



The Effect of a Physical Activity Program on Improving Body Cathexis and Self-Esteem of Patients with Schizophrenia

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Abstract

The aim of this study was to examine the effect of an exercise program on improving self-image and self-esteem of thirty (30) patients with schizophrenia. The sample was separated randomly in three groups of 10 individuals, that is, a control group, an exercise observation with tokens group (experiment group A) and an actual exercise with tokens group (experiment group B). Data from patients with schizophrenia collected using the Body-Cathexis Scale and the Rosenberg Self-Esteem Scale which were selected and administered to participants prior and after the application of the exercise program. The 8 weeks duration of the exercise program was conducted combining physical activity with behavioristic treatment so as to promote exercise behavior and minimize drop out risk. The results reported that the physical activity program had positive effects in experiment group B participants compared to those of the experiment group A and control group as feeling more vigorous and with higher self-esteem, leading to an improved personal care and less social limitations.

Key words: *schizophrenia, physical activity, body cathexis, self-esteem*

Η Επίδραση ενός Προγράμματος Άσκησης στη Βελτίωση της Σωματικής Κάθεξης και της Αυτοεκτίμησης Ατόμων με Σχιζοφρένεια

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Περίληψη

Σκοπός της παρούσας έρευνας ήταν να αξιολογήσει την επίδραση ενός προγράμματος άσκησης στη βελτίωση της εικόνας σώματος και της αυτοεκτίμησης τριάντα (30) ασθενών με σχιζοφρένεια. Το δείγμα χωρίστηκε τυχαία σε τρεις ομάδες, μια ελέγχου, μια παρατήρησης με αμοιβές (πειραματική ομάδα Α) και μια ομάδα που συμμετείχε σε άσκηση με αμοιβές (πειραματική ομάδα Β), των δέκα (10) ατόμων η καθεμία. Για τη συλλογή των δεδομένων χρησιμοποιήθηκε η κλίμακα της Σωματικής Κάθεξης (Body-Cathexis Scale) και η κλίμακα μέτρησης της αυτοεκτίμησης (Rosenberg Self-Esteem Scale), με ερωτηματολόγια τα οποία δόθηκαν στους συμμετέχοντες πριν και μετά την εφαρμογή του παρεμβατικού προγράμματος άσκησης. Η διάρκεια του παρεμβατικού προγράμματος ήταν οκτώ (8) εβδομάδες και το πρόγραμμα άσκησης συνδυάστηκε με συμπεριφοριστική θεραπεία για να προωθήσει τη θετική συμπεριφορά στην άσκηση και να ελαχ-

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στοποιήσει τον κίνδυνο εγκατάλειψης από το πρόγραμμα. Τα αποτελέσματα έδειξαν ότι το συνδυασμένο πρόγραμμα άσκησης είχε θετική επίδραση στην πειραματική ομάδα Β, σε σύγκριση με εκείνους της πειραματικής ομάδας Α και της ομάδας ελέγχου, καθώς οι συμμετέχοντες αισθάνονταν περισσότερο ενεργητικοί και με υψηλότερη αυτοεκτίμηση που με τη σειρά του οδήγησε σε καλύτερη προσωπική φροντίδα και λιγότερους κοινωνικούς περιορισμούς.

Λέξεις κλειδιά: *σχιζοφρένεια, σωματική άσκηση, σωματική κάθεση, αυτοεκτίμηση*

Introduction

Schizophrenia is typically viewed as a chronic severe psychotic disorder characterized by delusions, incoherence and physical agitation accompanied by disorganized speech, delirium, behaviors that result in poor long-term outcome (Acil, Doğan, & Doğan, 2008), adoption of inappropriate health habits like excessive smoking, drink, poor diet (Dixon, Medoff, Wohlheiter et al., 2007; McCreadie, 2003; Roick, Fritz-Wieacker, Matschinger et al., 2007) and lack of physical exercise that further reduces functional ability (Vancampfort, Probst, Scheewe et al., 2011). In fact, patients with schizophrenia are characterized by sedentary lifestyle (Lindamer, McKibbin & Norman, 2008) and face many challenges in maintaining physical health (Beebe, Tian, Goodwin et al., 2005).

