from some teachers seems to come from the perception that group lessons cannot deliver adequate results and will therefore increasingly damage the reputation of the profession the more group teaching supplants individual teaching. The disagreement seems to be primarily about potential harm; if group teaching does not have negative effects on the profession as a whole then giving students something in group sessions as opposed to nothing is desirable (and vice versa). Therefore, if an intervention that incorporates group teaching can be shown to be effective this may change many teachers' perceptions - and the quantitative and qualitative data from the current study suggests that is plausible. It will be important to stress the unconventional nature of the group teaching included in this course as this is likely to make it more acceptable to those teachers with reservations about group teaching as it currently stands in the profession. Furthermore, it is important to ensure that participants understand that application of AT is a skill to be actively used and developed over time rather than a treatment in the conventional passive sense.

There remains the potential challenge of teaching the course for teachers with limited previous experience teaching groups (this is not included in STAT teachers training in the UK). This, and the negative perceptions of some teachers (see above), highlights the importance of using the quantitative and qualitative findings to develop robust training materials for the course.

Perceptions of overall utility comparing group vs. individual lessons from both teacher and patient interviews seemed to cluster around the view that groups have benefits you do not get from individual lessons alone, but if required to choose only one format then individual lessons will be more effective overall. Teacher attitudes to a mixed intervention were much more positive than to group teaching in isolation - even with some enthusiasm for this approach. Interviews with participants also supported previous qualitative research for group interventions with other modalities.[19-21;31-33] Most prominent was the value participants placed on group solidarity and the potential for learning interactively by engaging with one another's experiences.

Quantitative findings

The quantitative outcomes are promising. There were substantial and clinically important improvements in RMDQ -5.99 by 3 months. Since two previous trial data sets (ASPEN and ATEAM) document that this population improve little and slowly, the results suggest that the net effect over and above usual care (a reduction in 1 RMDQ score in the control group of the ATEAM study, and

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similar in the ASPEN study) could be reductions in RMDQ of the order of 4-5.5 compared to usual care. However, as initial studies can over-estimate effect sizes this could be diminished in a larger trial. Even allowing for this, it still seems plausible that the intervention could achieve the MCID for between group differences, particularly as the intervention has not yet been optimised.

Conclusion

Overall the qualitative analysis points towards acceptability for the most part amongst participants and AT teachers – although some maintain reservations. The quantitative data suggests that an intervention of this design could be a viable way of increasing effectiveness vs a short course without greatly increasing cost. Although caution is warranted given the preliminary and uncontrolled nature of this study, a mixed course of individuals and group AT lessons appears to have the potential to produce clinically important changes in function and pain efficiently and is likely to be acceptable to participants and practitioners.

Future research.

Further iterative development of the materials for patients and teachers should improve engagement, acceptability and likely effectiveness to prepare the intervention for a full trial in low back pain which will also include a wider range of outcome including pain intensity and quality of life.

A similar course of individual and group AT lessons could also be developed for other common causes of musculoskeletal pain such as knee, hip or neck pain.

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Contributorship: PL had the original idea for the study; all authors developed the protocol; CN developed the course and course materials, trained the teachers, and ran several of the groups; JL managed all aspects of the study on a day to day basis, interviewed patients and teachers, analysed the qualitative and quantitative data, and wrote the first draft of the paper; AG supervised the qualitative work; all authors contributed to revisions of the paper. We are very grateful to Nigel Gibson and Jane Magpie, our PPI collaborators, for their very helpful input to both the study design, outcomes, and patient documents.

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Data sharing: data available from Professor Little on request with a proposal for use of the data.

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Legends for Figures

Figure 2. Mean days in pain for the previous week recorded at each session

Figure 1. Study flow diagram

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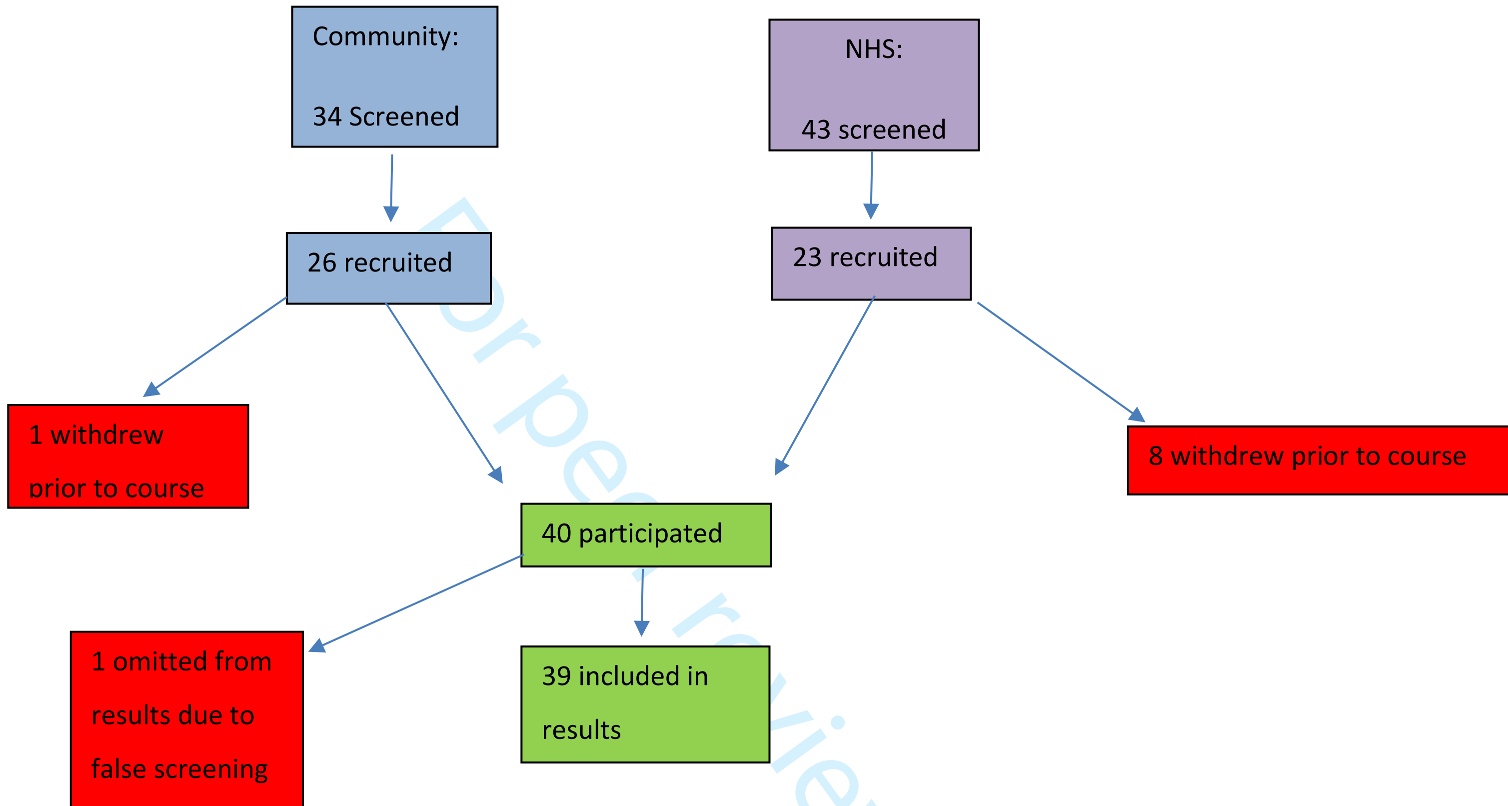
Figure 1



