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**“I HAVE A BODY NOW” : A BODY IMAGE MULTIMODAL  
APPROACH TO A PATIENT WHO FACES BODY IMAGE  
DISTURBANCE- A CASE REPORT**

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# “I HAVE A BODY NOW” : A BODY IMAGE MULTIMODAL APPROACH TO A PATIENT WHO FACES BODY IMAGE DISTURBANCE- A CASE REPORT

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**Abstract:** Body image (BI) is the representation of the body in mind. Body image disturbance (BID) is the misperception of body image. The present work is a case report of a physical therapy (PT) treatment elaborated for a woman who was diagnosed with BID. **Objective:** to analyze the effects of physical therapy in BID. **Methods:** Image Marking Procedure Test, Body Perception Index Calculation were used. After anamnesis, three months of PT were taken, where body perception was stimulated, by using proprioception, interoception, exteroception.

interoception, exteroception. and instructions of body anatomy. **Results:** The patient was diagnosed with paraschematia and hiposchematia at the beginning of PT. After three months of therapy, her paraschematia was healed but hiposchematia remained. **Conclusion:** PT in BID affected positively body image. Nonetheless, since it is a case report, we cannot generalize the results.

## Summary Box

- **What knowledge does this study add:** *The present study adds the knowledge of the importance of the presence of a physiotherapist in BID in the bariatric care multidisciplinary team. Furthermore, it also adds the knowledge of physical therapy treatment in BID, regardless of its etiology.*
- **Why this is important:** *This research demonstrates the importance of physiotherapy in mental health disorders, such as body image disorders.*

**Keywords:** body image, physical therapy, body image disturbance, bariatric surgery, eating disorders.

## Introduction

Several Physiotherapy specialties are recognized and implemented in multidisciplinary treatment programs, however, when taking into account disorders related to mental health, the role of the physiotherapist may be underestimated. Psychiatric Physiotherapy has been a common practice, for over 50 years, in countries such as Belgium and Scandinavia, however, the use of the body itself (its movements, its relationship with the environment) as a physiotherapeutic strategy in psychopathological conditions is not yet significant.<sup>1</sup>

One of the conditions in which Psychiatric Physiotherapy can be useful is in cases of body image distortions, as this disorder can have negative consequences on movement quality, daily function, habits and health.<sup>2,3</sup>

Body Image (BI) is the body representation in mind.<sup>4</sup> According to Corno and her colleagues<sup>5</sup> it's the key component of personal identity and self-consciousness. BI is constructed by multiple aspects, which are interdependent, but currently, the definition of BI has expanded, respecting its multidimensional mode. Banfield and Maccabe<sup>4</sup> and Allen and her colleagues<sup>3</sup> have shown in their studies complementary BI definitions, which highlights a new viewing for this theme. There are: functional BI, that relates to the body functionality;<sup>6</sup> cognitive aspect, which relates to beliefs and thought about BI; the affective aspect of body image, that is related of feelings about body; the behavioural component, that is the result of the previous aspects of body image, giving light to how the person behave about their body; the perceptual one, that is linked with the body size estimation.<sup>4</sup> It is important to mention that the perceptual component of body image is unconscious, as its role in guiding the body through space is well known<sup>7</sup>. The conscious assessment of BI can also be called as its attitudinal component.<sup>8,9</sup>

The perceptual aspect of body image is constructed by a series of multisensorial information that is provided by inputs of the nervous system, originated by visual, tactile, vestibular, auditory, and exteroceptive stimuli. It's constructed by the perception of the own person's body and also by the surrounding space, giving the primordial information of body orientation into different environments. It's self-modifying, once there's always new bodily experiences from daily life that must be monitored constantly by the brain.<sup>8,9</sup>

Unconscious and conscious aspects of BI link themselves by an interdependent network from a complex neuro-anatomical pathway. The perceptual construction is located into supramarginal and angular gyri of inferior parietal lobe and it's correlated with motor areas of the brain, while the conscious aspect of BI is connected to the limbic system.<sup>9</sup>

According to Hosseini and Padhy,<sup>8</sup> body image disturbance (BID) is the misperception of body image and it can be entailed by family bad behavior and comments about body, social-media unattainable beauty standard, low self-esteem, media, social pressures, body mass index and other factors, such as sexual abuse. Depending on self-conceptions in front of these scenarios, the subject can develop BID, which, in turn, can trigger body dissatisfaction.

