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Exercise Benefits on Psychomotor Agitation – A Pilot Study

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ABSTRACT

The use of psychoactive drugs to treat or control psychological disturbances can decrease patient's social participation. Exercise can help minimize this collateral aspect. To investigate the benefits of patients' participation in an exercise program regarding patient's quality of life, self-esteem, anxiety and depression. Methods: A single subject descriptive and correlational design was conducted. The subject was a 46 year-old female with medicated schizophrenic like psychomotor agitation that undergo a sixteen weeks program composed by two weeks were quality of life (WHOQOL-BREF), anxiety (Zung scale), depression (Berg scale) and self-esteem (Rosenberg scale) were assessed without the exercise program, followed by a ten week exercise program orientated by a physiotherapist and a four week period were the exercise program was conducted without the physiotherapist supervision. A decrease was noticed in the scores of the Berg scale (10 to 1) and Zung scale (37 to 33). By another side, the scores of Rosenberg scale increased (27 to 31) and the WHOQOL-BREF psychologic and environment domains also increased (58, 33 to 87, 5 and 43,75 to 56,25 respectively). It seems that the association produces positive aspects and the program is maintained even without supervision. An application of the exercise program to more patients should be considered.

INTRODUCTION

Quality of life is one of the prerequisites of human dignity, encompassing a number of factors, including health (1). According to the World Health Organization (WHO), health is defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (2), a process continuous in time, not static, composed of different stages of progression and digression (1). Physical, mental and social health is thus interdependent, with equal weight on quality of life of a society (3). Mental health has not received from the medicine and society, the same interest than physical health, perhaps derived from the bias normally associated with mental affections, derived from fear and misunderstanding that have fruit since ancient times (3, 4, 5). Madness means that individuals lose their citizenship, be isolated and are excluded from society, becoming victims of their own pathology (3, 4). It is very likely that the number of cases of mentally ill grow, due to the gradual increase in world population, increased life expectancy and exacerbate social problems (3). These issues are included in the four leading causes of disability worldwide, representing a huge cost in economic terms, disability and human suffering (3). This problem and their approach have undergone changes throughout history (6). The first time that this issue was publicly discussed was the US, in 1840, where he developed a census that included the category "stupid / crazy", in order to check the frequency of mental disorders (6). In 1948, WHO for the first time includes a session about mental disorders, the sixth edition of its International Classification of Diseases system (ICD-6) (6). In 1953, the American Psychiatric Association (APA) publishes the first edition of DMS (Diagnostic and Statistical Manual of Mental Disorders) (6). The latest edition, the DMS-V, was published May 18, 2013, being the result of 12 years of research by dozens of professionals (6). Currently, there are no radiological tests, laboratory or psychometric to diagnose the disease (7). The diagnosis is a clinical history collected from the individual and / or family / caregivers, taking into account the diagnostic criteria described in Figure 1 (3, 6). The psychiatrist should be aware of relevant information and the onset of symptoms to develop a good clinical reasoning, and thus finding the clinical diagnosis of the patient (8). The detection of such diseases as early as possible is essential so that preventive measures are applied, limiting the progression of speed, always with the aim of increasing the welfare and health of the individual, offering a better quality of life (1). If patients have due regard being seen as biopsychosocial beings feel they will be built, looking for a better way the disease (1). It is important for each individual to actively participate in monitoring their health status, as well

