

# A study to assess the effectiveness of planned exercise programme in patients with schizophrenia

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## Abstract

**Background:** Psychotic disorders are some of the most severe, chronic, and intractable psychiatric disorders. Schizophrenia is a common and unsolved mental health problem in the world today. Negative symptoms are those symptoms that tend to reflect diminution or loss of normal functions like apathy, anhedonia, alogia, avolition, affective flattening, or social isolation. Exercise is useful for the reduction of some of the negative symptoms of schizophrenia, depression, and anxiety, and also to reduce auditory hallucinations and improve sleep patterns, self-esteem, and general behaviour in people living with schizophrenia. Aim of the study was to assess the effectiveness of planned exercise programme in negative symptoms among patients with schizophrenia.

**Methodology:** A quasi experimental research design was used for this study. Total 60 samples were assigned into two groups with 30 in control group and 30 in experimental group. The data was collected by using structured socio-demographic proforma, Positive and Negative Syndrome Scale, and Scale for Assessment of Negative symptoms.

**Result:** There was a statistically significant difference in pre and post test scores in both control and experimental groups. But statistically significant difference in post test mean scores on negative symptoms between control and experimental groups indicated effectiveness of planned exercise programme along with medical and nursing care.

**Conclusion:** The findings concluded that planned exercise programme with routine medical and nursing care was effective in reduction of negative symptoms in schizophrenia patients.

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## Introduction

Psychotic disorders are some of the most severe, chronic, and intractable psychiatric disorders.[1] Schizophrenia is a common and unsolved mental health problem in the world today. It is perhaps the most enigmatic and tragic disease that psychiatrists treat, and perhaps also the most devastating, as no psychological disorder is more crippling than this disorder.[2] It is estimated that about one per

cent of population is, or has been affected by this disorder world over, including India.[3] According to the World (Mental) Health Report 2001, about 24 million people worldwide suffer from schizophrenia.[4] Late adolescence and early adulthood are peak years for the onset of schizophrenia.[5,6] The peak ages of onset are 15 to 20 years for men and 25 to 35 years for women.

In schizophrenia, the apparatus of the mind disintegrates severely and passively. In an individual suffering from schizophrenia, there are two sets of features: (i) the absence of certain functions or aspects of the mind which should be present in a normal individual - sometimes called negative symptoms, and (ii) the presence of certain phenomena which are not present in a normal individual and which probably represent a response of the healthy part of schizophrenia mind to the absent functions - sometimes called positive symptoms.[7] The most common of the positive symptoms are hallucinations, which are most frequently auditory; the person hears voices which can often be threatening and compelling. Delusions are false beliefs with no basis in reality, which are not amenable to reasoning. They can be persecutory, grandiose, somatic, or religious in nature. Schizophrenia can also cause the person to have loosening of association, concrete thinking, and have impaired verbal communication. Positive symptoms are more obvious to the observer as they tend to cause the person to act in a bizarre fashion. There is over attribution of emotions by schizophrenia patients with positive symptoms.[8] Negative symptoms are those symptoms that tend to reflect diminution or loss of normal functions like apathy, anhedonia, alogia, avolition, affective flattening, or social isolation.[9] Research suggested that the negative symptoms of schizophrenia, including problems with motivation, social withdrawal, diminished affective responsiveness, speech, and movement, contribute more to poor functional outcomes and quality of life (QOL) for individuals with schizophrenia than do positive symptoms.[10]

Exercise is the training of the body to improve its function and enhance its fitness. The terms exercise and physical activity are often used interchangeably. Exercise is a component of physical activity. The distinguishing characteristic of exercise is that it is a structured activity specifically planned to develop and maintain physical fitness. Physical conditioning refers to the development of physical fitness through the adaptation of the body and its various systems to an exercise programme.[11] Regular exercise can play an important role in improving the physical and mental wellbeing of individuals with schizophrenia.[12] Physical activity affects individuals' physical functions in a positive way, decrease morbidity risk of many illness, such as coronary heart disease, hypertension, stroke, type 2 dia-

betes, osteoporosis, obesity, and also contributes to many physical illness treatment.[13,14] Regular exercise programme had a positive effect on psychiatric disorders such as anxiety disorders, dementia, schizophrenia, somatoform disorders, and substance abuse. Studies of adult with schizophrenia have shown a moderate exercise programme reduced body mass index, improves aerobic fitness, raises self-esteem, and result in fewer psychiatric symptoms. Research studies focused on exercise as an adjunct treatment for schizophrenia,[15] and found that the exercise is useful for the reduction of some of the negative symptoms of schizophrenia, depression, and anxiety, and also reduce auditory hallucinations and improve sleep patterns, self-esteem, and general behaviour in people living with schizophrenia.