Over the last two decades the interest of researchers turned to exploring the role of exercise in improving mental health of these populations since a significant increase in people who suffer from psychiatric disorders was noticeable (Rossler, Salize, VanOs & Riecher-Rossler, 2005). Studies found that these patients were unhappy with their body functions and appearance (Theodorakis et al., 1991; Tucker, Bigler & Chelune, 1981) exhibiting high levels of depression (Jones, Hansen, Moskvina, Kingdon, & Turkington, 2010; Kunikata, Shiraishi, Nakajima, Tanioka, & Tomotake, 2011) and lower levels of self-esteem due to the negative image concerning the importance of their body appearance and weight that produces further negative emotions (Connors & Casey, 2006; Mendelson, McLaren, Gauvin & Steiger, 2002).

Studies so far have suggested that physical activity has a beneficial effect on the psychological well-being and quality of life of individuals with schizophrenia (Holley, Crone, Tyson & Lovell, 2011). Therefore, physical activity is a useful non-pharmacological method that should be incorporated into clinical practice (Faulkner, Cohn & Remington, 2006; Lee et al., 2008; McCormick, Frey) as a direct and readily available application compared to other common treatments such as medication and psychological approaches (Ellis et al., 2007).

Since benefits occur only for those who consistently exercise, increase of positive exercise behaviour to improve health is a key issue (Beebe & Smith, 2010). In this regard, physical activity interventions should incorporate not only application of exercises but also implementation of behaviour strategies as drop out is more related to personality characteristics and subjective mood states than to socio-demographic variables or diagnosis of patients with schizophrenia (Fassino, Amianto, Abbate, Daga & Leombruni, 2007). The purpose of these psychological techniques is to improve exercise habits as well as patients' perceptions and experiences towards physical activity as a mean to improve their quality of life and psychological well-being (Holley et al., 2011).

In fact, exercise is an effective mean for improving self-esteem and mood as well as reducing symptoms of depression resulting from mental illness (Beck & Steer, 1993; Chung & Baird, 1999; Craft & Landers, 1998; Ellis et al., 2007). Studies so far also have reported that exercise reduced the perception of participants concerning auditory hallucinations, improved self-esteem, sleep habits and their general behavior and increased their social interaction (Faulkner & Sparkes, 1999). Low self-esteem is associated with the negative symptoms accompanying psychotic disorders (Frank & Davidson, 2009) and a reduction of these symptoms is positively associated with self-esteem improvement (Jones et al., 2010; Hedlund & Gyllensten, 2010). Consequently, mild to moderate aerobic exercise is an effective program for the reduction of psychiatric symptoms and quality of life improvement of individuals with schizophrenia (Acil et al., 2008).

Self-esteem that refers to the perception of self and the value that everyone gives to his personal image is shaped during life through personal, environmental and social experiences and constitutes an important component of mental health (Kernis, 2005). Low self-esteem prognoses depression, while engagement in physical activity is associated with increased self-esteem and decrease of depression symptoms (Fox, 2000). People with high self-esteem exhibit better adaptation abilities, are more honest toward self and accept themselves for who they are, use defense mechanisms rarely, have confidence and are highly motivated. On the contrary, people with low self-esteem suffer from anxiety, adopt a defense attitude towards others, have

feelings of loneliness and underestimate their actual capabilities. Focusing on their weaknesses, they do not have self-confidence and therefore develop fear of failure and avoid competition (Jones et al., 2010).

Many psychotherapeutic approaches, from psychodynamic to cognitive behavioral ones, place self-esteem at the heart of their theoretical framework, since many studies justify the positive relationship between self-esteem and mental health, with evidence showing low self-esteem as linked to depression (Rosenberg, 1965), anxiety (Bachman, 1970), adverse reactions such as anger and irritability, aggressiveness and feelings of non-satisfaction from life (Campbell et al., 1991).

