APLICATION OF MEDICINAL BIOMAGNETISM IN THE TREATMENT OF OBESITY AND WEIGHT LOSS: A CASE STUDY

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Abstract: Obesity is now considered a public health problem. It is treated as a chronic disease where the accumulation of body fat occurs due to several factors, such as complex morphological changes resulting from the interaction of lifestyle, genetic and emotional factors. Therefore, the need for therapies that help to improve the quality of life of people with this disease becomes quite viable. This study was carried out with the objective of describing the Medicinal Biomagnetism (MB) therapy helping obese individuals to lose weight. There are numerous scientific research aimed at studying the causes of the development of obesity. There is a variety of "recipes", medicines, therapies, formulas,

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proteins, diets, etc., in order to treat obesity. These techniques are usually offered at a high cost, and are almost always not performed correctly, so they do not have the desired effects. In this research, we present a possibility of low- cost, non-invasive therapy, called Medicinal Biomagnetism that uses medium intensity magnets with the objective of providing not only quality of life, but also assisting in weight loss. In this research, the 3D movement protocol 1, 3D movement protocol 2 and specific special pairs were used. The result achieved so far gives us hope that it is possible to lose weight without the use of any medication and with a low investment cost, considering the health gain obtained by the patient.

Keywords: Obesity; slimming; Biomagnetism; 3D protocol; Integrative Therapy.

FOREWORD

According to Mancini and Gelonese (Mancini, 2015) the conception of obesity is defined as by the accumulation of localized or generalized fat in certain areas of body (adipose tissue), as a chronic disease with complex morphologic alterations, resulting from individual life style, genetic and emotional factors. The most utilized definition pattern of obesity is based on the body mass index (BMI) which reflects the degree of corpulence, or the body mass amount, however without considering if this body composition is formed by fat or lean mass (Mancini, 2015).

Excess of adipocytes (fat producing cells) at abdominal region is related to a major risk of heart diseases and metabolic disorder. (Mancini, 2015) and (Camargo; Montagnero; Lopes; et al., 2020), describe that weight excess can also be connected to the emotional self-protection. These authors say that if the person feels that the situation does not occur as they would like, a feeling of non-protection is generated, which will reflect in the body as obesity, as fat will generate a false sensation of protection (Mancini, (2015). Camargo; Montagnero; Lopes; et al., (2020)).

BMI by itself does not emphasize the important aspect of the modern epidemiology and its

metabolic and cardiovascular consequences, which is the increasing distribution of fat tissue on the human boby. The excess of adipocytes on the abdominal region is associated with a higher risk of heart diseases and metabolic disorders, while adiposity located on lower members (peripheral) seems to play a protection role. Therefore it is extremely relevant the rigorous evaluation of the anamnesis and the anthropometric measures, like height, weight, waist and hip circumferences, besides BMI (Mancini, 2015).

Melo, M. E. (2010), also says that several studies show that obesity is strongly connected to increasing the risk of disease development or mortality, by cardiovascular, cancer, type 2 diabetes, gallbladder disease, coronary artery disease, systemic arterial hypertension, osteoarthosis and depression. It has been the cause of functional disability, reduction of life quality, reduction of life expectancy and social and affective relationship. Psychological factors also play an important role for the development of obesity such as, stress, anxiety and depression, mainly influencing the behavior concerning meal consumption (FrancischeI; Pereira; Freitas; et al., 2000).

As a public health problem, obesity has in fact contributed to worsening the quality of life of the population that suffers from this disease. Therefore, there is a need for more tools that can contribute to its treatment. The authors In this article present Medicinal Biomagnetism (MB) as an option for its treatment, as it is a system of easy applicability and low cost.

This technique developed by Goiz Durán is oriented to prevention, complementary treatment of diseases and rehabilitation, based on the improvement of the internal biological terrain, where a pathological condition of the body is present. This allows the treatment of various diseases, like infectious-contagious, chronic-degeneratives, autoimmunes, dysfunctionals, metabollic, psycho-emotionals, tumors, genetic and intoxication, reducing clinical symptoms and rehabilitating different body functions (Martinez, 2021). In this technique, magnets of medium intensity are used (1,000 to 7,500 Gauss). The application of magnets aims at rebalancing the pH (Hydrogen potential) of bodily areas in imbalance, seeking their neutrality (Durán, 2017).

Durán (2017) discovered that all pathologies and/or pain conditions are virtually due to an

unbalanced pH - acid or alkaline - in specific areas of the body, which is caused by pathogenic micro-organisms in our body, responsible for the most varied complaints and pain. This therapeutic system is based on four basic fundamentals: pH, biomagnetic resonance, entropy and symbiosis (Durán, 2017).

The figure called "pH" represents the proportion between hydrogen (H+) and oxydril (OH-) in organic substances; it is the measure of the amount of free H+ ions in body fluids. Such amounts are extremely low, but a stable concentration of this ion is essential for normal functioning of all cells in the body (Andrade, 2018).

For Durán (2017), resonance is the bio-electro-magnetic information existing in organisms that generates a specific "identity" for each one. Such resonance works as a kind of specific electro-magnetic frequency that identifies, through Biomagnetic Pairs, viruses, bacteria, fungi and parasites. As this information has a magnetic component, it also has polarity, and using the principles of the Universal Law of Charges, it is possible to handle this information (Martinez, 2021). Entropy is the study of chaos, being the fraction of energy in a system that can no longer be transformed into work or mechanical energy. Mathematically speaking, it would be the ratio between the amount of heat lost or gained by a closed system and its temperature, which remains constant (Karp, 2005). Symbiosis is any association of two individuals of different species, in which these individuals obtain advantages from this relationship (Chatelard & Cerqueira, 2015).

The BM sessions involve investigating through what is called biomagnetic screening the anatomical structures of the individual's organism, with a magnet in North polarity (negative by BM convention) to identify organs and tissues that are in pH imbalance (Frank, 2017).