### *Review of literature*

**Negative symptoms in schizophrenia:** Shaker[16] conducted a study in 300 inpatients (150 males, 150 females) with an age ranging between 17-69 years diagnosed as chronic schizophrenia. The study results revealed that all those patients had negative symptoms, and the commonest one in male patients was poor self-care (83%), followed by marked apathy (66.7%); while in female patients, the commonest was non verbal communication (80%), followed by blunted affect (74%). The study concluded that the negative symptoms were very common in long stay patients with schizophrenia.

Bobes et al.[17] conducted a study aimed to analyse the prevalence of negative symptoms in antipsychotic-treated outpatients with schizophrenia spectrum disorders. The result showed that one or more negative symptoms were present in 57.6% of patients, with primary negative symptoms in 12.9% of subjects. The most frequent negative symptom items were social withdrawal (45.8%), emotional withdrawal (39.1%), poor rapport (35.8%), and blunted affect (33.1%). The study concluded that the prevalence of negative symptoms in patients treated with antipsychotics in daily clinical practice is considerably high.

**Effect of exercise therapy in schizophrenia:** A evaluative study was conducted by Acil et al.[18] to examine the effects of physical exercise to mental state and QOL in patients with schizophrenia. The study carried out with 30 inpatients or outpatients with schizophrenia, who were as-

signed randomly into aerobic exercise (n=15) and control (n=15) groups, participated to the study voluntarily. An aerobic exercise programme was applied to subject group for a period of ten weeks as three days in a week for 30-40 minutes. The results of the Scale for the Assessment of Negative Symptoms (SANS) showed an overall improvement in negative psychiatric symptoms after the exercise programme in the subject group. The subject group's overall difference of the SANS before/after mean values is statistically significant ( $p < 0.05$ ). The subject group showed a statistically significant decrease in emotional insensitivity, apathy, anhedonia, and attention subgroups ( $p < 0.05$ ), but not in the alogia subgroup ( $p > 0.05$ ). The finding recommended that mild to moderate aerobic exercise is an effective programme for decreasing psychiatric symptoms and for increasing QOL in patient with schizophrenia.

Baruah et al.[19] conducted a study aimed to find out the effectiveness of structured activity schedule for the patients with schizophrenia with negative symptoms. The content of activity schedule included supervised self-care activities, regular exercise for 15 minutes, followed by bathing, grooming, and prayer, routine medication intake monitoring, and thrice weekly demonstration/rehearsal of social skill intervention for schizophrenia patients with negative symptoms. The results indicate that after implementing the structured activity schedule in experimental group, the patient with schizophrenia has improvement in the level of negative symptoms.

Fogarty et al.[20] conducted a qualitative study to determine the impact of structured exercise programme on the physical and psychological wellbeing with long term diagnosis of schizophrenia. The study was done in a community care unit with six male volunteered participants having diagnosis of schizophrenia aged between 20-42 years. The exercise programme was developed by qualified exercise physiologist for duration of three months. The data was collected by focus group interview involving participants (n=six), exercise physiologist (n=two), and members of the nursing staff (n=four) who were involved in the implementation of the programme. The focus group was carried out by an experienced researcher who was not directly involved in developing or conducting the exercise programme and participants were asked to share the experience of the exercise programme. The focus group was tape recorded and

transcribed verbatim and data was analysed. The finding recommended that people experiencing a mental illness can participate in and benefit from physical exercise programme.

