

Effects of Recreational Dance on the Attention Span and Quality of Life of Individuals with Autism Spectrum Disorders

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Abstract

Background/ Objectives: The aim of this study was to determine the effects of recreational dance on the attention span (AS) and quality of life (QoL) of individuals with autism spectrum disorders (ASDs).

Methods: Eighteen participants were recruited for this study. Both control and intervention groups participated in ball catching/throwing together for 30 minutes, with extra 30minutes sessions of recreational dance in the intervention group. Both attention span and QoL were measured using the manual stopwatch and the Quality of Life In Autism (QoLA) questionnaire, respectively before and after each treatment session.

Results: AS improved significantly in both groups but the intervention group had greater improvement (from $p=0.036$ to $p=0.004$).

Conclusion: Recreational dance is beneficial for individuals with ASDs.

Keywords: Autism spectrum disorders, Recreational dance, Attention span, Quality of life.

Introduction

Individuals with Autism Spectrum Disorders (ASDs) are faced with severe handicapping challenges which are characterized by delay and deviation in the development of social communications and interactions [1,2]. They are also known to exhibit a plethora of abnormal behaviours such as restlessness, poor attention span, and over-activity which often makes them unable to concentrate or stay focused on tasks or activities [3-5]. In recent studies, recreational dance, a form of physical activity has been proven to foster the reduction of atypical behaviours, as it physiologically modulates stereotyped actions through the release of specific neurotransmitters [6,7]. Physical activity has been viewed to have a vast beneficial effect on physical and mental health: affecting the central nervous system, circulatory system of the heart and the locomotor system improve psychological well-being and increase general fitness level, enhance cognition especially on aspects of acquired skills or memory abilities and maintenance of cognitive abilities [8-13]. It has been used for individuals with ASDs and has been proven to reduce stereotypic behaviors exhibited by these

individuals [14-16]. This study was therefore designed to examine the effects of recreational dance on the attention span and quality of life of individuals with autism spectrum disorders.

Methods

The study involved 18 individuals (males and females) diagnosed with ASDs under the age range of 8-29 years recruited from Children Development Centre (CDC), Surulere, Lagos State and was conducted at the national stadium and gym of the centre. This study excluded individuals with comorbidities such as HbSS, Epilepsy, visual impairment or hearing deformity, and those who consistently engaged in dance therapy prior to the start of the intervention program.

Procedure

The treatment session lasted for a total of 4 weeks with each session occurring 2days/ week making a total of 8 sessions. Individuals in the control and intervention groups participated in ball throwing/catching at the same time for a period of 30 minutes

while individuals in the intervention group had an extra session of recreational dance which started with a warm up session and ended with a cool down phase for another 30 minutes. Attention span was measured pre-and post- physical activity intervention for each of the 8 sessions in order to monitor the trend about sustainable improvement while QoL was measured pre- and post- once only (before the 1st session of physical activity and after the 8th session of physical activity). This was done to avoid placing burden on the class teachers (which were the caregivers in this study) and to make sure accurate information was obtained from them. However, it was relatively easier to take the pre- and post- measurement for each session of attention span without so much stress on the class teachers. Furthermore, different classroom activities were given e.g, picking match sticks and dropping into the box, stringing of beads, colouring of pictures, picking and dropping toys to assess their attention span too as some could not respond to picking matchsticks. During each session, attention span measurement was obtained using the one-on-one approach as much verbal encouragement and incentives such as candy was given to gain the cooperation of the participants to concentrate on the task as they are often distracted.

Attention Span

The task included 5-10 match boxes of which each participants were asked to pour out the matchsticks and then pick it one after the other into the match box. A simple demonstration was shown to each of the participants and attention span was measured using stopwatch in seconds; this commenced as soon as the participants

started the task and ended when the he became fully distracted that he either stood up or look away from the task and jumps to another activity.

Quality of Life (Qol)

This was assessed using the QoLA questionnaire. Caregivers were asked to rate each item based on their experiences before and after the overall treatment sessions of four weeks. Part A of the QoLA items could not be ascertained as the caregivers commented that the questions were subjective (only the individual with the ASDs symptoms can determine if he/she is satisfied and not another person) so, the total scores were based on the part B of the QoLA items.

Data Analysis

Statistical Package for Social Science (SPSS Inc., Chicago, Illinois, USA) 20.0 version for Windows package programme was used to perform data analysis. Demographic and quantitative data such as age, attention span was expressed as mean and standard deviation (SD). Pre and Post intervention scores for Attention span was analyzed using the paired t test at the level of significance of $p < 0.05$. Pre and Post intervention scores for Quality of life was analyzed using Mann-Whitney U Statistics at the level of significance of $p < 0.05$. Other demographic variables like sex, was analyzed using percentages and pie chart.

Results

The table 1-3 below showed the results from the analyzed data.