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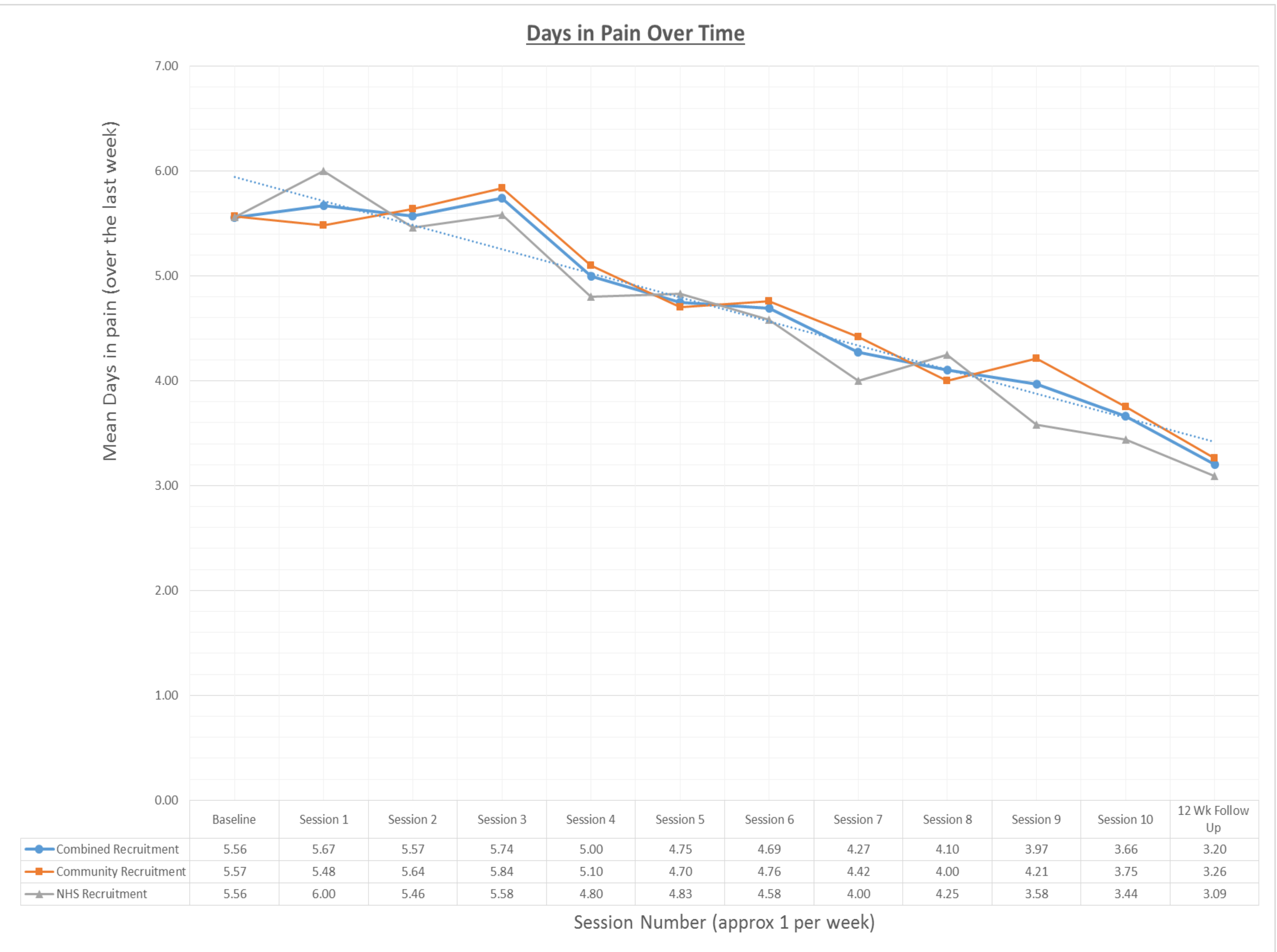

Days in Pain Over Time
Mean Days in pain (over the last week)
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4.00
3.00
2.00
1.00
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Baseline
Session 1
Session 2
Session 3
Session 4
Session 5
Session 6
Session 7
Session 8
Session 9
Session 10
12 Wk Follow Up
Combined Recruitment 5.56 5.67 5.57 5.74 5.00 4.75 4.69 4.27 4.10 3.97 3.66 3.20
Community Recruitment 5.57 5.48 5.64 5.84 5.10 4.70 4.76 4.42 4.00 4.21 3.75 3.26
NHS Recruitment 5.56 6.00 5.46 5.58 4.80 4.83 4.58 4.00 4.25 3.58 3.44 3.09
Session Number (approx 1 per week)

Appendix A

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Session 1: Individual Lesson	Session 2: Individual Lesson	Session 3: Group Lesson	Session 4: Group Lesson	Session 5: Group Lesson	Session 6: Individual Lesson	Session 7: Group Lesson	Session 8: Individual Lesson	Session 9: Group Lesson	Session 10: Group Lesson

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BMJ Open

Findings from the development and implementation of a novel course consisting of both group and individual Alexander Technique lessons for low back pain..