### Research methodology

The present study aimed to find out the effectiveness of planned exercise programme in patients with schizophrenia. A quasi experimental study design was adopted for this study. Population consists of entire patients with schizophrenia admitted to Lokapriya Gopinath Bordoloi Regional Institute of Mental Health (LGBRIMH), Tezpur, Assam, India with more than two years of illness duration. Total 60 patients were included for data collection, 30 each in control group and experimental group. The investigator used the purposive sampling technique to collect the samples. LGBRIMH is a tertiary mental health care institute.

### Inclusion criteria

1. Patient diagnosed as schizophrenia by psychiatrist as per the tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) diagnostic criteria.[21]
2. Both male and female
3. Age group between 18-42 years
4. Duration of illness more than two years
5. Patient showing negative score more than 20 in the Positive and Negative Syndrome Scale (PANSS)

### Exclusion criteria

1. Having diagnosed physical problem
2. Patient with active psychopathology

### Tools

To collect the socio-demographic data, a structured socio-demographic datasheet was used. To screen the negative symptoms, PANSS was applied. PANSS consists of a semi structured clinical interview and any available supporting clinical information such as hospital staff reports. There are 30 items which rate along a seven point continuum. Only one clinical domain of PANSS was used for screening the negative symptoms in patients with schizophrenia.[22] To assess the negative symptoms, SANS was used. SANS is a 25-item scale to evaluate the domains of the negative symptoms complex, including alogia, affective flattening, avolition-apathy, anhedonia-asociality, and attention.[23]

Planned exercise programme was prepared based on available literature on exercise for different illness for 30

minutes in a day for six days in a week for four weeks. Validity of the planned exercise programme was done by giving to five experts in the field physical education and in the mental health.

### Exercise module

Exercise module consists of chin to chest, head turns, head tilts, neck rotation, shoulder exercise, shoulder movement side to side, elbow bends, hand and finger exercise, finger to thumb touches, hip rotation, leg wide apart, opposite toe touching, ankle movement. After developing exercise module, it was validated by five experts including a physical instructor.[Appendix] Modifications were done as per the advice of experts. Planned exercise programme was implemented with the help of physical instructor.

### Data collection procedure

Data was collected after obtaining permission from ethical committee. Schizophrenia patients with negative symptoms in both groups were administered the tools SANS as a pre test after screening with PANSS within four days after admission. The patients in control group (30) were followed up on routine medical care (i.e. regular medication, psychosocial treatment) and nursing care for four weeks, and then the same tool, i.e. SANS was administered again.

Patients assigned in experimental group were provided with planned exercise programme following pre test apart from routine medical and nursing care for four weeks, and again the same tool was administered. The data was collected from the month of June till November 2012. The collected data were compiled in a master datasheet and analysis done by using Statistical Package for the Social Sciences (SPSS) version 18.

### Results

The findings from table 1 showed that majority of the sample in control group, i.e. 30.0% were 28-32 years of age group, whereas in experimental group the majority, i.e. 26.7% were in the age group of 18-22 years and 33-37 years of age. In both control and experimental groups, majority of the sample were male, i.e. 73.3%. In religion wise distribution, majority of sample in control group, i.e. 66.7% and experimental group, i.e. 76.7%, belonged to Hindu religion. In both control and experimental

groups, i.e. 40.0% and 43.3% were educated up to middle class level. It was evident that among the total number of samples, majority, i.e. 66.7% was unmarried both for control and experimental groups. In both groups, majority of the sample were unemployed both in control and experimental groups, i.e. 60% and 50%. The maximum number, i.e. 60% in control group were found to be suffering from illness more than five years and in experimental group, maximum number, i.e. 56.7% were suffering from illness for two to five years. Finally, majority of the patients (60% in control and 70% in experimental) were admitted for the first time to the hospital.

