Research and Literature Background: Feldenkrais

The following articles focus on Feldenkrais Movement Training and balance, balance confidence, mobility, gait, flexibility.


The Feldenkrais Method is a complementary approach to motor learning that purports to induce change in chronic motor behaviors. This preliminary study describes the effects of a Feldenkrais program on balance and quality of life in individuals with chronic neurological deficits following stroke. Two male (48 and 53 years old) and 2 female participants (61 and 62 years old), 1 to 2.5 years poststroke, participated as a group in a 6-week Feldenkrais program. Pretest and posttest evaluations of the Berg Balance Scale (BBS), the Dynamic Gait Index (DGI), and the Stroke Impact Scale (SIS) were administered. Data were analyzed using a Wilcoxon signed-rank test. DGI and BBS scores improved an average of 55.2% (p=.033) and 11% (p=.034), respectively.

Results: SIS percentage recovery improved 35%.

Conclusions: Findings suggest that gains in functional mobility are possible for individuals with chronic stroke using Feldenkrais movement therapy in a group setting.


Steadiness and comfort with daily movements, self-esteem and overall quality of life improved in patients with Multiple Sclerosis who used Feldenkrais bodywork and/or participated in Awareness Through Movement sessions.

Connors KA, Galea MP, Said CM. Feldenkrais Method Balance Classes Improve Balance in Older Adults: A Controlled Trial Evid Based Complement Alternat Med, 2009 Jun 24. [Epub ahead of print] Rehabilitation Sciences Research Centre, School of Physiotherapy, The University of Melbourne, Parkville, Victoria 3010, Australia. m.galea@unimelb.edu.au.
The Anat Baniel Method and Contemporary Neuroscience

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I have worked both as a physician and as a professional opera singer and it was through the latter that I first came to experience the work of Anat Baniel. Experience, here, is a crucial word. Nothing in my medical training had prepared me for the powerful effects of this extraordinary work but, although I had no clue as to its mechanism at the time, it was clear that it was mediated through the nervous system and that it had enormous potential in therapy and rehabilitation. It was to my great surprise and dismay that its use was not universal.

In my training and close working association with Anat I have had the opportunity to study some of the breakthroughs in our understanding of neuroscience that have become apparent only in the last decade [1]. (Indeed it was only in 1999 that the Nobel Laureate Torsten Wiesel admitted in print that he and David Hubel had been wrong in declaring that neuroplasticity is impossible beyond the critical period of infancy [2]).

These begin to help provide a scientific explanation for the knowledge that Anat and her teacher Dr Moshe Feldenkrais have accrued through their experience over decades of transforming the lives of children and adults whom conventional medicine had believed beyond help…again that word, experience.

Mechanisms of Neuroplasticity and Differentiation

One of the pioneers of this neuroscientific revolution is Michael Merzenich. He and his colleagues, such as Nancy Byl, have shown, on the neurological level, the mechanisms for neuroplasticity and differentiation, both in therapy and normal development [3,4]. These mechanisms are fundamental to the learning process underlying the work of Anat Baniel in helping children and adults overcome the limitations they have in their physical, cognitive and emotional development.

Focused Attention

Furthermore, Merzenich has demonstrated the necessity of focused attention in order to make these plastic changes last [5,6]. Pre-requisite to the work of Anat Baniel is the awareness and focused attention that the individual must bring to their therapy _ the Anat
Baniel Method is not a passive process imposed upon the client, even the most severely disabled of children participates in their path to improvement.

**Exercise and the Brain**

Much has been made in the press recently of the positive effects of exercise on brain function but research clearly shows that that exercise must be combined with focused attention to be effective in promoting cortical development and pre-empting cortical decline. Mice in enriched environments show increased synaptic formation over those who merely exercise on a treadmill and the only physical leisure activity in a recent study to show cognitive improvement in the elderly was ballroom dancing – requiring thought and coordination as well as cardiovascular involvement [7,8,9]. Such focused attention as at the core of Anat’s method.

**Learning Re-Use After Nervous System Damage**

Edward Taub of the University of Alabama has also pioneered research showing the mechanisms whereby stroke victims first learn disuse of their affected side. Taub’s studies demonstrate a CNS correlate of therapy-induced recovery of function after nervous system damage in humans which opens up the possibility for learning its re-use if the appropriate conditions for learning are provided as Anat’s practitioners have demonstrated with dramatic effect [10].