Individuals with high self-esteem control their environment, face positively the future, have a greater chance of succeeding in working tasks and achieve their goals more often since they have more self-confidence. Rosenberg (1989) examined the link between self-esteem and anxiety and found evidence for a causal relationship between the two. Many interesting findings are resulting from models of comorbidity, depression and anxiety (Ellis et al., 2007). Patients with schizophrenia and low self-esteem are expected to have poor quality of life and display poor psychosocial functioning (Breeke et al., 2001; Gureje et al., 2004).

Studies using the Rosenberg Self esteem Scale (RSES) in patients with schizophrenia have reported that 24% of these individuals scored below medium average, whereas patients receiving no therapy intervention exhibited lower self-esteem compared to those who did receive an intervention for administrating psychosis (Link et al., 2001). Several studies have also failed to show a correlation between self-esteem and socio-demographic factors in people with schizophrenia, except in the case of women patients found to display higher self-esteem than men as well as patients who had at least one close friend compared to those who did not (Sorgaard et al., 2002; Torrey et al., 2000).

Body cathexis is a factor referring to the satisfaction that individuals derive from their appearance and body in general. In particular, body cathexis as defined for the first time by Secord and Jourard (1953), expresses the relationship between body and self, the degree of satisfaction or non-satisfaction of the individual regarding different parts of the body and its functions.

A strong link between body cathexis and self-esteem has been noticed from the moment that assessment of body is connected with feelings about general appearance and weight. The use of antipsychotic drugs and their connection with weight gain and metabolic abnormalities may lead to negative body image and low self-esteem (De Hert et al., 2006; Loh et al., 2008). Therefore, alternative treatments other than medication and cognitive behavior therapy such as body orientation processes in psychotherapy, regular exercise or aerobic dance therapy may result to positive psychological outcomes concerning body image and offer an alternative or complementary treatment option for patients with psychiatric disorders (Burgess et al., 2006; Nickel et al., 2006).

According to Richardson et al. (2005), since patients diagnosed with schizophrenia often possess poor physical health, physical activity could significantly reduce the levels of comorbidity associated with mental illness, improve quality of life and in some cases to be as effective as psychotherapeutic interventions. However, although studies so far have reported an improved self-esteem, sociability and autonomy of participants with serious mental illnesses within psychiatry premises (Carless & Douglas, 2008; Perham & Accordino, 2007) the issue hasn't been examined sufficiently. Reviewing the literature it seems that no studies has been conducted examining the effect of exercise on body cathexis of individuals with schizophrenia and its relationship with self-esteem. Rajender et al. (2009) examined body image and kinesthetic ability of these patients but they did not include exercise in their intervention that seems to help in developing sense of self and improving self-esteem (Carless & Sparkes, 2008).

The purpose of this research was to examine the effect of a combined exercise and token economy system program on improving body cathexis and self-esteem of patients with schizophrenia, promoting at the same time positive behavior towards exercise so as to minimize drop-out risk.

Method

Participants

The sample consisted of 30 patients (38-61 years old, 20 men, 10 women) diagnosed with schizophrenia according to DSM-IV criteria and without prior participation in physical activity whatsoever. Participants were selected randomly by drawing lots from a total population of 45 residents receiving care for the last two years at Agia Anastasia private psychiatry hospital. Following, the sample was randomly assigned in two groups (control and experiment). Control group participants (N=10) agreed to sign the consent form so as to complete the instruments prior and after the application of the training program, but did not attend any training session. The remained sample of 20 patients were randomly separated in two groups of 10 patients,

an exercise observation with tokens group (experiment group A) and an actual exercise with tokens group (experiment group B) for the observers and participants of the PE program respectively using a therapeutic alliance process which is of particular concern in the treatment of patients with schizophrenia and its effect has been linked with positive psychological outcomes and performance in rehabilitation (Davis & Lysaker, 2004; Donnell, Lustig & Strauser, 2004; Smerud & Rosenfarb, 2008).