Table 1: Comparison of attention span within the control group

Sessions	Pre Mean \pm S	Post Mean \pm S	Difference (post-pre)	t-value	p-value
1	58.1 \pm 56.26	66.1 \pm 59.98	8.0 \pm 6.61	-3.628	0.007*
2	57.6 \pm 54.38	70.8 \pm 60.76	13.8 \pm 8.54	-5.050	0.001*
3	58.4 \pm 56.95	67.7 \pm 61.70	9.2 \pm 10.63	-2.603	0.031*
4	56.0 \pm 52.51	64.6 \pm 53.40	7.7 \pm 6.87	-3.593	0.007*
5	62.2 \pm 60.17	75.0 \pm 69.07	12.8 \pm 12.57	-3.050	0.016*
6	63.2 \pm 61.79	78.6 \pm 72.05	15.3 \pm 12.57	-3.657	0.006*
7	69.0 \pm 76.16	80.7 \pm 80.28	11.7 \pm 6.61	-5.292	0.001*
8	70.0 \pm 77.76	83.2 \pm 80.85	13.2 \pm 6.85	-5.789	0.000*

* Significant at $p < 0.05$

Table 2: Comparison of attention span measurement within the Intervention groups

	Pre Mean ± S	Post Mean ± S	Difference (post-pre)	t-value	p-value
1	143.0±108.50	177.3±140.10	34.3±40.96	-2.514	0.036*
2	134.2±108.64	183.4±148.24	44.8±45.68	-3.116	0.014*
3	168.4±127.36	224.8±169.70	56.3±51.14	-3.305	0.011*
4	173.8±136.83	221.2±176.03	44.7±51.48	-2.834	0.022*
5	162.1±115.95	211.7±149.50	49.9±40.41	-3.681	0.006*
6	174.4±137.02	221.7±165.50	47.2±33.91	-4.178	0.003*
7	168.2±120.59	210.2±148.28	42.0±34.80	-3.620	0.007*
8	175.0±123.08	229.1±156.40	54.1±40.87	-3.972	0.004*

* Significant at p<0.05

Table 3: Comparison of quality of life assessment before and after the treatment sessions of both groups

Assessment Sessions	Control Mean ± S	Intervention Mean ± S	u-value	p-value
Before	64.2±4.09	66.0±6.63	-0.532	0.595
After	64.1±4.65	66.8±5.43	-1.107	0.268

* Significant at p<0.05

Discussion

This study revealed significant improvements in the attention span of the intervention and control groups but there was no improvement in the quality-of-life variable.

It is important to note that both interventions (recreational dance and ball throwing/catching) brought about the improvement of attention span. However, intervention group whose treatment was recreational dance and ball throwing showed greater improvement than the control group whose treatment was ball throwing/catching only. This could be due to the fact that ball throwing/catching is a moderate physical activity while dancing is a vigorous physical activity and so, produces more effect. This assertion was supported by a study of Shane and Ilene, which reported that moderate and vigorous physical activity both have an effect on the increase of attention span but vigorous activity, specifically, have a greater effect on on-task behaviours, thereby increasing attention span in individuals with ASDs as it serves as a more fulfilling sensory experience [5]. The findings from this study is in agreement with a study carried out by, who reported that high intensity physical activity has more beneficial effect on individuals with ASDs than low intensity physical activity, this is as a result of more release of neurotransmitters in the grey-mater to activate the prefrontal and anterior cingulate cortices [17].

Recreational dance did not lead to any improvement of the quality of life (QoL) variable post-treatment session in the control and intervention group. This might have been due to the fact that QoL can be affected by other factors and not only by physical activity e.g., social life, satisfaction level, mood and this was supported by

the study of, who reported that there was no improvement in the overall quality of life of individuals with ASDs after participation in physical activity [18].

The results of this study has demonstrated that the use of recreational dance as a means of treatment in the ASDs participants was able to improve their attention span thereby enabled the participants to focus on a given task for a longer period of time. Nevertheless, the severity level of the ASDs symptoms of the individual was shown to affect the response to treatment, that is the more the severity, the less effective recreational dance can improve their attention span.

Furthermore, it is important to note that this study does not suggest that recreational dance alone is sufficient as a therapeutic measure for ASDs individuals as some of the participants were on medication like trigtetol, (which aids relaxation) but instead the incorporation of such activity may complement and/or enhance the effectiveness of other interventions or learning strategies.

Conclusion

Following the findings from this study, there was a statistically significant difference in the effect of recreational dance on the attention span of individuals with ASDs but no significant difference on the overall quality of life of individuals with ASDs.

The following recommendations were made:

1. Recreational dance programme should be incorporated into the treatment/ therapy of individuals with autism spectrum disorders.

2. Recreational dance program should be encouraged among individuals with autism spectrum disorders as they are found to be lover of art, music and diversity.
3. Caregivers (parents and teachers) of individuals with autism spectrum disorders should be educated on autism, management, and proper physical activity for the ASDs population.
4. These studies implicated those further studies should be carried out with the aim of finding means of improving the quality of life of individuals with autism spectrum disorders.

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