as your family, vital to the success of individual treatment with this type of pathology. (2, 4). This includes the important role of physical therapist (2). This must be inserted in the multidisciplinary team that works in mental health, contributing to its knowledge of the body, so you can stop the individual process of decay, caused not only by mental disorder who suffers, as the side effects of medication (2). Knowledge of this body includes exercise but also techniques that increase the driving abilities of the individual (decrease in changes in body structure and movement, as tensions, chronic muscle stiffness, abnormal breathing pattern, postural changes or difficulties in implementing some movements), assisting in the restructuring of the psychological and social aspects, and in return the body of reality, promoting their rehabilitation (3, 9, 10). The aim of this study was to verify whether the application of an exercise-based intervention could improve the rates of depression, self-esteem, anxiety and quality of life, a subject of females diagnosed with psychomotor agitation framework in the schizophrenia spectrum. Being a pilot study is relevant because it brings some benefits to physical therapists, opening doors to the emergence of new and more complex studies and new discoveries, to increase the quality of life not only of individuals with mental disorders, as well as their families. This study will combine three concepts "physiotherapy", "mental health" and "exercise", allowing differ from the intervention of physiotherapists in this unexplored field. It will be a useful work, taking into account the scarcity of studies in this area. This study reflects another mode of intervention, in addition to drug therapy for the management of anxiety and depression of a single subject, which developed schizophrenic behavior, enabling increased their self-esteem, functionality and quality of life. This is only a pioneering study, but significant, which will contribute to future investigations more complex and credible and to improve the care of users with mental disorders. It will then be addressed to the methodology of the study, which is referred to the type of study, the specific objectives of the study, the procedures that were performed, and the measuring instruments that have been used, as well as their validity data.

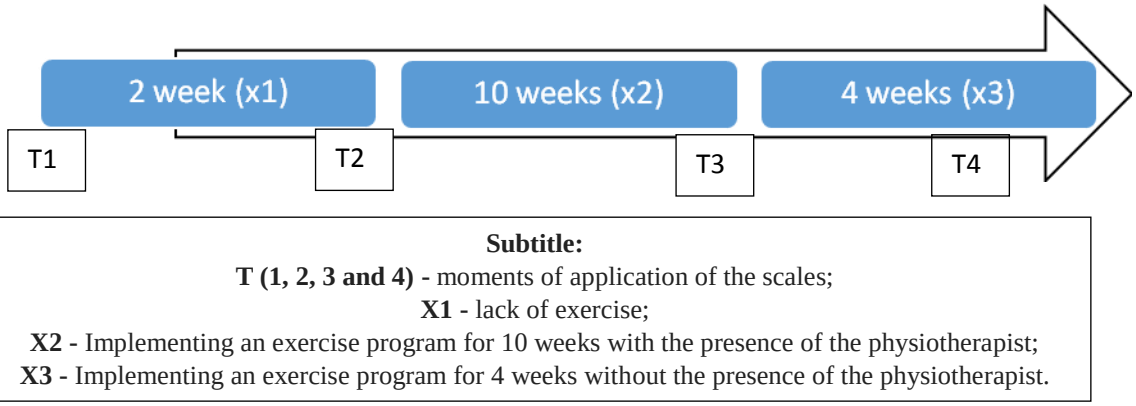
MATERIALS AND METHODS

The study on which we look back corresponds to the first level of analysis of a study of correlational, descriptive and correlational study, single subject (11). The participant is female and is 46 years old. The wearer is married and has two daughters. It's profession of seamstress, and works 10 hours a day, Monday to Saturday. With regard to his psychological state, it has some irregularities. It is marked by negative symptoms, anxiety, depression, irritability any express your mood and sleep pattern changes. Other features are highlighted