The application of BM through Biomagnetic pairs is extremely simple. It basically consists of applying on body surface specific magnets that can form pairs that resonate with each other or not. Each pair is called a Biomagnetic Pair (BMP). Screening is done through a kinesiological test or muscle test on the participant that is being treated (patient) (Frank, 2017; Durán, 2017).

In the BM screening, a muscle shortening happens of the right hemibody when the muscle contracts slightly, signaling the polarity imbalance at the tracked point. At first, the north or negative

pole of a magnet (tracker) is placed in anatomical positions related to the organs and tissues of the human body to identify which of these lead to shortening of the right hemibody [6]. If the screened patient is well hydrated, the muscle response is faster (Frank, 2017).

Each anatomical point found during the screening is impacted with a negative magnet (tracker) placed on the skin or on the individual's clothing over the organ or tissue that was identified. Each organ or tissue will be aligned with the search for an impaction point or resonance point that will make the right hemibody align with the left when the magnet in the south polarity or positive by convention of the BM (impactator) is placed on the skin point – directly or covered by the volunteer's clothing (Bailey, 2010).

Among different types of PBM found during the screening, we want to highlight the Special Pairs here. These are dysfunctional pairs of organs or systems, that appear without the presence of microorganisms, in this case magnets can be applied daily if necessary (Durán, 2017).

According to Frank (2017) and Duran (2017) the minimum time for magnet action is 15 minutes, in order for the tissue or organ to be repolarized. When active pairs are treated properly, both polarity and tissue pH balance, then the cells return to Normal Energy Level (NEL).

The objectives of this study are to evaluate the effectiveness of BM in the treatment of obesity through the 3D movement 1 and 3D movement 2 protocols in the weight loss process, recognizing the organs, according to the protocol, to be impacted with the magnets; Observe whether there was an improvement in binge eating through the application of the assessment instrument and whether this persisted during and after 50 days after the end of the procedure; Analyze whether there was an improvement in allergic symptoms (osteoarticular and mythic) caused by obesity during the protocol and 50 days after its end.

We hope that this research can contribute to the discovery of new alternatives for the treatment of obesity, in addition to contributing research material to the scientific community, placing Medicinal Biomagnetism as a regular practice in healthcare. This implies in reducing costs to fight obesity, and also offering this integrative technique through the Brazilian Unified Health System

(SUS), with little or no side effects.

MATERIAL AND METHODS

The present work consists of a cross-sectional descriptive study, with a quantitative approach of an exploratory nature. It was applied to a female individual with obesity. The data from the medical records will be reviewed and they will have the guarantee of preservation and anonymity as specified in the free and informed consent form (TCLE). After the analysis of the medical records of a female individual, 43 years old, with obesity as the main complaint, both protocols 3D Movement 1 and 3D Movement 2 were used. As these protocols still do not have a standardization concerning how many sessions and intervals between them, we proposed to do it as follows: 10 sessions impacting both 3D protocols (number 1 and 2), with intervals of 8 days between one session and the other, leaving 30 minutes for number 1 and 20 minutes for number 2.

Each step is detailed in the item that deals with the development of the work. Data collection took place in three steps designated by outcome. The primary outcome divided into three steps:

- Step 1: Baseline assessment, prior to the begining of the Medicinal Biomagnetism (BM) sessions; Calculation of the Body Mass Index (BMI); Weighing (Kg); Food Craving Questionnaire: (Questionnaire of Food Craving (craving) – Trait consisting of 5 questions and State consisting of 8 questions. This questionnaire aims to assess the need to eat; Brief Pain Inventory – BPI: (Brief Pain Inventory - reduced form). Consisting of nine (9) questions. This questionnaire aims to assess the research of participant's level of pain; Food report describing the choice of food and the reasons given for these food choices, carried out for 15 days for 24 hours a day before the first BM service, for another 15 days for 24 hours a day before the sixth BM session, 15 days During 24 hours daily after the tenth session of BM and two months after the end of the experience with BM also for 15 days for 24 hours a day.

- Step 2: Beginning of the first BM session; Weighing (Kg); Complete Screening of Medicinal Biomagnetism; Application of the 3D Movement 1 Protocol; Application of the 3D Movement 2 Protocol.

- Step 3: Follow-up (post-treatment evaluation) 50 days after the last session of Biomagnetism, when all questionnaires from Step 1 were applied.

RESULTS AND DISCUSSION

In order to apply the protocol, neodymium magnets of 2700 Gauss in double polarity were used, separated by a linear space of 3.5 cm between the centers of the magnetic poles of the magnets, correlating the magnetic induction or magnetic lines superimposed on the organism at the location of the point found in the screening (Bossa, 2021).

Both Movements have to be applied in the same session, apply 3D1 Movement – for 30 minutes and then apply 3D2 Movement for 20 minutes. Each protocol contains 14 pairs. In Movement 1, as described in table 1 and shown in Figure 1, the negative magnet is positioned on the tracking point on the right side of the body and the positive magnet on the resonance point. After 30 minutes of impaction when starting movement 2 as described in Table 2.

Table 1 — Movement 1

Biomagnetic Pair	North Pole impact point (-)	South Pole impact point (+)
BMP 1	Liver	Liver
BMP 2	Liver	Liver (R)
BMP 3	Kidney (R/L)	Liver (R/L)
BMP 4	Medulla oblongata	Low back ¾
BMP 5	Thymus	Rectum
BMP 6	Low back	Kidney (R/L)
BMP 7	Hip (R)	Hip (L)
BMP 8	Eye (R)	Eye (L)
BMP 9	Supraspinatus (R)	Supraspinatus (L)
BMP 10	Thyroid (R)	Thyroid (L)
BMP 11	Testicle (R)	Testicle (L)
BMP 12	Patella (R)	Patella (L)
BMP 13	Esophageal sphincter	Appendix
BMP 14	Transverse colon	Liver
BMP: Biomagnetic Pair	R: Right	L: Left