The study was approved by the Institutional Review Board of University of Thessaly and informed consent was received from all participants prior program initiation. A written medical clearance for moderate exercise was also provided for each participant of experiment group B by the psychiatrist of the hospital (American College of Sports Medicine, 1995). This study is part of a project in fulfillment of Ph.D. requirements concerning also the effect of this training program on mood profile and quality of life on this sample of patients with schizophrenia.

Application of the exercise program

The duration of the training program was 8 weeks at a frequency of three training sessions per week, of 45 minutes each session. As regards to control group individuals, they didn't attend any training session. The experiment group A, their task was not to participate but solely to observe the training program of the experiment group B, receiving the same tokens at the end of each training session as a reward of their consistency. Since our study focused exclusively on the psychological effects of exercise and not physical ones, our intention was to examine whether observing the training program could lead to positive psychological outcomes of experiment group A participants.

Each training session for the experiment group B participants included a 5 minutes warm-up period of breathing and flexibility exercises (Beebe & Smith, 2010), followed by 10 minutes of walking, 25 minutes of aerobic exercise (Beebe et. al., 2005) combined with strength (Vierto, Sainio, Koskinen et. al., 2009), balance and co-ordination exercises (Sullivan, Rosenbloom & Pfefferbaum, 2004) and a cool-down period of 10 minutes of breathing and relaxation exercises (Starkey, Deleone & Flannery, 1995). The intense walking was included as the easiest, safest, and most readily available physical activity that channels tension tendency for restlessness and wandering into a beneficial activity (Richardson, et. al., 2005). Apart from walking, all activities were different in each training session in an attempt to keep the interest of patients with schizophrenia and provide variability. Overall, the purpose was to provide a training program that fairly covers all aspects that constitute the general physical condition of each individual and takes moderate physical effort to perform, as perceived by participants (Faulkner, Cohn & Remington, 2006).

A formal sheet of goal achievement was held for each patient of the experiment group B in each exercise session and the same formal sheet was held for experiment group A recording only the number of tokens which they received in each exercise session.

In each exercise session, each participant of the exercise observation with tokens group (experiment group A) and the actual exercise with tokens group (experiment group B) had the opportunity to receive two tokens referred to as 'credit', that is, prior the beginning one token (a plastic coin) was awarded for being on time and at the end of the exercise session the second token (participation certificate) rewarded the consistency of patients to observe (experiment group A) or participate (experiment group B) the whole 45 minutes session required. All individuals were allowed to keep their tokens after exercise program. Furthermore, behaviours that required a response cost as a 'fine', were only in case of severe inappropriate behaviors (severe foul language, aggression, hitting or threatening someone, destroying property) resulting in the loss of all tokens of that particular day.

Following three sessions, only the individuals who gained 6 tokens had the right to receive a more significant (bigger) token as a bonus of their consistency and appropriate behavior. Number of smaller and bigger tokens provided throughout the program was gradually reduced without however being completely withdrawn in an attempt to ascertain whether individuals adopted the desirable behavior to be on time for exercise session not due to the reward given but due to their eagerness to observe (experiment group A) or to participate voluntarily (experiment group B) in the exercise session.

Instruments

The instrument selected and administered prior and after the exercise program by the researcher and the psychiatrist to all participants of three groups, was the following:

1)The Greek version of the Body-Cathexis Scale, a 38 item scale found to be highly reliable in Theodorakis, Doganis & Bagiatis (1991) study, was used to measure participants' attitudes towards the body and self in terms of physical fitness, total appearance, health and skills, face, body parts and teeth, age and hair,

pain resistance, appetite, hands and eyes and a total body satisfaction score. The items answered on a 5 point scale from a. "I feel very bad", b. "I feel bad", c. "I don't feel something", d. "I feel good", to e. "I feel very good" that refers to one's feelings and attitudes towards his/her body. The highest score means the greater satisfaction of the participants who took part in the exercise program.

