

# FELDENKRAIS AND BODY IMAGE

by

Hans Staffan Elgelid

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## Abstract

This study compared four subjects' body image scores, as measured by a semantic differentiation scale, before and after a series of Awareness Through Movement lessons. Four subjects were chosen to participate in this study based on their initial score on a semantic differentiation scale. The four subjects met with the researcher twice a week for 45 minutes each time to receive either tutoring or Awareness Through Movement lessons. Subject one received Awareness Through Movement lessons during the whole six week session. Subject two received Awareness Through Movement lessons for the first three weeks and one-on-one tutoring during the last three weeks. Subject three received one-on-one tutoring the first three weeks and Awareness Through Movement lessons during the last three weeks. Subject four received one-on-one tutoring during the whole six week session. The subjects completed a semantic differentiation scale before the study began, after three weeks, and at the end of the study.

The results indicated that a person who received Awareness Through Movement lessons scored higher on a semantic differentiation scale designed to measure body image, than a person who received one-on-one tutoring. The results also indicated that although the score on the semantic differentiation scale decreased slightly three weeks after the

person stopped the Awareness Through Movement lessons, the score did not revert back to the initial level.

## **Chapter 1**

### **Introduction**

Body image has been defined in many ways during the 20th century. Such definitions range from temporary body states and schematas,<sup>1</sup> to a picture of the body that forms in the mind,<sup>2</sup> an integration of the self in three spheres,<sup>3</sup> and an internalized, learned representation of the body.<sup>4</sup> The literature also emphasizes that body image is a dynamic concept,<sup>5</sup> and that new elements that are added to the body image can enhance or detract from a person's body image.<sup>6</sup> Body image changes have been found throughout the life span as the individual grows and matures.<sup>7</sup> Differences in body image between gender have been noted,<sup>8</sup> as have disease specific body image disturbances.<sup>9 10 11</sup> Body image has been labeled as body schema, perceived body, self-concept, self-esteem, and self-image.<sup>8</sup> Given that body image spans such a wide range of definitions and areas, and involves a subjective component,<sup>12</sup> even today there still is no clear definition encompassing the whole concept of body image.<sup>13,14</sup>

Most of the literature about body image has been published in the areas of nursing, neurology, psychology, occupational therapy, and physical

education. A literature search did not reveal any published articles about body image in journals traditionally covering the field of physical therapy.

In the author's experience working with clients in rehabilitation with amputations, burns, cerebrovascular accidents, and chronic pain, a significant change appears to occur in body image in all these diverse client groups. This observation is based on the author's experience of watching the clients move in and interact with their environment. Unless physical therapists find a way to address issues of altered body image, the author believes that the client may leave rehabilitation with an incomplete body image which could affect functional outcomes and life satisfaction. In the case of chronic pain, unless physical therapists manage to bring awareness to the distorted or missing parts of the client's body image, the author believes that the client is likely to return to rehabilitation at some time in the future.

The growing field of somatic education, including the Feldenkrais Method, the Alexander technique, and Eutony, acknowledges the importance of the client's self-image. The founders of these fields, Moshe Feldenkrais, F.M. Alexander, and Gerda Alexander even consider self-image to be central to their methods.<sup>15 16 17</sup> Feldenkrais stated that self-image consists of movement, sensation, feeling and thought, and that each one of these components will be present in any action.<sup>15</sup> Physical therapists can and

should be involved in bringing awareness to the client's movements and sensations thereby affecting the client's self-image.

One possible reason that self-image has not been well researched in the field of physical therapy could be that body image is a dynamic concept that involves subjective interpretations and also is socially and culturally influenced.<sup>18</sup> As body image spans such a wide range of definitions, the study of body image might best be performed in a multi-field fashion. An exact measurement technique of the body image concept is difficult to find, both because body image includes a subjective component,<sup>19</sup> and because the different fields researching body image have different ideas about what aspect of body image is important to measure.

## **Purpose**

The purpose of this study was to investigate how the Feldenkrais Method influences the body image of a person, as measured by a semantic differentiation scale.

## **Theoretical framework**

This study is built around Feldenkrais' idea that humans act in accordance with their self-image. In his book *Awareness Through Movement*<sup>15</sup> Feldenkrais describes the self-image as consisting of movements, sensations, feelings and thoughts, and states that each one of those

components will be present in any action. Without all four of these components, life is endangered. The Feldenkrais Method is a method of education, and a central educational theme in the Feldenkrais Method is that individuals limit their potential by limiting their movements and developing habits of moving, thinking and interacting with their environment. A child's self-image changes rapidly as the child progresses from rolling, to crawling, to standing, to walking and to other learned movements.<sup>15</sup> As individuals develop a certain movement repertoire they tend not to vary their repertoire or the way they perform these movements, because learning and education usually ends when they have achieved an objective. The objective could be to pass a test for a grade, improve speech to the point of understanding, or achieve some other goal that the individual or society has deemed important. Since humans tend to learn only until the objective is achieved, they seldom use their brain cells and body to explore different patterns and combinations beyond the habitual patterns. Therefore the individual's self-image will be less than complete, and less than the individual's potential self-image, because the individual's self-image is made up only of those patterns and combinations that they actually use. So a person's self-image is the result of his personal experience. Central to Feldenkrais' thinking was that a systematic correction of the image is quicker and more effective than corrections of a single action. Therefore the Feldenkrais Method, whether Awareness

Through Movement or Functional Integration, deals with the whole person and not with correction of single movements.<sup>15</sup>

The Feldenkrais Method consists of two different kinds of lessons.

Awareness Through Movement (ATM) is the verbally directed form of the Feldenkrais Method. An ATM lesson consists of gentle exploratory movement sequences organized around a specific human function such as walking, reaching, bending etc. with the intention of increasing awareness of multiple possibilities of action. ATM lessons are usually taught to a group of students.<sup>20</sup> Functional Integration (FI) lessons consist of a practitioner using words and non-invasive touch to guide an individual student to an awareness of existing and alternative movement patterns. The teacher communicates to the student how he or she organizes him or herself and suggests additional choices for functional movement patterns. In FI the intent of the touch is to communicate, not to correct.<sup>20</sup>

## **Research question**

Does the person receiving three to six weeks of Awareness Through Movement lessons observe a change in body image, as measured by a semantic differentiation scale?

## **Assumptions**

Since the study of body image is centered around a vague concept, some assumptions were necessary prior to beginning this study.

- 1) The assumption was made that the measurements chosen by the author measure body image. Part of the problem of finding a good test for body image is that the study of body image is multi-disciplinary, and researchers have difficulty deciding what aspects of body image are important to measure.<sup>19</sup>
- 2) The assumption was made that “healthy” people do not have a complete body image.<sup>19</sup>

## **Limitations**

The following limitations of the study have been identified.

- 1) No control of the subject’s activities was attempted.
- 2) The Feldenkrais Method does not have any protocol or standard sessions, so a Feldenkrais lesson will vary depending on the practitioner who is giving the lesson. This study can, therefore, not be duplicated or generalized to a larger population, but can only be used as a guideline.