Besides most of the studies on BID are related to eating disorders patients, it seems to be common to find body image disturbance and dissatisfaction among postoperative bariatric surgery patients, since they experience rapid body shape change in a short period of time, which may compromise the patient's body perception<sup>10,11</sup>. Alegría and Larsen observed in their qualitative study that, in post weight loss surgery conditions, participants presented confusing references about their recent body.<sup>12</sup> A particular patient, in the same study reported that she knew she was thinner, but she still perceived her body as a fat one. Based on these data, the authors suggest the necessity to inform health professionals, who manage this kind of patients, about possible body image disturbance in post bariatric surgery. So that they can be prepared to explain this possible condition and elaborate therapeutic strategies to help them.

The Basic Body Awareness Therapy, the Norwegian Psychomotor physiotherapy, the "tailored physiotherapy programme" are described in the literature as body therapeutic strategies for various mental disorders and also used specifically for the distortion of body image in cases of patients with eating disorders.<sup>13-15</sup> When it comes to obese patients, the body strategies most cited in the literature are dance therapy to improve body image and physiotherapy to help with weight loss.<sup>16,17</sup> As far as we know, there is no description in the literature of a physiotherapeutic approach focusing on Body Image for patients undergoing bariatric surgery, although Souza et al.<sup>11</sup>, in their recent article on body image changes in post-bariatric patients, suggest the need for a perceptual body approach for these patients.

The aim of the present work is to report a physical therapy strategy in body image disturbance of a post bariatric, young woman.

### **Case Presentation**

A 27 years old Brazilian woman, came to physical therapy with the complaint that she doesn't know her body dimensions. She passed through bariatric surgery and hasn't had any skin repair surgery. Using the IMP test and BPI, she was diagnosed as paraschematia with a hyposchematia, because her body segments had presented disoriented and she underestimated her body dimensions. The physical therapy was performed once a week, by face to face mode, in the physiotherapist's office, located in the city of Ibiúna, SP.

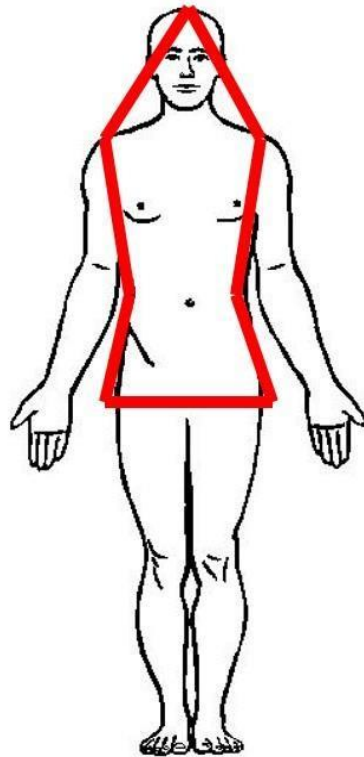
### **Diagnostic Evaluation**

The beginning and the completion of treatment were performed by the Image Marking Procedure (IMP) test.<sup>18-20</sup> IMP test is widely used to assess body size estimation.<sup>21-27</sup>

The Image Marking Procedure is a projective test and the subjects are asked to imagine themselves as they were standing before a mirror. The test consists in the patient staying at a distance from their outstretched arms in front of a wall, blindfolded, and they are asked to point in the wall where their body parts are found under touching at the same point in their body by the examiner. The body parts that are pointed compose the body silhouette and are top of the head, both acromion, waist - just below the last rib, and trochanters (figure 1). The test is repeated three times, for more accurate results. After the wall marking, the patient is carefully positioned as close as possible to the wall, where the real body dimensions are compared with a square.<sup>18-20</sup> The used tools for this test were: 30 mm yellow, green, blue and red chroma labels; eyes suits; square.

From IMP, the Body Perception Index (BPI) was calculated, aiming to diagnose the patient's body image. According to the formula:  $BPI = \frac{(\text{Perceived size 1} + \text{Perceived size 2} + \text{Perceived size 3})/3}{\text{Real size}} \times 100$ . A total BPI value for the whole body is also calculated (mean value of the BPI values at the different body regions).<sup>28</sup> Following Bonnier's nomination of BI distortions, the results from BPI can be called schematia- when there's no distortion of BI; aschematia- when there's a lack of perception of the body, being called as

**Figure 1:** Schematic view of Image Marking Procedure and its body segments correlation.



a anaesthesia of the body sensation and topography; hyposchematia- when there’s an underestimation of the body size; hyperschematia- when there’s an overestimation of body size, and paraschematia- the disorientation of body segments.<sup>29</sup> Body Perception Index  $\geq 99,4\%$  and  $\leq 112,3\%$  is considered to have adequate body perception, as schematia; Body Perception Index below  $99,4\%$  was classified as hyposchematia, and above  $112,3\%$  as hyperschematia according classification proposed by Segheto and his colleagues.<sup>30</sup> The table 1 shows a schema of the body image diagnoses.