Figure 1 – Biomagnetic Pairs of Protocol 1 – 3D-1

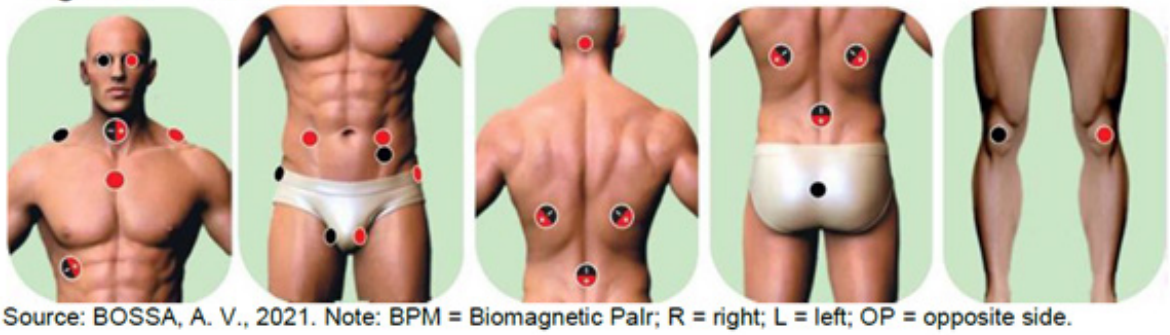
Source: BOSSA, A. V., 2021. Note: BPM = Biomagnetic Palr; R = right; L = left; OP = opposite side

Movement 2 – Here some pairs must be reversed, where the negative magnetic pole will be on the left side of the body and the positive on the right side, and the replacement of pairs 13 and 14 must be done, as described in Table 2 and shown in Figure 2.

Table 2 — Movement 2

Biomagnetic Pair	North Pole impact point (-)	South Pole impact point (+)
BMP 1	Liver	Liver
BMP 2	Liver (L)	Liver (D)
BMP 3	Kidney (R/L)	Liver (R/L)
BMP 4	Medulla oblongata	Low back ¾
BMP 5	Thymus	Rectum
BMP 6	Low back	Kidney (R/L)
BMP 7	Hip (L)	Hip (R)
BMP 8	Eye (L)	Eye (R)
BMP 9	Supraspinatus (L)	Supraspinatus (R)
BMP 10	Thyroid (L)	Thyroid (R)
BMP 11	Testicle (L)	Testicle (R)
BMP 12	Patella (L)	Patella (R)
BMP 13	Ascending colon	Liver
BMP 14	Descending colon	Descending colon
BMP: Biomagnetic Pair	R: Right	L: Left

Figure 2 — Movement 2



Source: BOSSA, A. V., 2021. Note: BPM = Biomagnetic Pair; R = right; L = left; OP = opposite side.

According to the representation in Graph 1 of the Food Report, it was observed that the patient's nervousness was 23% in Step 1; in Step 2 it decreased to 7%, and in Step 3 it disappeared. Anxiety was 36% in Step 1; in Step 2 it was 10%, disappearing at follow-up. According to the Food Report, the volunteer mentions hunger 22% in Step 1; in Step 2 this value reduces to 3% and in the Follow-up hunger is not mentioned by the patient.

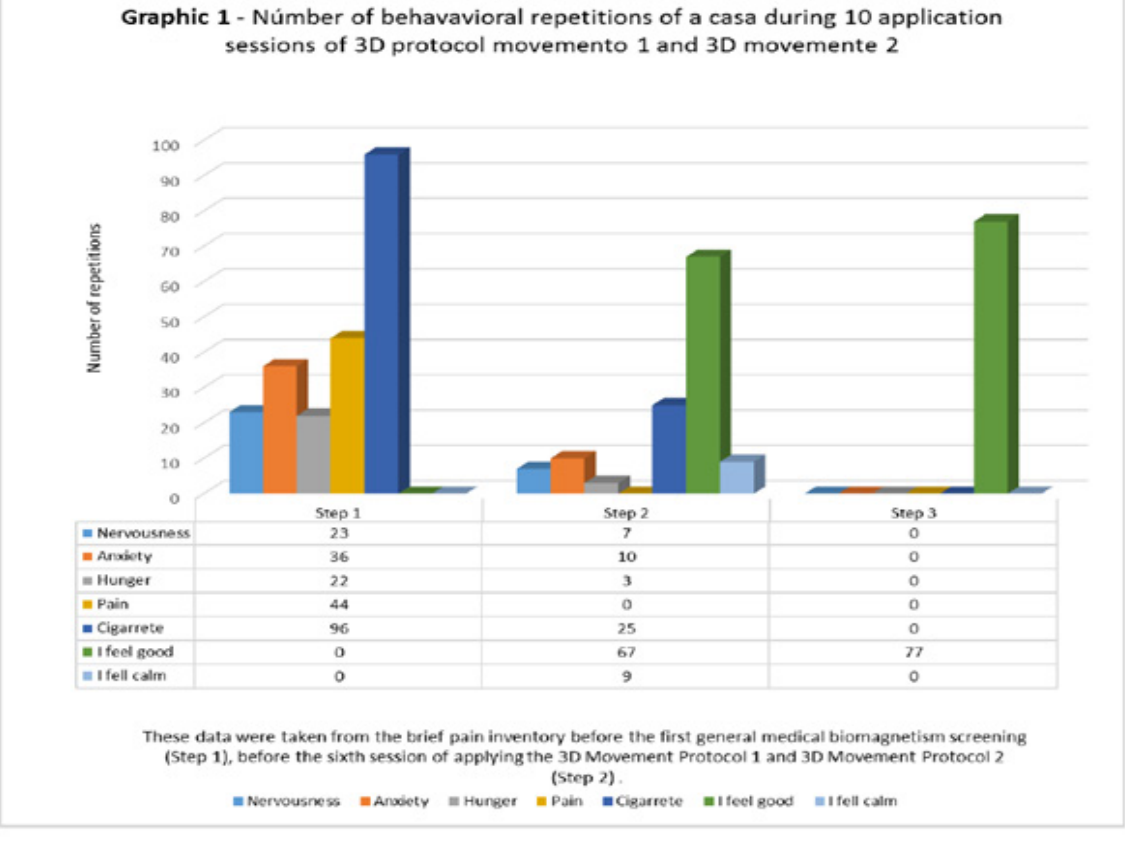
Therefore, the conclusion is that the 3D Movement 1 and 3D Movement 2 Protocols are effective in improving behaviors and feelings related to the excessive search for food. The feeling

of pain was present in 44% in Step 1, but in Step 2 and Follow-up the pain disappeared. One then concludes that the aforementioned 3D Movement 1 and 3D Movement 2 Protocols are effective in eliminating this volunteer's pain.