Similar mechanisms underlie the remarkable results seen with treatment of brachial plexus injury by the Anat Baniel Method. Old neurological patterns are replaced by new ones as clients learn to overcome their limitations.

**Brain Functioning and Quantum Physics**

New insights into the workings of the brain and the nature of consciousness are arising continually in the exciting field of cognitive neuroscience. One exciting area is the application of the principles of Quantum Physics to the mechanisms of brain functioning and the mind as expounded by the renowned physicist Henry Stapp of UCBerkeley in his book the Mindful Universe and numerous articles some of which are coauthored by the psychiatrist Jeffrey Schwartz [11,12].

This work is still controversial but provides a basis for the behavior of the human being as a complex dynamic system in its development and also in its progress through treatment. Once again, given the appropriate learning conditions, provided by a skilled practitioner, the outcome emerges not as a simple cause and effect relationship but as the result of an intelligent, sentient individual creating its own solution.

Many of the extraordinary outcomes resulting from this method have been dismissed by other professionals as mere coincidence and examples of spontaneous recovery or
misdiagnosis. It is easy to see how occurrences out of our experience as physicians may be seen to be beyond the realms of possibility.

However, as another major player in contemporary neuroscience, V.S. Ramachandran of UCSD, warns us, more harm has been done in science by those who make a fetish out of skepticism, aborting ideas before they are born, than by those who gullibly accept untested theories [13]. Only last Monday, a study from UCLA showed a mechanism showed that regeneration is possible to recover supraspinal control of stepping following spinal cord injury [14]. Such recovery would have previously been deemed impossible. We need to be open to possibility.

Only a few weeks ago a local pediatrician was in tears when she saw the effects of only a week’s lessons of the Anat Baniel Method on one of her tiny clients. She was weeping for all the children whom she had treated in the past whose lives could have been helped so much if she had known of the Anat Baniel Method before. Fortunately, more and more physicians and therapists are experiencing the effectiveness of the most intelligent therapeutic modality of which I am aware. We, as clinicians, have a responsibility to make this work available to everyone.

I have the honor to have studied with Anat for the past 3 1/2 years. She is the best teacher with whom I have worked and has dispelled my skepticism as to whether the work, which she practices so brilliantly, can be taught to others. I am now privileged to be a part of a growing network of practitioners, nurtured by those with greater experience as my own experience grows.

References


[13] Ramachandran, V.S. Creativity versus skepticism within science: more harm has been done in science by those who make a fetish out of skepticism, aborting ideas before they are born, than by those who gullibly accept untested theories. Skeptical Inquirer 30.6 (Nov-Dec 2006): 48(4).

The objective of this study was to investigate the effects of Feldenkrais Method balance classes on balance and mobility in older adults. This was a prospective non-randomized controlled study with pre/post measures. The setting for this study was the general community. A convenience sample of 26 community-dwelling older adults (median age 75 years) attending Feldenkrais Method balance classes formed the Intervention group. Thirty-seven volunteers were recruited for the Control group (median age 76.5 years). A series of Feldenkrais Method balance classes (the 'Getting Grounded Gracefully' series), two classes per week for 10 weeks, were conducted. Main outcome measures were Activities-Specific Balance Confidence (ABC) questionnaire, Four Square Step Test (FSST), self- selected gait speed (using GAITRite instrumented gait mat). At re-testing, the Intervention group showed significant improvement on all of the measures (ABC, P = 0.016, FSST, P = 0.001, gait speed, P < 0.001). The Control group improved significantly on one measure (FSST, P < 0.001).

**Results.** Compared to the Control group, the Intervention group made a significant improvement in their ABC score (P = 0.005), gait speed (P = 0.017) and FSST time (P = 0.022).

**Conclusions.** These findings suggest that Feldenkrais Method balance classes may improve mobility and balance in older adults.

Dean, J. R., Yuen, S. A. & Barrows, SA. *Effects of a Feldenkrais Awareness Through Movement Sequence on Fibromyalgia Patients*.

Patients with Fibromyalgia moved more easily, efficiently, and with less effort after learning to reorganize the biomechanics of their movements during 15 weeks of *Feldenkrais* sessions and classes.

