

*Original Research*

## **Effects of a 12-week series of Feldenkrais® Awareness Through Movement® classes on functional ability, quality of life, and kinesiophobia on retirement age adults**

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### **Abstract**

**Aim:** This investigation examined the impact of a 12-week series of Feldenkrais Awareness Through Movement (ATM®) classes on the functional ability, quality of life and kinesiophobia of a group of active retirees.

**Method:** Twenty-seven participants completed three questionnaires, the patient specific functional scale (PSFS), WHOQOL-BREF, and the Tampa Kinesiophobia Scale before and after the program. Paired T tests were used to evaluate the differences between the time points.

**Results:** There was a significant change in the PSFS after the twelve-week program (1.4 out of ten point ( $p < .001$ ) improvement). There were no statistically significant differences in the other measures, though the mean for the group moved from what is considered a “high” level of kinesiophobia to a “normal” level.

**Conclusion:** Functional limitations were improved following a 12-week period of Feldenkrais ATM classes. The results are consistent with previous studies that suggest that the best way of evaluating the impact of the Feldenkrais Method may be using items that the individual selects as occurs with the PSFS rather than scales where the items being evaluated are fixed and/or standardised.

### **Keywords**

Feldenkrais Method, somatics, phenomenology, embodiment, health

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## **Effects of a 12-week series of Feldenkrais® Awareness Through Movement® classes on functional ability, quality of life, and kinesiophobia on retirement age adults**

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## **Background**

The Feldenkrais Method® was developed by Moshe Feldenkrais as a means to assist individuals to learn more efficient movement patterns and thereby increase their ease of and ability to function. It has been described as an exploration into the relationship between movement, physical experience and development (Feldenkrais 1972) and consists of two components; a hands-on approach called functional integration and a group approach as used in the program being evaluated in this paper called Awareness Through Movement (ATM®). An analysis of the structure of ATM classes by (Connors *et al.* 2011) found that the classes utilise principles described in current theories of learning and skill acquisition.

There is some evidence of the effectiveness of ATM classes from both qualitative and quantitative studies. Qualitatively, improvement has been found in body image and self-efficacy (Öhman *et al.* 2011). Quantitatively, a systematic review by Ernst and Canter found 'encouraging', but 'not compelling' evidence for the effectiveness of the Feldenkrais Method (2005). A more recent systematic review of the effects on balance concluded that the Feldenkrais Method resulted in improved static, but not necessarily dynamic balance (Gomez *et al.* 2013).

One difficulty in evaluating the Feldenkrais Method is that it does not target specific factors such as strength, flexibility or balance, but rather aims to improve an individual's ability to function in their daily life. It is hardly surprising, therefore that a study by Connors investigating which outcome measures were most useful in evaluating the impact of the Feldenkrais Method found the Patient Specific Functional Scale (PSFS) to be the most useful and sensitive to change

(Connors *et al.* 2010). The current study therefore included the PSFS as a means to evaluate the effectiveness of the program.

Most previous investigations into the Feldenkrais Method have considered the physical outcomes of Feldenkrais (Hillier and Worley 2015), but there is little evidence relating to the psychological and even less related to social impacts (Connors *et al.* 2011). The WHOQOL-BREF was developed by the World Health Organisation (WHO) and is the second outcome measure used in the current study. The measure recognises that quality of life includes physical health, psychological health and social relations (Skevington *et al.* 2004).

An individual's interpretation of pain or catastrophizing in relation to pain or injury can lead to the development of kinesiophobia (fear of movement) which in turn increases both the pain and disability of an injury (Vlaeyen *et al.* 1995). It has also been suggested that measures of kinesiophobia are more responsive to change in patients with the low levels of disability such as the participants in the current study (Hall *et al.* 2011). The eleven point Tampa Scale of Kinesiophobia (Walton and Elliott 2013) was therefore chosen as the third outcome measure for the current study.

The aim of this study was to evaluate the effect of a 12 week Feldenkrais ATM program on the functional abilities, quality of life and kinesiophobia of a group of participants from two retirement villages as indicated by the PSFS, WHOQOL-BREF, and the Tampa Kinesiophobia Scale.

## **Method**

Participants undertook a series of weekly one-hour ATM classes over a period of twelve weeks. The classes were conducted at two retirement villages. Following an introduction and signing of informed consent, the participants filled out three outcome measures; The PSFS, WHOQOL-BREF, and the Tampa Kinesiophobia Scale. An investigator was present to assist as needed. The participants filled out the outcome measures again at their twelfth and final class.

## **Participants**

A series of Feldenkrais ATM classes were offered at two retirement villages. To participate in the classes, participants needed to be able to get up and down off of the floor and be able to read and write in English. All 27 individuals (mean age 73.8, range 59-88 years) undertaking the classes were asked if they wished to participate in a research project evaluating the effectiveness of the classes and all agreed to participate. All participants were independent in daily living except one individual who had suffered a stroke and lived with his wife-carer. Most had minor limitations of their activities of daily living.

Participants who were absent from more than 3 sessions would be excluded from the analysis.

