

Therapeutic Effects of the Feldenkrais Method (Awareness Through Movement) in Eating Disorders

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Abstract

„Based on the movement-pedagogical concept of Feldenkrais and the findings of disturbed body perception by eating disordered patients this research aimed at studying the therapeutical effects of the Feldenkrais Method „Awareness through Movement“ with eating disorder patients. 15 eating disordered patients treated at the Roseneck hospital for behavioural medicine rated – by means of a questionnaire consisting of scales of the Body Cathexis Scale (BCS), the Body Parts Satisfaction Scale (BPSS), the questionnaire for body perception (Fragebogen zum Körpererleben; FKE), the Emotion Inventory (Emotionalitätsinventar; EMI-B), the Anorexia-Nervosa-Inventory for Self-rating (ANIS) and the Eating Disorder Inventory-2 (EDI) – various aspects of their eating disorder before and after participating in a nine hour course of the Feldenkrais Method. The data of these patients were compared to those of the members of a control group, also consisting of 15 eating disordered patients who did not participate in a Feldenkrais course. The participants of the Feldenkrais-course showed increasing contentment with regard to problematic zones of their body and their own health as well as concerning acceptance and familiarity with their own body. Other results were a more spontaneous, open and self-confident behaviour, the decrease of feelings of helplessness and decrease of the wish to return to the security of the early childhood, which indicates the development of felt sense of self, self-confidence and a general process of maturation of the whole personality. The outcome points to the therapeutical effectiveness of the Feldenkrais Method with eating-disorder patients within a multimodal treatment program.”

Key words: Feldenkrais Method – Eating disorder- body perception- Body therapy- Psychotherapy

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Introduction

The interest in body oriented approaches for treatment of psychosomatic disorders has been growing continuously during the last years. Body-, movement- and breathing therapies become more and more integrated into the treatment plans of psychosomatic disorders, especially in stationary settings, due to impoverishment of sensuous experience in modern industrial society, a movement-inactive lifestyle, excessive demand of the body through stressful situations and increase of psychosomatic illnesses. Many body-oriented treatments are thereby founded on the work of Wilhelm Reich (1970,1972). Alongside, integrative approaches as well as functional body approaches gained more and more importance, like practices of movement oriented therapies. One of these practices is the holistic movement pedagogy of Feldenkrais, whose group method is in the centre of the following study.

His interest in mechanics and efficiency of movement, in neurophysiology and pedagogy as well as the experience of a severe walking disabling knee injury, that he was able to heal by himself through self observation and application of movement, lead the ingenieur, PhD of physics and judo teacher Moshe Feldenkrais (1904-1984) 1949 to the publication of his ground laying book “Body and Mature Behaviour. A study of Anxiety, Sex, Gravitation and Learning” (Feldenkrais, 1949).

During the following 30 years Feldenkrais developed and taught the two ways of his method, the hands on version “Functional Integration” and the group lessons “Awareness Through Movement” (Feldenkrais 1978, 1987, 1989).

According to Feldenkrais the unity of body and mind is a concrete reality. They are not two somehow connected things, but in their functions rather an inseparable whole. (Feldenkrais, 1988). Motor activity is in that perspective the centre of all human activity and learned motor habits are the origin of emotional instability and behaviour disorders. Changes in behaviour are therefore only stable, if also the underlying physical pattern changes and through new-, or re-education of muscular habits the whole psychophysical organism achieves improvement (Hanna, 1984). That way Feldenkrais (1949) shaped a theory of holistic somatic education, in which through movement an access for change of the entire person is sought.

According to Feldenkrais (1978) we act after the image, that we create of ourselves. This self-image, which is formed through movement, sensation, emotions and thinking, is partly inherited, partly educated and a third part is created through self-education. With help of the specific movement lessons of the Feldenkrais method a process of organic learning is re-stimulated, which enables a sort of post-maturation and leads to the formation of new, more functionally appropriate reactions. Feldenkrais (1987) understands organic learning as the way children learn to lift the head, to roll, to walk, etc. Meant is an exploring, playful way of learning in ones own rhythm, with sufficient breaks and without pressure to perform, which awakens curiosity and interest, in which multifaceted parallels to most recent pedagogic approaches become apparent. This way of learning aims to evolvment and better use of ones own potential. Of special meaning is here the progression and promotion of kinesthetic sense, which is, as our first and basic ability to perceive, deeply connected with our self-identity. Another important point is the creation of eu-tonus, which means an optimal pattern of tonus, which provides the biggest preparation for action and reaction.

The method of “Awareness through movement” - a system of over thousand of verbally taught movement lessons - uses gentle movement, guided attention, perception and imagination to develop the kinaesthetic sense in a vivid and lively way, to improve the

neuromuscular self image, on which movement is based and to foster with it the felt sense of self and self awareness.

The work wants to lead to aware and spontaneous action and to the ability to be at the same time in contact with ones own muscular-skeletal system and the environment. Movement should ideally be only limited through the individual structure of the skeleton but not through muscular interference and every action should be performed with the least required effort and a maximum of efficiency. Thereby movement ranges from specific patterns, based on human motor development, to quite unusual configurations and often covers a specific function, like rolling, looking, breathing etc. Important principles are for example the exercise of attentive perception of ones own body, reduction of unnecessary effort, reduction of movements oftentimes down to very tiny, slow motions, encouragement to being not perfect, a playful approach, newness of the situation during the whole lesson, work with only one half of the body, techniques of imaging (Feldenkrais 1988) as well as parallels to Milton Ericksons hypnotherapeutic approach in the use of language and the possibilities to induce trance by means of movement and enhanced attention (Erickson u. Rossi 1981, Reese 1985).