**Results:** In both immediately following, and six months after completion of the class, improvements in balance, posture and gait were reported. Also reported: reduced pain, increased sleep, and reduction in fatigue.


A study with older women demonstrated improvement in the Burg Balance Scale as well as improved walking speed, movement time, and quicker
correction of balance. Participants also reported greater confidence and strength.

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C. McConville (Feldenkrais Practitioner) The effects of Feldenkrais awareness through movement on hamstring length, flexibility, and perceived exertion
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The aim of the current study was to investigate the effects of the Feldenkrais Method on flexibility, perceived exertion and hamstring length. In Study 1, 79 healthy participants undertook measurements of flexibility (sit and reach test), perceived exertion (Borg's Rating of Perceived Exertion 6–20) and hamstring length (active knee extension test) prior to being randomly allocated into a Feldenkrais or control group. The same measurements were taken after the group intervention (a Feldenkrais Awareness Through Movement lesson, or control procedure).

Results: Although the Feldenkrais participants improved significantly more in sit and reach measurements than their control counterparts, no differences between the groups were found for measures of perceived exertion or hamstring length.


The purpose of this study was to quantify the results of a Feldenkrais method-Awareness Through Movement-involving a neck flexion task. The study examined 30 normal subjects to determine if a Feldenkrais Awareness Through Movement sequence would result in an increase in neck flexion range of motion and if the subjects would indicate a significantly lower level of perceived effort posttest. Measurements of range of motion were taken using a gravity-based cervical range of motion goniometer. The subjects recorded their perceived efforts on a visual analogue scale. The range of motion data were analyzed using a one-way ANOVA. The visual analogue scale data were analyzed with a Mann-Whitney U test.

Results: There was a significant difference in both neck flexion range of motion and perceived effort posttest.

The present study aimed to investigate whether physiotherapy or Feldenkrais interventions resulted in a reduction of complaints from the neck and shoulders (prevalence, pain intensity, sick leave, and disability in leisure and work roles) in 97 female industrial workers (not on long-term sick leave).

Range of motion of neck and shoulders, VO2, endurance score (i.e., summation of pain intensity ratings during a static shoulder flexion), cortical control according to the Feldenkrais methodology, and physiological capacity according to a dynamic endurance test of the shoulder flexors with simultaneous surface EMG were also recorded. The workers were randomized to: (1) physiotherapy group (PT-group; treatment according to the ergonomic program of the PTs of the occupational health care service), (2) Feldenkrais group (F-group; education according to the Feldenkrais methodology), or (3) control group (C-group; no intervention).

Pre- and post-tests were made at one-year intervals. The two interventions lasted 16 weeks during paid working time.

Results. The F-group showed significant decreases in complaints from neck and shoulders and in disability during leisure time. The two other groups showed no change (PT-group) or worsening of complaints (C-group). The present study showed significant positive changes in complaints after the Feldenkrais intervention but not after the physiotherapy intervention. Possible mechanisms behind the effects in the F-group are discussed.


The purpose of this study is to compare treatment effects of Body Awareness Therapy, Feldenkrais, and conventional individual treatment with respect to changes in psychological distress, pain, and self-image in patients with nonspecific musculoskeletal disorders. A total of 78 patients, 64 females and 14 males, with nonspecific musculoskeletal disorders were recruited consecutively to the different treatment groups in a quasieperimental design. The patients were measured three times during the study period: before the interventions, after six months, and after one year.
Results. The results showed significant positive changes over time in all three treatment groups with regard to reduced psychological distress, pain, and improved negative self-image. There were few significant differences among the groups but effect-size analysis indicated that the group treatments using Body Awareness Therapy and Feldenkrais might be more effective than conventional treatment.

Twenty-one subjects with Rheumatoid Arthritis were tested after a series of *Awareness Through Movement* lessons.

**Results:** Significant change in both the muscle activity and the perceived effort of the task (using electromyographic equipment during trunk flexion.) Two years post treatment, a large percentage of subjects had increased function, continued to maintain higher levels of function, continued to use the skills they learned and felt that the *Feldenkrais* helped them with their pain problem.