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Findings from the development and implementation of a novel course consisting of both group and individual Alexander Technique lessons for low back pain.

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Abstract

Objectives:

1) To develop of a mixed course of individual and group lessons in the Alexander Technique (AT) for low back pain,

2) To explore its:

i. effectiveness, and ii. acceptability to both participant AT teachers and patients

Design: Single centre study, mixed methods.

Setting: Members of the public in the Brighton area (community recruitment), and patients from 6 Hampshire GP practices (NHS recruitment).

Participants: People with chronic or recurrent low back pain; AT teachers.

Interventions: Iterative development and implementation of a 10 lesson (6 group, 4 individual) AT course.

Outcome measures: Perceptions from semi-structured interviews analysed using inductive thematic analysis. Descriptive analysis of RMDQ (Roland-Morris-Disability-Questionnaire over 12 weeks.

Results: Thirty-nine participants with low back pain were included and thirty-two alexander technique teachers were interviewed, seven of whom taught on the course. Some participants had reservations, preferring only individual lessons, but the majority found the sharing of experience and learning in groups helpful. There was also concern regarding group teaching amongst some AT teachers, but most also found it acceptable. By 12 weeks RMDQ score among participants fell from 10.38 to 4.39, a change of -5.99. 29/39 (74%) of participants had a clinically important reduction in RMDQ score of 2.5 or more.

Conclusion: Some patients and practitioners had reservations about group AT lessons, but most found groups helpful. Further development is needed, but the course of individual and group lessons has the potential to cost effectively deliver clinically important benefits to back pain patients, who are known to improve little and slowly.

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Strengths and Limitations of this study

Strengths

- Iterative preliminary development of a novel course of mixed individual and group lessons of the Alexander Technique (AT)
- Similar inclusion criteria to previous studies of AT to permit some comparisons
- Use of mixed methods to gain insights into the key perceptions and issues of acceptability for the course.

Limitations

- Preliminary descriptive data from a sample allowing historical comparisons but no concurrent controls.
- Small study population.

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Introduction

Back pain has an estimated lifetime prevalence of 59% to 90%, with an annual incidence of around 5% of the population.[1] In the UK 12.5% of all sick days are related to low back disorders[2] and persistent or major recurrent back pain has a poor long term prognosis.[3] Alexander Technique (AT) is included in the NICE systematic review section on self-management as a postural therapy.[4] AT aims to correct posture and upright support mechanisms through increasing a person's awareness of harmful habits of body use, allowing them to consciously move in a different way.[5] These mechanisms involve improved coordination of the trunk, head and limbs and improved motor control of postural muscles, factors which are usually operating poorly in individuals with chronic back pain[6-9,10,11]. In the ATEAM trial, 6 lessons resulted in a 1.4 difference compared to usual care in the Roland Morris Disability Questionnaire (RMDQ), whereas the minimum clinically important difference for the RMDQ is of the order of 2-2.5.[5,12] Longer courses of one-on-one lessons in the ATEAM trial were effective (RMDQ -3.4 compared to usual care) but not likely to be as cost effective as other options that utilise group environments such as physiotherapy.[5] Therefore, introducing AT group lessons alongside individual teaching may be a promising way to increase effectiveness without compromising cost efficiency.

Understanding and addressing potential barriers to uptake and implementation is essential for developing a new intervention[13]. In particular, there are not only issues for participants in engaging with AT group lessons, but for AT teachers there may be important barriers - particularly any reduction in one-on-one lesson time-13 as Alexander Technique is traditionally delivered as a longer 1:1 intervention, including 'hands-on' assessment and guidance, in order to address students individual body use in detail. In addition to concerns about lack of individual teaching time hands on work (light touches to direct attention and prompt changes in body use) is a critical part of AT teaching.[14]

There is no previously published research of group teaching of Alexander Technique for back pain. However, there are some small-scale studies documenting the potential effectiveness of teaching Alexander Technique in groups. A class based AT intervention for 23 music students was found to reduce both playing-related and non-playing-related pain. Students reported that increased body awareness had led to these benefits.[15] A small group (6-8) AT intervention including some hands-on work was found to improve functional reach in a sample of 12 women over 65 versus a control group of 5.[16] An intensive two week group intervention including hands-on work for balance in an elderly sample of 19 individuals found some improvements in balance measures.[17] Finally, a

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fourteen-week class based intervention of AT was found to reduce tension in a sample of undergraduate piano students.[18]

Group physiotherapy and acupuncture have also been studied, and in at least two studies, groups were not seen as inferior to individual treatment by participants. [19,20] The perception of group solidarity and common struggle with illness was valued by participants in both group physiotherapy and other group interventions including acupuncture and group exercise trials.[19-21] In the group environment participants also had the opportunity to share tips and advice with one another which enhanced their learning. [20,21] However, some participants may not benefit from the social aspect of group lessons due to the severity of their own physical or mental pain and/or disability. [12] It is also possible that where disruptive individuals are present, or participants do not get on with one another, the group environment will be of diminished value. [22]

The development of the course was the primary aim of this study, but as it happened only modest changes were made to the initial format. We report the qualitative and quantitative results from the preliminary development of a mixed course of group and individual lessons of Alexander Technique.