## **Significance of the study**

Various somatic education approaches, including the Feldenkrais Method, the Alexander technique, and Eutony consider a person’s self-image to be central to how the person functions in the environment.<sup>15,16,17</sup> Nurses, physicians, psychologists, and occupational therapists all seem to be

aware of some importance of the client's body image, based upon published studies in their peer reviewed journals regarding body image. In the field of physical therapy very little time seems to be spent doing research about the client's body image, at least judging by journals in the field. Since, according to Moshe Feldenkrais,<sup>17</sup> movement and sensations are part of the client's concept of body image, physical therapists are in a position to deal with the client's concept of body image. If physical therapy interventions do not bring awareness to the missing or distorted pieces of the client's body image, then this author questions if the clients have been helped. There is a great chance that the client will go out and perform the same actions, in the same habitual way as before rehabilitation and with the same results unless the client's body image has changed as a result of the rehabilitation. The Feldenkrais Method, the Alexander technique, and Eutony suggest that through handling and movement a client's awareness of areas of the body that are not included in their self-image can be improved. If physical therapists and other health care workers learned from these and other fields of somatic education, they might improve the outcome of rehabilitation of their clients.

## Chapter 2

### Literature review

#### Definition of body image

No specific definition of the term body image exists.<sup>21</sup> Many fields of study including biology, sociology, anthropology, endocrinology, dermatology, orthopedics, orthodontic dentistry, psychology, and plastic and reconstructive surgery have studied body image.<sup>22</sup> Since the concept of body image spans so many fields of interest, the concept of body image has been defined in many ways.<sup>19</sup> The most common definition in the literature was developed by Schilder,<sup>2</sup> and stated that body image is “The picture of our body which we form in our mind. That is to say the way the body appears to ourselves.” Bruch used terms such as body image, body awareness, body identification, body structure, bodily self, body perception, and social body concepts as interchangeable.<sup>23</sup> Body image definitions also have included self-confidence, self-esteem, and self-image.<sup>15</sup> Definitions of body image included both direct perceptions (visual, tactile, and proprioception) of the body, and the emotions, attitudes and reactions of the individual.<sup>24</sup> Definitions of body image spanned the conscious and unconscious, the external and internal, reality and fantasy,<sup>25</sup> as well as cultural and social forces.<sup>23</sup> Freud<sup>26</sup> claimed that “The ego is first and foremost a body ego.” Adler, Jung and Reich were other psychoanalysts who wrote about body image.<sup>21</sup>

Head<sup>1</sup> was the first researcher who used the term body image. He noted that to make fluid movements and to adjust body positions implied integrated cognitive awareness of shape, size and form of the body. To him, the body image was a set of body blue prints that constantly changed with learning. He stressed the dynamic relationship between temporary body states and schemas built over time. Head primarily studied the impact of brain and body damage on the central body schema and ignored body image in normal development.

Schilder<sup>2</sup>, in his studies, included both pathological and everyday conscious and unconscious sensations from the body. He believed that the body image protected the sense of an integrated self, and placed body perception and experiences at the center of human awareness.

Winnicott<sup>27</sup> stressed that the sense of body worth had its origins in infancy through the three functions of holding, handling and mirroring that the mother carries out. Holding gives the baby a sense of security. Handling turns the baby into a provider of pleasure and gratification. Mirroring creates a sense of physical beauty through the mother's expression that mirrors to the baby.<sup>27</sup>

DeBea<sup>3</sup> felt that the integration of self occurred in three spheres of body image. The three spheres according to DeBea were, spatial integration

between different parts of our body, and between the self and others, temporal integration connecting self-awareness over time, and social integration comparing self-perceived self with the self as seen by others.

Some authors consider the body image to be a part of the self-image,<sup>12</sup> while others consider the self-image to be synonymous with body image.<sup>23</sup> Sims considered the body to be unique in that it is experienced both inside and outside the individual and is both self and object.<sup>28</sup> Some authors claim that the body image is more than the body itself.<sup>12,29</sup> Clothing, glasses and other things that humans use in connection with their bodies are included in the concept of body image.<sup>29</sup>

Body image also is conceptualized in a particular social context.<sup>29</sup> Body image can be divided into an external envelope of the body and the internal volume or space of the body.<sup>29</sup> According to Cleveland and Fisher,<sup>30</sup> the physical is considered the body envelope; the relationship of an individual to others and to objects around the body is the body space; the perception of the body envelope comes from the skin and visual information. The same authors also believe that body volume or space arises from the deep proprioceptors of the body, and movement and physical activity is therefore important in the formation and maintenance of body image.<sup>30</sup>

Price<sup>31</sup> investigated body image from a nursing standpoint and developed a three-part definition of body image. Those three parts consisted of:

- 1) Body reality. Body reality is the way individuals perceive and feel their bodies. Body reality is seen and measured objectively, and relates to body make-up and proportions, and does not contain value judgements. Body reality is the way the individual's body really is. Body reality is not a static concept, but changes with aging.
- 2) Body presentation. Body presentation is how the body responds to the individual's commands. This response includes fashion, how the individual moves, and how the individual poses to the world. The body functions as an expression of the individual's wishes, intentions and feelings. An individual can control his/her body presentation to a certain extent.
- 3) Body ideal. Body ideal is an internal standard by which an individual judges him/herself and others. This ideal affects how the individual thinks he/she should look and how the individual thinks others should look and act. The individual is measuring reality and presentation against a standard in his/her head and includes body contours, comfort, size, weight, odors, coordination, strength, reliability and control.

Price also developed ten assumptions that underpin and map the body image.<sup>12</sup>

- 1) Body image is dynamic, and consists of body reality, body presentation, and body ideal.
- 2) Change in the body image is brought about by a change in the environment. The environment is both real and tangible, internal and external to the human body.
- 3) Body image is adjusted regularly in health as well as illness or injury.
- 4) Humans interact with their environments. Humans try to affect and are affected by the environment. This interaction is partly to sustain a satisfying body image.
- 5) The body image is sustained in a changing environment through adjustment of body reality, body presentation, and body ideal, through the use of coping strategies and a social support network.
- 6) When the components of body image are balanced, a sense of well being/health exists. Failure to balance components of the body image results in altered body image/illness.
- 7) Body image is affected by the environment and contributes to the personal self-image.
- 8) Self-image is negotiated in society, so that the individual can develop a sense of self-worth. The body image is an important part of this negotiation.
- 9) Individuals can only sustain a normal body image in a limited range of environmental change. When this environmental range is exceeded, an altered body image results.

10) When the individual has an altered body image, he needs professional nursing care to assist him in achieving a state of body image equilibrium.