According to the graph, the cigarette matter was pointed out 96 times in Step 1; in Step 2 it decreased to 25 times and in the Follow-up it disappeared. Therefore, it shows that the Protocols 1 and 2 show satisfactory results in reducing the desire to smoke. In Step 1 the volunteer does not describe that she felt well, in Step 2 she mentioned it 67 times and in the Follow-up the mention increased to 77 times.

Therefore, it is possible to conclude that the improvement in behaviors and feelings of nervousness, anxiety, pain, excessive search for food and cigarettes provided by Protocol 3D Movement 1 and 3D Movement 2 resulted in well-being in the volunteer and a 9% feeling of calm cited in Step 2.

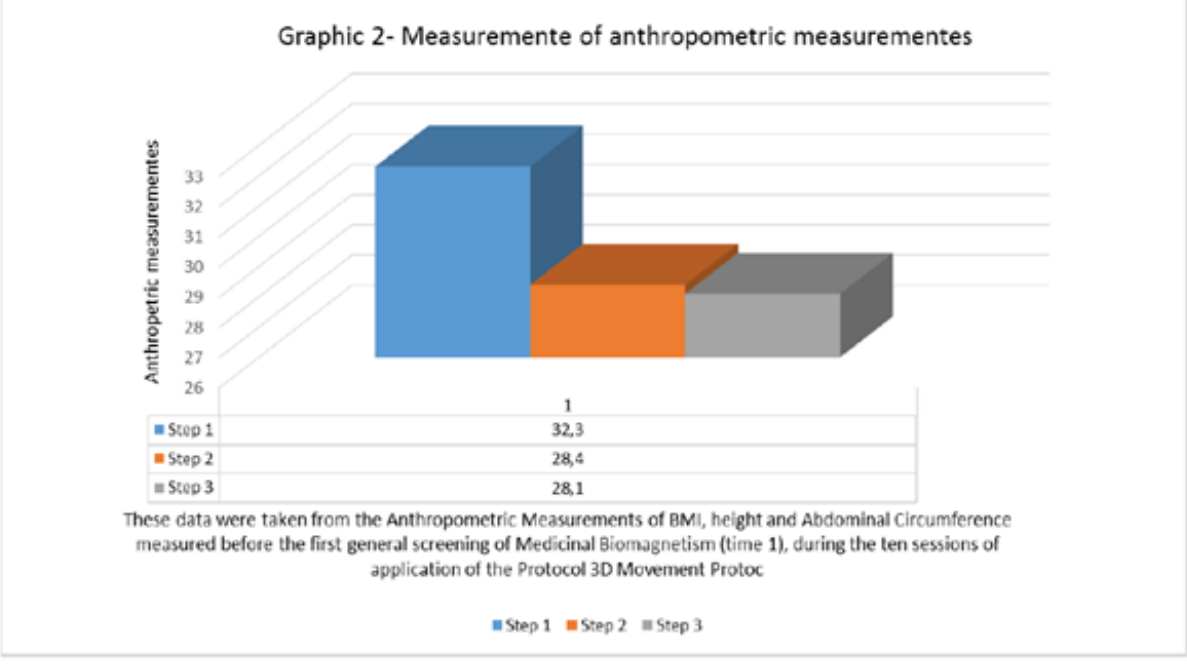
Graphic 1 – Food Report / Behavior



Regarding to Graph 2, which measured the anthropometric averages, it presented the following results: in Step 1 there was a reduction of 31%, in Step 2 it decreased 28.4% and in the Follow-up time there was a reduction of 28.15%.

Therefore, it is possible to conclude that the 3D Movement Protocol 1 and 3D Movement Protocol 2 was able to reduce significantly the body mass index and abdominal circumference of the research participant.