Table 2 showed significant difference between pre and post test negative symptoms in control group. It also showed statistically significance difference of pre and post test

Variables		Control group		Experimental group	
		N	%	N	%
Age	18-22 years	3	10.0%	8	26.7%
	23-27 years	8	26.7%	5	16.7%
	28-32 years	9	30.0%	7	23.3%
	33-37 years	6	20.0%	8	26.7%
	38-42 years	4	13.3%	2	6.7%
Gender	Male	22	73.3%	22	73.3%
	Female	8	26.7%	8	26.7%
Religion	Hindu	20	66.7%	23	76.7%
	Muslim	9	30.0%	6	20.0%
	Christian	1	3.3%	1	3.3%
Education	Illiterate	2	6.7%	4	13.3%
	Primary	3	10.0%	1	3.3%
	Middle	12	40.0%	13	43.3%
	Matriculation	3	10.0%	5	16.7%
	Higher secondary	8	26.7%	5	16.7%
	Graduate	2	6.7%	2	6.7%
Marital status	Married	10	33.3%	10	33.3%
	Unmarried	20	66.7%	20	66.7%
Occupation	Unemployed	18	60.0%	15	50.0%
	Cultivator	2	6.7%	1	3.3%
	Daily wage earner	2	6.7%	5	16.7%
	Service	1	3.3%	3	10.0%
	Business	3	10.0%	2	6.7%
	Housewife	4	13.3%	4	13.3%
Duration of illness	2-5 years	12	40.0%	17	56.7%
	>5 years	18	60.0%	13	43.3%
No. of admission	1st admission	18	60.0%	21	70.0%
	2nd admission	5	16.7%	7	23.3%
	3rd admission	4	13.3%	1	3.3%
	>3rd admission	3	10.0%	1	3.3%

**Table 2: Mean, standard deviation, and paired 't' test values of pre and post test scores of negative symptoms in control and experimental groups**

Group	Test	Mean±SD	t (df)	p value
Control	Pre test	78.800±15.541	15.72 (29)	0.00*
	Post test	45.966±14.859		
Experimental	Pre test	74.833±17.013	26.59 (29)	0.00*
	Post test	26.700±13.311		

t' 29=2.045, df=degree of freedom, \*=significant at 0.05 level  
SD=standard deviation

**Table 3: Mean, standard deviation, and independent 't' test values of pre and post test scores in control and experimental groups**

Test	Groups	Mean±SD	t' (df)	p value
Pre test	Control	78.800±15.541	0.943 (58)	0.350
	Experimental	74.833±17.013		
Post test	Control	45.967±14.859	5.290 (58)	0.00*
	Experimental	26.700±13.311		

SD=standard deviation, df=degree of freedom, \*=significant at 0.05 level

**Table 4: Chi square ( $\chi^2$ ) test between selected demographic variables and pre test level of SANS score**

Variables	$\chi^2$ value	df	Table value	Significant
<b>Age</b> 18-32 years 33-42 years	3.750	1	3.841	NS
<b>Sex</b> Male Female	0.326	1	3.841	NS
<b>Religion</b> Hindu Muslim and Christian	0.400	1	3.841	NS
<b>Education</b> Illiterate and Primary Middle and Matriculation HS and Graduate	1.271	2	5.991	NS
<b>Marital status</b> Married Unmarried	0.150	1	3.841	NS
<b>Occupation</b> Unemployed and Housewife Cultivator and Daily wage Service and Business	0.955	2	5.991	NS
<b>Duration of illness</b> 2-5 years >5 years	0.834	1	3.841	NS
<b>Number of admission</b> 1st admission 2nd and > admission	1.319	1	3.841	NS

SANS=the Scale for the Assessment of Negative Symptoms, df=degree of freedom, NS=not significant, HS=higher secondary

negative symptoms in experimental group.

Table 3 showed that there was no significance difference of pre test scores between control and experimental groups. The table also showed significant difference of post test scores of SANS between the groups.

Table 4 showed statistically no significant association ( $p>0.05$ ) between negative symptoms and selected socio-demographic variables.