as lack of appetite, too many concerns, decreased predisposition for social events, changes in motor coordination and motor sequence of complex movements. There are times when their status worsens, with or without episodes of life considered stressful, and other that is stable, with symptoms virtually non-existent. It is noted further that each floating does not occur at the same time. About a year and nine months, the wearer psychomotor agitation developed a framework with appearance of schizophrenia. About six months later he began to be followed at the Hospital, in the area of psychiatry. Since being medicated (Cipralex – 10 mg).The specific objective of the study is to verify that the practice of an exercise program over a period of 10 weeks back benefits in respect of indices of anxiety, depression, self-esteem and quality of life in an individual who has developed a psychomotor agitation framework with appearance schizophrenia. It is also intended to determine whether those achieved rates remain when the user performs the exercises independently, without the presence of the physiotherapist, checking whether or not it important for your motivation for the implementation of the program. To evaluate the different rates at different times of the study, four scales were used. The scale WHOQOL-BREF, which evaluates the quality of life of users, is validated for the Portuguese population and studies show that presents good levels of discriminant validity, internal consistency, test-retest stability and content validity and is an excellent tool for evaluating the quality of life nationwide (12). Scale Self-Assessment Zung Anxiety, validated for the Portuguese population, is a tool to check the level of anxiety (13). The scale was evaluated with a good reliability, validity and discrimination (14). The depressive inventory Beck assesses depression and is adapted for the Portuguese population (15). It is considered a good tool to assess the severity of depression, with good psychometric properties with regard to validity and reliability, having a high correlation with the Hamilton scale (15). The scale of self-esteem Rosenberg, developed by Rosenberg, is an instrument that assesses self-esteem. It is found validation for the Portuguese population and reflect studies that this instrument has good internal consistency (16). The data analysis was done using a statistical descriptive analysis using Excel. The participant was informed about the procedures and the study's exercise plan and then asked if wanted to be part of this research. Once you have accepted, he signed an informed consent. Upon completion of this initial phase, therapeutic intervention explained then started. The exercises were performed in the home environment, by acceptance issues and motivation on the part of the wearer.

The data relating to the level of quality of life, self-esteem, depression and anxiety were collected at four time points T1, T2, T3 and T4. Table 1 shows schematic steps of the procedure.

Table 1 - Outlining the steps of the study



At first (T1), the scales were applied in order to verify what level of anxiety, depression, self-esteem and quality of life of the user prior to application of the exercise program. Two weeks later (T2), the scales were reapplied to check the fluctuation of the values of these parameters, if they remain stable or not, before the start of the exercise program. It was subsequently applied for a period of 10 weeks a coordination exercise plan, three times a week. At the end of that period, it was proposed again to the user who fills up the same scales (T3). A fourth time, the user has performed for four weeks the same exercises, but without the help and presence of the therapist. The scales were applied again after the end of that period (T4). This program consisted of three stages, with total duration of about 30 minutes (Table 2). The heating initially with a duration of 5 minutes, 20 minutes coordination exercises of the upper and lower members and, finally, about 5 minutes return to calm. Heating included the active mobilization of the major joints of the body. Coordination exercises are described Appendix 1. The program involved coordination exercises for the reason of being motivating for the wearer. Figures 1 and 2 show the experimental September related to these steps (1st and 2nd stages). Finally, the return of calm to step consists of the trunk stretching exercises and upper and lower limbs.

Table 2 -Intervention planSteps

Steps	**Practice**
Heating	• Active mobilization of the major joints of the body
CoordinationExercise	• Tabel a 2
Return to calm	• Stretching exercises

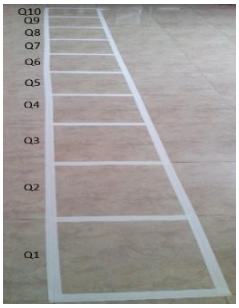


Figure 1- Experimental Seton the first phase

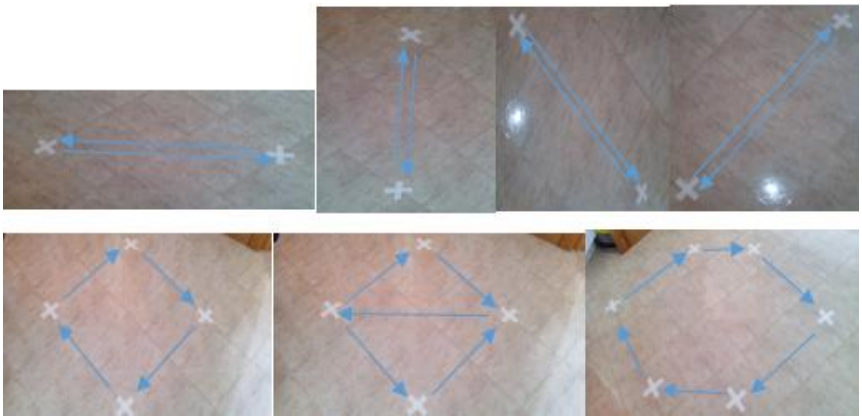


Figure 2- Experimental Seton the second phase

RESULTS

Table 3 -Results

Scales		Score			
		T1	T2	T3	T4
WHOQOL-BREF	Domain1 (Physical)	64.29	64.29	75	78,75
	Domain2 (Psychological)	62,5	58.33	62,5	87,5
	Domain3 (Social Relations)	50	50	50	50
	Domain4 (Environment)	43,75	43,75	43,75	56,25
Beck (Depression)		11	10	4	1
Rosemberg (Self-Esteem)		28	27	29	31
Zung (Anxiety)		37	33	35	33