**Table 1:** Scheme of the body image diagnoses

Body Perception Index	Results of BPI – Body Image Classification
$\geq 99,4\%$ and $\leq 112,3\%$	Schematia
Above $112,3\%$	Hyperschematia
Below $99,4$	Hyposchematia

## **Therapeutic Intervention**

The used tools were: a ball of 25 cm of diameter; twine; mat for covering the floor; dyna-disk. The exercises varied between perceptual stimulation exercises and strength exercises with free resistance.

In the final of every exercise, the patient was invited to make a body scanner<sup>31</sup> exercise, which consists of supine position, closed eyes, deep breathing and attention to the stimulated body parts and bodily sensations.

The first meeting was destined for anamnesis. Perceptual BID was diagnosed by IMP test. The second meeting started by a touch exercise that was made by passing a ball through the patient's body delimitations. She was lying on a mat covered floor, in the supine position, with closed eyes. After this, the patient kept her eyes closed and was asked to roll on the floor, from left to right and from right to left, with outstretched arms and shoulders, aiming to perceive her body dimensions.

The third session was oriented to give her perceptual information of the patient's inferior members. First, in supine position, the physiotherapist used different textures tools, such as dyna-disc, leading the patient to take attention to her legs. Following that, measuring exercise was used, which consists of the physiotherapists asking the patient to draw the perceived circumference of a specific part of her body with a twine, starting with her thighs. After the first drawing, the real measurement was made by the physical therapist, and both were compared. The same exercise was used in other body parts, such as the waist, chest and arms.

The fourth session was oriented for the patient to perceive her body in a functional way. Strength exercises were used, by using strength added to the attention to the stimulated muscles before, during and after the exercise, using the scanner exercise.<sup>31</sup> It was used for abdomen, abdominal plank and abdominal crunch exercise; for legs, squat exercise and for arms, push up exercise.

At the fifth meeting, sensorial exercise was made, which was developed by the patient standing against the wall, holding a ball by her waist and spinning her body in 360° without letting the ball fall. Another exercise was made, consisting of the patient lying on the floor in the supine position with closed eyes, while the PT passed the ball to the waist region.

Subsequently, the physiotherapy on the same session was conducted by strength exercise, such as abdominal ones. Touch exercises in the abdomen area were performed, by using a ball passing through her waist, side to side, making a circumference, with the aim of accurating her waistline afference.

The ensuing sessions maintained the same pattern as the previous ones, aiming to maintain the progress of BI rehabilitation. Table 2 shows a summary of the sessions.

**Table 2:** Summary of the sessions

<b>First meeting</b>	IMP Test.
<b>Second meeting</b>	Passing a ball through the patient's body delimitations; roll on the floor; body scanner exercise.
<b>Third meeting</b>	Using different texture tools to take attention to the patient's legs; measuring exercise for the legs and other body areas with a twine; body scanner exercise.
<b>Fourth meeting</b>	Stretching exercises for abdomen and legs; body scanner exercise.
<b>Fifth meeting</b>	Spinning a ball against the wall; lying on the floor in supine position while the PT passed the ball to the waist region; abdominal exercise; making a circumference with a ball on the patient's waist, while she's lying on the floor; body scanner exercise.
<b>Ensuring sessions</b>	Same as the previous ones.

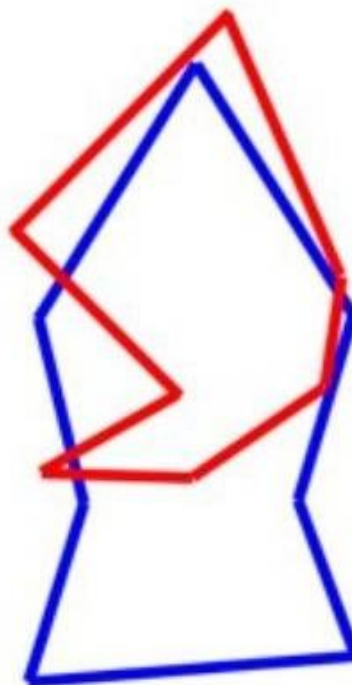
## Results

By IMP test, paraschematia with hyposchematia (total BPI=74,4%) was diagnosed at the first meeting (figure 2). The perception of a healthier BI was created session by session. With each new session, the patient came referring to advances and difficulties in daily life that guided the direction of treatment along with the



physiotherapist's plan. By observing the difference in what was perceived in the BID and recognizing that the body was no longer part of it, the patient began to understand her real body. Some sessions were more remarkable than others, from the point of view of triggering a new body concept. Second and fifth meetings were this case.

**Figure 2:** Result of the drawings acquired through the IMP first patient's test. The red drawing represents the perceived body dimension and the blue drawing represents the real dimension of the body. Observe that low body segments are perceived in a confused way.