## Discussion

The study intended to assess the effectiveness of planned exercise programme in patients with schizophrenia in terms of negative symptoms. Study result showed statistically significant difference between pre and post test negative symptoms score in control ( $t=15.72$ ,  $df=29$ ;  $p=0.00$ ). These observations were expected as the subjects were on routine treatment and nursing care. This also displayed a statistically significance difference of pre and post test negative symptoms score in the experimental group ( $t=26.59$ ,  $df=29$ ;  $p=0.00$ ) following planned exercises programme apart from routine treatment and nursing care. This observation indicated the effectiveness of planned exercise programme along with medical and nursing care. This finding is supported by findings of Baruah et al.[19]

Study result showed no statistically significant difference at pre test level between the groups ( $t=0.943$ ,  $df=58$ ;  $p=0.350$ ). It indicated similar nature of psychopathology in the groups. Further findings displayed significant difference in the post test scores between control and experimental groups ( $t=5.290$ ,  $df=58$ ;  $p=0.00$ ). This observation indicated the efficacy of planned exercise programme in patients with schizophrenia in terms of negative symptoms.

The result of the present study was consistent with the findings of a study done by Baruah et al.[19] on the effectiveness of the structured activity schedule on negative symptoms, where they have found significant difference between pre and post test mean scores in experimental group ( $t=4.71$ ,  $df=49$ ;  $p=0.00$ ). Again, significant statistical difference in post test mean scores of experimental and control groups ( $t=2.5$ ,  $df=98$ ;  $p=0.014$ ) has indicated the effectiveness of the structured activity schedule on negative symptoms. The study result recommended that structured activity schedule was effective in reduction

of negative symptoms.[19]

The study results support the findings of the study conducted by Acil et al.,[18] where the researchers found that the application of regular physical exercise practiced by patients with schizophrenia is a useful non-pharmacological

application to improve mental states and QOL. The present study results supported with the findings of the study conducted by Fogarty et al.,[20] where they found that persons with schizophrenia can participate in the exercise programme and benefit from it. The results of the present study have kept consistent with the findings of a study done by Marzolini et al.,[24] where they found that a group exercise programme for individuals with schizophrenia/schizoaffective disorder was feasible when implemented by a multidisciplinary team.

### Limitations

The sample size of the present study is very small. So, it cannot be generalised for all patients with schizophrenia. The time period for the intervention was very limited; the result may vary with the extended intervention period.

### Conclusion

The negative symptoms of schizophrenia nearly always presented in all chronic schizophrenia patients. Negative symptoms and limited functional recovery are major challenges in the care of patients with schizophrenia. Exercise has had a significant effect on decreasing negative symptoms. Present study has indicated the effectiveness of planned exercise programme with routine treatment and nursing care. The present study has a contribution to the nursing practice by providing an effective guideline for physical activity to improve negative symptoms in patients with schizophrenia at hospital settings.