The Feldenkrais method has a broad range of application and research areas, like rehabilitation of neurological disorders (Deutsche Multiple Sklerose Gesellschaft 1993, Milz 1985), developmental disturbance of children, pain problems and disorders of the motor apparatus (Weitzer u. Graml 1995), psychosomatic problems (Czetchok 1992, Goebel 1992), prevention and adult education (Petzold 1985), psychotherapy (Fried 1988, Pohl 1994) or the training of musicians (Jacoby 1990), actors, dancers or in sports. The Feldenkrais method is also increasingly used in treatment of psychosomatic disorders, which among other things go hand in hand with a decrease or disruption of the motivity or with a disturbed relation to ones own body and an incomplete body image. However there is still a lack of studies that evaluate the efficacy of the Feldenkrais method in this realm. Only Hutchinson (1985) is referring to an evaluation of a training program consisting of exercises using imagination and elements of Feldenkrais lessons to change the negative body and self-image of adipose women.

In common for eating disorders like Anorexia nervosa, Bulimia nervosa and hyper phage Adiposities are disturbances of body perception and of body image as well as feelings of personal ineffectivity (Bruch 1973).

The most obvious symptom of Anorexia nervosa is a strong loss of weight, which is not resulting from somatic causes, but develops from food rejection or restriction, connected with a kind of weight phobia (Gerlinghoff & Backmund 1989). Girls and young women are stricken with this in the first place (Karren 1986). Disturbed body perception of the patient is often expressed in the fact that even extreme loss of weight is not realized and the patients still feel too fat or want to retain the now reached "ideal weight" (Karren 1986). This clinical picture nowadays increases considerably in industrial countries. Equally considered as determining for development of Anorexia nervosa are individual, family dynamic and socio-cultural factors (Bruch 1978, Hellinger 1994, Selvini-Palazzoli 1982).

Bulimic patients mostly experience at least one ravenous hunger attack a day, during which they are unable to control the amount of food intake (Paul u. Pudel 1985). Some patients though show a change between phases of hunger attacks and symptom free periods. Two third of the patients induce vomiting every time after a ravenous hunger attack which comes with negative feelings. Additionally they often abuse appetite depressants and laxatives. Frequently named as trigger for the excessive hunger attacks are frustration, boredom, anger or rage. Hunger or appetite don't play a role here. This suggests that patients grounded on their symptomatology have lost the physical sensation of hunger or saturation.

Adipositas is a symptom, for which physiological, genetic and personality factors as well as acquired eating habits from childhood are of significance (Bräutigam & Christian 1981). Adipose feel their eating behaviour as well as their body weight as something uncontrollable. They often have an aggressive to hostile relationship to their own body. Disturbances of the body image were found of the kind, that adipose people think of themselves as fatter as they actually are. (Mader 1986). However from a medical point of view Adipositas only describes the forms of overweight that require treatment or are relevant for health. In difference to adipose patients, normal weighted are able to show, without cognitive control, spontaneous on body signals relying eating behaviour and are able to keep their normal weight long-term. (Pudel 1987).

From the description of the Feldenkrais method it became obvious, that movement opens access to a change of the entire person, existing movement-, breathing-, and posture patterns become more conscious and the development of body perception and the felt sense of self is being promoted. Eating disorders have disturbances of body perception, of body image as well as feelings of personal ineffectivity in common (Bruch 1973). These aspects show the significance and effective radius of a body- and movement-therapeutical approach to these disorders.

Aim of the following inquiry study was to filter the effect of a Feldenkrais-group on the patients relationship to her own body, her emotional state and on other for eating disorders typical fields in the setting of a stationary, multimodal therapy program. At the same time this investigation is following the intention to expand the psychological knowledge about areas in which the Feldenkrais method has an impact on patients with eating disorders.

From this aim resulted the following questions:

- Does “satisfaction with the own body” and “acceptance of the own body” change through participation in the Feldenkrais-group?
- Do changes in “spontaneity of behaviour” and in “psychical well-being” occur through participation in the Feldenkrais-group?
- Does the “consciousness of figure” (Figurbewußtsein) as well as a “feeling of being overwhelmed” (Gefühl der Überforderung) change through the participation in the Feldenkrais-group?
- Do as positive rated changes in areas specific for eating disorders, like impulse regulation, social security etc. result from a participation in the Feldenkrais-group?

Method

Field of investigation and design of investigation

Several units at the hospital of Roseneck where the following study was conducted are specialized in treatment of eating disorders besides other existing focal points. Here patients with Anorexia nervosa- and Bulimia nervosa as well as hyper phage adipose patients receive treatment together. At clinic entry every patient gets assigned to one reference therapist (M.D. or psychologist). At the beginning of therapy every patient together with her therapist works out a therapy plan with the goals of the therapy.

This general therapy plan for every eating disordered person is composed of single- and group therapy, which is lead by the respective therapist of reference. Additionally the eating-disorder patients take part in bodywork, in the setting of physical exercise and movement-therapies. Movement therapy here includes dance therapy and the Feldenkrais method “Awareness through movement”, which is mostly conducted in groups of patients of one unit, as well as single work. A more extended description of the

therapeutic concept of the clinic of Roseneck can be found in Fichter (1989). In preparation of the transition from the stationary therapy to the ambulant phase the patients are already recommended during their stay to make contact with self-help associations or therapists in their hometown. Patients have a possibility to try out the things learned in therapy also in their home environment in prepared therapy vacations. Then occurring problems can be renewedly worked on in the clinic (Brunner 1987).