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Methods

Overall study design

This was a mixed methods study. Qualitative work with AT teachers, both those participating in the delivery of the intervention, and a wider group of teachers who volunteered to be interviewed, was nested in the development and preliminary testing of the intervention in order to understand what the likely acceptability of the course would be to the AT profession and make alterations as necessary. Patient participants were also interviewed regarding their experience of the course. Quantitative measure were collected by using similar inclusion criteria to two previous studies that had good data on the natural history[5,7], and where there was a modest improvement in control groups, some provisional comparison could be made.

Development of the intervention.

The groups sessions included some hands on work with each participant, to provide individualised feedback on body use, during which the teacher explained to the group what she/he was doing. Each participant was also given a book explaining AT to read in their own time (*Body*, *Breath and Being*),[23] and mp3 talks developed by CN to explain aspects of the technique. Participants were encouraged to practice AT techniques in between lessons.

The first group course consisted of eight participants taught by two teachers (one primary, the other assisting). Two initial group lessons (90 minutes each) were followed by alternating individual lessons (40 minutes) and group lessons.

The initial course structure was determined based on discussion with our AT collaborators. Following the earliest interviews (after or during first group course) with participating teachers and patients about their experience of the course the format was altered for all subsequent courses. Group lessons were made shorter (60 minutes), since participants struggled to concentrate for 90 minutes, group lessons were preceded by individual lessons to reduce initial misunderstandings, group size was also reduced (4-6 participants), and groups were taught by a single teacher, both to improve efficiency and avoid the logistic difficulties of coordinating two teachers. No further alterations were made to the course following this (for course format see appendix A).

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Patient and Public Involvement (PPI)

Two PPI collaborators were involved in discussion of the research questions, outcome measures (particularly the importance of functioning as the key outcome), design of the study (whether a control group was necessary), initial development of the intervention, and comments on study documents. Our PPI collaborators were not involved in the recruitment to, or the further conduct of, the study - but we gained feedback from study participants regarding the acceptability of all study procedures. A summary of the results will be sent to all participants.

Participants and recruitment

People with low back pain

Two primary pathways were used to recruit participants - community recruitment and NHS recruitment. Community sample: We used local paper advertisements, fliers placed in public places (e.g. community centres) and direct referral by study AT teachers in the Brighton area. NHS Recruitment**:** GP practices wrote to a random sample (to ensure a representative sample was invited) of patients who had seen the GP for back pain during the last 5 years. Potential participants were screened for eligibility by the trial manager and offered a place on the next available group course.

Eligibility criteria:

Inclusion criteria: Aged 18-65; ability to understand English (since outcomes validated in English); chronic or recurrent back pain (at least one previous episode recorded on GP electronic records; current episode at least 3 weeks in duration); and RMDQ score of 4 or more.

Exclusion criteria: Previous lessons in AT; unable to reliably answer outcome questions (e.g. severe and unstable mental illness, dementia or learning difficulty); unable to sit down due to pain (prevents elements of AT practice); pregnancy; age over 65 (major pathology more likely - particularly cancer); current nerve root pain below the knee (sciatica); previous spinal surgery or planned major surgery; pending litigation for back pain; terminal illness; and any 'red flag' criteria suggesting sinister pathology.

Alexander Technique teachers:

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In order to explore the acceptability of the course to the AT profession we emailed the UK database of Society of Teachers of the Alexander Technique (STAT)teachers to recruit volunteer teachers for qualitative interviews about the issues surrounding group teaching in this format.

Teachers who were members of STAT and who were local to the Southampton study centre or the Brighton Alexander Technique College were recruited to deliver the intervention. These teachers were also interviewed regarding the issues surrounding group teaching but in addition regarding their experience of teaching the course

Data collection:

Near the end of their course student participants were also asked to take part in semi-structured qualitative telephone interviews about their experience of AT and of learning in a group format. Open ended prompts were used and adapted as the interviews progressed where new issues were identified. Interviews were transcribed verbatim before analysis.

All participants completed a questionnaire at baseline and at 3 months (final follow-up) including basic demographic information; Health-related quality of life (EQ-5D)[24]; Roland Morris Disability Questionnaire (RMDQ) [5,7,12,25]; days in pain[5,7,26] and days interference with activity over past week; overall improvement[5,7,27]; modified enablement scale[5,7,28]; and information regarding current/recent medication and treatment. Participants also completed a short weekly questionnaire prior to each lesson comprising only our primary feasibility outcomes: RMDQ, days in Pain, days interference. The RMDQ was chosen as it is a standardized outcome measure for low back pain included in the COMET initiative.[29] Days in pain and days interference in normal activities were chosen in addition to the RMDQ as these were all used in the ATEAM and ASPEN studies[5,7] .

Analysis

Qualitative Analysis:

The transcripts were coded and analysed using inductive thematic analysis.[30] The transcripts were read and re-read. Through initial coding an early coding frame was developed and discussed in detail by the qualitative researchers. Following agreement, the rest of the data were coded. From these codes, higher order themes were developed, drawing on frequent discussion. When themes had been developed, they were discussed and agreed with the full research group. This process was followed for two analyses: student participants with low back pain, and AT teachers (both those who taught and did not teach as part of the intervention).

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Quantitative Analysis:

Pre- and post-test scores of three outcome measures were analysed for means and standard deviations- RMDQ, days in pain, days interference.

PPI input

JM and NG provided input to the initial development of the intervention, the protocol, patient materials, and study documents.

Results

Community recruitment: Between 01/04/2016 and 12/04/2017, we screened 34 volunteers; 27 were eligible, and were 26 recruited. One participant withdrew before their course started. The remaining 25 participants attended one of 5 group courses (between 03/05/2016 and 26/06/2017) – see Figure 1.

[insert Figure 1 here]

NHS recruitment: 6 GP practices recruited participants between 24/10/2017 and 09/05/2018. 729 invitations were sent with 141 replies:

- **A)** Interested and eligible on the RMDQ: **60**
- **B)** Interested but not Eligible on the RMDQ: **26**
- **C)** Not interested: **55**

43 patients were screened; 26 were eligible and 23 agreed to participate.

