

The Effect Of The Feldenkrais Method On Pain And Anxiety In People Experiencing Chronic Low Back Pain

Alison L. Smith BPhysio (Hons), Victorian Rehabilitation Centre, Australia

Gregory S. Kolt PhD, Faculty of Health Studies, Auckland University of Technology

Janet C. McConville MSc, Feldenkrais Practitioner, School of Physiotherapy, La Trobe University

Abstract: The aim of this pilot investigation was to evaluate the Feldenkrais Method's effect on pain and state anxiety in people experiencing chronic low back pain. Participants (N = 26) were aged between 25 and 78 years, and were recruited from a community health centre, a rehabilitation hospital, and from the general community. The sample was divided into two groups: Feldenkrais and control. The Feldenkrais group experienced a 30-minute Awareness Through Movement session whilst the control group listened to a narrative of the same duration. Pain was assessed pre and post intervention using the Short-Form McGill Pain Questionnaire. State anxiety was also measured pre and post intervention using the State Scale of the State-Trait Anxiety Inventory. Multivariate Analyses of Variance showed that the Feldenkrais intervention was effective in reducing the affective dimension of pain ($p < .05$), but not the sensory or evaluative dimensions, nor state anxiety. These findings are discussed in relation to previous research and some of the theoretical concepts assumed to underlie the Feldenkrais Method. The clinical implication of the findings involves the potential for the Feldenkrais Method to complement existing modes of pain management for people experiencing chronic low back problems. [Smith A, Kolt G & McConville J (2001) *The Effect Of The Feldenkrais Method On Pain And Anxiety In People Experiencing Chronic Low Back Pain*. *New Zealand Journal of Physiotherapy* 29,1, 6-14]

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INTRODUCTION

The Feldenkrais Method is a movement-based therapy currently used in patient care by an increasing number of physiotherapists and other health-care professionals (Hopper, Kolt, & McConville, 1999; Ives & Shelley, 1998; James, Kolt, McConville, & Bate, 1998; Kolt & McConville, 2000; Wildman, 1990a). The Feldenkrais Method aims to improve function, achieved through teaching an individual how to move with ease and efficiency (Feldenkrais, 1949). This involves guiding the individual's attention to his or her kinaesthetic sense of movement (Apel, 1992; Feldenkrais, 1949), for the improvement of body awareness and movement organisation (Apel, 1992; Feldenkrais, 1984; Rywerant, 1983; Wildman, 1990b). One additional premise of the method is that a resultant improvement in neuromuscular function could have a positive influence not only on the way a person moves, but also on how that person thinks and feels (Feldenkrais, 1977).

The Feldenkrais Method incorporates two allied techniques: Functional Integration (FI) and Awareness Through Movement (ATM). FI involves gently guided manipulation of body parts on a one-to-one basis, where the practitioner communicates new possibilities of body organisation using noninvasive tactile guidance (Lake, 1983; Scoglio, 1993). ATM involves verbal direction of movement sequences that usually take place in a group (Scoglio, 1993). Movement themes commonly involve developmental patterns such as rolling and sit-to-stand, but may also focus on functions such as

breathing, or relatively abstract explorations of joint movements and posture (Wildman, 1990b). Emphasis is placed on utilisation of minimal muscular effort, through which it is hoped that the participant may experience maximal proprioceptive and tactile sensory awareness. Such awareness is thought to be prerequisite to the improvement of neuromuscular efficiency (Feldenkrais, 1984; Rywerant, 1983).

Several researchers and clinicians reported that the Feldenkrais Method can play a role in the management of pain (Bearman & Shafarman, 1999; Chinn, Trujillo, Kegerreis, & Worrell, 1994; Dornan, 1990; Lake, 1985; Scoglio, 1993; Wanning, 1993; Wildman, 1990a) and anxiety (Bearman & Shafarman, 1999; Feldenkrais, 1949, 1977; Johnson, Frederick, Kaufman, & Mountjoy, 1999; Kolt & McConville, 2000; Wildman, 1990b). However, published research that has investigated the Feldenkrais Method's effect on people with pain syndromes (Bearman & Shafarman, 1999; Chinn et al., 1994; Lake, 1985) and anxiety (Johnson et al., 1999; Kirkby, 1994; Kolt & McConville, 2000) has yielded inconsistent findings due to methodological differences and limitations. This problem appears to be reflective of the entire body of Feldenkrais research, in that there appears to be little consistency in findings regarding its efficacy. In their comprehensive review of the Feldenkrais literature, Ives and Shelley (1998) concluded that "the most support for the Feldenkrais Method comes not from the research findings, but rather from the sheer number of positive reports that fit within a sound

theoretical framework" (p. 85). As this is less than satisfactory in light of the growing demand for evidence-based physiotherapy practice (Koes, 1997; Rothstein, 1997), there is good rationale for further research of the Feldenkrais Method as an approach to patient management.