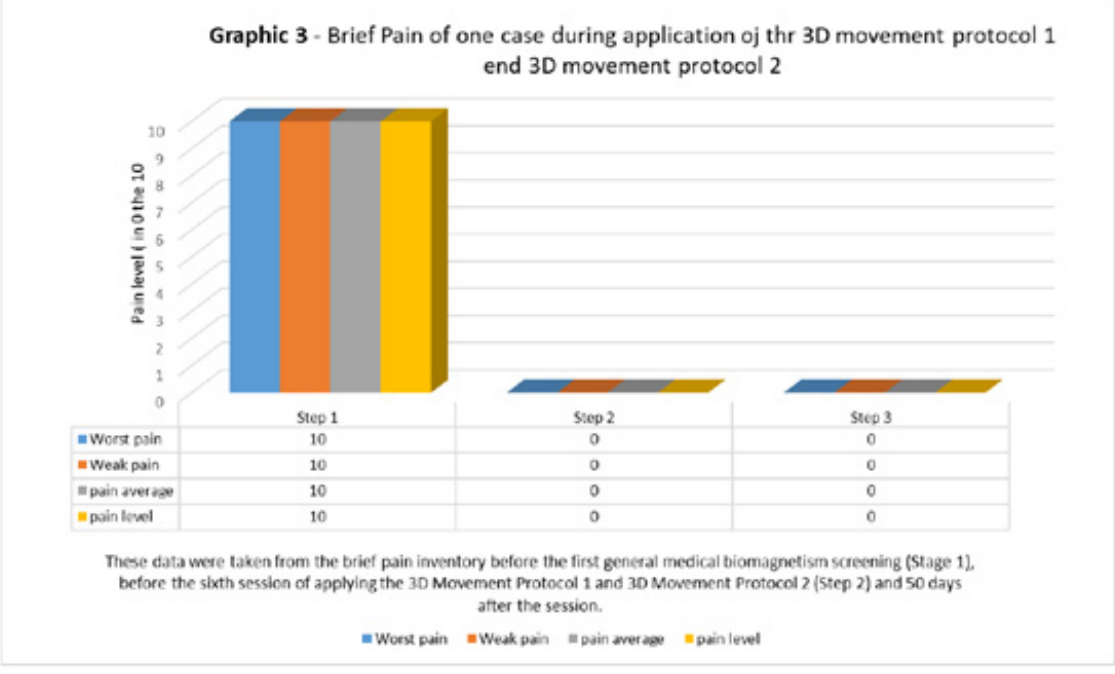
Graphic 2 – Anthropometric Measures



On the Graph 3 of the Brief Pain Inventory, it is noticed that in Step 1 the volunteer felt pain at the maximum level of 10. However, in Step 2 and in the Follow-up time, the level of pain was zero.

Therefore, one may conclude that the 3D Movement Protocol 1 and 3D Movement Protocol 2 proved to be effective in relieving the volunteer's pain.

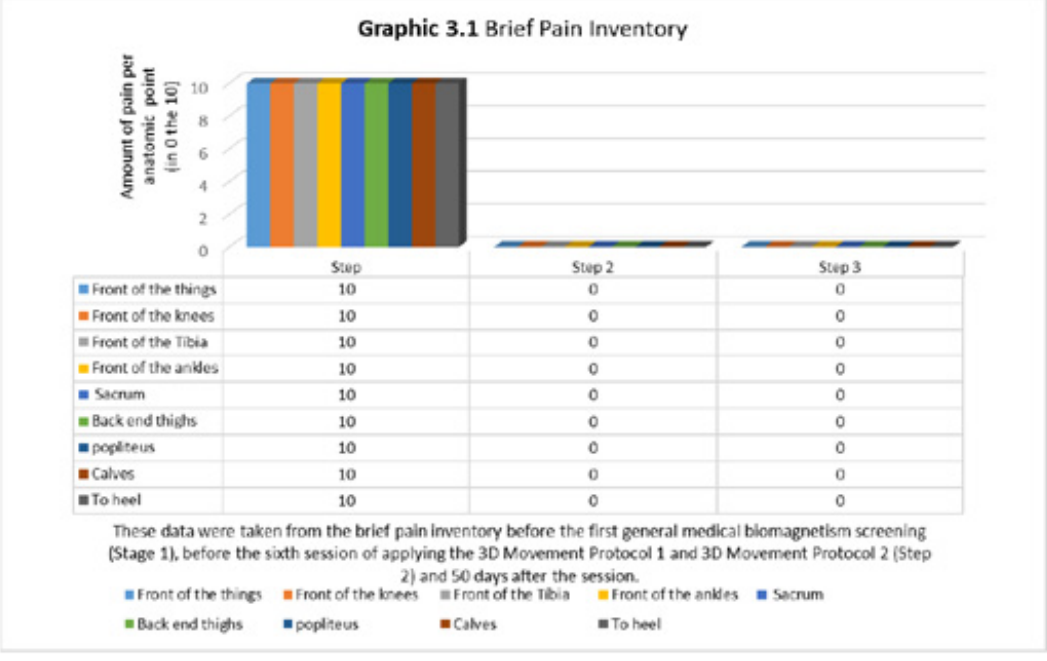
Graphic – Brief Pain Inventory



According to Graph 3.1 of the Pain Inventory, it is noticed that the referred anatomical points mentioned with pain by the research participant, in time 1 had a score of 10. In time 2 and in the Follow-up, the pain level shows zero.

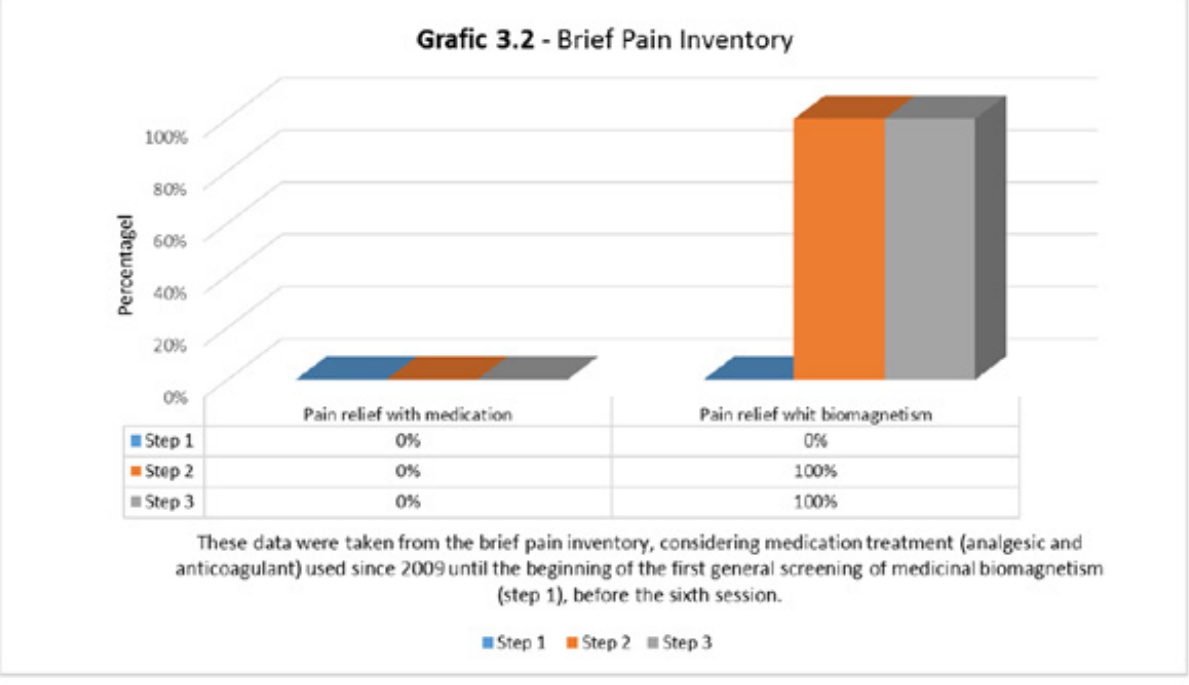
Therefore, the conclusion that the 3D Movement Protocol 1 and 3D Movement Protocol 2 proved to be effective in relieving pain in the anatomical points mentioned by the patient.