2)The Rosenberg Self-Esteem Scale (Rosenberg, 1965) as used in its Greek version with high internal consistency found in Doganis, Theodorakis and Bagiatis (1991) study, measures overall self-esteem and personal worthlessness by asking the respondents to reflect on their current feelings prior and after application of the exercise program. Self-esteem scale includes 10 general statements with each item answered on a five point scale -from "strongly agree" to "strongly disagree" and a lower score reflecting higher self-esteem and assesses the degree to which respondents are satisfied with their lives and feel good about themselves.

Statistical Analysis

Statistical analysis included the use of Statistical Package of Social Sciences (SPSS 17.0). Cronbach's α reliability analysis was included to examine internal consistency of instrument's variables. Kolmogorov - Smirnov analysis was used to examine normality of sample distribution. The null distribution of this statistic K-S test is calculated under the null hypothesis that the samples are drawn from the same distribution (in the two-sample case). As regards the Body-Cathexis and Rosenberg Self-Esteem instruments was analysing the data for the calculation of averages and standard deviations. Pearson correlation analysis was used in order to examine the internal coherence between the factors of the questionnaires. Paired sample t-test analysis was used in order to examine possible differences within groups of participants in relation to body satisfaction and self-esteem at the beginning and at the end of the exercise program. Independent t-test analysis was used in order to examine possible differences between groups and one-way Anova analysis with Bonferroni adjustment was used to highlight the importance of differences in factors between groups (control group, experiment group A and experiment group B).

Results

Prior program application, no significant correlation between factors of both instruments was noticed (Table 1).

Table 1. Intercorrelation between factors in pre- measurements

Factors	1	2	3	4	5	6	7	8	9	10
1.Self esteem	-	.28	.11	.33	.14	.25	.9	.34	.51	.72
2.Physical condition		-	.78**	.64**	.78**	.59**	.71**	.51**	.63**	.89**
3.Total appearance			-	.48**	.79**	.64**	.64**	.44*	.33	.82**
4.Health &skills				-	.73**	.73**	.77**	.62**	.76**	.83**
5.Face					-	.69**	.88**	.63**	.61**	.92**
6.Body parts-teeth						-	.78**	.55**	.52**	.81**
7.Age-hair							-	.68**	.67**	.91**
8.Pain resistance								-	.37*	.69**
9.Appetite, hands, eyes									-	.71**
10. Total body cathexis										-

** . Correlation is significant at the 0.01 level.

* . Correlation is significant at the 0.05 level.

However, a positive linear correlation was noticed between factors of both instruments in post program measurements (Table 2).

Table 2. Intercorrelation between factors in post measurements

Factors	1	2	3	4	5	6	7	8	9	10
1.Self esteem	-	.16	.38*	.17	.31	.02	.33	.44*	.61**	.46**
2.Physical condition		-	.56**	.57**	.57**	.67**	.59**	.28	.67**	.86**
3.Total appearance			-	.33	.35	.31	.32	.19	.68**	.69**
4.Health &skills				-	.26	.52**	.53**	-.02	.52**	.62**
5.Face					-	.45*	.78**	.44*	.42*	.71**
6.Bodyparts-teeth						-	.70**	.20	.44*	.70**
7.Age hair							-	.30	.55**	.80**
8.Pain resistance								-	.38*	.46**
9. Appetite, hands, eyes									-	.86**
10. Total body cathexis										-

** . Correlation is significant at the 0.01 level.

* . Correlation is significant at the 0.05 level.

No statistically significant differences were revealed between groups in pre-test measurements. Additionally, Levene test of Homogeneity variances showed that no statistically significant differences were observed between groups in pre and post measurements (Table 3).