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### References

1. Lalitha K. Mental health and psychiatric nursing: an Indian perspective. Bangalore: VMG Book House; 2007.
2. Townsend MC. Psychiatric/mental health nursing: concepts of care in evidence-based practice. 7th ed. F.A. Davis Company; 2012.
3. Schultz SH, North SW, Shields CG. Schizophrenia: a review. *Am Fam Physician*. 2007;75:1821-9.
4. Ahuja N. A short textbook of psychiatry. 7th ed. New Delhi: Jaypee Brothers Medical Publishers; 2011.
5. Tamminga CA, Buchanan RW, Gold JM. The role of negative symptoms and cognitive dysfunction in schizophrenia outcome. *Int Clin Psychopharmacol*. 1998;13 Suppl 3:S21-6.
6. Miller DD. Schizophrenia: its etiology and impact. *Pharmacotherapy*. 1996;16(1 Pt 2):2-5.
7. Howe G. Working with schizophrenia: a needs based approach. London: Jessica Kingsley; 1995.
8. Hazarika M. Social cognitive deficits and need for social cognitive remediation in schizophrenia. *Dysphrenia*. 2014;5:87-90.
9. Stuart GW, Laraia MT. Principles and practice of psychiatric nursing. 9th ed. St. Louis: Elsevier/Mosby; 2009.
10. McGrath J, Saha S, Welham J, El Saadi O, MacCauley C, Chant D. A systematic review of the incidence of schizophrenia: the distribution of rates and the influence of sex, urbanicity, migrant status and methodology. *BMC Med*. 2004;2:13.
11. Cooper KH. Exercise. *Encyclopaedia Britannica* [internet]. 2014 Aug 26 [cited 2014 Sep 3]. Available from: <http://www.britannica.com/EBchecked/topic/197976/exercise>
12. Górczynski P, Faulkner G. Exercise therapy for schizophrenia. *Cochrane Database Syst Rev*. 2010;(5):CD004412.
13. Pierce TW, Madden DJ, Siegel WC, Blumenthal JA. Effects of aerobic exercise on cognitive and psychosocial functioning in patients with mild hypertension. *Health Psychol*. 1993;12:286-91.
14. Schmitz N, Kruse J, Kugler J. The association between physical exercises and health-related quality of life in subjects with mental disorders: results from a cross-sectional survey. *Prev Med*. 2004;39:1200-7.
15. Holowachuk B, Hvidston E, Mitchell A, Richards R, Richmond M. Physical activity as an adjunct treatment for schizophrenia and related psychotic disorders: a systematic review [internet]. [cited 2014 Sep 3]. Available from: <https://circle.ubc.ca/bitstream/handle/2429/1453/05.pdf?sequence=1>
16. Shaker AS. Prevalence of negative symptoms in chronic long stay schizophrenic patients at Al-Rashad Mental Teaching Hospital. *The Iraqi Postgraduate Medical Journal* [serial online]. 2011;10(3):413-20 [cited 2014 Sep 3]. Available from: <http://www.iasj.net/iasj?func=fulltext&Id=42936>
17. Bobes J, Arango C, Garcia-Garcia M, Rejas J; CLAM-ORS Study Collaborative Group. Prevalence of negative symptoms in outpatients with schizophrenia spectrum disorders treated with antipsychotics in routine clinical practice: findings from the CLAMORS study. *J Clin Psychiatry*. 2010;71:280-6.
18. Acil AA, Dogan S, Dogan O. The effects of physical exercises to mental state and quality of life in patients with schizophrenia. *J Psychiatr Ment Health Nurs*. 2008;15:808-15.
19. Baruah A, Reddemma K, Ahmed N, Srinivasan A. A study on effectiveness of structured activity schedule on negative symptom of patients with schizophrenia. *Indian J*

Soc Psychiatry [serial online]. 2011;27(3-4):192-95 [2014 Sep 3]. Available from: <http://www.iasp.org.in/pdf/IJSP-2011-Vol%203-4.pdf>

20. Fogarty M, Happell B, Pinikahana J. The benefits of an exercise program for people with schizophrenia: a pilot study. *Psychiatr Rehabil J*. 2004;28:173-6.

21. World Health Organization. The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines. 10th rev. Geneva: World Health Organization; 1992.

22. Kay SR, Fiszbein A, Opler LA. The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophr Bull*. 1987;13:261-76.

23. Andreasen N. The scale for the assessment of negative symptoms (SANS). Iowa City, IA: University of Iowa; 1983.

24. Marzolini S, Jensen B, Melville P. Feasibility and effects of a group-based resistance and aerobic exercise program for individuals with severe schizophrenia: a multidisciplinary approach. *Ment Health Phys Act*. 2009;2:29-36.

## Appendix

### Validity of exercise module based of criteria checklist from five different validators

Sl. No.	Criteria	Agree		Disagree		Suggestion	Action taken
		F	Percentage	F	Percentage		
A	Selection of patient	5	100%	-	-		
B	Total duration of exercise	5	100%	-	-		
C	Types of exercise						
1	Chin-to-chest	5	100%	-	-		
2	Head turns	5	100%	-	-		
3	Head tilts	5	100%	-	-		
4	Neck rotation	5	100%	-	-		
5	Shoulder exercise	5	100%	-	-		
6	Shoulder movement, side to side	5	100%	-	-		
7	Elbow bends	5	100%	-	-		
8	Hand and finger exercises	5	100%	-	-		
9	Finger-to-thumb touches	5	100%	-	-		
10	Hip rotation	5	100%	-	-		
11	Leg wide apart	5	100%	-	-		
12	Opposite toe touching	5	100%	-	-		
13	Ankle movement:	5	100%	-	-		
14	Suggestion any other	<i>If possible to include meditation and yoga</i>				<i>Suggestion could not incorporated in view of time limit of the study</i>	