Graphic 3.1 – Brief Pain Inventory



In the Brief Pain Inventory – Graph 3.2, it is represented by that in time 1 the volunteer was using analgesics and anticoagulants. However, at time 2 and at follow-up, the patient with only 3D movement 1 protocol and 3D movement 2 protocol dispensed successfully the use of such medicines.

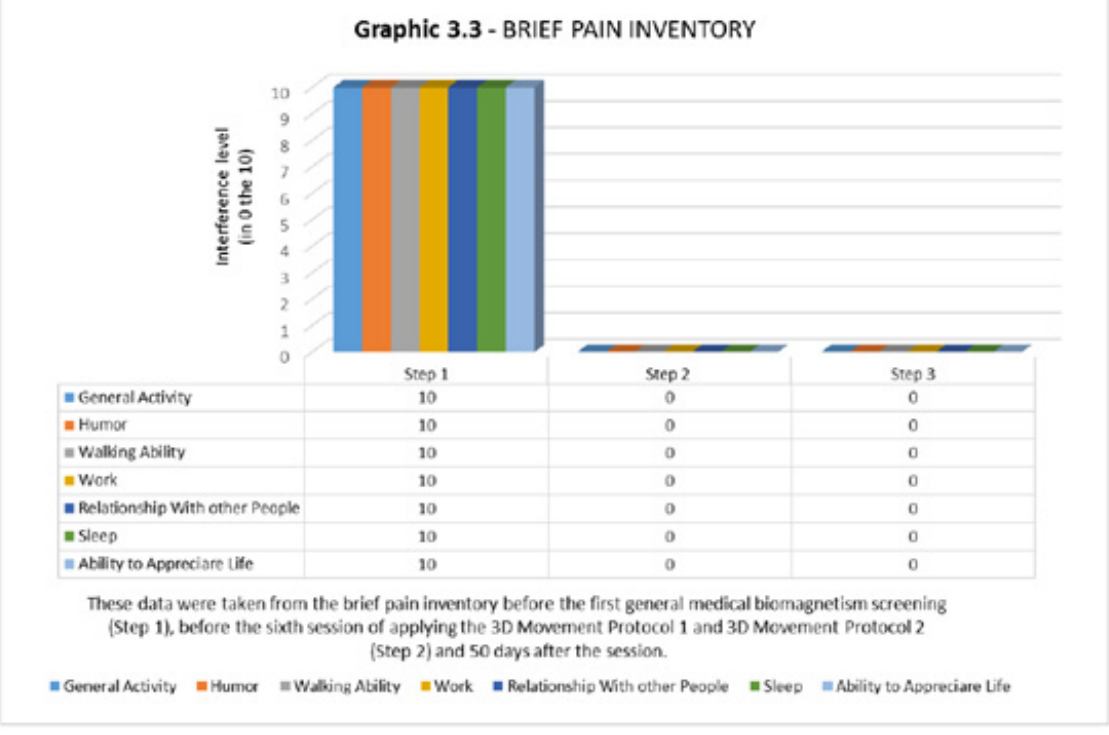
Graphic 3.2 – Brief Pain Inventory



Graph 3.3 of the Brief Pain Inventory shows that in the last 24 hours before answering the inventory, pain interfered generally on her activity, with a score of 10 at time 1. In time 2 and in follow-up, pain did not interfere anymore. In turn, pain interfered with mood with a score of 10 in time 1, and in time 2 and follow-up, the level of interference was zero. In turn, pain interfered in the ability to walk with a score of 10 in time 1, in time 2 and at follow-up it was zero. At work, the pain interfered with a score of 10 in time 1. In times 2 and Follow-up, the interference was zero. In relationships with other people, pain interfered with a score of 10 in time 1. In times 2 and follow-up the interference was zero. In Sleep, Time 1 shows 10 on your Interference and time 2 and Follow-up shows zero. In the ability to appreciate life, pain interfered with a score of 10, at time 1, felt down to zero at time 2 and Follow-up.

Thus, the results of research permit conclude that the 3D Movement 1 and 3D Movement 2 Protocol provided an important improvement in the volunteer's quality of life.