Two studies, in particular, have investigated the effects of the Feldenkrais Method on pain (Lake, 1985; Bearman & Shafarman, 1999). In the earlier of these studies, Lake (1985) reported that ATM intervention helped people with acute and chronic back pain achieve a more vertical postural alignment. Unfortunately, and to the detriment of the study, Lake concluded that the Feldenkrais Method could be applied for the benefit of pain, a finding that clearly cannot be drawn from the research design.

More recently, Bearman and Shafarman (1999) reported "significant" improvements in pain levels, decreased number of medications, and an improved quality of life, following Feldenkrais intervention on people experiencing pain from a variety of sources. However, the investigators failed to report any statistical analyses to support these claims, which greatly limits interpretation of the findings.

In relation to anxiety, a search of the literature identified only three empirical investigations (Johnson et al., 1999; Kirkby, 1994; Kolt & McConville, 2000) that focused on the effect of the Feldenkrais Method on anxiety. The study by Kirkby (1994) was designed to compare the effectiveness of Cognitive-Behavioural Coping Skills Training (CBCST) with the Feldenkrais Method on several psychological variables in a population of females experiencing premenstrual syndrome. The experimental interventions involved training for one hour per week over six weeks. Kirkby reported no significant difference on anxiety scores (as measured by the State-Trait Anxiety Inventory, Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) between the CBCST, the Feldenkrais, and no-treatment groups.

In contrast to the Kirkby (1994) findings, Kolt and McConville (2000) found that the Feldenkrais Method was effective in reducing anxiety in a group of undergraduate physiotherapy students who underwent a four-session program of Feldenkrais ATM, relaxation exercises, or no-treatment control procedures.

In another recent study, Johnson et al. (1999) reported that participation in an 8-week Feldenkrais program resulted in significant state anxiety reductions compared to participation in "non-therapeutic bodywork" for patients with multiple sclerosis.

Although the reports of Kirkby (1994), Kolt and McConville (2000), and Johnson et al. (1999)

produced conflicting findings, their investigations were markedly different. It might be concluded, however, that the Feldenkrais Method could be effective for the reduction of state anxiety (see Johnson et al.; Kolt & McConville) rather than trait anxiety (see Kirkby).

One issue that remains unclear in the literature is how much ATM participation is required to produce benefits. For example, Brown and Kegerreis (1991), Chinn et al. (1994), and Ruth and Kegerreis (1992) all found significant changes in a variety of variables (e.g., perceived exertion, range of movement, EMG activity) over a single ATM session. In contrast, other studies reported changes only after several ATM's (e.g., Dunn & Malcolm, 1992; Johnson et al., 1999; Kolt & McConville, 2000). As well, the issue of the required number of ATM sessions is confounded by the lack of detail reported in previous research regarding the specific ATM sessions used. It appears that research still needs to be directed to looking at the potential of single and multiple ATM sessions to produce change.

The current investigation looked at the potential of a single ATM session to produce change in patients with chronic low back pain. Chronic low back pain is one area of physiotherapy where the efficacy of a variety of treatment modalities is still under evaluation. It must be acknowledged that chronic low back pain is a complex and multifactorial condition that has been the subject of a great deal of research attention, and it is not the aim of this paper to present an in-depth discussion of the evolution and management of the condition. However, to place the current study within the context of contemporary approaches to chronic low back pain management is warranted. Among the variety of treatment approaches to the management of chronic low back pain (see Waddell, 1998), are approaches based on psychophysiology. These approaches look at the relation between mental events and neuromuscular activity, whereby stress leads to autonomic arousal, muscle tension, and vascular change, with a resultant influence on pain (e.g., Adams, Ravey, & Taylor, 1996). Flor, Turk, and Birnbaumer (1985) provided some evidence that supports this psychophysiological theory in a study that compared the relationship of paraspinal electromyographic reactivity to personally relevant and general stress among chronic low back pain patients, non-back-pain patients, and healthy controls. They found that only the patients with chronic low back pain demonstrated abnormal paraspinal muscular reactivity to stress, together with a prolonged delay in return to baseline. Clinically, these findings have led to the successful application of treatments, such as relaxation or biofeedback,

aimed at breaking abnormal psychophysiological patterns (Gamsa, 1994). Biofeedback, in particular, has been shown to reduce subjective pain reports and precipitate increases in function (Adams, Ravey, & Bell, 1994).