According to the table 3, it appears that in Domain 1 of WHOQOL- BREF scale values remained sealed from T1 to T2 and from T2 to T3 increased, as well as of T3 to T4. Observing the area 2, there is a non-significant decrease of scores from T1 to T2, an increase from T2 to T3 (wherein T3 equals T1 value) and a larger increase of T3 to T4. In Area 3, the values remain the same at all time points. In Area 4, the values remain unchanged until T3, and T3 to T4 notes a slight increase.

Comparing the scores of Beck scale, there is a slight drop from T1 to T2, a more abrupt descent from T2 to T3 and again a slight decrease of T3 to T4.

Comparing the score of Rosenberg scale, it is seen that T1 to T2 that regressed slightly from T2 to T3 increased slightly T4 and T3 also increased.

Comparing the results of T1 and T2 of the Zung scale, there is a decline, from T2 to T3 increased slightly and returned to regress from T3 to T4.

DISCUSSION

This is well documented information which reflects the benefits of exercise in relation to the regulation of blood glucose levels, blood pressure, lipids, and cardiovascular diseases, however, with regard to the mental health; little information is available (17). Studies disclose that the practice of enjoyable exercise uncompetitive character is as or more

effective in reducing depression and anxiety as pharmacologic or psychotherapeutic treatments, with membership fees identical to medication (18, 17). In another study, it was found improvements in relation to body image, self-esteem, muscle strength, cardiovascular performance and decreased anxiety and depression, after the application of two exercises that included strength training programs, anaerobic endurance exercise and general physical activities with different ways of relaxation and exercise (9). It has further decreased muscular pain, respiratory impairment, feeling of anxiety and symptoms of depersonalization (9).Improved sleep quality as well as the scores of anxiety (9). More than 100 studies were analyzed and it was found that the common practice of exercise for longer than 10 weeks is more efficient in decreasing the depression of the relaxation sessions, and patients with a higher level of depression and anxiety the most benefit (17). Faulkner and Sparkes also applied a 10-week exercise program and there was a decrease in hallucinations, increased self-esteem and an improvement in sleep patterns and general behavior in schizophrenic patients (10). These are the results of some of the few studies that record the benefits of exercise in practice users with psychiatric disorders. According to an article comparing several studies, exercise programs to promote a more effective way mental health should be supervised, individual (or group, depending on preference and condition of the wearer), composed of aerobic and anaerobic exercise (muscle strength), starting with low intensity to reach the moderate level, increasing steadily (17). In this study, the program is individualized because of the impossibility of meeting more participants. However, according to the literature, the performing group activities intensifies their expressiveness and communication, interaction with other individuals, as well as the sense of unity, acceptance and trust with others, developing their self-esteem and confidence to establish social relationships, contributing to their psychosocial rehabilitation (3). Therefore, I think it would be interesting the emergence of new studies that addressed this component. Taking into account the results observed in this study by comparing the scores of the scales between T3 and T4, there was an improvement on the WHOQOL-BREF scale in areas 1, 2 and 4, and the Beck scales, Rosenberg and Zung. These results can be explained due to the sense of accomplishment of a goal, autonomously, without the presence of physiotherapist, which until recently had trouble (22, 23, 24, 25). There are some controversial studies on the type of exercise to use in individuals with mental disorders, as well as its intensity, the session time and duration (17). Given that many never practiced it and have a poor physical condition, need some care in the program's prescription (17). There is a multitude of exercises that may be prescribed, and there is evidence that anaerobic exercise (exercise produced in a short space of time and with