Graphic 3.3 Brief Pain Inventory



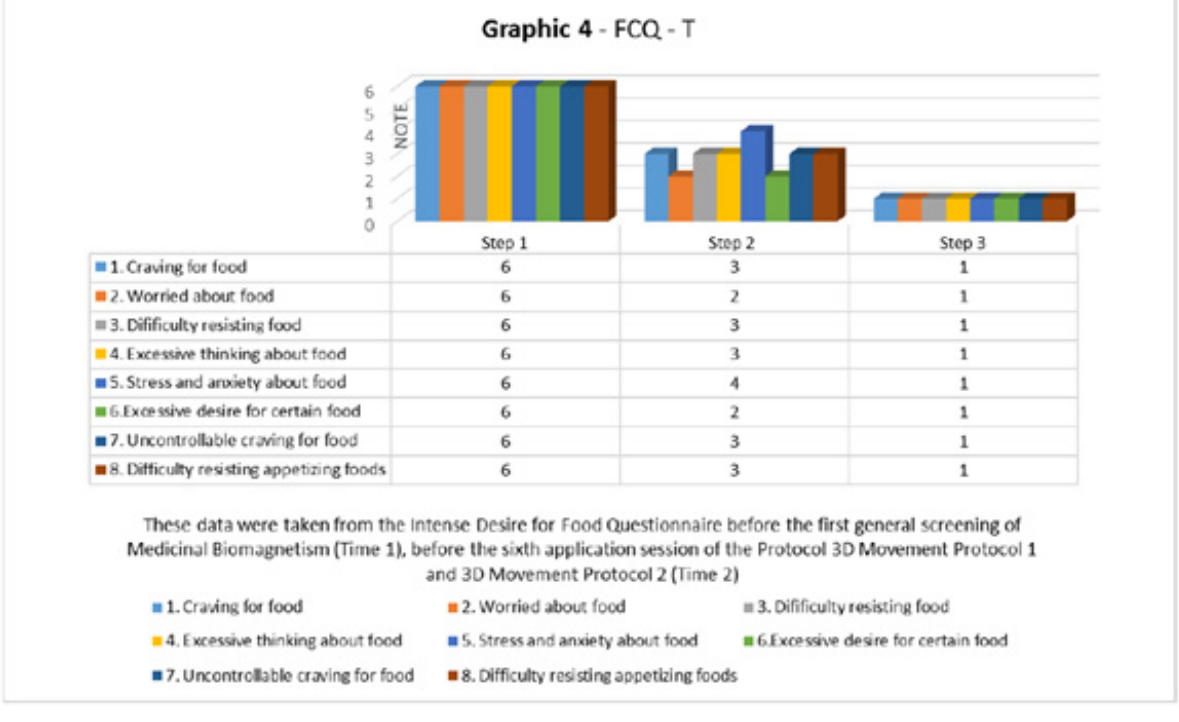
According to the FCQ - T Chart, the research participant reported at time 1 that it is always difficult to control the compulsion for food, at time 2 she reported that it is sometimes difficult and at Follow-up she reports that this difficulty no longer applies. She also says in time 1 that she always finds herself worried about food. In time 2 rarely, and in Follow-up it says never or no concern for food. In time 1 of question three he answers that he always cannot stop thinking about eating, no matter how hard he tries, in time 2 sometimes he cannot stop thinking about eating and in the Follow-up never or does not apply to think about eating . In question four, she answers in time 1 that when she is stressed, she always feels a compulsion for food that is difficult to control and keeps thinking about it until she actually manages to eat. As early as time 2, she is often stressed with a difficult to control craving for food and keeps thinking about it until she actually manages to eat. In Follow-up patient relates never or not applicable. In question 6, time 1, every time she feels a compulsion hard to control for food, you always keep thinking about it until actually manage to eat. In time 2, rarely thinks about

it and in Follow-up, she never does or does not think about food until he actually manages to eat.

According to Chart FCQ-T, at time 1, it is hard for her to control the compulsion for food, ”thoughts of eating always consume me”, she says. In time 2, she sometimes has a compulsion for food hard to control and in Follow-up, the compulsion for food hard to control is never appears or is not applied. In time 1, she reports that it is always difficult to resist the temptation to eat appetizing foods that are within reach, in time 2, it is sometimes difficult to resist the temptation to eat appetizing foods, and in the Follow-up she never has such compulsion or the difficulty in resisting the temptation to eat appetizing foods does not apply.

Therefore, the conclusion that 3D Movement Protocol 1 and 3D Movement Protocol 2 are effective in helping to control cravings for food.

Graphic 4 - FCQ -T – Intense food craving questionnaire

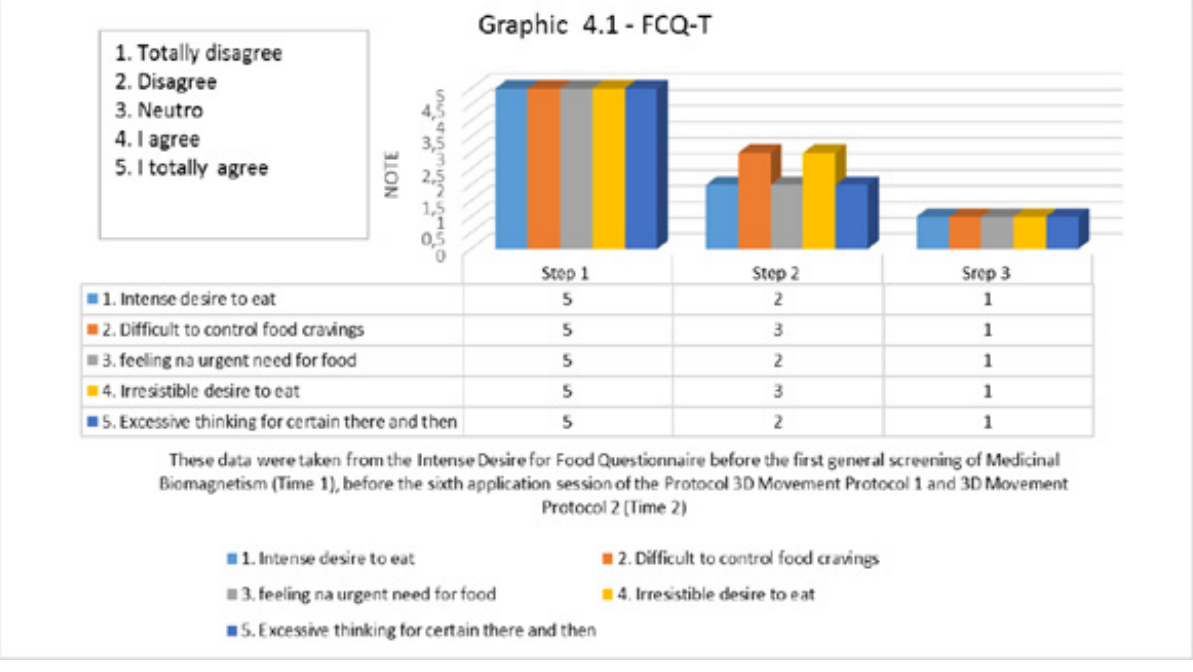


According to the FCQ - S representation, the volunteer reported that at time 1 she totally agrees to feel an intense desire to eat one or more specific foods, at time 2 she disagrees with feeling