Most current pain management now combines cognitive, behavioural, and psychophysiological techniques (Waddell, 1998). The features of this multifaceted approach include: an understanding of pain and disability; a positive, optimistic mental approach; an aim to combat demoralisation and increase confidence; the use of largely group therapy, but also individual counselling; an active patient participation and responsibility; skills acquisition and training; an emphasis on patient management of his or her pain and life; and involvement of a spouse or partner (Waddell, 1998).

If the patient can be taught to modulate their pain response and anxiety response through the Feldenkrais Method, such as with biofeedback or relaxation techniques (Jessup, 1989), there could be preliminary support for the inclusion of the Feldenkrais Method into existing CLBP management programs. Further, that some authors have explicitly suggested the use of the Feldenkrais Method to manage various aspects of chronic low back pain (e.g., Lee, 1997; Miller, 1991), lends additional support to the rationale for this pilot investigation.

The broad aim of this study was to gather pilot data, and to supplement the growing body of literature on the efficacy of the Feldenkrais Method for a variety of psychological (Chinn et al., 1994; Gutman, Herbert, & Brown, 1977; Hopper et al., 1999; Johnson et al., 1999; Kirkby, 1994; Kolt & McConville, 2000; Ruth & Kegerreis, 1992), physical (Brown & Kegerreis, 1991; Chinn et al., 1994; Hopper et al., 1999; James et al., 1998; Lake, 1985; Ruth & Kegerreis, 1992), and clinical improvements (Bearman & Shafarman, 1999; Chinn et al., 1994; Kirkby, 1994; Lake, 1985).

Specifically, the aims were twofold. First, to investigate the effects of the Feldenkrais Method on pain as a multidimensional construct (Sim & Waterfield, 1997), and second, to investigate the Feldenkrais Method's effect on state anxiety in a clinical setting. Two hypotheses were tested. First, that there would be a significant reduction in one or more of the sensory, affective, or evaluative dimensions of pain following a Feldenkrais Awareness Through Movement (ATM) session in people experiencing chronic low back pain (CLBP). The second hypothesis was that there would be a significant reduction in state anxiety following a Feldenkrais ATM session in people experiencing CLBP.

METHOD

Participants

Participants were recruited from a community health centre ($n = 10$), a rehabilitation hospital ($n = 8$), and from the general community ($n = 10$). Of the 28 participants who were recruited and completed the study, data from only 26 were used, due to incomplete questionnaire responses of 2 participants. Exclusion criteria were hearing deficits or difficulty comprehending written and spoken English language. The final sample, therefore, involved 26 people (10 males, 16 females), aged between 26 and 78 years ($M = 50.8$, $SD = 16.2$), who reported experiencing chronic low back pain (CLBP). For this investigation, the American Medical Association's (1988) definition of CLBP was used. That is, CLBP was defined as low back pain persisting past the normal time of healing, and which may or may not be associated with objective physical findings, residual structural defect, or known underlying pathology. For research purposes the "normal time of healing" was considered to be three months (International Association for the Study of Pain, 1986). The mean duration of back pain was 10.9 years ($SD = 8.8$) in the Feldenkrais group ($n = 14$), and 8.1 years ($SD = 8.8$) in the control group ($n = 12$), which was not significantly different between groups, $F(1, 24) = 0.21$, $p = .65$. The mean ages of the Feldenkrais and control groups were 54.4 years ($SD = 15.3$) and 51.1 years ($SD = 16.2$), respectively. Age was not significantly different between the two groups, $F(1, 24) = 0.78$, $p = .39$.

Participants were volunteers and no payment or other incentive was offered. All participants signed a statement of informed consent, and the La Trobe University, Faculty of Health Sciences Human Ethics Committee approved the project.