Table 3. Arithmetic means and standard deviations pre and post program measurement

Variables	Groups	1. pre-test		2. post-test	
		M	SD	M	SD
Self-esteem	a. Experiment group A	35.00	4.57	34.60	5.31
	b. Experiment group B	38.30	3.12	40.60	5.57
	c. Control Group	39.40	5.42	36.50	3.80
Physical condition	a. Experiment group A	28.90	8.46	28.20	5.95
	b. Experiment group B	33.00	4.13	32.40	4.30
	c. Control Group	30.60	5.62	28.30	4.62
Total appearance	a. Experiment group A	19.50	6.16	19.60	3.59
	b. Experiment group B	20.80	5.59	20.50	4.97
	c. Control Group	21.80	2.57	20.10	1.72
Health & Skills	a. Experiment group A	18.10	4.79	17.30	2.26
	b. Experiment group B	18.80	.789	19.00	2.00
	c. Control Group	20.60	2.75	16.30	3.05
Face	a. Experiment group A	14.30	3.94	14.50	1.78
	b. Experiment group B	15.40	2.06	15.20	2.15
	c. Control Group	16.50	1.35	14.70	1.63
Body parts & teeth	a. Experiment group A	12.20	3.29	13.10	3.60
	b. Experiment group B	13.10	1.91	13.70	1.94
	c. Control Group	15.60	1.89	15.20	1.13
Age & Hair	a. Experiment group A	14.40	3.95	13.50	3.10
	b. Experiment group B	15.60	2.41	14.60	2.31
	c. Control Group	16.80	2.30	16.30	2.11
Pain resistance	a. Experiment group A	10.20	3.12	9.90	2.02
	b. Experiment group B	10.20	2.15	9.60	1.95
	c. Control Group	10.90	2.51	10.50	2.06
Appetite, hands, eyes	a. Experiment group A	11.00	2.86	11.10	1.28
	b. Experiment group B	12.60	1.64	10.90	2.47
	c. Control Group	12.20	1.61	11.60	1.35
Total Body Cathexis	a. Experiment group A	128.60	33.29	127.20	20.10
	b. Experiment	139.50	13.94	135.90	18.30

group B					
c.	Control	145.00	17.20	133.00	10.97
Group					

Regarding experiment group A, no statistically significant differences using paired t-test analysis for all factors between pre-post measurements were noticed. Similar results were also observed for experiment B group, apart from 'age-hair' factor where a reduction in post measurement was observed. Post hoc t-test for independent samples revealed statistically significant differences in post measurements for 'self-esteem' and 'health skills' ($t=-2.34$, $df=15.51$, $p=.033$) between experiment group A and experiment group B in favour of experiment group B ($t=-2.22$, $df=18$, $p=.040$). A statistically significant difference in post-measurements was also noticed between experiment group A and control group in 'age-hair' factor ($t=.36$, $df=18$, $p=.030$).

As for the control group, paired t-test analysis between pre-post measurements showed a statistically significant reduction observed for 'self-esteem' ($p=.017$), 'physical fitness' ($p=.011$), 'total appearance' ($p=.006$), 'health and skills' ($p=.004$), 'face' ($p=.002$) and 'total body satisfaction score' ($p=.002$). No statistical significant differences ($p>.05$) were observed concerning the factors of body parts and teeth, age-hair, pain resistance and appetite, hands and eyes.

Discussion

The purpose of the study was to examine the effect of an exercise and token economy system program on improving psychological parameters of patients with schizophrenia in terms of body cathexis and self-esteem as perceived by participants, as well as the promotion of positive behavior towards exercise so as to minimize drop out risk. The study focused on how exercise improves psychological well-being of persons with schizophrenia considering the subjective feelings of what motivates or interests each individual to take part in physical activity as a very important part of their treatment (Grant, 2000).

Benefits of physical activity in promoting physical health of patients with schizophrenia is already well documented (Beebe et al., 2005; Vancampfort, Probst, Scheewe et al., 2011). The several symptoms of psychiatric disorders, such as lack of energy, general fatigue and low self-concept are related to poor physical health and condition and this can lead to a vicious cycle of loss of self-confidence and a decrease of physical and mental health levels. For this reason, the inclusion of intervention exercise programs as a part of treatment is highly recommended (Knapen et al., 2007).

Hence, exercise programs for persons with severe mental disorder should use physical activity as a mean to help patients pursue other areas of their lives which they perceive as meaningful for receiving enjoyment (Crone, 2007) and improving their body image (Racinet & Chevrollier, 1997). Increasing levels of physical activity and physical fitness consequently leads to appropriate psychosocial adjustment linked to body weight and image, self-value and physical well-being of each individual (Van de Vliet et al., 2002). Physical activity programs could help persons to adopt more healthy attitudes as part of their everyday routine so as to promote their psychological well-being and quality of life (Holley et al., 2011).