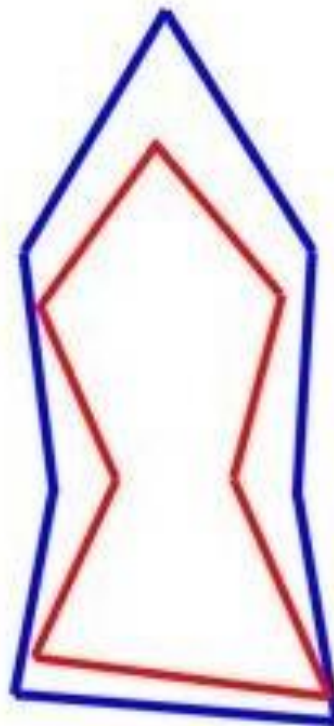


At the second meeting, the patient started to note she had a different body than she thought. On the occasion, she reported to perceive her body thinner than she thought it was, once she was still perceiving her body just like before the bariatric surgery. It was triggered by the perception of the frontal bulge of the 9 and 10 vertebrochondral ribs.

At the fifth session, the patient reported she couldn't make a whole clay body, since she didn't have any precise sense of her waist and abdomen. This was clear from the clay body, divided in superior and inferior quadrants. Then, the PT oriented the therapy to the patient to perceive the waist region and to understand the quadrants' communication by that.

After three months, IMP test and BPI were remade. Paraschematia were healed, but hyposchematia (BPI=79,1%) were kept. The aim of the present treatment was to make the patient perceive her body segments, in a real way, which was achieved, even though she still underestimated her body dimensions. The result of the IMP test can be checked in the figure 3.

**Figure 3:** Result of the drawings acquired through the IMP last patient's test. The red drawing represents the perceived body dimension and the blue drawing represents the real dimension of the body. Observe that body segments are well perceived, although its dimensions are underestimated.



## Discussion

A three-month treatment for BID followed, with the aim of returning the precision of body perception to a woman who had parachemata and hyposchemata. We analyzed the BI using the IMP test. As her diagnosis showed BID in different ways, it was worth working in an integrated way, using strength and sensory exercises, thus bringing schematic reorganization through different afferent stimuli.

This treatment was developed by three main components: proprioception, exteroception and interoception, guided by attention to each stimulus<sup>31, 32</sup> introducing to the patient ways of experiencing her body in order to perceive its limits, size and dimensions. The scanner exercise <sup>31</sup> was an attempt to guide this, as it was a voluntary way of paying attention to this perception, thus making the perception of the body closer to reality.

The three previously mentioned components were explored through tactile, visual afferent pathways and also through muscular action, explored, respectively, in the second, third, fourth and fifth meeting. Although all meetings explored tactile afferent pathways, it is important to highlight that proprioception originated from muscular activity was also present, as well as sensory reorganization through visual comparison between perceived and real size, presented in the third meeting.

Although the underestimation of her body remained, the imprecision of the perception of her body segments was reestablished. In the literature, no similar physiotherapeutic treatment was found that specifically worked on paraschematia, through the BI approach, although ways of diagnosing it were found.<sup>33</sup>

The literature establishes that body image disorders can accompany different psychiatric situations, such as epilepsy,<sup>33</sup> and eating disorders, as well as obesity and anorexia nervosa.<sup>8</sup> However, emerging knowledge also points to the growth of IHD in women who are exposed to media,<sup>34</sup> in addition to people who have undergone bariatric surgery.<sup>11</sup>

Therefore, the need for a real and healthy reconnection with one's own body is present in several clinical situations. Physiotherapy can be a non-drug treatment alternative for mental disorders that present symptoms such as BID.

Given the results of this study, it opens up a reflection to consider physiotherapeutic treatment for people who undergo bariatric surgery, as part of their rehabilitation process.

### **Informed Consent and ethical considerations**

The present case report was conducted in accordance with ethical standards and the CARE guidelines for case reports. The patient provided written informed consent for the publication of their medical information and any accompanying images.

### **Equity, Diversity and Inclusion Statement**

The authors are committed to promoting equity, diversity, and inclusion throughout the entire clinical intervention process. These principles were applied at every stage of care, from assessment and treatment planning to follow-up.

### **Patient Perspective**

At the end of the study, the patient reported an improvement in her daily quality of life and started to do physical activity, aiming to keep creating body experiences. She said she recognized herself, and highlighted the fact that she had a body, which was reported by her own words: "I have a body now".

### **Conclusions**

The present study reinforces that physiotherapy can be efficient in the treatment of mental health, particularly it can help patients who face body image disorders. However, the results cannot be expanded to the general population, as the sample in this study is small.

### **Conflicts of Interest**

The authors declare that there's no conflict of interest.

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