an intense desire to eat one or more specific foods and at Follow -up strongly disagrees with this statement. In the desire difficult to control for one or more two types of specific foods, it agrees completely in time 1, she is neutral in time 2 and in the Follow-up strongly disagrees. At time 1, she says the totally agrees with feeling an urgent need for one or more specific foods, at time 2 he disagrees and at Follow-up she totally disagrees with feeling an urgent need for one or more specific foods. In the item my desire to eat one or more specific foods, it seems irresistible, it completely agrees in time 1. It is neutral in time 2 and in the Follow-up it strongly disagrees. At time 1 you totally agree that you will keep thinking about one or more specific foods until you get them. Already in time 2 disagrees and in Follow-up strongly disagrees that he will continue thinking about one or more specific foods until he manages to obtain them.

Therefore it is concluded that the 3D Movement Protocol 1 and 3D Movement Protocol 2 proved to be effective in the intensive balance of regulating the excess desire for food.

Graphic 4.1 - FCQ -T – Intense food craving questionnaire



The causes of obesity still have to be better described. The authors Pinheiro; Freitas; & Corso (2004) suggest three assumptions:

In the first one, it is possible that the population can be genetically more prone to obesity and this can be related to some environmental factors that intensify the condition. This assumption is linked to the increase in obesity in low-income people to the probable "thrifty genotype", that is, genes related to obesity will guarantee survival in the absence of food; however, when too much food is consumed, these genes become harmful. The most studied is the second assumption, in which the rising trend in obesity is mainly attributed to a rapid and dramatic decline in personal energy expenditure, found in both developed and developing countries. This drop will be due to the growing predominance of occupations that require less physical work and the decrease in leisure sports activities. Lower energy expenditure is also associated with dietary factors, such as lower consumption of fiber and increased consumption of fat and sugar. In the third assumption, obesity results from early protein-energy malnutrition.

Therefore, there is a need for studies with new possibilities for integrative, non-invasive, low-cost therapeutic techniques, not only for weight loss, but also for improving the quality of life of obese people. Among many available techniques, this work aims to show that Medicinal Biomagnetism (BM) tends to be a promising and very beneficial technique, becoming an important therapeutic resource to help in weight loss and improve quality of life.

Psychological factors contribute to the development of obesity, stress, anxiety and depression, mainly influencing eating behavior (FrancischI; Pereira; Freitas; et al., 2000).

Anjos, (2006) as well as Figueiredo and collaborators (2021) concluded that overweight and obesity undoubtedly influenced the private health expenditures of Brazilian families. It is known that the presence and increase in the number of overweight and obese people in households led to greater financial expenditures for health maintenance. They also point out that obesity represents one of the main causes of death and illness worldwide and represents a great financial expense for health care

systems, and national societies and economies.

In 1988, treatment with Biomagnetic Pairs (PBM) was discovered and applied by the Mexican physiotherapist, physician and scientist Isaac Goiz Durán (Durán, 2017). It was important because it proved to be beneficial to treat a wide variety of clinical diseases, including complex diseases, in addition to being a non-invasive therapy, easy and comfortable to apply. This system studies, detects, classifies, measures and corrects fundamental changes in Hydrogen potential (pH) in living organisms, because by leveling it, through magnets, pathologies are regulated, corrected and eradicated (Durán, 2017).

Over the years several BM protocols have emerged, among them there are the 3D Movement 1 and 3D Movement 2 Protocols. These protocols consist of a variation of the Basic Protocol which function is: to deto, deflate and reduce inflammation of the abdomen, also help as a complement in the treatments for losing wheight (Duran, 2017). Considering that this protocol helps in detoxification, disinflammation and reduction of edema, one can seek its efficiency in the treatment of obesity in relation to the improvement of quality of life and weight loss.

CONCLUSION

In this case study, only one BM protocol was used for weight loss treatment. Possibly, with a longer time for treatment and more robust research, this could lead to more robust results. Nevertheless, the volunteer eliminated 13 kg/m2 in a period of approximately two and a half months, moving from the obesity index to being overweight. However, his general state of health gained a quality of life with excellent results. The application of the Protocol 3D Movement 1 and 3D Movement 2 proved to be very effective in improving behaviors and feelings related to the excessive search for food. It proved to be effective in controlling anxiety over cigarettes, given the significant decrease of the desire for cigarettes. It was also effective in relieving pain from anatomical points cited by the research participant, pointing to the possibility of treating pain without the use of medication.

This protocol was used to test its effectiveness in a simplified approach, but which can be taught rapidly without further BM training. The study of this case proved that the protocol 3D movement 1 and 3D movement 2 contributed in the patient's weight loss process, however, it was extremely important to improve behaviors and feelings related to the excessive search for food and cigarettes, factors that can harm her general health condition.

The conclusion is that there was a 100% improvement in pain symptoms and thus the volunteer obtained an important gain in general quality of life. Certainly, these first results can be a great start to show to scientific community the importance of appreciating Medicinal Biomagnetism as a therapeutic technique, not so distant from having its effectiveness proven.

The authors of the present article hope that the results presented in this case study can optimize and disseminate this therapeutic methodology that, in addition to having proved to be effective to the objectives described hereby. Also, they emphasize the absence of adverse effects and its low cost, what facilitates its accessibility, enabling it to be included as a regular health practice, in the fight against obesity by lowering costs, making it excellent to be offered as an integrative technique of the Brazilian Unified Health System (SUS – Health Unic System).

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