great intensity) and aerobic exercises (low-intensity exercise produced in a long time) provide the same psychological benefits (17, 18). Authors state that to maintain and promote health, it should be performed vigorous aerobic exercise, a minimum of 20 minutes, three days a week, or aerobic exercise of moderate intensity, a minimum of 30 minutes 5 days a week (20). The combination of aerobic activity of moderate and vigorous intensity is also effective (20). The maximum aerobic capacity should not be exceeded, this is because the overproduction of lactic acid is associated with the occurrence of panic attacks in these subjects and the experience of negative affective states (12). Pulcinelli indicates that the session should occur between 15 and 30 minutes, three to five times a week for a predictable and fixed space (17, 18). Exercise should be motivating for the user so that they are incorporated into your routine (17). In this study, the program addressed physical coordination exercises (mostly moderate aerobic) as a matter of motivation. The participant said he felt deficits at this level on a day-to-day and showed greater acceptance and motivation in performing this type of exercises. These are exercises that improve self-concept, and the mental representation of the body. To Vaz Serra (1986), self-esteem "is the evaluation process that the individual sets about its qualities and performances" (19). The author also notes that the self-concept is related to self-esteem (19). This is because the individual makes judgments about himself, attributing feelings to their own identity (19). The level of difficulty in the two phases was progressing over time in order to increase physical capacity, acting as a motivating factor (21). Regarding the WHOQOL-BREF scale, there were no major fluctuations between T1 to T2 scores. Already in the Domains 1 and 2 there was an improvement from T2 to T3, a result of the consequent benefits of physical activity, and T3 to T4, to feel able to perform the exercises, independently without the presence of physiotherapist, which until recently had trouble (22, 23, 24, 25). In Beck scales, Rosenberg and Zung, there were no major fluctuations between T1 and T2. Unlike scales Rosenberg and Zung that there were no major changes in BDI improved significantly from T1 to T4, especially from T2 to T3. It is a fact that there were no major benefits in terms of anxiety and self-esteem in this study. But it is known that the decrease of depression is a picture that will be riding over time, and positively influence the indices of anxiety and self-esteem (26). These facts lead us to question: the exercise plan applied were longer, do these indices suffered positive changes? Does the continuity of the time these benefits would reflect? I suggest that further studies clarify this issue. With exercise, there is the possibility of connection between your body and mind, improving your consciousness and body language, giving freedom and autonomy, making emotional connections with the world around them and their integration into society (9).This

intervention allowed the wearer looks up to the world, to others and to your own body otherwise functioning as a facilitator of their rehabilitation (9). In view of the results, it was found that physical therapy contributed to the psychological rehabilitation of the participant. Proves once again that physical, mental and social health are thus interdependent and it is increasingly clear that being good mentally is essential to the welfare of the people, communities and countries (3). We suggest further study of single-subject is developed on this issue in order to check for major changes to the results in terms of individuality. The elements raised in this paper suggest that, pending the final judgment with the highest quality evidence about the effectiveness of the use of physical exercise for users with mental problems, it is appropriate to recommend exercise in combination with traditional psychiatric treatment.

CONCLUSION

The hope for many individuals suffering from psychological problems lies in the link between biological, psychological and social development and progression of behavioral and mental changes. It is true that there is still much to learn about this issue, but we have the knowledge and the ability to reduce mental and behavioral disorders worldwide. Despite being a pilot study with only one subject, and the purpose of the practice of motor coordination exercises is to meet the participant's motivation, the results of this study were positive, showing that the practice lowers rates of depression and increases the levels of self-esteem and quality of life, more specifically the physical and psychological domains. After the teaching and learning of the exercises by the user, this can run them alone, with the same benefits.