A literature search of journals traditionally covering the field of physical therapy did not reveal any articles about body image as it related to physical therapy. This lack of research is surprising, since researchers in the field of nursing have published articles about what body image consists of,<sup>31</sup> and the assumptions that underpin and map the body image.<sup>12</sup> In a hospital, physical therapists and nurses often work with the same clients, so why have physical therapists not studied body image as in-depth as nurses have? If body image changes throughout the life span, and both physical therapists and nurses work with clients throughout the life span, it seems that both physical therapists and nurses would benefit from studying ways to change the client's body image.

### **Body image changes throughout the life span.**

Head<sup>1</sup> wrote that the body image developed throughout life, and started to form as soon as the pre-toddler started to explore his body, its boundaries and contours. Horowitz<sup>6</sup> believed that new elements are added to the body image throughout life. According to Schilder,<sup>2</sup> body image seemed to develop in parallel with sensory and motor development. He also wrote that the touches of others, and the interest that others take in the different

parts of the body will be very important in postural development of the body. Weiss<sup>32</sup> felt that early tactile and proprioceptive stimulation in the womb, infancy, and childhood provided the stimulation and basis for the development of the body self. Kulka<sup>33</sup> et al. suggested that movement helped the infant develop a sense of self.

The development of body image in the child.

According to Bleasing and Brockhous,<sup>7</sup> as the child grows, develops, and experiences itself and interacts with the environment, the child forms a concept of his own body. That concept is unique to each child, and is derived from his individual sensorimotor and affective experiences. The child's experiences are constantly integrated, and the body image is therefore plastic and changes as the child needs to re-organize. The child needs to have a relatively stable body image to perceive others and to test reality. Without this stability, the child will possibly experience anxiety and have difficulty interacting with the environment. On the other hand, if the body image is too stable, then the child will not be able to adjust his/her body image with the changes that occur with growth, development and interactions with the environment.<sup>7</sup>

The oral stage. Birth – one year old.

In infancy the child is initially focused on the oral zone.<sup>34</sup> During the first year of life, the infant learns to differentiate his body image from the outside world. During this stage, the child develops trust and mistrust.<sup>34</sup> If the child develops a sense of trust, he develops a good self-concept. A mistrustful child tends to develop a poor self-concept and sees himself as bad.<sup>7</sup>

The toddler stage. 1-3 years of age.

During this stage, a continuation of the differentiation of the self from the environment occurs.<sup>34</sup> Parental figures are important during this stage, because the parental attitudes form an impression of the child's concept of himself, his body and his functions. The child might think of his body as good or bad, clean or dirty, loved or disliked.<sup>7</sup>

The pre-school stage. 3-6 years of age.

At this stage the child starts to focus on the genitalia.<sup>34</sup> In the western culture, this focus could lead to punishment and therefore anxiety and guilt. The genitals could be a site of conflict between pleasure and anxiety that could lead to a body image disturbance of the genitals.<sup>7</sup> Gender typing and identity also is important at this stage. Aggressiveness, competitiveness, muscular build, and independence are characteristics that are regarded as important for boys in western culture. For girls, a

different set of characteristics is important. If the child does not have the attributes that are appropriate for his gender, the child might develop a body image distortion.<sup>7</sup>

School age. 6-12 years of age.

According to Erickson,<sup>34</sup> this stage is when the child develops industry or inferiority. The school-aged child is testing his skills against a group of peers. If the child cannot speak or perform as well as other children, or if the child has any other limitations, the child might think of himself as inferior to other children. This period contains rapid growth, and at this age, the child tends to focus on his body and how he looks to others, while the younger child tends to be more focused on himself.<sup>7</sup>

As this section of the literature review indicates, the child goes through changes in body image as he/she grows. As the child starts to mature, changes in body image according to the gender also start to develop.<sup>35</sup>

### **Body image and gender**

Most studies in the literature about body image and gender tend to focus on what parts of the body are attractive. Women tend to more nearly equate body with self. Men's role and status are more defined in terms of achievement than body attributes. For a woman, the body awareness tends to involve boundary regions, while for the male, the body tends to

reflect experiences pertaining to the digestive aspect.<sup>35</sup> Secourd<sup>36</sup> and Jourard studied college students and found that women are in some cases dependent on perceived and demonstrated attractiveness to male irrespective of skills, interests and values. No woman in that study rated all her body parts positively, and the feeling of not attaining the body ideal might be responsible for a sense of insecurity. In a study by Wittreich<sup>37</sup> and Grace, the subjects were wearing distortion glasses while viewing themselves through distortion lenses. According to Wittreich<sup>37</sup> and Grace, perceptions that arouse anxiety in the individual are least likely to be observed among the changes that occur while viewing their own mirror image while wearing distortion lenses. The results of the Wittreich<sup>37</sup> and Grace study indicate that women reported fewer changes in the legs and feet, and that changes in the legs and feet are therefore more marked with anxiety for women than for men. Women tend to view the legs as a symbol of attractiveness that is dependent on the judgement of others, men, on the other hand, tended to view their legs as means of locomotion, agility, and strength. Men therefore showed less anxiety involving changes in the legs. According to Fisher,<sup>35</sup> the more aware we are of a body part, and the more confident we are in that body part, the less likely we are to notice changes in that body part. So Wittreich<sup>37</sup> and Grace's study about women noticing less changes in their legs, and therefore being more anxious about changes in their legs makes sense. Fisher noted that women are more aware of facial changes and less anxious about the

function of the face than men.<sup>35</sup> A study by Weinberg<sup>38</sup> found that men's bodily concerns were related to psychological insecurity. In a study on medical inpatients, Schwab<sup>39</sup> and Harmeling found that males were more satisfied with their bodies than females. This satisfaction was independent of the illness. A study by Gray<sup>40</sup> found that women tend to perceive themselves as appearing heavier than they were, while males saw themselves as lighter than they actually were.

Although no material was found regarding special problems relating specifically to either gender's body image in the physical literature, physical therapists have started to notice that women have special needs, and the American Physical Therapy Association has a section devoted to women's health. This focus might eventually translate into studies differentiating differences between men and women in areas such as body image.

The literature indicated that body image changes and disturbances occur throughout the life span,<sup>7</sup> and also differences between the genders develop.<sup>35,36</sup> But how can we classify something as a body image disturbance, and how have researchers tried to define a body image disturbance?

### **What is a body image disturbance?**

Body image disturbance, or altered body image is as difficult to define as is body image. That is, body image disturbance has many definitions and theoretical underpinnings. Body image disturbance is a nursing diagnostic category approved by the North American Diagnosis Association.<sup>41</sup>

Corbell<sup>42</sup> defined body image disturbance as arising when one fails to accept the body as it is. A conflict exists between the way the body is perceived and the way the person pictures his body mentally. Price<sup>12</sup>, as discussed previously, defines body image disturbance as a disturbance or alteration when the internal and external environment changes outside the range where the person can sustain his normal body image.

Murray<sup>43</sup> believed in a developmental component to a healthy body image. She wrote that the success of the individual in coping with the changing demands of each area of the body as it becomes dominant is necessary for the development of a mature body image. If the person cannot integrate each body zone, the person will have an immature and incomplete body image that will interfere with normal adult living.