Test Instruments

Deyo et al. (1994) suggested that suitable outcome measures for studying patients with low back pain should constitute a measurement of health-related quality-of-life, where at least one measure of symptoms (e.g., pain), one measure of functional status (including self-care, lifting, walking, sleeping, recreation), and one measure of role function (including work absenteeism, days in bed, days of limited activity) need to be included. As it would be unrealistic to assume that a single session of the Feldenkrais Method could have a direct influence on functional status or role function, a functional outcome measure (e.g., Roland Morris Disability Scale, Roland & Morris, 1983) was not chosen. Rather, pain and anxiety, as measures of symptoms, were selected.

The Short-Form McGill Pain Questionnaire (SF-MPQ), developed by Melzack (1987) to provide information on the qualitative dimensions of the pain experience, was used in this study. The SF-MPQ has three components, each of which is scored separately in order to provide data descriptive of the sensory, affective, and evaluative dimensions of pain. The SF-MPQ was selected for use in the current research as it enables rapid and simple acquisition of data on multiple aspects of the pain experience. Melzack and Katz (1992) reported that the SF-MPQ has high content validity, and with the inclusion of a Visual Analogue Scale, the test-retest reliability is reportedly higher (Bowsher, 1994) than that of other instruments such as the McGill Pain Questionnaire (Melzack, 1975).

The State Trait Anxiety Inventory (STAI) (Form Y), developed by Spielberger et al. (1983), was used in our investigation to assess state anxiety. The essential qualities that the state scale is designed to evaluate are feelings of apprehension, tension, nervousness, and worry (Spielberger et al., 1983). A review of the literature has shown the scale's previous application for the assessment of state anxiety in patients with low back pain (e.g., Garron & Leavitt, 1983) and many other pain syndromes (e.g., Dyrehag et al., 1998). The state scale of the STAI has been found to have high reliability as measured by its internal consistency (Spielberger et al., 1983).

Procedure

Participants were randomly assigned (within treatment centres) to either the Feldenkrais or control groups. Mixed unlabelled envelopes containing a card marked either "Group 1" (Feldenkrais) or "Group 2" (Control) were distributed by the researcher for this purpose. Participants in the Feldenkrais group were administered the STAI and the SF-MPQ immediately prior to being read a standard set of instructions for the intervention (based on those used by Hopper et al., 1999). These instructions included a request to adopt a comfortable position on the floor, to listen to and follow the instructions on the audiotape, and to refrain from talking during the session. The group then participated in a 30-minute Feldenkrais ATM via audiotape (a standardised technique used to administer ATM's, Kolt, McConville, & Bate, 1998) entitled *Awareness of breath: the golden key* (Delman, 1993). The voice on the tape verbally guided participants through gentle breathing sequences and visualisations. This particular ATM was selected, as it does not require repetitive movement sequences involving the upper limbs, lower limbs, or pelvis. It was thought that limb and pelvic movements could potentially have

aggravated the lower back discomfort experienced by some of the participants (as the participants' CLBP was heterogeneous in origin), and so this physically simple ATM was chosen. Although the function of breathing may, at first, be considered inappropriate for the treatment of CLBP, it should be noted that a fundamental precept of the Feldenkrais Method is that awareness and attitude are more important than any specific act (Bearman & Shafarman, 1999). Under this assumption, it was reasoned that any improved sensory perception and ability to modify movement organisation could be applied throughout the entire body, no matter what the emphasis of the particular ATM. In addition, a heightened awareness, given to even the most "taken for granted" functions (e.g., breathing), has been proposed to predispose an individual to become more attuned to his or her whole being (Scoglio, 1993).

People in the control group, after completing the STAI and SF-MPQ, listened to a 30-minute audiotaped story (Wodehouse, 1992). Prior to this procedure a standard set of instructions was read to the participants. These instructions varied as minimally as possible from those read to the Feldenkrais group. It was the aim of the control intervention to provide an activity that required the participants to attend to a voice (as in the Feldenkrais ATM session), in a position of comfort (as in the Feldenkrais ATM session), but that did not encourage awareness of sensation or movement. Thus, differences between groups could be attributed to the increased kinaesthetic awareness resulting from experience with the Feldenkrais Method. The choice of an audiotaped narrative as a control intervention was supported by the lack of any literature to suggest that it could be an effective form of therapy for either pain or anxiety.