## Intervention

The ATM classes were conducted by a Feldenkrais Practitioner with over 20 years' experience (author ME) and were offered without charge to the participants as part of a project funded by a Gold Coast (Australia) Medicare Local Innovation Grant.

The main focus on the series of lessons was on getting down and up from the floor and moving more efficiently in daily activities. The functions and primary orientations of the body during the lessons were as follows:

1. Diagonal reaching – supine
2. Differentiation/coordination of bilateral movements for walking – sidelying
3. Differentiate hips, pelvis and spine – supine and sitting
4. Sit to stand – sitting and standing from a chair
5. Rolling and getting off the floor in a spiral – lying and standing
6. Connecting breathing with pelvis and spine – supine
7. Spinal extension – supine
8. Differentiating and connecting rotational movements of the shoulder, spine, ribs and pelvis – supine
9. Circling the foot and connecting with rotation of the hips, spine and ribs – prone
10. Turning in sitting – sitting
11. Balance in standing – standing
12. Connecting eye movements to the rest of the body – supine

### *The Patient Specific Function Scale (PSFS)*

The Patient Specific Function Scale (PSFS) involves the participants choosing three to five activities that they find difficult or are unable to perform due to their pain or disability (Jolles *et al.* 2005). The scale uses an eleven point Likert scale with zero indicating they were unable to perform the activity at all due to pain or disability and 10 indicating they were able to achieve the task normally without difficulty. The mean activity scores for each individual were used in further analysis. In other words, if they selected three items the total was divided by three, and if they selected five the total was divided by five. Only items where the participant included the scores for the same activities in the before and after surveys, were included in the analysis.

### *World Health Organisation Quality of Life Scale*

The WHOQOL-BREF consists of 26 questions divided into four domains: physical health, psychological health, social relationships and environment (Skevington *et al.* 2004). Each question is answered on 5 point scale ranging from strongly disagree to strongly agree with a middle option of a neutral response. Higher scores indicated a higher Quality of life. Analysis

was only undertaken on surveys from those participants who completed each item in both the before and after surveys.

### *Tampa Kinesiophobia Scale*

The eleven point Tampa Kinesiophobia Scale (Walton and Elliott 2013) was used to assess an individual's level of fear in regards to causing injury or damage with movement. The scale involved 17 questions answered using a four-point scale again ranging from strongly disagree to strongly agree, without the option of a neutral response. A higher score indicates a higher level of kinesiophobia. Again, responses were only included in the analysis if the participant responded to all questions in the before and after surveys.

### *Data analysis*

Descriptive statistics and effect sizes were calculated for each outcome measure. One-tailed T tests were used to determine whether participants improved after the 12-week program for each of the three outcome measures. A significance level of 0.05 was used for all tests.

## **Results**

Out of the initial 27 participants, 24 attended nine or more classes. The reasons for non-attendance were not recorded. Twenty-four of the participants completed PSFS correctly both before and after the program, 18 the WHOQOL-BREF, and 15 the Tampa Kinesiophobia Scale. The researcher checked the PSFS for completeness and answered questions while the measures were being completed because this was considered to be the most likely to cause difficulties, but the other measures were not monitored as closely.

Table 1 shows that the only significant difference following the program was an improvement in the PSFS. There was an improvement in the mean that did not reach statistical significance ( $p=.08$ ) in the Physical Health domain of WHOQOL-BREF. The Tampa Kinesiophobia Scale was above the cut-off of 37 indicating high levels of kinesiophobia before the program, but below the cut-off level after the program.

Table 1: Results Initial and Post

	N	Initial (SD)	Post (SD)	Difference (Effect Size)	P value (Single Tail)
<b>Patient Specific Functional Scale</b>	24	4.6 (1.9)	6.0 (1.7)	1.4 (0.78)	<0.001*
<b>WHOQOL-BREF</b>	18				
Domain 1 Physical Health		108.4 (12.2)	111.7 (12.1)	3.3 (0.27)	0.08
Domain 2 Mental Health		94.9 (8.6)	94.7 (9.1)	-0.2 (0.02)	0.44
Domain 3 Social Relationships		45.8 (8.2)	45.8 (5.5)	0 (0)	0.52
Domain 4 Physical Environment		140.7 (11.9)	141.3 (13.2)	0.6 (0.05)	0.36
<b>Tampa Kinesiophobia Scale</b>	15	38.1 (6.0)	36.6 (5.4)	-1.5 (0.26)	0.21

\*P ≤ 0.05

## Discussion

This investigation examined the impact of a 12-week Feldenkrais program on functional ability, quality of life and kinesiophobia on a group of active retirees. Of the three outcome measures, there was a significant improvement in the PSFS. The PSFS assesses the self-perceived functional limitations in completing activities that are specific to and selected by the individual participants. As distinct from most other outcome measure, it is therefore able to consider a broad spectrum of functional ability while being easy to administer and record (Westaway *et al.* 1998). The statistically significant improvement seen in (Table 1) is consistent with, but smaller than the 3.8 point improvement observed in Connors, investigating changes following Feldenkrais ATM programs (Connors *et al.* 2010) investigation reduced the ceiling effect by excluding potential participants if they had no movement limitations and ensured that participants selected activities where they had some difficulty. In this investigation 8 out of the 24 participants that completed the (PSFS) at least had one task that was rated above 7/10. For the purpose of measuring improvements in level of function, it would have been useful to discourage selection of activities that can already be performed with minimal pain or difficulty. Improvement in PSFS was also found by Hillier following an ATM program for an aging population, but the improvements were not significantly different from a control group receiving a traditional balance exercise program (Hiller *et al.* 2010).