According to Cleveland and Fisher<sup>30</sup> the individual not only has to adapt to normal changing patterns of body image such as aging, pregnancy, etc. but also to altered body image due to trauma, pathological and degenerative changes. What is a body image problem for one person might not be a problem for another person. A healthy body image is an

adaptable body image.<sup>30</sup> An increased flexibility in a person's range of internal and external environment leads to a decreased chance of a body image distortion.<sup>30</sup>

Kolb<sup>5</sup> categorizes body image disturbance as arising from one of the following five categories of illness:

- 1) Disorders following neurological disease. These diseases can affect any part of the nervous system and are connected with movement and posture.
- 2) Disorders occurring with changes in the body structure secondary to acquired or induced toxic and metabolic disorders.
- 3) Disorders caused by other somatic diseases occurring either early or late in life.
- 4) Disorders after acute dismemberment.
- 5) Psychiatric conditions, including psychoses, psychoneuroses and psychopathic states.

Pain also can be the cause of different body image disturbances.

According to Lederman<sup>13</sup>, people deal with pain in three ways that can cause a body image disturbance. The person can focus too much on the painful area thereby enlarging it. The person can diminish the painful area thereby making it smaller, or the person can totally segregate the painful area from the body.

None of the above definitions are written by physical therapists, and no definitions of body image disturbance were found in a literature search of journals that traditionally cover the field of physical therapy. This lack of published material is highly surprising, since the physical therapist works with clients with specific dysfunctions such as chronic illnesses, myocardial infarctions, and brain lesions, and body image disturbance has been shown to occur in the previously mentioned dysfunctions.<sup>9,11,44</sup>

### **Body image disturbances in specific dysfunction**

Body image and unilateral neglect.

Unilateral neglect typically denotes a deficit affecting the awareness of the body half and extrapersonal space contralateral to the side of the brain lesion.<sup>44</sup> Unilateral neglect has been labeled hemi-neglect, spatial neglect, extinction, imperception, hemi-inattention, unilateral spatial agnosia, or visuospatial agnosia.<sup>45</sup> The right parietal lobe seems to be the most common lesion site for unilateral neglect,<sup>46</sup> but other sites also have been identified with unilateral neglect.<sup>44</sup> Many neurological theories have been proposed to explain unilateral neglect.<sup>44</sup> The most promising seem to be central representational disorder and attentional dysfunction. Central representational disorder is associated with inadequate body schema, representational mapping and spatial presentation.<sup>44</sup> Villardita<sup>47</sup> suggested that unilateral neglect is an attentional dysfunction, because unilateral neglect is modality specific, and attention is selective. Unilateral neglect

can occur in tactile, visual or auditory spheres but is not necessarily represented in all three spheres at the same time. Heilman<sup>48</sup> and colleagues divided unilateral neglect into four categories.

- 1) Hemi-inattention, is a neglect of sensory input, auditory, somesthetic, or visual, to the body side contralateral to the side of the brain lesion. Hemi-inattention is an attention arousal disorder according to the authors.
- 2) Extinction or simultaneous stimulation is a limited attention situation. As the neurons involved in attention recover, minimal response to stimuli contralateral to that side is possible, but this side ceases to be the focus of attention when the ipsilateral side is stimulated at the same time.
- 3) Akinesia is a non-motor deficit in starting a movement, and involves lesions of the frontal lobe as well as sensory association, limbic, or reticular areas.
- 4) Hemi-spatial neglect is neglect of the space contralateral to the side of the brain lesion.

If Van Deusen's<sup>44</sup> idea that central representation is correct as an explanation for unilateral neglect, and the central representation disorder is associated with an inadequate body schema, representational mapping, and spatial presentation then a logical conclusion is that physical therapy treatment is needed to address those aspects.

Body image and eating disorders.

A group of clients that physical therapists treat, in which the therapist might not be as aware of the body image component, are clients with eating disorders. Patient's with anorexia and bulimia often are seen by physical therapists. Usually these clients are treated for disorders such as TMJ dysfunctions and neck and back dysfunctions and not the eating disorder.

Results of body image studies with anorexia have been inconsistent.<sup>44</sup>

Patterns that have emerged are:

- 1) Size estimation and image distortion measures produce different results. Fries<sup>49</sup> found that body perception measurements differed significantly between anorexic subjects and control subjects. Button, Fransella and Slade<sup>50</sup> found no significant difference between anorexic and control subjects.
- 2) Failure to correctly estimate width of one's body or its parts was not unique to those with anorexia.<sup>50,51</sup>
- 3) Perception of body size was qualitatively different for those with anorexia than for control subjects in terms of meaning for the patient. In a study by Touyz and Beaumont,<sup>52</sup> no difference between anorexic and control subjects as far as over- or underestimating their body shapes was noted. However, a qualitative difference in

underestimating self-weight between anorexic/severely underweight subjects and control subjects of normal weight occurred.<sup>52</sup>

- 4) Overestimation of body size was associated with a poor prognosis and greater pathology in anorexia nervosa<sup>50,53</sup>

A study by Waller,<sup>54</sup> Hamilton and Shaw suggested that news and entertainment media reinforce cultural and social norms of thinness. That study found that females with an eating disorder increased their body size estimation following exposure to magazine pictures of thin models, while the control subjects were not manipulated by the same pictures. If this study by Waller,<sup>54</sup> Hamilton and Shaw is correct, it seems reasonable to assume that a physical therapist who sees a large population of females with eating disorders needs to be careful about the reading material to which he exposes his clients, and to be aware of possible changes in the clients' body image.

Physical therapy clients with anorexia are on one end of the spectrum, but clients on the other end of the spectrum, physical therapy clients with obesity, also have the potential for having a disturbed body image.

Body image and obesity.

Many obese people have negative feelings about the body that may contribute to negative self-esteem and negative comments about the body.<sup>55,56</sup> The onset of obesity, presence of emotional disturbance and a negative evaluation of obesity by others during the formative years seem to determine if a disturbed body image will, or will not be present. A person who becomes obese in adolescence is more likely to have a body image disturbance than a person whose onset of obesity occurs in childhood or as an adult. Emotional disturbances also are most frequent in the adolescent group, and body image disturbance is the most dominant feature of the emotional disturbance.<sup>55</sup>

Body image disturbances also have been reported in the literature in patients with a colostomy,<sup>10</sup> after a myocardial infarction,<sup>11</sup> with phantom limb pain,<sup>44</sup> rheumatoid arthritis,<sup>57</sup> and mastectomy.<sup>58</sup>

Physical therapists may see clients with any of the above physical disturbances. The question in the author's mind is if physical therapy treatments would be more effective if a way was found to affect the client's body image disturbance. If having negative feelings about the body may contribute to negative self-esteem,<sup>55,56</sup> maybe the client's body image influences the client's overall behavior.