A group of 15 patients of the clinic with eating disorders did take part in a Feldenkrais group with nine scheduled sessions within five weeks additionally to the intensive multimodal therapy program of the psychosomatic clinic of Roseneck. These patients were compared with a control group of 15 patients with eating disorders of the same clinic, who only took part in the above described therapy program without the Feldenkrais method. A closed group seemed to make more sense compared to an open group, because it allowed a developing program for the class. It also didn't seem meaningful to have a placebo treatment for the control group, which would have had the same time length as the Feldenkrais lessons, with a look at the extensive schedule of the patients and the purpose of this study to be - also considering the small sample - a pilot study.

For both groups it was paid attention, that patients didn't receive any other movement therapeutic treatments (e.g. dance therapy) during waiting hours and time frame of the investigation. However the influence of other (non-body-oriented) parts of the stationary treatment on the examined variables stayed uncontrolled in this comparison of the two groups.

Newly arrived patients of the units for eating disorders were collected in the course of three weeks. With this group a Feldenkrais-group was started, with one initiating meeting and nine lessons of "awareness through movement" each of 45 min length. The lessons were held two times a week over a period of five weeks. During the execution of the Feldenkrais-group again in the course of three weeks newly arrived patients with a diagnosis of eating disorders were collected to contribute to the control group.

Measurement of each group was conducted respectively after a initiating meeting and after a period of five weeks, resp. after the end of the Feldenkrais-group. For the Feldenkrais class a series of lessons was chosen, that in method specific ways dealt with different stages of child development.

Thus after the initiating meeting the first class was started with the primary movement topics of infancy (lips, eyes, head, first rolling movement). Topic of the second class was lifting of the head in back position (work with the flexors). The third lesson introduced breathing movements, especially belly breathing. Content of the fourth lesson were movements of the legs in connection and differentiation with rolling the head. The fifth class was aimed at the connection of different postures (from "collapsed in itself" to "exaggerated erection") and the feelings that come with it. The sixth lesson continued to play with the red thread of motor development in infancy and was about rolling movement to the side. The seventh lesson was assigned to explore the own pattern of breathing as well as the connection of different ways of breathing and emotions. In the eighth class especially movement with arms and legs and the perception of both halves of the body received attention. The ninth lesson again was about breathing, this time about the different phases and the rhythm of breathing.

Description of the tools for data collection

Both patients from the control- and from the Feldenkrais-group received for both points of data collection a questionnaire composed of the following parts: based on "Body Cathexis Scale" (BCS) (Secord u. Jourard 1953) and on "Body Parts Satisfaction Scale" (BPSS) (Berscheid, Walster u. Bohrnstedt 1973) a list of 34 items was put together, on which satisfaction or dissatisfaction with different body parts and functions had to be indicated. It was handled this way, because none of the original scales – BCS as well as BPSS- seemed to be ideal. As handled in BPSS satisfaction and dissatisfaction with ones own body should be estimated on a six-ranks rating scale, which went from "very unhappy" (=0) up to "very happy" (=5).

For the topic of acceptance of the own body items from the “Questionnaire for body experience” (Fragebogen zum Körperleben) (FKE) of Paulus (1982) was used. From the scale “acceptance of the own body and integration into self-experience”, which contains 43 items, the 21 topmost loading and for the study in its contents most meaningful items were selected. The answers had congruent to FKE to be put on a four-ranks scale from “not right” (=0) to “very right” (=3).

For measurement of psychic condition two factors “inhibited vs. spontaneous condition” and “disturbed general condition vs. well-being” from the Emotionalitätsinventar (EMI-B) of Ullrich de Muynck and Ullrich were used (1978). An improvement of the general physical as well as psychological condition and decrease of inhibited behaviour and increase of spontaneous behaviour is assigned to the Feldenkrais method (Feldenkrais 1989). The 27 items of the two scales were introduced with the instruction: “During the last week I predominantly felt...”. The prevailing feelings had to be rated between two contrary pairs of attributes in each direction with three grades of distinction (“very much”, “clearly”, “more likely”). For the results these raw values were according to the instructions turned into scale values. The authors give/deliver T-value profiles among other things for samples of “clinical non-disturbed” (n= 566) and “psychiatric patients” (n=481), though a sample of comparison of patients with eating disorders is missing.

The Anorexia-nervosa- inventory for self evaluation (ANIS) (Fichter u. Keeser 1980) was initially conceptualized as instrument for recording anorectic symptoms, but is usable for all eating disorders and was at the time of the data collection used regularly at the clinic of Roseneck. A factor analysis resulted in six factors with overall 32 items. For this study the factors “consciousness of figure” and “feeling of being overwhelmed” was used. For answering this a six-ranks rating scale from “not at all” (=0) to “very strong” (=5) is available. For evaluation the raw values are being summarized to scale values. (For the fields of “satisfaction with ones own body”, “acceptance of own body” and the ANIS no norm values were available.)

To meet the many conditions and dimensions of eating disorders, the Eating Disorder Inventory-2 (EDI) (Garner 1990) was used additionally. It is used regularly in its German translation at the clinic. EDI is a widespread instrument for measurement of symptoms that usually come along with eating disorders. It delivers standardized scale values for 11 dimensions. For this study the following scales were used: “Drive for thinness”, “Bulimia”, “Body dissatisfaction”, “Interoceptive Awareness”, “Maturity Fears”, “Asceticism”, “Impulse regulation” and “Social insecurity”. The single questions had to be answered according to the momentary condition of the subject, using a six-ranks rating scale from “never” (=0) to “always” (=5). From these raw values one scale value was computed. Norm tables exist for one group of eating disorder patients (n=889) and additional groups of comparison.