If changes were to be detected by the WHOQOL-BREF, it would be expected to be most likely in Domain 1 (Physical Health) as the questions mostly related to activities of daily living, dependence on medical aids, mobility, pain/discomfort and work capacity. In this investigation, Domain 1 was the only Domain that approached demonstrating a significant improvement. A previous investigation by O'Carroll observed that WHOQOL-BREF was not as sensitive as WHOQOL-100 in detecting changes in Domain 3 (Social Relationships) (O'Carroll 2000). A change was not expected in Domain 4 (environment), as the investigation was not aimed at improving the surroundings of the participants. An alternative scale that could be used as it has shown to have equal validity is the WHOQOL-OLD. The WHOQOL-OLD has the addition of a fifth domain that has questions regarding: sensory abilities, autonomy, past/present/future activities, death/dying and intimacy (Carrasco *et al.* 2011).

In this investigation, the Tampa Kinesiophobia Scale was used to assess whether the Feldenkrais program reduced participants' fear avoidance beliefs. Although the change in the Tampa scale was not statistically significant, it is interesting to note the decrease from 38.1 to 36.6 moves the score from a category of high to low levels of kinesiophobia (Vlaeyen *et al.* 1995). Jørgensen observed decreased levels of kinesiophobia in an exercise program that appears to have had some similarities to ATM classes as it involved problem solving skills for working around limitations and creating a better understanding of how pain is caused (Jørgensen *et al.* 2011). It could be suggested that some of the statements on the Tampa scale were non-applicable to the participants in this investigation, as they did not have a specific injury or pathology. Therefore, similar investigations in the future should use a scale that has questions that are applicable to the participants of the study. For example, Houben used a modified Tampa scale that had questions directed towards lower back pain (Houben *et al.* 2005). In addition, as 1 in 3 adults aged 65 and over will experience a fall once a year (Tinetti *et al.* 1994) it may also be appropriate to use a scale that has questions relating to fear of falling or loss of independence.

There are several limitations of this investigation. Most importantly the fact that this was an evaluation of a project precluded the possibility of including a control group. Therefore any positive effects cannot necessarily be attributed to the classes because time alone, or the impact of being in a study could have resulted in a change. A number of participants either dropped out of the program or did not complete all three surveys before and after. Only eight out of all the participants involved in the study completed each scale correctly, which limits the strength of the findings. A major issue that contributed to the production of incomplete questionnaires for WHOQOL-BREF and Tampa's Scale was participants believing the questions were not applicable to them. Future investigations should ensure participants understand the instructions for the questionnaires or include scales that are more applicable to the participants of the investigation.



## Conclusion

In summary, there was a significant improvement in the PSFS for the participants following a 12-week Feldenkrais ATM program. This suggests that a series of Feldenkrais ATM exercises may be effective in improving functional limitations in active retirees, but a clear cause and effect relationship cannot be established due to the absence of a control group in the current study. Careful selection of outcome measures is important in evaluating change in an older or retired population.

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## Biographies

**Madeleine Edgar** (Diploma in Physiotherapy, 1959). Madeline received her Dip. Phty. (as it was in 1959) from Melbourne University and was Certified as a Feldenkrais Practitioner in Brisbane in 1993. She worked as a Physiotherapist for 33 years in Geriatric care and in her private practice as a Feldenkrais Practitioner for the last 23 years giving FI lessons and running ATM Classes. She has given many presentations and Feldenkrais lessons to different organisations and on the radio – in the Gold Coast region of Australia. She also published two Marvellous Movement workbooks on the Feldenkrais Method and 50 ATMs on CDs. Madeleine is an Emeritus Fellow of the Australian Feldenkrais Guild. She is now retired, but still continues to promote the Feldenkrais Method whenever possible.

**Gregory Anderson** (Bachelor of Exercise Science, 2013). Gregory was born in Southport, Australia, in 1991. He received the B.E. degree in exercise science from Griffith University 2013. Greg is currently studying a post-graduate certificate in Public health with a view to continue post-graduate studies. He is currently interested in health and fitness in urban populations in both developed and developing countries.

**Neil Tuttle** (BSc, Grad. Dip. Adv. Manip, Ther., MPhil, PhD). Neil is a physiotherapist and academic. He is particularly interested in improving methods of teaching both physical and reasoning skills. His areas of research include individual treatment responses, manual therapy for neck pain, simulated learning environments in health professional education He is interested in palpation skills in the assessment of neck pain, lymphoedema, and the prevention of bruising in avocados.