## **Body image and behavior**

Body image influences behavior, because having a belief that one is attractive leads to social self-confidence and skill.<sup>59</sup> Clifford<sup>60</sup> found that individuals with facial deformity are more likely to be socially withdrawn. This withdrawal might be a defense mechanism of hiding a deformity and can have an adverse impact on the person's self-image.<sup>59</sup>

## **Measuring body image**

Many different methods have been used to assess body image. Interview methods,<sup>23</sup> Rorschach tests,<sup>31</sup> tilting chamber,<sup>61</sup> visual size estimation,<sup>62</sup> tactile size estimation,<sup>63</sup> contour drawing scale,<sup>64</sup> the draw-a-person test,<sup>65</sup> video confrontation,<sup>24</sup> figure rating scales,<sup>66</sup> questionnaires,<sup>20</sup> clay figures,<sup>18</sup> and semantic differential scales<sup>44</sup> are among the different measurement techniques that have been used.

Van Deusen<sup>44</sup> categorized assessment tools in four groups:

- 1) Self report tools and other paper and pencil tests. These groups of tools included semantic differentiating scales, picture selection instruments, and responses to statements. Semantic differentiating scales ask the subjects to scale their body parts between bipolar adjectives such as complete -incomplete, negative -positive etc. using ten different pairs of Osgood's evaluative adjectives.<sup>67</sup> Picture selection instruments are used to determine if body shape images selected by the patient representing their own bodies are within normal limits.

Responses to statements such as “I feel good about my body” is the last category of self-report tools.

- 2) Computer related instruments. An increase in computer assisted measurements of body image has been reported in the literature. Most of these studies have been performed on patients with neurological disturbances rather than on patients with psychological disturbances, since testing for psychological disturbances usually requires subjective input.<sup>68,69</sup>
- 3) Psychophysical measures. These measures include size estimation and image distortion techniques that allow comparisons between perceived body size and the subject’s actual body size. These tests are primarily used for patients with eating disorders.
- 4) Functional tools. These tools are being developed by rehabilitation specialists for patients who have neural-based disturbances. These tools are used in an attempt to relate everyday performance to body image disturbances.<sup>44</sup>

Silhouettes and contour drawings seem to be gaining in popularity and are the most popular tool for assessing the subjective element of body image disturbance.<sup>70</sup> In these studies, subjects select the figures they think most accurately describe their present self and their ideal self. The difference between the responses is used to estimate the subject’s degree of

dissatisfaction.<sup>66</sup> In 1995, at least 21 sets of contour drawing tests existed.<sup>66</sup> Many of these tests had not demonstrated validity or reliability.<sup>66</sup>

The draw a person test (DAP) was developed in the 1940s. This test is built on the assumption that an individual's spontaneous drawings of a human figure represent a projection of the individual's own body image.<sup>20</sup> Machover was the researcher who did most of the early work on the DAP test.<sup>65</sup> Modifications of the DAP have included blindfolded drawing,<sup>71</sup> and the "inside-of-the-body test" that includes the subject's internal organs.<sup>72</sup> Three formal measurements can be taken of the DAP. They are: area, which is considered to reflect self-assessment in relation to the environment; height, which is interpreted as an indication of feelings of relative self-significance; and centeredness, which is considered to be related to the subject's general security level and the subject's orientation toward reality.<sup>73</sup> Fisher and Cleveland<sup>30</sup> reviewed studies using figure drawings as a measure of body image. Fisher and Cleveland's main conclusion was that the draw a person test may be valuable but was used in an impressionistic manner. Fisher and Cleveland found difficulties differentiating which aspects of the drawing were linked to body image, which to drawing skills, and which were due to how the drawing was obtained.

Gerda Alexander utilized clay as a measurement of body image.<sup>17</sup> Initially she used clay to make students aware of their own body images. She found that missing elements, lack of body feeling, disordered movements and inadequate feelings, organic sickness, and physical adjustment were visible in clay. She also noticed that the same defects would show up in the student's modeling no matter how often the student modeled in clay, and that the student only succeeded in modeling when the missing body awareness was awakened and all sympathetic system disturbances were removed. She claims that the students themselves understood that they were modeling their own self-image, and that their whole personality was shown in the model. Some students consistently had too much clay, while others never had enough no matter how much clay they started with. Some students modeled a figure directly out of the clay, while others divided the clay into six parts on which they first worked and then put together as a whole person.<sup>17</sup>

Assessing body image always has been considered difficult,<sup>74</sup> because body image is an abstract concept dealing with attitudes, the mind, and interpersonal values.<sup>74</sup> Body image measuring techniques also have been difficult to assess, because some techniques might be measuring mental health and social behavior as much as body image. Different fields also may attempt to measure different aspects of body image and for different purposes. A psychologist might look at body image to measure the

development of an individual. A sociologist might look at body image to learn about the client's social interactions. A psychiatrist might be interested in body image to find clues to mental illnesses.<sup>74</sup>

### **Body image and somatic education**

The field of somatic education, including the Feldenkrais Method, the Alexander Technique, and Eutony all mention the importance of the client's self-image. The founders of these fields, Moshe Feldenkrais, F.M. Alexander, and Gerda Alexander, even considered self-image to be one of the central parts of their methods.<sup>15,16,17</sup>

In his book *Awareness Through Movement*,<sup>15</sup> Feldenkrais writes about the self-image as consisting of movements, sensations, feelings, and thoughts, and that each one of these components will be present in any action. Without all four of these components, life is endangered. The Feldenkrais Method is an educational method, and a central educational theme in the Feldenkrais Method is that humans limit their potential by limiting their movements and developing habits. A child's self-image changes rapidly as the child goes from rolling,<sup>15</sup> to crawling, to standing, to walking and to other learned movements. Feldenkrais believed<sup>15</sup> that as individuals develop a certain movement repertoire, they tend not to vary that repertoire or the way they do these movements very much. Feldenkrais also discussed learning,<sup>15</sup> and believed that learning and

education usually ends when an individual has achieved his objective. The objective could be to pass a test for a grade, improve the speech to where he can be understood, or some other goal that the individual or society has deemed important. Because humans tend to learn to their objectives, they seldom use their brain cells and bodies in many different patterns and combinations. Therefore, according to Feldenkrais<sup>15</sup> the self-image will be smaller than the potential, since the self-image is made up from patterns and combinations that each individual actually uses. So a man's self-image is the result of his own experience. Central to Feldenkrais' thinking was that a systemic correction of the image is quicker and more effective than corrections of a single action. Therefore the Feldenkrais Method, whether Awareness Through Movement or Functional Integration, deals with the whole person and not with correction of single movements.<sup>15</sup> The Feldenkrais Method consists of two different kinds of lessons. Awareness Through Movement (ATM) is the verbally directed form of the Feldenkrais Method. An ATM lesson consists of gentle exploratory movement sequences around a specific human function such as walking, reaching, bending etc. with the intention of increasing awareness of multiple possibilities of action. ATM lessons are usually taught to a group of students.<sup>20</sup> Functional Integration consist of a practitioner using words and non-invasive touch to guide an individual student to an awareness of existing and alternate movement patterns. The teacher communicates to the student how he or she organizes him or herself, and suggests

additional choices for functional movement patterns. In Functional Integration the intent of the student is to communicate, not correct.<sup>20</sup>

If, as this literature indicates, changes in body image occur as we grow and mature<sup>7</sup>, between the genders,<sup>8</sup> as well as disease specific image disturbances,<sup>9,10,11</sup> and if the Feldenkrais Method is proven to influence a client's body image, then a logical conclusion would be that the Feldenkrais Method could benefit patients with a body image disturbance. Should the above assumptions prove correct, physical therapists then must start considering somatic education methods, such as the Feldenkrais Method, as a valuable treatment tool.