Sample

As far as the therapy schedule of the clinic Roseneck allowed it, the individuals of the control group were selected as parallel as possible to the ones in the Feldenkrais group in terms of diagnostic criteria, age and preliminary time length of treatment in the clinic. (See Tab. 1).

Out of 15 patients in the Feldenkrais-group, nine were diagnosed with Bulimia nervosa (BN), two with Anorexia nervosa (AN), one of the two had additionally the diagnosis Bulimia nervosa and four patients were diagnosed a (psychogenetic) Adipositas.

Of 15 patients in the control group, nine were diagnosed with Bulimia nervosa, two with Anorexia nervosa (one of them additionally with Bulimia nervosa) and four with Adipositas (two of them additionally with Bulimia nervosa). AN and BN were diagnosed through the therapists; they related all of their criteria for diagnosis to DSM-III-R (Wittchen et al. 1989).

Subject	Feldenkrais- group (FG)				Subject	Control-group (KG)			
	Age	Sex	Diagnosis	Pre-treatment		Age	Sex	Diagnosis	Pre-treatment
FG01	23	w	BN	3	KG01	25	w	BN	3
FG02	26	w	BN	1	KG02	25	w	BN	1
FG03	28	w	BN	2	KG03	30	w	BN	3
FG04	42	w	BN	0	KG04	27	w	BN	0
FG05	30	w	BN	2	KG05	31	w	BN	3
FG06	30	w	BN	0	KG06	30	w	BN	0
FG07	28	w	BN	1	KG07	27	w	BN	1
FG08	20	w	BN	0	KG08	21	w	BN	0
FG09	24	w	BN	1	KG09	24	w	BN	0
FG10	29	w	AN	1	KG10	30	w	AN	1
FG11	22	w	AN/BN	3	KG11	18	w	AN/BN	0
FG12	41	m	Ad	1	KG12	51	w	Ad/BN	1
FG13	30	w	Ad	3	KG13	42	m	Ad	2
FG14	29	w	Ad	0	KG14	28	w	Ad	0
FG15	35	m	Ad	1	KG15	23	w	Ad/BN	1
\bar{x}	29,0			1,3		28,8			1,1

Note: BN: Bulimia nervosa; AN: Anorexia nervosa; Ad: Hyper phage Adipositas; Pre-treatment: time of pre-treatment in weeks.

Tab. 1: Description of the sample of the study

The patients were predominately female, whereas the Feldenkrais group had two men and the control group one man. Age range of the patients of the Feldenkrais group was 20-42 years, for the control group 18-51 years. Both groups were matching in mean age and mean duration of preliminary time of treatment. Regarding the family status currently four members of each group were married, the rest was unmarried.

The question “Do you already have any experience with body therapies (e.g. Feldenkrais, dance therapy, Autogenous training, yoga, etc.)?” which was asked at the first time of measurement, was answered with “no” by eight patients from the Feldenkrais group. Three had experience from a former clinic stay with Autogenous training, four had to a small extent experience with the Feldenkrais method. 5 patients from the control group hadn’t had any experience with body therapies. Six had from a former clinic stay experience with Autogenous training, five with Feldenkrais, six with progressive muscle relaxation and three with yoga (multiple answers were possible).

Results

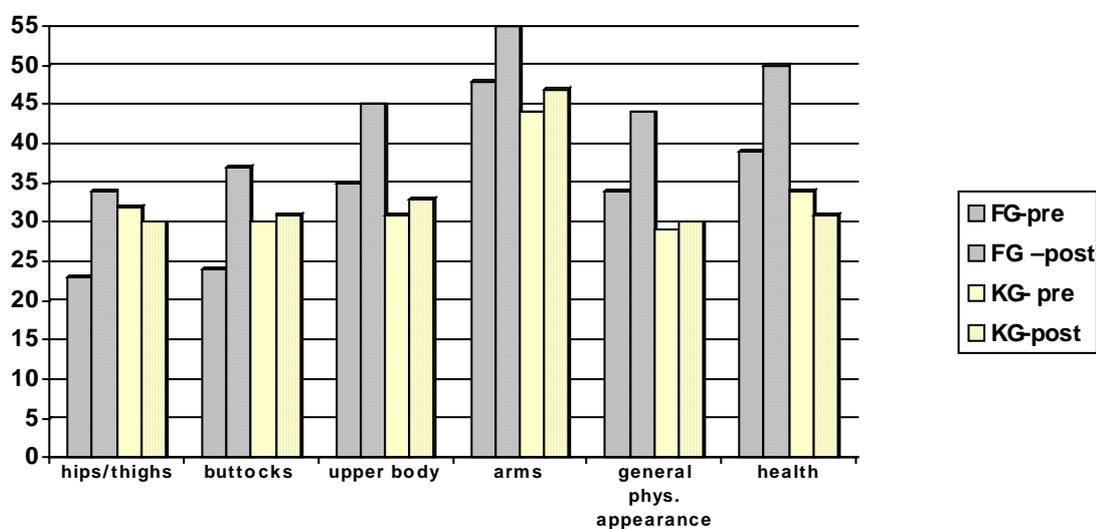
Satisfaction with the own body

To assess the satisfaction with different body parts resp. body regions, the participants of the Feldenkrais- and of the control group were asked a list of 34 items from the “body cathexis scale” (BCS) (Secord u. Jourard 1953) and the “body parts satisfaction scale” (BPSS) (Berscheid, Walster u. Bohrnstedt 1973). The pre- and post assessments were tested with Wilcoxon-test for pair differences for changes. The test of significance over the sum of raw values in each group resulted for the question of satisfaction with hips/thighs ($z = -1.88$, $p = 0,029$), buttocks ($z = -2.39$, $p = 0,008$), torso ($z = -1.88$, $p = 0,023$), arms ($z = -1.86$, $p = 0,031$), general physical appearance ($z = -1.73$, $p = 0,041$) as well as health ($z = -2.25$, $p = 0,012$) in significant differences for the Feldenkrais group between pre- and post-test (see pic.1).