Of those 23, 8 withdrew prior to commencing their group course; either due to the timing of their response to the invitation or the timing of the course dates. The size of this study meant that we had no alternative courses to offer. 15 participants attended one of four group courses between 01/01/2018 and 25/06/2018.

As such, of 49 initial recruits 40 went on to receive the intervention. However, one participant was also found to be ineligible after pre-course screening (their responses were incorrect), and so their data has not been included.

AT Teacher Interviews

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Our email was sent to 816 STAT members of whom 29 initially volunteered to be interviewed, and 25 consented and were interviewed. We also interviewed the seven teachers who taught group courses as part of the current study.

All teachers who volunteered had at least some group teaching experience (whether AT or non-AT; see table 1) although it was made clear in our initial email that this was not necessary for inclusion in the interviews. The sample was predominantly female although this may be as a result of the overall gender distribution in the profession. The sample included 8 teachers who fulfil a senior role in STAT.

Table 1

Characteristics of AT teacher sample.

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	Yes	No
Experience Teaching AT Groups Specifically for Back Pain	18 (56%)	14 (44%)
Experience Teaching AT Groups (non-back pain)	29 (91%)	3 (9%)
Experience Teaching Groups In Other Subjects	11 (34%)	21 (66%)
Senior Role in Stat	8 (25%)	24 (75%)
Gender	Male: 7 (22%)	Female: 25 (78%)

Number of years since qualification to teach AT	0<5	5<10	10<20	20+
	7 (22%)	8 (25%)	9 (28%)	8 (25%)

Low back pain participant interviews

A total of 32 of 39 student participants (82%) were interviewed, 21 from the community recruitment phase and 11 from the NHS recruitment phase. Most participants interviewed were female, married or living with a partner and from a wide educational background.

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Qualitative findings

We developed three central themes (see below) regarding attitudes to group AT teaching. Of these, two originate from both AT teacher and student interviews. The third originates from AT teachers alone.

1) *Group teaching is better than no teaching*

The perception that some access to AT was better than no access was prevalent amongst the teachers. Teachers tended to take the view that although group teaching is not as optimal as private lessons in terms of depth of learning or rate of progression, it still has some merit, as in practice many people will not have the money or interest in attending a course of private lessons.

Group teaching was seen as an efficient way to providing students with a theoretical introduction to the technique, and also effective when focused on imparting some basic AT skills to students, (particularly semi-supine, a type of AT practice that involves lying flat on ones back with bent knees), as well as practical everyday advice about body use.

> *T05 "I'd really stress that actually, actually group work isn't necessarily the best way, but at the same time, with the groups I've found, I have found people have had benefits very quickly."*

This is echoed in the participant interviews. Some participants expressed a preference for individual lessons - and a small number would have opted for a course of pure individual lessons if possible. Regardless, these participants had an overall positive experience of the course and some raised the fact that they understood costing was an issue therefore were willing to accept the inclusion of group lessons in practice.

> *GREAT46: "Um, no, no, I thought they were excellent. I mean, if, if it was my first choice I'd say all private lessons, but I think for more people to have the treatment more quickly maybe, then the combination is probably really good… Yeah, because that would, you know, we wouldn't want to delay other people having the course."*

2) Group teaching is valuable and has different strengths to individual teaching.

This view was also prevalent amongst teachers and there was some significant crossover with the 'group teaching is better than no teaching' theme; many teachers held that although private lessons might be superior in the final analysis group teaching still has its own strengths.

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Generally, those who expressed this attitude see group teaching and individual teaching as each having their own strengths and weaknesses. Some would go as far as to saying that group and individual teaching are not directly comparable, and therefore the best approach in any given case is a matter of which is best suited to an individual student. It is worth noting however that most of the teachers who held this attitude would still recommend students have at least some private instruction alongside group lessons.

> *T026: "I've changed my mind about it. I think you can teach a lot in a group session... ...even [compared] to individual and what the feedback I get from the people from the groups, they - you know, some of them, they have been actually able to explore the technique even in more depth"*

This was mirrored in the participant interviews with a majority expressing views akin to this. These participants tended to value the group support and solidarity highly and liked having the opportunity to share experiences and problems with the group. They valued the dual learning environments; focusing on their own specific problems in individual lessons and using group lessons as an opportunity to observe and interact with other participants and learn from one another's experiences.

> *GREAT15: "Yeah, I think the, the mix of having one-to-ones and also sort of group sessions is really um interesting as well. I really liked having, I benefited from obviously having the one-to-ones, but equally having that opportunity to share experiences with people was, I think, um invaluable actually"*

Many of these participants felt that the balance between group and individual lessons was an ideal approach for them. However, others would have preferred a greater proportion of individual lessons as they found they learned more one to one. Despite their preference for individual lessons these participants did find the group lessons useful in ways that individual teaching alone would not have provided.

> *GREAT41: "Um, I preferred the one to one sessions, to be honest. But actually, the group sessions was good to… I mean, I, the thing is you're listening to everyone else's problems and issues, which is fine. Um, because it sort of, you pick up tips from other people, and how they've overcome it and things."*

Participants generally expressed an understanding that this was just a starting point for learning the Alexander Technique and that they could go into much more depth with further study.

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GREAT12: "Because it, I do understand it and I think ten lessons probably is only scratching the surface. You know, I realise like probably I really should try and have another 10/20, but it's expensive and I'm not too sure that I will do that."

3) *Group teaching damages the AT profession.*

A smaller but significant subsection of teachers interviewed expressed sympathy with this view. This attitude is partly supported by concern amongst these teachers that the current quality of AT group teaching present in the profession is very poor. They perceive that classes often comprise large groups of beginners with no experience of private lessons and are often taught by teachers with no training for group teaching.

Teachers expressing this view see a great deal of danger in the propagation of group teaching. They tend to express the view that if people attend only group lessons, they will not have learnt the technique to any practical degree of depth and will subsequently come away with an impression of AT that is both substandard and false. As a result, the reputation of AT as a whole will suffer, the more group teaching becomes popularized.