## **Chapter 3**

### **Methods**

#### **Population and sample**

Eighteen subjects volunteered for the study. All eighteen subjects completed a semantic differentiation scale (See appendix) designed to measure body image. The four subjects with the lowest scores on the semantic differentiation scale were chosen to participate in the study. The reason for choosing the subjects with the lowest score was that they had the most room to improve the score on the semantic differentiation scale. A high score on the semantic differentiation scale indicates more satisfaction with the person's body image, and, therefore, there is less room for improvement.

#### **Protection of subjects rights**

All subjects that participated in this study signed an informed consent form (See appendix) prior to participating in the first Awareness Through Movement class.

#### **Setting**

The Awareness Through Movement lessons took place during the summer of 1999 in a classroom in the physical therapy department at the University of Central Arkansas.

## **Treatment**

The treatment for subjects one, two and three was Awareness Through Movement lessons. The Awareness Through Movement lessons were chosen from the 1992-1996 professional Feldenkrais training. All Awareness Through Movement lessons work on the body as a whole system. Feldenkrais believed that a systematic correction of the image is quicker and more effective than corrections of a single action.<sup>15</sup> The lessons chosen for this study addressed all areas of the body to achieve a systematic effect of the body image.

## **Measurement methods**

Each subject's concept of body image was measured using a semantic differentiation scale. The four subjects that were chosen to participate in the study completed a semantic differentiation scale before the first Awareness Through Movement lesson, after three weeks, and after the last lesson. The subjects also wrote about their concept of their own body image before the first Awareness Through Movement lesson, and after the last Awareness Through Movement lesson. The researcher was present when the subjects wrote about their body image, both before and after the Awareness Through Movement lessons. At the conclusion of the study the subjects had a chance to say anything they wanted to about their concept of body image and ask questions about what the study was trying to measure. The semantic differentiation scale was constructed using ten

pairs of Osgood's evaluative adjectives.<sup>70</sup> The adjectives were chosen from Osgood's list of 15 evaluative adjectives.<sup>70</sup> Van Deusen<sup>44</sup> used a semantic differentiation scale using similar adjectives to measure body image in subjects with rheumatoid arthritis. For the current study, Van Deusen's scale was modified by the substitution of light-dark for the previous impaired-unimpaired. The terms impaired-unimpaired were deemed inappropriate for the healthy college students used in this study.

### **Data collection**

The four subjects were numbered according to when they scheduled their first ATM/tutoring session. The first subject to schedule an appointment was labeled one, the second two and so on. Subject one received six weeks of Feldenkrais lessons. Subject two received Feldenkrais lessons during the first three weeks, and then was tutored one on one by the researcher during the next three weeks. Subject three received tutoring during the first three weeks, and then Feldenkrais lessons during the last three weeks. Subject four received tutoring during the whole six week period. Each Awareness Through Movement lesson was administered for 45 minutes two times per week. Tutoring in academic subjects served as the placebo intervention for the study and was chosen so that any change in body image following Awareness Through Movement lessons would be attributed to the lessons rather than the one-on-one attention received by the subjects.

### **Data analysis**

Since this project was essentially a single subject study, no traditional statistical analysis was performed. The scores on the semantic differentiation scale for weeks 0, 3 and 6 were compared. Comparisons were made between subject's scores on the semantic differentiation scale to see if there was a difference between the subjects that received, versus the subjects that did not receive, Awareness Through Movement lessons. The study also examined trends in scores on the semantic differentiation scale over the six week period for each subject.

The written description of the body image that the subjects wrote before and after the Awareness Through Movement lessons was used as part of the description of that particular subject's idea of body image. Since this study was a single subject design, it was important to identify the subject's idea about body image.

### **Reliability**

A coefficient alpha test was performed on the 18 pre-test semantic differentiation scale scores to test the reliability of the semantic differentiation scale. The coefficient alpha for the 18 pre-test semantic differentiation scale scores was 0.750.

According to Nunnally and Bernstein<sup>75</sup> a coefficient alpha above 0.70 is considered moderate and sufficient for use.

## Chapter 4

### Results

The average score on the semantic differentiation scale was 45.1, with scores ranging from 30-60. The four subjects with the lowest scores on the semantic differentiation scale were chosen to participate in the study.

The average score for the four chosen subjects was 32.5, with scores ranging from 30-37.

The four subjects completed a semantic differentiation scale at weeks 0,3,1and 6. For a summary of the scores see figure 1.

#### Subject one

Subject one received six weeks of Awareness Through Movement lessons and scored 30 on the semantic differentiation scale before the lessons started. After three weeks of lessons, subject one scored 44 on the semantic differentiation scale. After three more weeks of Awareness Through Movement lessons, subject one scored 46 on the semantic differentiation scale (see fig.1).

#### Subject two

Subject two received three weeks of Awareness Through Movement lessons, followed by three weeks of tutoring. Subject two scored 30 on the semantic differentiation scale before the lessons started. After three

weeks of lessons, subject two scored 49 on the semantic differentiation scale. After the three weeks of tutoring, subject two scored 46 on the semantic differentiation scale (see fig.1).

Subject three.

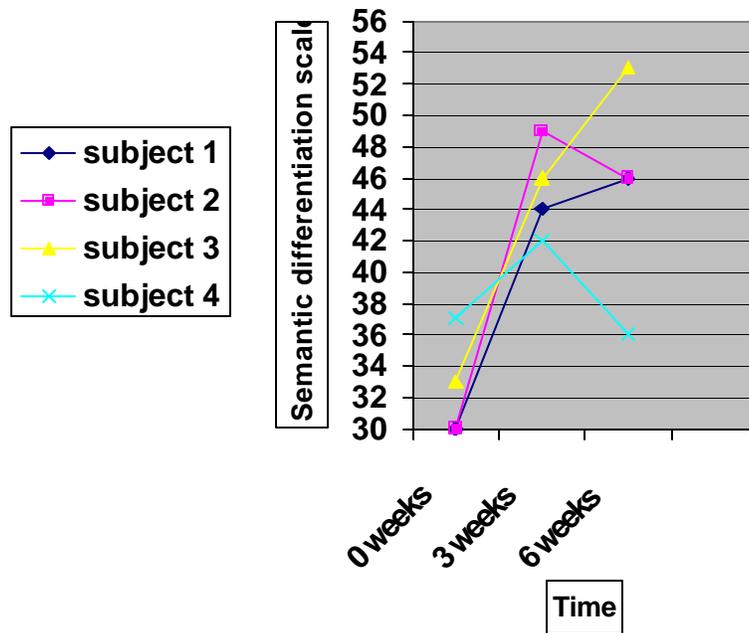
Subject three received three weeks of tutoring, followed by three weeks of Awareness Through Movement lessons, and scored 33 on the semantic differentiation scale before the tutoring started. After three weeks of tutoring, subject three scored 46 on the semantic differentiation scale.