The control group showed no significant differences in the corresponding evaluations.

Regarding satisfaction with feet, legs, knees, stomach, back, shoulders, hands, neck, head, hair, face, nose, mouth, lips, eyes, skin, weight, height, breathing, posture, body shapes, digestion, voice, ease of movement, elegance of movement, appetite, sleep, liveliness there were no significant changes, neither in the Feldenkrais group nor in the control group. But differences in the initial level of Feldenkrais group and control group have to be considered as limiting here.

These results suggest that the Feldenkrais method causes improvement of satisfaction in body areas that are specifically problematic for eating disorders (e.g. hips/thighs, buttocks) as well as a more positive assessment and attitude regarding the own health.



Pic. 1 Change in estimation of contentness with single body parts resp. –areas, measured with 34 Items of the “Body Cathexis Scale” (BCS) (Secord u. Jourard 1953) und der “Body Parts Satisfaction Scale” (BPSS) (Berscheid, Walster u. Bohrnstedt 1973) (Numbers show summarized raw values; high values show a high level of contentness; Minimum = 0, Maximum = 75). FG = Feldenkrais group; KG = Control group.

Acceptance of the own body

Acceptance of the own body was tested with 21 questions of the scale “Acceptance of the own body and integration into self experience” from the “questionnaire for body experience (Körpererleben)” (in German: FKE) from Paulus (1982). The change between pre- and post-test within each group was tested with a Wilcoxon-test for pair differences over the summarized raw values for significance.

Tab.2 shows, that participants of the Feldenkrais group describe a major improvement in the experience of their own movement and the acceptance of the own body in five questions, whereby for two of the five questions a different initial level existed. Interesting is especially the clear improvement in the given “If I look at myself in a mirror, I find myself sometimes strange and sinister”, which describes a for eating disorders typical area of strangeness towards the own body. The control group didn’t show significant changes in any aspect of satisfaction with the own body. Based on these results it can be assumed that the Feldenkrais method promotes acceptance of the own body in different areas and with that especially the familiarity with the own body gets improved.

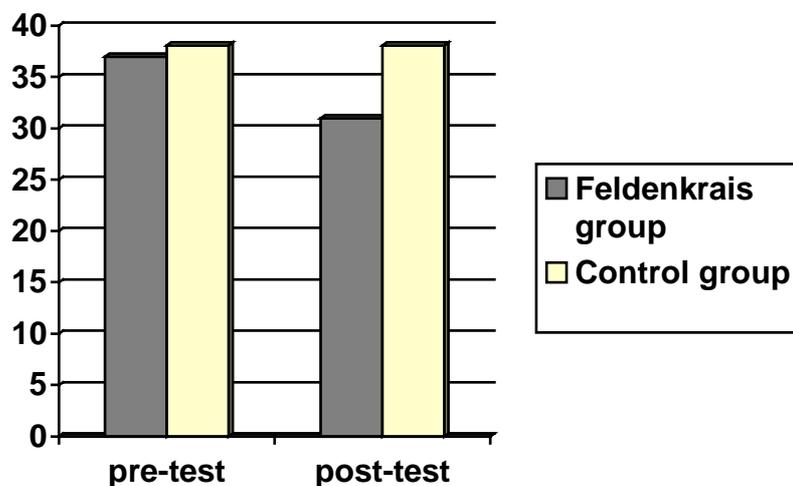
	Feldenkrais-group				Control-group			
	pre	post	z-value	p	pre	post	z-value	p
1. My body often feels uncomfortable	30	23	- 1,717	0,043	28	29	- 0,253	0,399
2. My movement often seems awkward and rigid	21	14	- 1,171	0,043	22	20	- 0,674	0,250
3. My movement often seems clumsy	18	14	- 0,980	0,163	20	18	- 0,801	0,211
4. I sometimes have physical experiences that stay unclear and puzzling to me	15	13	- 0,591	0,277	22	24	- 0,338	0,367
5. I look immature	13	07	- 1,135	0,088	18	21	- 1,095	0,137
6. I sometimes feel captured in my own body	25	21	- 1,048	0,147	30	29	- 0,338	0,367
7. It's hard for me to make bodily contact to my friends and neighbours	22	17	- 1,400	0,080	22	24	- 0,912	0,180
8. I feel limited in my range of action through my physical condition	21	16	- 1,572	0,057	24	21	- 0,943	0,173
9. My body sometimes seems strange and far away	23	20	- 0,840	0,200	28	25	- 1,213	0,112
10. The impression I arouse with my body is often not congruent with my real feelings	30	26	- 0,888	0,197	32	34	- 0,296	0,383
11. I would feel better if I would look different	28	22	- 2,022	0,021	16	19	0,730	0,233
12. The impression I arouse with my body is more negative	24	19	- 1,352	0,088	20	19	0,000	0,500
13. If I look at myself in a mirror I find myself sometimes strange and frightening	23	14	- 2,100	0,017	24	21	- 0,591	0,554
14. I seldom have fun with my body	30	24	- 1,681	0,046	24	21	- 0,591	0,554
15. When I move I often feel my physical heaviness as a hindrance	16	16	0,000	0,500	19	19	- 0,140	0,444
16. I very often dislike how I behave and move	23	23	0,00	,500	25	24	- 0,404	0,343
17. I often feel a physical uneasiness	27	23	- 1,121	0,131	29	35	- 1,483	0,069
18. In secret I'm sometimes afraid others could reject my physically	26	27	- 0,314	0,376	19	19	0,000	0,500
19. Physically I mostly feel unbalanced	28	23	- 1,480	0,069	27	23	- 1,095	0,136
20. I am less content with my body than my peers	23	18	- 1,078	0,140	26	26	0,000	0,500
21. I often show a cool physical façade to the outside like a mask	25	20	- 1,120	0,131	26	29	- 0,43	0,176