Prior to the commencement of the tapes, towels and thin rubber exercise mats were offered to participants to assist with comfort and positioning in supine lying. As it is one aim of the Feldenkrais Method to facilitate attention to sensory input for maximal kinaesthetic awareness (Feldenkrais, 1984), increasing participants' comfort and sensation (through the use of mats and soft towels) was not considered to threaten the internal validity of the investigation.

Immediately following the 30-minute interventions, the participants were re-administered the STAI and SF-MPQ. It should be noted, that although the researcher who administered the questionnaires and intervention (A.S.) was not blinded to the treatment administered, the possibility of bias communicated to the participants through these procedures was considered to be minimal. In

fact, all the researcher was required to do was distribute and collect the questionnaires, read a set of standard instructions, and start the audiotape intervention. The researcher did not remain in the room while the interventions were being delivered.

The data were analysed using three one-way multivariate analyses of variance (MANOVA) and post-hoc Scheffé tests on significant results. The alpha level was set at .05 and data were analysed using the Statistica program.

Results

Analysis using MANOVA showed that the groups (Feldenkrais and control) were not significantly different for age ($p = .39$), gender ($p = .28$), duration of CLBP ($p = .65$), pretest anxiety scores ($p = .21$), or pretest scores on the sensory ($p = .76$), affective ($p = .18$), and evaluative ($p = .90$) pain scales.

Descriptive statistics for pain and anxiety are shown in Table 1. It can be seen that the mean scores of both groups decreased between pretest and posttest measurements on all variables, with the exception of the evaluative dimension of pain in the Feldenkrais group, which increased between pretest and posttest.

In relation to the effect of the Feldenkrais Method on pain, a one-way MANOVA showed no significant difference for the main effect of time, $F(4, 10) = 2.12, p = .15$. However, one variable, the affective dimension of pain, differed significantly between times of measurement, $F(1, 13) = 4.98, p = .04$. Post-hoc analysis using a Scheffé test identified that posttest affective pain was significantly lower than at pretest ($p = .04$). There were no significant differences between pretest and posttest scores for the sensory, $F(1, 13) = 0.73, p = .41$, or evaluative, $F(1, 13) = 0.03, p = .87$, dimensions of pain.

A corresponding analysis for the control group

(one-way MANOVA) also showed that, overall, there were no significant differences across time, $F(4, 8) = 2.07, p = .18$. However, as with the Feldenkrais group, there was a significant difference between pretest and posttest scores for one variable, the sensory dimension of pain, $F(1, 11) = 6.06, p = .03$. Post-hoc analysis using a Scheffé test showed that control participants reported a significant decrease in sensory pain between pretest and posttest ($p = .03$). There were no significant differences between pretest and posttest scores for the affective or evaluative dimensions of pain in the control group, $F(1, 11) = 1.74, p = .21$ and $F(1, 11) = 2.45, p = .16$, respectively.

The results indicate that the Feldenkrais participants reported a significant decrease in affective pain relative to the control group, whilst the control participants reported a significant decrease in sensory pain relative to the Feldenkrais group.

In relation to the effects of the Feldenkrais Method on state anxiety, one-way MANOVA (with time as the independent variable) revealed no significant differences within the Feldenkrais group. Inspection of the findings for state anxiety showed that there was no significant difference between pretest and posttest measures for the Feldenkrais group, $F(1, 13) = 2.65, p = .13$. As well, no significant differences were found between pretest and posttest scores for state anxiety within the control group, $F(1, 11) = 4.27, p = .06$.

Discussion

The findings of the current investigation showed that the Feldenkrais Method was effective for the reduction of the affective dimension, but not the sensory or evaluative dimensions, of pain, in people experiencing CLBP. Therefore, the hypothesis that one or more of the sensory, affective and evaluative dimensions of pain (as assessed by the SF-MPQ)

Table 1. Mean Pretest, Posttest, and Change Scores for Pain and Anxiety

	Feldenkrais n = 14				Control n = 12			
	Pretest M (SD)	Posttest M (SD)	Change M (SD)	p	Pretest M (SD)	Posttest M (SD)	Change M (SD)	p
Sensory Pain	7.1 (7.0)	6.1 (8.0)	-1.0 (4.4)	.41	6.9 (5.8)	3.4 (3.6)	-3.5 (4.9)	.03*
Affective Pain	2.6 (2.7)	1.4 (2.3)	-1.2 (1.9)	.04*	1.8 (2.6)	1.0 (1.4)	-0.8 (1.7)	.21
Evaluative Pain	24.7 (19.9)	25.8 (29.2)	1.1 (23.8)	.87	25.8 (23.9)	17.8 (19.5)	-8.0 (16.7)	.15
State Anxiety	41.0 (12.9)	36.5 (10.9)	-4.5 (10.4)	.13	35.4 (9.8)	30.9 (8.2)	-4.5 (7.9)	.06