After three weeks of Awareness through Movement lessons, subject three scored 53 on the semantic differentiation scale (see fig 1).

Subject four

Subject four received six weeks of tutoring, and scored 37 on the semantic differentiation scale before the tutoring started. After three weeks of tutoring, subject four scored 42 on the semantic differentiation scale. After another three weeks of tutoring, subject four scored 36 on the semantic differentiation scale (see fig. 1).

Figure 1



	0 weeks	3 weeks	6 weeks
Subject one	30	44	46
Subject two	30	49	46
Subject three	33	46	53
Subject four	37	42	36

### **The subjects' impression of body image**

The subjects were asked to write about their concept of body image before and after the six week study. The results for each subject are provided in the following paragraphs.

#### **Subject One**

Subject one received six weeks of Awareness Through Movement lessons. Before the study, subject one wrote that body image: "Is a way to tell how a person feels about themselves. I feel mine to be boring and at times very unattractive. I think it can change slightly, depending on a person's mode." Subject one's initial writing was very short and generalized.

After the Awareness Through Movement lessons, subject one's writing was more personalized about her own body image: " Body image is very much associated with body awareness. I am now more aware of what my body will and won't do....I am now more frustrated with my body , because I am aware of what I can and can't do. But I am working on (body image) it more, and have an idea of where I would like to be."

### Subject two

Subject two received three weeks of Awareness Through Movement lessons, followed by three weeks of tutoring. Initially, subject two wrote about body image as something that is mostly formed by others:

“I think body image is formed largely by others. Others may make a comment about a part of your body....But it is also formed by the way you interpret the actions of others. I do not think it is formed very much by a person’s own visual observations about their own body.”

After the study, subject two emphasized a more intrinsic view of body image: “A person can emphasize good or bad aspects of their body image. It depends on that person what they see. This image can change if the person wants or allows it to.”

### Subject three

Subject three received three weeks of tutoring followed by three weeks of Awareness Through Movement lessons. Subject three wrote mostly about the negative aspects of the body image: “Although many people tell me I have a wonderful figure, I hate it.....I once thought that my uncoordination stems from not wanting the awareness of my body in space.” Subject three also mentions that she is very competitive:

“Mentally I am very competitive. I want to be the best, and I want to be in control. I think my obsession (I will admit “It”), has become an obsession

with my body image stems from wanting to control and to be the best.....I am aware of my poor body image which even makes me more obsessed with it. I can not find a concrete reason as to why?"

After the study, subject three wrote: "I have learned, or rather re-learned, that I have no coordination. My body has many different minds that for whatever reason choose not to function together....For example, my left and right side don't work together. Rather they do work together, but they don't function in harmony." Subject three also mentioned the frustration with not being able to do simple cross-body tasks:

"I am very frustrated and upset when I fail. I hate not being able to accomplish such simple tasks such as moving to the right, while looking to the left." Subject three did mention that there was an increase in awareness after the Awareness Through Movement lessons: "I am much more aware of my body when I want to be. I don't necessarily walk around thinking about my body, but when I do, I am able to notice even the smallest of differences."

#### Subject four

Subject four participated in six weeks of tutoring and did not receive any Awareness Through Movement lessons. Before the study, subject four wrote: "The first time I really started to think about my body image was when I was 10 years old. It was when I realized that I needed a bra, but no

one else in the 4<sup>th</sup> grade did. I became self-conscious.....I became very quiet-meaning I kept to myself. But all along I was aware of how I looked and pretended not to care. Now I realize my body image is unhealthy and I need to change it.” So initially subject four wrote about body image from a very personal standpoint. After the study subject four wrote:

“It seems that media controls how many (especially younger people) feel about their body image; I wish it wasn’t that way; it needs to be more personal without being social. Body image is just one part of self-image. I can’t remember not feeling awkward and clumsy. I don’t think it matters. I must look to the present and the future of my life and see what is important. I think a way to success/happiness is how one feel about oneself.”

## Chapter 5

### Discussion

This study suggested a change in body image, as measured by a Semantic Differentiation Scale, in the three subjects that received Awareness Through Movement lessons. All subjects recorded an increase in their score on the Semantic Differentiation Scale after the first three weeks. This increase occurred regardless of whether the subject received Awareness Through Movement lessons or not. This initial increase could possibly be due to the novelty of the increased one-on-one attention that all four subjects received. After the study was completed, the score on the Semantic Differentiation Scale of subject four, who did not receive any Awareness Through Movement lessons, had returned to slightly below the baseline level. In the case of subject two, who received Awareness Through Movement lessons for the first three weeks, but not for the second three week period, there was a very slight decrease in the Semantic Differentiation Scale score between the first three weeks and the second three weeks. The score after week six was higher than baseline level. For subject one, who received Awareness Through Movement lessons for the whole six week period, and subject three, who received Awareness Through Movement lessons during the last three weeks of the study, the score on the Semantic differentiation scale continued to increase during the second three week period.

Feldenkrais wrote that the body image is never static, and changes from action to action.<sup>15</sup> He further stated: “The parts of the body that are easily defined in the awareness are those that serve man daily, while the parts that are dull or mute in his awareness play only an indirect role in his life and are almost missing from his self-image when he is in action.”<sup>15</sup> The subjects that participated in the Awareness Through Movement lessons did score higher on the Semantic Differentiation Scale, at the conclusion of the study, than the subject that did not receive lessons, even though the subject that did not receive the lessons had a higher base score on the Semantic Differentiation Scale. These higher scores could come from the fact that Awareness Through Movement lessons involve the whole body, and take the person through different combinations of movements than to what the subject is accustomed. This makes the person use the body in different positions, and by the use of certain body positions as constraints, the person has to move areas that they habitually do not move. The constraints also force the person to move the areas of the body that they normally move, but to move in a novel way. The person might have to reverse origin and insertion, or oppose two body parts that normally move in the same direction. If as Feldenkrais claims in his book “Awareness Through Movement”,<sup>15</sup> “The way a man holds his shoulders, head, and stomach; his voice and expression; his stability and manner of presenting himself-all are based on his self-image”, then it would make sense that

learning how to move and hold the shoulders, head, and stomach would also change the person's general body image. All three subjects that received Awareness Through Movement lessons showed changes in the score on the semantic differentiation scale, while the subject that did not receive lessons only showed an initial increase, and then a return to the base level. Based on the four subjects that participated in this study, there is an indication that, as measured by a semantic differentiation scale, Awareness Through Movement lessons may affect a person's body image.