T24: "the teachers are so keen on it because they say something is better than nothing, but something isn't better than nothing. Driving around in a half-maintained car isn't better than not driving."

Some teachers expressing these views were more positive about the intervention as proposed but others retained their concerns. fact, These teachers would say that any attempt to teach people AT in groups is a non-starter by definition. Alexander Technique has to be learnt in a one-on-one setting as it requires the constant physical attention of a teacher to achieve the kind of embodied learning needed for the technique to be effective. Even though the intervention included some hands-on teaching in group lessons the total amount of hands-on time was still seen as insufficient by some.

T028 "It's just not the Alexander Technique [laughs]. If you've not got your hands on someone. I just don't' think we're giving them the full shilling, they're not, they're not, it, it's a compromise, put it that way."

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Those teachers who taught the course as part of this intervention expressed views generally in line with the first and second themes. However, intervention teachers did express some views that would fit with theme three regarding group teaching in general – but not regarding the course employed in this intervention. Teachers expressing views aligned with each of the three themes had variable experience of AT group teaching - there was no particular pattern in this regard. Only one teacher in the sample commented on having receiving training or group AT teaching of any kind.

Quantitative findings

Most student participants were female (30/39), in employment (29/39), married or living with a partner (25/29), and had a range of educational levels.

Follow-up for the primary outcome (RMDQ) was documented in 31/39 (79.5%) participants who were active at baseline for the weekly data prior to lessons and 30/39 (76.9%) for the final follow-up questionnaire at 12 weeks.

RMDQ Score fell from 10.38 to 4.39 a change of -5.99 by 12 weeks. 29/39 (74%) of participants had a reduction in RMDQ score of 2.5 or more. For the data collected at each lesson there was an overall consistent downward trend in RMDQ scores across recruitment groups **(see figure 2 and table 2).**

Overall mean days in pain fell from 5.56 to 3.20, with a consistent downward trend in days in pain throughout the course **(see table 2).**

Mean days interference in normal activities fell from 1.64 to 0.74 a change of -0.95, with an overall downward trend across the weeks (**see table 2**).

[insert figure 2 here]

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Table 2. Primary outcomes in low back pain participants (Baseline and final 12 week follow up).

RMDQ Score									
	Combined Recruitment			**Community Recruitment**			**NHS Recruitment**		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Baseline	39	10.38	4.446	23	11.13	4.684	16	9.31	3.979
12 Week Follow Up	31	4.39	3.639	20	4.15	3.731	11	4.82	3.601
Days in Pain (during the past week)									
	Combined Recruitment			**Community Recruitment**			**NHS Recruitment**		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Baseline	39	5.56	2.162	23	5.57	1.996	16	5.56	2.449
12 Week Follow Up	30	3.20	2.413	19	3.26	2.535	11	3.09	2.300
Days Interference with Usual Activities (during the past week)									
	Combined Recruitment			**Community Recruitment**			**NHS Recruitment**		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
Baseline	36	1.64	2.332	20	1.75	2.381	16	1.50	2.338
12 Week Follow Up	31	0.74	1.673	20	0.55	1.317	11	1.09	2.212

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Discussion

This study reports the initial development of a course of combined group and individual lessons for the AT specifically for back pain, and the exploration of its acceptability among both patients and AT teachers.

Strengths and weaknesses

A strength of this study was the iterative development of this intervention based on feedback from teachers and participants. The inclusion criteria and key outcomes were very similar to previous RCT's of Alexander Technique (ATEAM + ASPEN) so that we can provisionally compare the findings to the previous trials. We have also shown the viability of two distinct recruitment pathways. Finally, we have used mixed methods to gain better insight regarding patients' and practitioners' views regarding acceptability of the intervention. The small sample size and preliminary format warrants some caution regarding quantitative outcomes. The study was also uncontrolled so we cannot exclude non-specific changes over time, but since we know from the ATEAM and ASPEN studies that participants with these inclusion critera improve very little over time, we can be cautiously confident the intervention has the potential to be effective.

The drop out rate pre-course commencement in the NHS recruitment group was higher than anticipated, but was very likely due to the lack of flexibility inherent in running a small feasibility study. We had no secondary course to offer if participants could not make the dates of the course in their area. We also had no replacement teachers immediately available that could be mobilised if a study teacher withdrew from the team - as one did causing a group cancellation. These issues would be remediable in a larger more flexible study – particularly with regards to flexibility around course dates available to participants.

The group teaching incorporated in this intervention should not be considered 'typical' within the AT profession at present – and a number of teachers interviewed remarked on this (both those who taught the course and those who did not). The group sessions included hands-on work and the numbers were kept small enough for this to be manageable for teachers. The groups were also accompanied by required reading and mp3 talks - again most groups do not do that. Furthermore the course as a whole was designed by CN to be effective for back pain sufferers, although it is feasible for the course to be adapted for other musculoskeptal problems (knee, hip, or neck pain). Although we do not have data on the use of additional resources (e.g. use of mp3 talks) we recommend that future trials retain these 'atypical' elements in order to maximise the effectiveness of this course.

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Qualitative findings

The reception of this intervention by patient participants and AT teachers was mostly positive – in many cases finding some advantages to individual lessons alone – supported by the evidence of positive perceptions of patients for group interactions in other conditions[31-33]. However, there is some concern regarding group teaching amongst AT teachers. Much of the resistance to teaching AT group lessons from some teachers seems to come from the perception that group lessons cannot deliver adequate results and will therefore increasingly damage the reputation of the profession the more group teaching supplants individual teaching. The disagreement seems to be primarily about potential harm; providing group teaching has no negative effects on the profession as a whole, then group sessions are preferable to (and vice versa). Therefore, if an intervention that incorporates group teaching can be shown to be effective this may change many teachers' perceptions - and the quantitative and qualitative data from the current study suggests that is plausible.