*significant at $p < 0.05$

would be reduced following a 30-minute Feldenkrais ATM session was supported. As there was no significant reduction in the affective dimension of pain in the control participants, the cause of the reduction could be attributed to the Feldenkrais intervention. The affective dimension of pain was rated on the descriptors tiring-exhausting, sickening, fearful, and punishing-cruel in the SF-MPQ.

Analysis for the control intervention showed a reduction in the sensory component of pain. It had been anticipated that no aspect of pain would be influenced by the control intervention, therefore, this was an unexpected finding. The sensory dimension of pain was described on the SF-MPQ by such adjectives as throbbing, stabbing, aching, and tender.

As previous related research (Bearman & Shafarman, 1999; Lake, 1985) differs markedly in design and methodology from the current investigation (particularly in the selection of outcome measures), it is difficult to draw comparisons between the previous findings and those of the current study. For example, previous investigators have used findings of improved function (Bearman & Shafarman, 1998) and improved postural alignment (Lake, 1985) to imply relief from pain, but have not reported the reduction of pain itself. As it was the aim of the current investigation to provide evidence regarding the Feldenkrais Method's influence on pain directly (through the assessment of three discrete dimensions of pain), the results of the current investigation cannot directly support or refute previous research findings.

The finding of a significant reduction in the affective pain dimension, does however, lend support to the theoretical background of the study. That is, the result is supportive of the assumption that the Feldenkrais Method can alter pain through increased body awareness and improved movement capabilities (Apel, 1992; Feldenkrais, 1984; Rywerant, 1983; Wildman, 1990b). Feldenkrais (1977) theorised that the mind could be influenced through reshaping of the self-image that occurs during the process of movement learning. The current findings are reflective of this theory, in that perhaps it was not the pain itself that was changed, but the individual's attitude toward their pain. For example, it could be that the awareness of breathing control developed in the ATM reduced the participants' emotional response to pain through a dissipation of accumulated stress. Although this effect has been considered as one explanation of the efficacy of relaxation for pain management (McIndoe, 1994), Wanning (1993) suggested that the Feldenkrais Method provides for more than mere relaxation. Therefore, it might be that an enhanced understanding of movement control

could have renewed the participants' sense of control over their bodies, and as such, contributed to the reduction in their emotional response to pain.

In relation to the other dimensions of pain (sensory and evaluative), there are a number of possible explanations for the nonsignificant changes following the Feldenkrais ATM session. One explanation could involve improved body-awareness and enhanced sensory perception, as these effects are assumed to result from experience with the Feldenkrais Method (Apel, 1992; Feldenkrais, 1949; Wildman, 1990b). Essentially, the participants may have become attuned to their physical sensations (including pain) in such a way that their perception of pain was barely altered. That is, the increased awareness could have prevented the distraction effects that have been proposed to account for the effectiveness of techniques such as exercise (e.g., Johnson & Petrie, 1997) for pain management. The explanation gains further support when the control intervention is considered, as the effects of distraction could well explain the reductions in the sensory dimension of pain observed in the control group.

A further explanation for the nonsignificant changes in the sensory and evaluative dimension of pain for Feldenkrais participants could lie in the use of a single rather than multiple sessions. As such, it is possible that there was insufficient opportunity within the session to develop an understanding of the Feldenkrais as a process of learning body awareness.

The current investigation showed that a 30-minute Feldenkrais ATM session had no significant effect on state anxiety in people experiencing CLBP. This finding did not support the research hypothesis, nor therefore, the earlier literature (Bearman & Shafarman, 1999; Feldenkrais, 1949, 1977; Johnson et al., 1999; Kolt & McConville, 2000; Wildman, 1990b) from which the research hypothesis was derived. There were also no significant anxiety changes in the control participants. The current research was not designed to support or dispute earlier research findings, but rather to examine them in a clinical context. Kolt and McConville (2000) found a reduction in state anxiety in a population of healthy university students following experience of a Feldenkrais ATM session. In the current investigation, it could be that no such effect was demonstrated because people with CLBP could experience affective processes that are more difficult to manipulate than those of other groups.