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Appendix

Appendix 1

Coordinationexercises		
1st stage		
1st, 2nd and 3rd weeks	4th, 5th and 6th weeks	7th, 8th, 9th and 10th weeks
• Jump once every square to reach 10 (Q10), forward and biped support.	• Jump once every square to reach Q10, forward and support unipedal.	• Jump once every square to reach Q10, forward and biped support, followed by flexion of hip joint, knee extension, knee flexion and extension of the hip joint memberin non-support.
• Jump1x, 2x, 1x, and so on, until reaching advancing Q10, in bipedal support.	• Jump1x, 2x, 1x, and so on, until reachingadvancingQ10, assistance nun pedal.	• Jump 1x, 2x, 1x, and so on, until reaching advancing Q10, assistance nun pedal. After jumping 2x as quares houlders should bend interchangeably.
• Go to the interior of Q1 and then to outside (left side), jump to the inside of Q2, and so forth, to support bipedal.	• Go to the interior of Q1 and then to outside (left side), jump to the inside ofQ2, and so forth, to support bipedal.	• Go to the interior of Q1 and then to outside (left side) touching with the hand on that side of the ground bounce the interior Q2, and so forth, to support bipedal.
• Go to the interior of Q1 and then to outside (right side), jump to the inside of Q2, and so forth, to support bipedal.	• Go to the interior of Q1 and then to outside (right side), jump to the inside of Q2, and so forth, to support bipedal.	• Go to the interior of Q1 and then to outside (right side) touching with the hand on that side of the ground bounce the interior Q2, and so forth, to support bipedal.
• Go to the interior of Q1 and then to outside (right side), jump to the inside of Q2 and then to outside (left side), and so forth, to support bipedal.	• Go to the interior of Q1 and then to outside (left side), go to the interior of Q2 and then to outside (right side) and so forth,to support bipedal.	• Skip to the inside of Q1 and then out of it (right), playing with the hand on that side on the ground jump to the inside of Q2 and then out of it (left), playing with the hand on that side on the ground and so forth,to support bipedal.
• Skip forward two squares, one backward, and so forth, to support bipedal.	• Skip forward two squares, one backward, and so forth,to support bipedal.	• Jump to squares forward, another back free lower limb extension and so forth,to support bipedal.
• Go to Q1 in adduction, abduction then to Q2 inthe lower limbs and so forth.	• Go to Q1 in adduction, abduction then to Q2 inthe lower limbs and so forth. The upper body should also add uceorab duct.	• Go to Q1 adductiononce, and then Q2 abduction of the legs twice,and so on.The upper body should also add uceorab duct.

• Jumpin support bipedal for Q1, catch up with one hand an object that there is, skip to Q2, place the objectin Q3, jumping into Q3, and so on.	• Jumpin support bipedal for Q1, catch an object that there is in his left hand and then with the right, interchangeably, jump Q2, place the objectin Q3, jumping into Q3, and so on.	• Jumpin support unipedal for Q1, pick up an object that there is in his left hand and then with the right, interchangeably, jump Q2, place the objectin Q3, jumping into Q3, and so on.
• Jump once in each square until you reach Q10, back in support bipedal.	• Jump once in each square until you reach Q10, back in support bipedal, abducting and alleging, interchangeably, the upper and lower limbs.	• Jump once in each square until you reach the10th, back in support bipedal, abductingonce and adducing twice the upper and lower limbs.
• Sideways, to flexion and extension of the hip joints, alternately.	• Sideways, doflexion and extension of the hip joints alternately, alternating with the upper limbs, simulating the march.	• Sideways, doflexion and extension of the hip joints alternately, alternating with the upper limbs, simulating the march. In bounce once Q1and Q2 twice, and so on.
• Sideways, abductone leg, crossing the contralateral ago, abduct, cross the contralateral ahead, and so on.	• Sideways, abductone leg, crossing the contralateral ago, abduct, cross the contralateral ahead, and so on. The upper body should be horizontal adduction and abduction interspersed.	• Sideways, abductone leg, crossing the contralateral ago, abduct, cross the contralateral ahead, and so on. The upper body should be horizontal adduction and abduction interspersed. Cervicalshouldrotate left or right depending on the direction of the upper limbs.
2nd phase		
• Request the user to touch 10 times the brands that are in the soil, according to a specific path (Figure 3). The goal is to decrease the time needed for execution of progressively task.		