The reason for this positive increase in body image is difficult to understand, since the Semantic Differentiation Scale is a very general instrument. Pons, Preston and Garraghty<sup>76</sup> have found that the brain has plastic properties, and that after amputations the part of the somatosensory cortex that corresponds to the amputated limb re-organizes to include another area of the body. This re-organization has been reported to occur in a time span of four weeks<sup>77</sup>, so the time frame of this study could provide time for a change in the organization of the cortex. However, reorganization after an amputation is very precise to the area of the amputated limb, and the Awareness Through Movement lessons that the subjects in this study completed were general lessons involving the whole body. Since the Semantic Differentiation Scale also is a very general instrument for measuring a general idea of body image, it is very

doubtful that the changes in body image came from a re-organization in the somatosensory area.

### **The subjective experience**

The writings on body image that the subjects did before and after the study did not give a clear indication of their experience of body image, or of any connection between what the subjects experienced and what the Semantic Differentiation Scale suggested.

Subject one wrote that: "I am now more frustrated with my body, because I am aware of what I can and can't do." This change is interesting in light of the fact that the scores on the Semantic Differentiation scale went up throughout the study for subject one. Even though the subject felt more frustrated with the body, the scores on the Semantic Differentiation Scale indicated a more positive body image. Subject one also wrote that: "Body image is very much associated with body awareness." This statement could indicate that the Awareness Through Movement lessons increase the person's body awareness and that automatically changes the body image in a positive way, even if the person feels more frustrated with the body.

Subject two's initial concept of body image seemed to be very influenced by others. Subject two wrote: "I think body image is largely formed by

others....But it is also formed by the way you interpret the actions of others. I do not think it is very much formed by a person's own visual observation about their body." After the study, subject two had a more intrinsic view of the formation of body image. "A person can emphasize good or bad aspects of their body image. It depends on what that person what they see. This image can change if the person wants or allows it to." This shift suggests a change in thinking about body image. Feldenkrais has been quoted as saying: "I am not after a flexible body. I am after a flexible brain."<sup>78</sup> If a person is moving in new ways, the brain has to work in a different pattern. According to Feldenkrais, that change in brain pattern will change the person's thinking and acting in the world. Subject two's writing suggests a shift in thinking from an extrensic to an intrinsic view of body image. This shift could indicate that the body image has changed, or that subject two became aware of the ability to change the body image, as a result of having been taught Awareness Through Movement lessons.

Subject three initially wrote about the negative concept of body image. After the study, subject three indicates that: "I have learned, or rather re-learned, that I have no co-ordination....I hate not being able to accomplish such simple tasks such as moving to the right, while looking to the left." Subject three did indicate an increased awareness though: "I am much more aware of my body when I want to be. I don't necessarily walk around

thinking about my body, but when I do I am able to notice even the smallest of differences.” Subject three was the subject that had the largest positive change in the scores on the Semantic Differentiation Scale. However, subject three, like subject one, experienced an increase in frustration about her own inability to perform certain movements that came through in the writing, but there was still a positive increase in the score on the Semantic Differentiation Scale.

Subject four initially wrote about body image from a personal experience: “The first time I really started to think about body image I was 10 years old.....Now I realize my body image is unhealthy and I need to change it.” After the study subject four wrote: “It seems the media controls how many(especially younger people) feel about their body image. I wish it wasn’t that way; it needs to be more personal without being social.” She went on stating that: “I can’t remember not feeling awkward and clumsy. I don’t even think it matters.” Even though subject four went from a more intrinsic to a more extrinsic view of body image, she does not mention much about increased awareness, or possibilities of changing one’s body image. Subjects one, two and three who received Awareness Through Movement lessons either mentioned increased awareness, or ability to change the body image. Since subject four did not receive any Awareness Through Movement lessons, one would not expect any changes in awareness or how to change the body image. The possibility exists that

subject four's change, from a more intrinsic to a more extrensic view of body image, was caused by this study. Subject four knew that this study was about body image. Maybe the mere act of participation in a study on body image makes one increasingly aware of what forms and influences one's body image. Since there was no indication of subject four having an increased awareness of body image or awareness of being able to change the body image, subject four's change was attributed to either a heightened awareness about what forms or influences body image, or a natural fluctuation in thoughts about body image.

### **Further research**

A need exists for further research in the field of body image and Feldenkrais, or any other form of somatic education. This study has limited value for the general practitioner of physical therapy. Until the American Physical Therapy Association has a specialization for somatic educators, or for physical therapists interested in psychosomatic issues, the number of studies by physical therapists investigating body image will be limited. For the general physical therapist practicing in the United States, there probably would be more interest in a study that would indicate if the Feldenkrais Method could increase a person's awareness of a specific body part, or decrease the awareness of a certain body part. To be able to perform a study that is more specific to body parts, a different measurement method must be used. Body image is a subjective

experience that is difficult to measure. To ask a person what parts of themselves they are not aware of is probably of no use. If one is not aware of something, one can not indicate one's lack of awareness, because then one is aware of whatever one claims not to be aware of. So to measure what parts of the body a person is unaware of, the person must perform something that indicates a lack of awareness of a certain area of the body. Gerda Alexander<sup>17</sup> used clay modeling as a way to find out about a person's body image. She had the person model themselves with their eyes closed for 15 minutes. She looked at what method the person used to put together the figure, thickness of the figure, and what was missing. She had the person do this before and after the Eutony sessions.<sup>17</sup> Clay modeling could very easily be used before and after Feldenkrais sessions, to measure changes in body image.

However, clay modeling requires interpretations by the researcher. The field of physical therapy in the United States appears to be avoiding body image research, as indicated by the lack of articles in journals traditionally covering the field of physical therapy. This lack could possibly be because of the problem with interpretation and qualitative vs. quantitative research. If we, as physical therapists, want to find out if the Feldenkrais Method can improve someone's sense of a certain body part, we have to allow more artistic, interpretive, and qualitative studies to be performed and published. It could be of great help to a patient to be more aware of an ankle that

they keep spraining, or a neck that aches due to the person having no awareness of the neck. To do research on body image and Feldenkrais, we need to interpret clay models, draw a person tests etc. Body image is at least partly an internal, subjective experience<sup>31</sup>, and in the author's opinion, to research a subjective experience, the client must be allowed to express that subjective experience through drawing, modeling, or writing. The researcher must then interpret this act of creation of the subjective experience. Physical therapy clinicians, faculty, and students need to start looking at qualitative research, so that we can get an idea if the Feldenkrais Method, and other somatic education methods can help our patients.

Semantic differentiation scale		
Good	- - - - -	Bad
Incomplete	- - - - -	Complete
Unsociable	- - - - -	Sociable
Light	- - - - -	Dark
Awkward	- - - - -	Graceful
Pleasurable	- - - - -	Painful
Beautiful	- - - - -	Ugly
Interesting	- - - - -	Boring
Negative	- - - - -	Positive
Successful	- - - - -	Unsuccessful

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