Alexander technique and Supervised Physiotherapy Exercises in back paiN (ASPEN): a four-group randomised feasibility trial

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Scientific summary

The ASPEN trial

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Scientific summary

Background

An Alexander technique teacher uses gentle hand contact and verbal instruction to help patients become aware of and avoid harmful habits of muscle tension and muscle use. The Alexander technique is applied in everyday activities such as standing, sitting at a desk or walking. The Alexander technique is not an exercise and so might plausibly have additive benefits to physiotherapy exercises, which are likely to work through different mechanisms. It is also unclear whether or not a full course of 24 lessons is needed to provide optimal benefit. A feasibility trial was needed to confirm recruitment mechanisms, key outcomes and the acceptability of study procedures and interventions.

Objectives

The key objectives for the feasibility study were to:

(a) confirm the acceptability of study procedures, the feasibility of recruitment and attrition in trial groups
(b) assess the feasibility of carrying out the range of laboratory-based biomechanical and neuromuscular physiological measures
(c) provide provisional data on the effectiveness of each intervention and the interventions in combination and perform exploratory analyses of the changes in laboratory-based markers
(d) confirm whether or not the proposed control group (normal care) is suitable as a control group (i.e. relatively stable over time) in the context of recent National Institute for Health and Care Excellence (NICE) guidance on the management of back pain.

Design

The trial used a feasibility parallel-group randomised controlled trial design. Participants were allocated by an external randomisation line to four groups: (1) normal care, (2) Alexander technique lessons, (3) physiotherapy exercise classes and (4) Alexander technique lessons plus exercise classes. Neither the intervention nor the main validated self-report outcomes could be blinded. In total, 19 patients were interviewed in a qualitative substudy to explore issues of feasibility and acceptability.

Participants

Patients with recurrent back pain (and at least 3 weeks' duration of the current episode) from general practices in southern England.

Interventions

- Alexander technique: 10 one-to-one lessons with a qualified Alexander technique teacher, each lasting approximately 30–40 minutes.
- Physiotherapy classes: supervised, tailored exercises, approximately 1 hour each, for 12 weeks.
- Normal care: all patients could contact their general practitioner, who was provided with NICE guidance and was free to prescribe or refer.

Main outcome measures

- Primary outcome: Roland–Morris Disability Questionnaire (RMDQ).
- Other outcomes: days in pain, Von Korff pain and disability scale, overall improvement (health transition), fear of activity, modified enablement scale.
- Other potential outcomes: the Oswestry Disability Index and the Aberdeen pain and function scale were also included with a view to informing a definitive set of outcomes.
- Biomechanical and neuromuscular physiological markers: axial muscle tone and flexibility (using a trunk rotation device) and electrical activity (using electromyography) and mechanical properties of muscle tone, elasticity and stiffness (using a MyotonPRO device; Myoton Ltd, London, UK), activity, trunk strength and proprioception.
- Qualitative study: a nested qualitative study was performed among 19 individuals.

Results

In total, 83 patients consented, 69 were randomised and 56 (81%) were followed up at 6 months. Three methods of recruitment proved feasible – invitation based on attendance with back pain (1) in the last 5 years or (2) in the last week, and (3) opportunistic recruitment – but opportunistic recruitment in surgery was slow and inefficient as a sole method. Both the measurements and the interventions proved feasible, although the time commitment was an issue, highlighting the importance of clearer information at consent and flexibility of appointments. The RMDQ was sensitive to change (standardised response mean 0.74), as were the Oswestry Disability Index (standardised response mean 0.80) and the Aberdeen pain and function scale (standardised response mean 0.71), and the Aberdeen instrument showed promising discrimination between groups. At 6 months the control group was stable, that is, it had improved only slightly (RMDQ 1 point lower than at baseline) and, compared with the control group, there were clinically important reductions in RMDQ in all groups [Alexander technique –3.0, 95% confidence interval (CI) –6.7 to 0.8; exercise classes –2.9, 95% CI –6.5 to 0.8; combined –2.5, 95% CI –6.2 to 1.19].

As expected, given the very limited power, exploratory analysis of most clinical outcomes did not reach significance at the 5% level, although some clinical outcomes reached the 10% level by 3 and 6 months, particularly in the combined group. The improvement following each session suggested ongoing benefit until the last class or lesson, and the overall improvement was clinically important.

Novel biomechanical variables strongly associated with RMDQ score at 6 months were muscle tone (0.94 increase in RMDQ per unit increase in Hz, 95% CI 0.48 to 1.40; $p < 0.0001$), lumbar proprioception (1.48 increase in RMDQ per degree, 95% CI 0.83 to 2.12; $p < 0.0001$) and muscle elasticity (–4.86 increase in RMDQ per unit log decrement, 95% CI –0.01 to –9.72; $p < 0.05$). At 3 months, the Alexander technique improved proprioception and exercise classes improved trunk extension strength. A 6 months, the Alexander technique improved timing of multifidus muscle onset and the active straight leg raise test and exercise classes improved multifidus muscle thickness and ability to contract. The combined effects of the Alexander technique and exercise classes were improvements in muscle tone and elasticity and thickness and contractile ability. Thus, there is a plausible link between intervention, proprioception, muscle elasticity and outcome. In terms of harms, one participant fell in the exercise class group.

There was only modest improvement in the control group, comparable to that seen in previous studies. The qualitative substudy documented the need for more information to be provided about the Alexander technique before consent, given its limited penetration in care to date. There were low expectations of care for chronic back pain in the NHS and low expectations regarding the tailored physiotherapy exercise classes, as participants perceived that they were getting something that they had already tried, but participants were pleasantly surprised by the group sessions. The time commitment for the interventions was a problem for some patients but mostly very positive comments were received about the Alexander technique and the exercise classes and about the biomechanical measurements.

Conclusions

With modest modifications a full trial is likely to be feasible. There is encouraging evidence that both interventions may provide clinically important benefits, particularly the combined intervention. Novel biomechanical markers that could be targets for interventions have been identified; a better outcome was associated with changes in muscle tone, elasticity and proprioception. There is also preliminary evidence that, in turn, these markers were modified by intervention.

Suggestions for future research

Even with the small numbers of patients in this study, the improvement in clinical outcomes and changes in biomechanical markers suggest that a full trial could both provide useful efficacy information and improve our understanding of recovery mechanisms in chronic back pain.

Trial registration

This trial is registered as ISRCTN51496752.

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