From a purely theoretical perspective, one of the fundamental aspects of the Feldenkrais Method, as noted previously, is that the mind-body interaction of the learning process could have a positive influence

on the way an individual thinks and feels (Feldenkrais, 1977). That the findings for anxiety do not support this theory is also worthy of explanation. For example, Feldenkrais (1949) stated that "the edge of anxiety is blunted by the dissolution of anxiety patterns" (p. 69). Whilst it might have been possible for the exploration of new and more efficient breathing patterns to assist in the dissolution of tension or "anxiety patterns" in persons experiencing CLBP, Feldenkrais did not make clear what anxiety patterns constitute. Therefore, it is not possible to know if participants demonstrated these postures or patterns of movement prior to the ATM session, or further, whether the ATM selected actually addressed them.

In summary, the current findings suggest that the Feldenkrais Method was not effective for the reduction of state anxiety in people experiencing CLBP. This finding may be due to the possibility that use of the Feldenkrais Method to decrease state anxiety is a more appropriate intervention for clinical populations other than chronic pain, or that more than one ATM is required to effect change. Future research should investigate these suggestions before general conclusions regarding the clinical value of the Feldenkrais Method for state anxiety are made.

The findings of the current study showed that the Feldenkrais Method can significantly reduce the affective dimension of pain (as assessed by the SF-MPQ) in people experiencing CLBP. The clinical implication of this finding is that the Feldenkrais Method may have complementary value to traditional medical or physiotherapeutic interventions for the overall management of people experiencing CLBP. It has been suggested that traditional medical or physiotherapeutic interventions alone are often only partly successful for chronic pain management, leaving a large proportion of patients who suffer prolonged discomfort (Craig, 1994). CLBP is one such chronic pain experience that is reportedly difficult to treat, as it is often too complex to be entirely explained by neurophysiological concepts (Bellissimo & Tunks, 1984). Therefore, attention needs to be given to interventions (such as the Feldenkrais Method) that address other aspects of the CLBP experience. Important concerns of the healthcare professional are, after all, not only the pain itself, but also the patient's response to the pain.

The findings of this pilot investigation must be viewed in light of five potential limitations. First, the sample size was small. For future research, at least 26 participants in each group would be required for a power level of 0.8. Second, as no follow-up tests of pain or anxiety were conducted, establishing the longer-term effects of the intervention is not possible. Third, although the use of a single session of

Feldenkrais intervention could be viewed as a limitation, this method was guided by the literature that indicated the changes that may be possible by participation in a single Feldenkrais session. A further limitation concerns Rosenthal effects. Although it was not made explicit to participants which was the experimental and which the control intervention, this could have been deduced, making it possible for the Feldenkrais participants to respond to the questionnaires in accordance with what they perceived the researchers had hypothesised. Finally, that participants were drawn from varied settings (community health centre, rehabilitation hospital, and general community) could confound the findings. However, analysis of data by setting was not possible in this pilot investigation due to sample size.

Notwithstanding these potential limitations, the current research suggests that further clinical and research attention may be given to the Feldenkrais Method as a possible adjunct to more traditional methods of managing CLBP. Although it could be argued that pain and anxiety are not the most important indicators of clinical change in CLBP patients, they are factors that undoubtedly have a significant impact on the overall coping ability of the patient, and indeed, the success or failure of a multifactorial approach. The aim of this investigation was to explore the possibility that the Feldenkrais Method might be an appropriate adjunctive intervention for use in a CLBP management program, on the premise that it might facilitate the empowerment (through reduced pain perception and anxiety) that current approaches aim to achieve (Waddell, 1998). Additionally, we were interested in focussing on anxiety and pain to shed some light on the relatively unexplored psychophysiological effects of the Feldenkrais Method. Our goal of conducting exploratory pilot research on the efficacy of the Feldenkrais Method on pain and anxiety in those experiencing CLBP was fulfilled. On the basis of the findings, we suggest that further investigation is required before strong conclusions are drawn, and modifications to current clinical practices recommended.

CORRESPONDENCE:

Dr. Gregory S. Kolt
Faculty of Health Studies
Auckland University of Technology
Private Bag 92006
Auckland 1020
New Zealand
Telephone: +64 9 917 9999 (extension 7774)
Facsimile: +64 9 917 9877
Email: gregory.kolt@aut.ac.nz

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