Tab. 2: Change in the acceptance of the own body, measured with 21 questions from the scale acceptance of the own body and integration into self-experience" from the "Questionnaire for experience of the own body (Körpererleben)" (FKE) (Paulus 1982) (summed raw values for pre- and post-test for both groups; high values represent a low level of acceptance; min.=0, max.=45; significance based upon Wilcoxon-test).

Psychical condition

Patients' changes of the emotional inventory (Emotionalitätsinventar) EMI-B regarding the assessment of the factors "disturbed general condition vs. well-being" as well as „inhibited vs. spontaneous condition“ were looked at here. An analysis of variance with measurement repetition over the values of both scales showed no significant main- (factor group: $F=2,60$, $df=1$, $p=0,012$; factor time: $F=1,79$, $df=1$, $p=0,19$) resp. interaction- ($F=0,94$, $df=1$, $p=0,342$) effect for "disturbed general condition vs. well-being". This means both groups showed no changes in the field of general condition and undisturbed self-evaluation. With the scale "inhibited vs. spontaneous condition" the factor "time of measurement" ($F=6,24$, $df=1$, $p=0,19$) lead to a significant main effect. Furthermore significant was the interaction of the factors "group and time of measurement" ($F=6,78$, $df=1$, $p=0,015$) whereas the factor "group" didn't show an effect ($F=2,24$, $df=1$, $p=0,147$). From looking at pic.2 of the interaction effect it is clear to see that participants in the Feldenkrais group described themselves as more spontaneous, more free, more open, more self-confident, less shy and less hold back in their condition

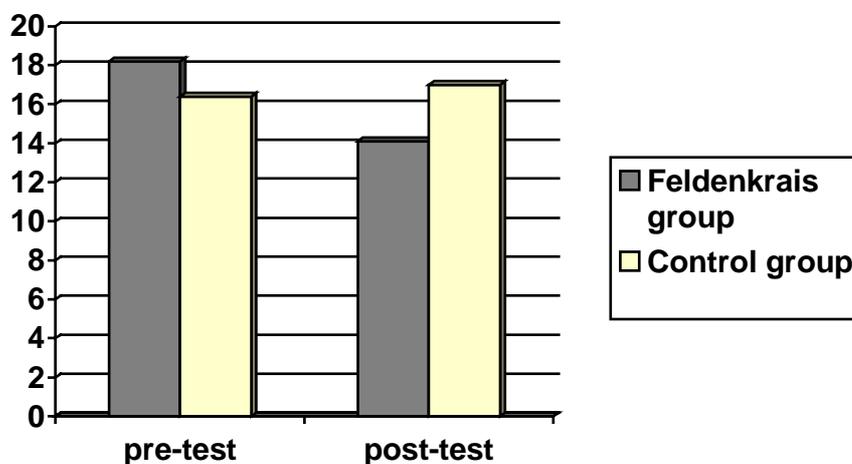
after the series of lessons. The control group didn't show changes in this point. With this regarding the psychological condition it can be said, that the Feldenkrais method has a positive influence on the area of spontaneity. In relation to the general well being no therapeutic effects could be shown.



Pic. 2: Estimation of inhibited vs. spontaneous feelings (Numbers show scale means; high values stand for a high level of inhibition).

“Consciousness of figure” and “feeling of being overwhelmed”

To answer this question, analyses of variance over the scales “Consciousness of figure” and “Feeling of being overwhelmed” from the Anorexia-Nervosa-Inventory (ANIS) were calculated. No significant effects were found for the “Consciousness of figure” scale (factor group: $F=0,02$, $df=1$, $p=0,899$; factor time of measurement: $F=2,12$, $df=1$, $p=0,158$; interaction group-time of measurement: $F=0,29$, $df=1$, $p=0,593$). For the scale “feeling of being overwhelmed” the interaction of group and time of measurement was significant ($F=6,42$, $df=1$, $p=0,018$). Whereas the main effect didn't reach significance (factor group: $F=0,03$, $df=1$, $p=0,873$; factor time of measurement: $F=3,73$, $df=1$, $p=0,065$). Picture 3 shows for the factor “feeling of being overwhelmed” a clear change with the participants of the Feldenkrais-group. These patients felt less overwhelmed after the class, whereas patients of the control group showed a light increase (compare pic. 3).



Pic. 3: Evaluation of the feeling of being overwhelmed (numbers show scale means; high values stand for a high level of feeling of being overwhelmed).

Typical problems for eating disorder patients, like feelings of helplessness against outer demands and expectations and like feelings of inner emptiness, the seven items of the factor “Feeling of being overwhelmed” covered restlessness and inferiority. This result suggests improvements through the Feldenkrais-method regarding these feelings. A change of the general consciousness of figure, which was covered through the areas fasting, diet, eating behaviour and fear of gaining weight, whereas wasn’t detected through participation in the Feldenkrais group.