Post results between the three groups showed the positive effect of the physical activity program on improving parameters concerning self-esteem and psychological well-being of experiment group B participants, in agreement with mental health and psychological well-being benefits found in high-quality studies (Acil et al., 2008; Duraiswamy, Thirthalli, Nagendra & Gangadhar, 2007; Faulkner & Sparkes, 1999). In particular, experiment group B participants as compared to those of the experiment group A and control group participants reported at the end of the exercise program as feeling more energetic and with higher self-esteem, leading to an improved mental condition referring to less psychological distress and social limitations. Increasing positive feelings and reducing negative symptoms related to anxiety, depression and fatigue increases the possibility that individuals with psychosis will be more willing to engage socially, thus, decrease the burden on others and improve their psychological well-being (Brown, 1987; Hesso & Sorensen, 1982; Pelham, 1990). No differences were noted between experiment group A observing the exercise program and control group participants who neither participate nor observe any exercise session.

Regarding total cathexis score that refers to overall body satisfaction, no differences were observed between the two experiment groups A and B. However, post measurements showed that "health skills" variable which refers to hours of sleeping and "physical condition" was significantly improved for experiment group B participants. As a qualitative element, the phrase 'since I've started exercising I sleep better and I feel healthier' was frequently expressed by the individuals of the experiment group B during the exercise program.

As regards to Rosenberg Self-esteem scale, post measurements showed that experiment group B reported higher self-esteem with the completion of the exercise program compared to experiment group A. Interestingly enough, post results showed that control group reported a reduction not only in self-esteem but in most factors of the questionnaire. This finding suggests that the combination of common therapeutic treatments such as psychotherapy and medication does not necessarily leads to feelings of self-confidence and worth, especially in the case of patients who are long-time residents like those participating in this study. Quite clearly, benefits of physical activity for people with psychiatric disorders indicate that physical exercise should play a more active role in mental health care (McCormick et al., 2008; Lee et al., 2008).

Overall, it seems that the application of the token economy system was useful in motivating individuals to participate and minimize drop-outs during intervention. The fact that there were no drop-outs provided the opportunity to patients to continue participating in the program and helped benefits of psychological well-being and self-esteem to become evident.

Certainly, our study didn't focus on whether the use of extrinsic rewards is necessary to set the conditions under which internal motivation can develop (Park, Gibson, & McMichael, 2006). Future studies are needed to further explore whether combination of exercise and token economy procedures provide similar positive results of internal motivation to persons with schizophrenia (Silverstein, 2010). Moreover, since our study is the first which examine the body cathexis in this population, therefore future studies using larger samples are needed to further explore the effect of exercise on self -image and self-care of patients with schizophrenia.

The findings of this research indicated that physical activity interventions referring to people with mental disorders should incorporate behaviour strategies and procedures such as the token economy application in order to improve exercise habits as well as patients' perceptions towards physical activity as a mean to improve their self-esteem and care.

Importance for Physical Education

Physical education is an effective intervention method since it helps people with schizophrenia to deal with their psychological problems providing at the same time the possibility to accomplish their everyday activities with more energy, joy and willingness. Regular physical activity is a useful non-pharmaceutical approach compared to other therapies such as psychotherapy and medicine treatment that helps patients with schizophrenia to improve their quality of life, self-esteem and functionality level and provides motives to continue their treatment.

Importance for the Quality of Life

The combination of exercise and behavioristic techniques shows that it constitutes an effective behavior therapy for psychiatric disorders. The aim is to improve their exercise habits, experiences and perceptions of patients on physical activity as a mean to improve their quality of life, self-esteem and psychological well-being. Such combined treatment can reduce inappropriate behaviors and promote positive behaviors that will help people to develop creative personal experiences of participation and self-care.

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