It is also encouraging to note that while many intervention teachers went into this study with significant reservations about group teaching, at interview they were generally very positive about the intervention. Likewise, many of the teachers in the wider interview sample were better disposed towards this intervention than group teaching in general. As such it will be important to stress the unconventional nature of the group teaching, (particularly small group size, allowing opportunity for hands-on work) included in this course as this is likely to make it more acceptable to those teachers with reservations about group teaching as it currently stands in the profession. Furthermore, it is important to ensure that participants understand that application of AT is a skill to be actively used and developed over time rather than a treatment in the conventional passive sense.

There remains the potential challenge of teaching the course for teachers with limited previous experience teaching groups (this is not included in STAT teachers training in the UK). This, and the negative perceptions of some teachers (see above), highlights the importance of developing robust materials for the course to maximise engagement and inform training.

Perceptions of the overall utility comparing group vs. individual lessons from both teacher and patient interviews seemed to cluster around the view that groups have benefits you do not get from individual lessons alone, but if required to choose only one format then individual lessons will be more effective overall. Teacher attitudes to a mixed intervention were much more positive than to group teaching in isolation - even with some enthusiasm for this approach. Interviews with participants also supported previous qualitative research for group interventions with other

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modalities.[11-16;18] Most prominent was the value participants placed on group solidarity and the potential for learning interactively by engaging with one another's experiences.

Quantitative findings

The quantitative outcomes are promising. There were substantial and clinically important improvements in RMDQ (-5.99 by 3 months). Since two previous trial data sets (ASPEN and ATEAM) document that this population improve little and slowly, the results suggest that the net effect over and above usual care (a reduction in 1 RMDQ score in the control group of the ATEAM study, and similar in the ASPEN study) could be reductions in RMDQ of the order of 4-5.5 compared to usual care. However, as initial studies can over-estimate effect sizes this could be diminished in a larger trial. Even allowing for this, it still seems plausible that the intervention could achieve the MCID for between group differences, particularly as the intervention has not yet been optimised.

Conclusion

Overall the qualitative analysis points towards acceptability for the most part amongst participants and AT teachers – although some maintain reservations. The quantitative data suggests that an intervention of this design could be a viable way of increasing effectiveness versus a short course without greatly increasing cost. Although caution is warranted given the preliminary and uncontrolled nature of this study, a mixed course of individuals and group AT lessons appears to have the potential to cost-effectively produce clinically important changes in function and pain efficiently and is likely to be acceptable to both participants and practitioners.

Future research.

Further iterative development of the materials for patients and teachers should improve engagement, acceptability and likely effectiveness to prepare the intervention for a full trial in low back pain which will also include a wider range of outcomes, including pain intensity and quality of life.

A similar course of individual and group AT lessons could also be developed for other common causes of musculoskeletal pain such as knee, hip or neck pain.

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Contributorship: PL had the original idea for the study; all authors developed the protocol; CN developed the course and course materials, trained the teachers, and ran several of the groups; JL managed all aspects of the study on a day to day basis, interviewed patients and teachers, analysed the qualitative and quantitative data, and wrote the first draft of the paper; AG supervised the qualitative work; all authors contributed to revisions of the paper.

Competing interests: No author has competing interests.

Data sharing: data available from Professor Little on request with a proposal for use of the data.

Ethics statement

Ethical approval was given by both University of Southampton (reference numbers: 24008 and 18780) and NHS ethics committees (REC committee: 17/EM/0185 IRAS number: 214897); all participants provided gave written informed consent prior to participation.

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Figure 1. Flow diagram of participants

Figure2. Days in pain over time

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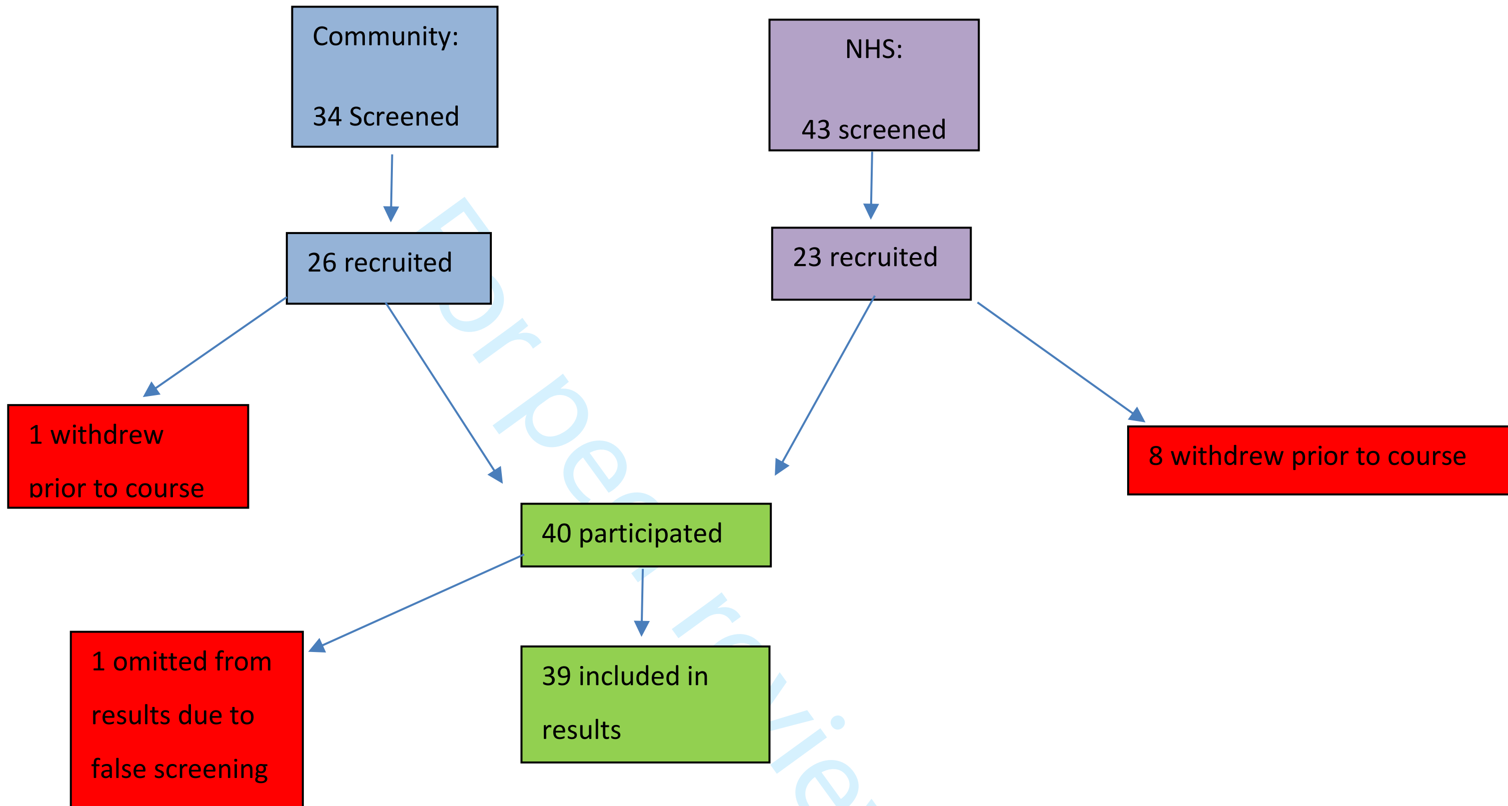
Figure 1