Change in eating disorder specific symptoms

Changes in eating disorder specific symptoms were measured according to the specifications in the questions of the eight scales „Drive for thinness“, „Bulimia“, „Body dissatisfaction“, „Interoceptive awareness“, „Maturity fears“, „Asceticism“, „Impulse regulation“ and „Social insecurity“ of the Eating Disorder Inventory-2 (EDI). Tab.3 shows group medians of both groups at time of measurement 1 and 2 as well as percentage range for the Feldenkrais and control group at time of measurement 1 based on norms for eating disorder patients, as determined by Garner (1990) with a sample of n=889, based on patients with different eating disorders. Values for Feldenkrais as well as control group lie altogether in upper levels, which points to the distinctive symptomatology of the patients in this study.

Tab. 4 shows results of the analysis of variance with measurement repetition.

Group and time of measurement show a significant interaction effect in the scale “maturity fears”, in which eight items capture the wish to return to the security of childhood. These fears decreased clearly in the Feldenkrais group (scale means: before 15.7, after 13.2) and a increased lightly for the control group (scale mean: before 17.7, after 18.5). The Feldenkrais method decreased the wish to return to a childlike dependence and supported a more mature behaviour and the acceptance of responsibility.

Subscale	Drive for Thinness	Bulimia	Body Dissatisfaction	Interoceptive Awareness	Maturity Fears	Asceticism	Impulse Regulation	Social Insecurity
FG, MZP1	22.2	21.6	33.0	26.9	15.7	14.2	20.5	21.7
KG, MZP1	22.9	17.0	26.5	29.8	17.7	13.9	21.3	23.7
FG, MZP2	21.3	16.0	31.6	26.3	13.2	12.2	20.0	20.3
KG, MZP2	20.6	11.4	28.4	28.3	18.5	15.1	22.6	23.4
FG, MZP1	99	99	99	99	96	93	99	99
percentage rank (Prozentränge)								
KG, MZP1	99	88	84	99	98	90	99	99
percentage rank (Prozentränge)								

Tab. 3: Group means of the Feldenkrais group (FG) and control group (KG) at the point of measurement (MZP) 1 and 2 for the 8 used subscales of the Eating Disorder Inventory as well as Prozentränge for FG and KG at MZP 1 regarding the norms of a group of eating disorder patients (Garner 1990) (High values represent a high level of eating disorder specific symptoms).

	df	MS	F	p
Scale: Drive for Thinness main effect:				
- group	1	0,02	0,00	0,991
- time	1	40,02	2,57	0,210
Interaction:				
-group/time	1	7,35	0,47	0,498
Scale: Bulimia main effects:				
- group	1	317,40	2,47	0,127
- time	1	459,27	15,03	0,001
Interaction:				
- group/time	1	0,00	0,00	0,999
Scale: body dissatisfaction main effects:				
- group	1	360,15	1,57	0,220
- time	1	0,82	0,04	0,849
Interaction:				
- group/time	1	40,02	1,81	0,189
Scale: Interoceptive Awareness main effects:				
- group	1	91,27	0,82	0,372
- time	1	17,07	1,10	0,304
Interaction:				
- group/time	1	3,27	0,21	0,650
Scale: Maturity Fears main effects:				
- group	1	198,02	2,05	0,163
- time	1	10,42	1,19	0,286
Interaction:				
- group/time	1	40,00	4,55	0,042
Scale: Asceticism main effects:				
- group	1	25,35	0,69	0,414
- time	1	2,82	0,26	0,614
Interaction:				
- group/time	1	40,02	3,69	0,065
Scale: Impulse Regulation main effects:				
- group	1	45,07	0,49	0,489
- time	1	2,40	0,14	0,707
Interaction:				
- group/time	1	13,07	0,78	0,383
Scale: Social Insecurity main effects:				
- group	1	96,27	2,00	0,168
- time	1	11,27	1,94	0,174
Interaction:				
- group/time	1	4,27	0,74	0,398

Tab. 4: result of the analysis of variance over the scales of the eating disorder inventory (EDI).

The factor “time of measurement” leads to a significant main effect for the scale “bulimia” (comp. Table 4). Both groups showed improvement for exactly the same amount (Feldenkrais-group scale mean: before 21.6, after 16.0; control group scale mean: before 17.0, after 11.4). But since the initial level for both groups was very different in this case, this result is not being interpreted any further.

The scales „Drive for Thinness“, „Body Dissatisfaction“, „Interoceptive Awareness“, „Ascetism“, „Impulse Regulation“ and „Social Insecurity“ showed no significant effects and thus there were no specific consequences of the Feldenkrais method observable.

Discussion

The following aspects should be regarded critically: The sample of this study was quite small with two times 15 persons. But an extension of the groups would have caused non-reasonable waiting time for many patients. Additionally it wouldn't have made sense to work with a substantially larger group for the Feldenkrais-class program, because it would have critically limited the possibility to survey the group, individual care and the development of a group feeling. Also both groups contained patients with different diagnoses of eating disorder to avoid a too long waiting time for many patients.

As a result the groups were heterogeneous. This kind of group formation however was congruent with the concept of treatment in the clinic, in which patients with different eating disorders are staying in the same unit and take part in the different group therapies. Further uncontrolled stayed which effects other, non-body oriented elements of the stationary therapy program could have on the measured

variables. Facing these aspects as well as regarding the lack of evaluative studies concerning this topic and regarding the difficulties to measure short-term changes in this area with the existing tools adequately, this study had the character of a pilot study to show first hints of possible effects of the Feldenkrais method in stationary therapy of eating disorders.

A clinically observable sign of all eating disorders according to Bruch (1973) is a disturbed relationship to the own body. Patients suffering from eating disorders are dissatisfied with their own body and their body image is distorted. The Feldenkrais method as a body therapy method works towards an improvement of body perception and a clarification of the body image, with which among others the satisfaction and acceptance of the body should improve

From the assessment of satisfaction of the patients with various body parts and regions a confirmation for the effectiveness of the Feldenkrais method can be concluded especially for the problematic zones typical for eating disorders (Garner 1990), like hips, thighs and buttocks as well as torso and arms as described in the literature. The general physical appearance receives a more positive assessment and attitude which points to a generally improved body feeling and improved relationship with the own body.