J Stephens, PT, J Davidson, PT Lengthening the hamstring muscles without stretching using "Awareness Through Movement" located at the Free Library, 2006

Thirty-eight subjects were recruited from Weidener University did not have a history of orthopedic problems, including surgery or injury to the back, pelvis, or or neurologic dysfunction (eg, multiple sclerosis, or peripheral neuropathy)

All subjects were asked to refrain from beginning any new physical activity, including hamstring muscle stretching, that had not been part of their regular activity prior to the 3-week period of the intervention. Subjects in the ATM (Feldenkrais Awareness Through Movement) group were asked to perform a 15-minute ATM session 5 times per week guided by an audiotaped ATM lesson sequence. Subjects in the control group performed their regular daily activities. There were no statistically significant differences between ATM and control groups based on age, sex, or pretest hamstring muscle length.

**Results:** The mean change in hamstring muscle length in the ATM group was +7.04 degrees compared with the control group change of +1.15 degrees (Tab. 1). There was a significant increase in hamstring muscle length over time and an interaction of group X time, indicating an increase in hamstring muscle length in the ATM group compared with the control group (P=.005)


A group of patients with Multiple Sclerosis participated in an *Awareness Through Movement* group. The results demonstrated significantly improved mCTSIB scores and improved balance confidence compared to controls. There was a marked improvement in all other measures in the *Awareness Through Movement* group compared to controls.
Results: This type of motor learning intervention can be effective in improving a variety of physical and psychological parameters related to balance and postural control in patients with MS.


A group of 31 older adults was studied using a prospective, repeated measures control group design. The SF-36 was used to assess health status — quality of life. Video motion analysis was used to collect data on walking and on a floor-to-stand transfer movement.

Results: Coordination of the transfer movement improved significantly in the Feldenkrais group. Vitality and mental health scores also improved significantly in this group. Feldenkrais has been shown to be an effective method for improving coordination, mobility, economy of movement and quality of life in older adults.


The purpose of this study was to examine effects of Feldenkrais exercises in improving balance, mobility, and balance confidence in older adults. Participants (N = 47, mean age 75.6) were randomly assigned to a Feldenkrais group (FG, n = 25) or to a control group (CG, n = 22). The FG group attended a 5-week Feldenkrais program, 60 minutes three times per week, while the CG group was a waitlist control. The outcome measures were balance (tandem stance), mobility (Timed Up and Go), gait characteristics (GAITRite Walkway System), balance confidence (Balance Confidence Scale; ABC), and fear of falling (Falls Efficacy Scale). Pre- and post-tests were conducted.

Results: After completion of the program, balance (p = 0.030) and mobility (p = 0.042) increased while fear of falling (p = 0.042) decreased significantly for the FG group. No other significant changes were observed. However, participants of the FG group showed improvements in balance confidence (p = 0.054) and mobility while performing concurrently a cognitive task (p = 0.067).
Conclusions: These results indicate that Feldenkrais exercises are an effective way to improve balance and mobility, and thus offer an alternative method to help offset age-related declines in mobility and reduce the risk of falling among community-dwelling older adults.


The Getting Grounded Gracefully program, based on the Awareness Through Movement lessons of the Feldenkrais method, was designed to improve balance and function in older people. Fifty-five participants (mean age 75, 85% women) were randomized to an intervention (twice-weekly group classes over 8 wk) or a control group (continued with their usual activity) after being assessed at baseline and then reassessed 8 wk later.

Results. Significant improvement was identified for the intervention group relative to the control group using ANOVA between-groups repeated-measures analysis for the Modified Falls Efficacy Scale score (p = .003) and gait speed (p = .028), and a strong trend was evident in the timed up-and-go (p = .056). High class attendance (88%) and survey feedback indicate that the program was viewed positively by participants and might therefore be acceptable to other older people.

Conclusion. Further investigation of the Getting Grounded Gracefully program is warranted.

Multiple Sclerosis

In one study, steadiness and comfort with daily movements, self-esteem and overall quality of life improved in patients with Multiple Sclerosis who used Feldenkrais bodywork and/or participated in Awareness Through Movement sessions.

In another study, a group of patients with Multiple Sclerosis participated in an Awareness Through Movement group. The results demonstrated significantly improved mCTSIB scores and improved balance confidence compared to controls. There was a marked improvement in all other measures in the Awareness Through Movement group compared to controls.

Results: This type of motor learning intervention can be effective in improving a variety of physical and psychological parameters related to balance and postural control in patients with MS.