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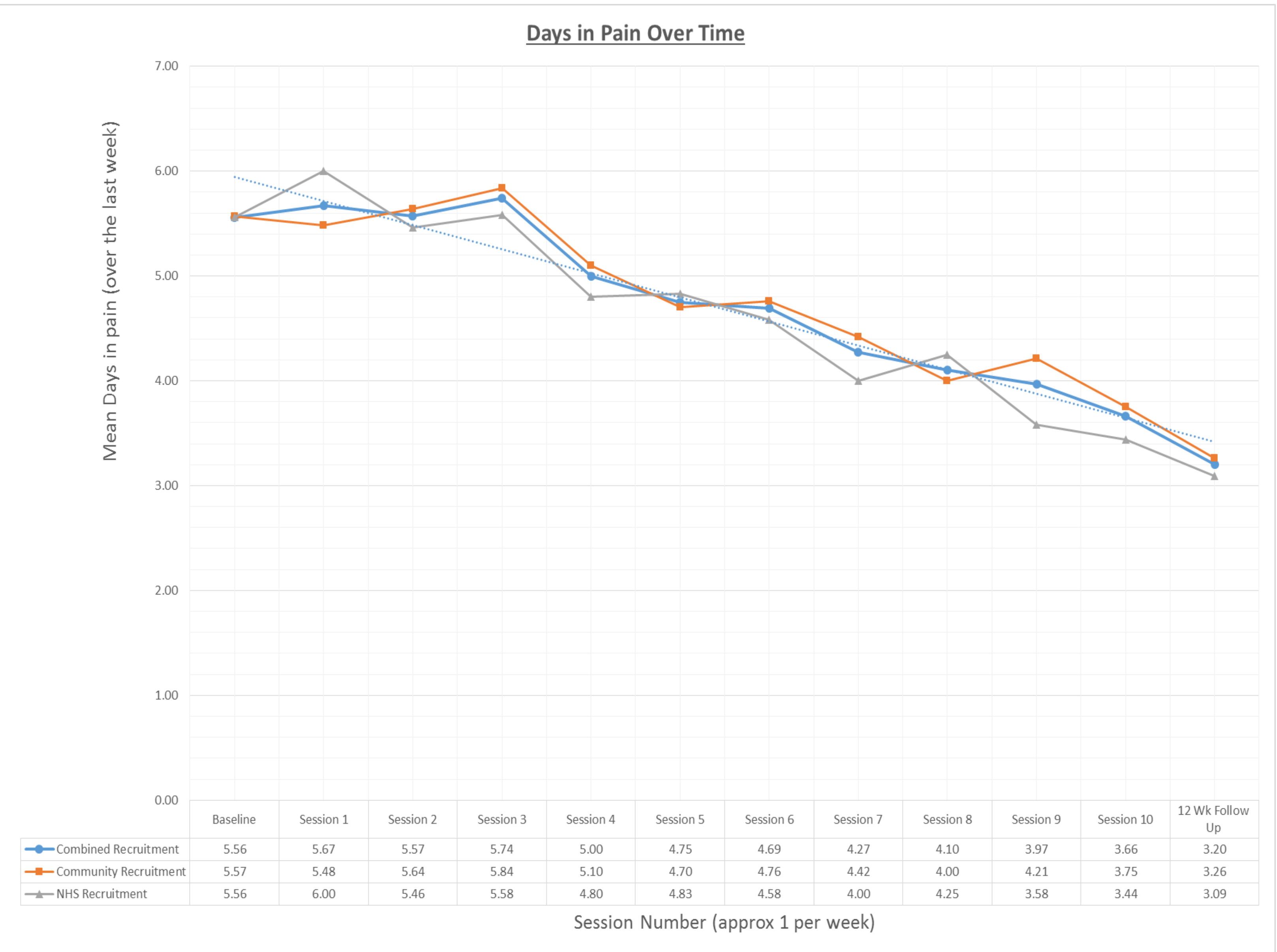

	Baseline	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6	Session 7	Session 8	Session 9	Session 10	12 Wk Follow Up
Combined Recruitment	5.56	5.67	5.57	5.74	5.00	4.75	4.69	4.27	4.10	3.97	3.66	3.20
Community Recruitment	5.57	5.48	5.64	5.84	5.10	4.70	4.76	4.42	4.00	4.21	3.75	3.26
NHS Recruitment	5.56	6.00	5.46	5.58	4.80	4.83	4.58	4.00	4.25	3.58	3.44	3.09

Appendix A

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Session 1: Individual Lesson	Session 2: Individual Lesson	Session 3: Group Lesson	Session 4: Group Lesson	Session 5: Group Lesson	Session 6: Individual Lesson	Session 7: Group Lesson	Session 8: Individual Lesson	Session 9: Group Lesson	Session 10: Group Lesson

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