Concerning the acceptance of the own body it is shown that after Feldenkrais lessons the body feels more pleasant. The own movements are perceived as less awkward and inflexible, which is explicable with the method specific proceeding, aiming towards more quality and flexibility of movement (Feldenkrais 1978). The own body is regarded with more pleasure, which is congruent with the already mentioned improvement of satisfaction with certain problematic zones and the general physical appearance. Decrease of strangeness and fear while looking at oneself in a mirror is an interesting result and points to a clarification of a distorted body image. Through the development of bodily awareness the subjective image of the own body approximates the real body structure and the perception of the body becomes more realistic (Feldenkrais 1978). Through sensing and moving and occasionally palpating of the own body it becomes more familiar. So the own mirror image looks less strange.

Feldenkrais (1988) states that the unity of body and mind is a concrete reality, that they are not somehow connected things, but in their functions an inseparable whole. Physical behaviour has as well impact on thinking and feeling of a human being as well as thinking and feeling have impact on the body and behaviour. Compulsive behaviour in different forms is symptomatic for all eating disorders and is always also expressed through physical behaviour in posture and action.

New possibilities of behaviour and spontaneous possibilities of reaction, adjusted to the respective situation, arise if an immoderate increased or a slack tonus of musculature gets regulated and if rigid, habitual posture and movement patterns become more aware (Feldenkrais 1989). The participants of the Feldenkrais group showed on the referring factors of EMI a decrease of inhibited and compulsive and an increase of spontaneous, open and self-assured condition and behaviour. This confirms the assumption of Feldenkrais (1989), that through physical movement compulsive behaviour can be decreased and spontaneous behaviour can be increased.

Recent development in the area of eating disorders moved more towards an understanding of especially Anorexia nervosa and Bulimia nervosa as disorders with multiple conditions and dimensions, in which the patterns of symptoms are only ultimately the expression of numerous different developments. As mentioned biological, psychological, family and sociocultural factors are relevant for the development of eating disorders, although the influence of each single factor in the heterogeneous population of patients can vary quite a bit. (Garner 1990). Quite some of these issues can be found in the scales of the Anorexia-nervosa-inventory (ANIS) and the Eating-disorder-inventory (EDI), which were used in this study. The Feldenkrais group showed improvements referring to the feeling of helplessness against demands from the outside, inner emptiness, restlessness and inferiority, which were measured within the "feeling of being overwhelmed" with the referring scale from the ANIS. The feeling of ineffectivity is typical for all eating disorders (Bruch 1973) and based on the result it can be said that through the development of body awareness also the felt sense of

self and self-consciousness is being promoted and with that also the ability to deal with demands from the outside in a constructive way. The Feldenkrais group showed a surprising improvement in the EDI-scale “Maturity fears”, which captures the wish to return to the security of early childhood. This confirms one of the basic assumptions of the Feldenkrais method – as expressed in “Body and Mature Behaviour” (1949), which is that through the movement lessons which themselves are based on motor development of a child as a red thread, a sort of maturation- or post-maturation process at the physical level and with that on the entire personality is evoked. Based on the result of the EDI-Scale “Bulimia” it can be said, that for eating disorder patients in general the tendency decreases to think of uncontrollable eating attacks or to give way to them. Since both groups improved here in exact the same range, one can say that the Feldenkrais method doesn’t show an additional effect but that the standard therapy program of the clinic is very effective in that point.

Since the satisfaction with the own body measured with typical problem zones increased, one could also expect a significant result in the EDI-Scale “body dissatisfaction”, which measures also dissatisfaction with these problem zones. The means show indeed a decrease of dissatisfaction in the Feldenkrais group, but it is not significant. No significant changes were found in other subscales “Consciousness of figure” (ANIS) as well as “Drive for Thinness” (EDI), “Interceptive Awareness” (EDI), “Asceticism” (EDI) und “Social Insecurity” (EDI).

Summarizing the results the Feldenkrais method “Awareness through movement” with its cautious and structure building procedure and the resulting development of body awareness and felt sense of self can be seen as a valuable part of a stationary therapy program for eating disorders. But a course with a quite little number of lessons has obviously its limitations.

Based on the experiences of this study the used program could be further developed and optimized (see comments). Different elements, like perception, touch and palpation of the own body, developing a feeling for inner and outer space, as well as for body boundaries or working with lips, tongue, mouth cavity and especially breath hereby seem useful. Thinkable would be also the offer of continuation classes in the stationary setting or a combination of participation in group lessons and individualized single lessons in the Feldenkrais method “Functional Integration” (Hanna 1994, Rywerant 1985) as well as the realization of Feldenkrais groups in the setting of post-care- and self-help groups. Future studies on the topic of “Feldenkrais and eating disorders” could investigate the impact of Feldenkrais on different forms of eating disorders (Anorexia nervosa, Bulimia nervosa, Adipositas). Furthermore a comparison of the Feldenkrais method with other movement and body therapeutic methods would be informative.

Note

The participants of the Feldenkrais group answered additionally to the quantitative questionnaires an interview after finishing the study. Most-mentioned topics formed categories like “kinaesthetic experience”, “conscious body perception”, “relaxing effect”, “pleasant exercises” and “problems during the lessons”. They also reported concrete “effects regarding the eating disorder”, “trance inducing effect” and “interest in further engagement” with the Feldenkrais method.

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