

Effects of Tai Chi and Reflexology on Selected Psychomotor Variables among Autistic Children

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Abstract

The purpose of this study was to find out the effects of Tai Chi and reflexology on selected psychomotor variables among autistic children. 45 autistic children (N = 45) were randomly selected for this study. The selected subjects were divided into three groups, namely, experimental group I to undergo Tai Chi training, experimental group II to undergo reflexology and third group was considered as control group, which did not undergo any special treatment. Pre and post tests were conducted on all the 45 children before and immediately after experimental treatments on selected psychomotor variables, static balance and dynamic balance. The differences between the initial and final scores of the selected dependent variables were considered as the effect of experimental treatments using statistical tool ANCOVA. Results proved that tai chi and reflexology for 12 weeks, significantly improved psychomotor variables, static balance and dynamic balance compared to control group at 0.05 level. Comparisons between the treatment groups proved that there was no significant difference on static balance and tai chi was found to be superior than reflexology on dynamic balance. It was concluded that tai chi can be better used than reflexology to improve selected psychomotor variables, static balance and dynamic balance among autistic children.

KEYWORDS: Autistic children, Tai Chi, Reflexology, Static Balance, Dynamic Balance

INTRODUCTION

Autism is a highly variable neuro-developmental disorder (Geschwind DH (2008) Autism children may be severely impaired in some respects but normal, or even superior, in others (Pinel JPG. (2011) The autism begin in early childhood and become established by age two or three years, (Rogers SJ (2009) and tend to continue through adulthood, although often in more muted form.(Rapin I, Tuchman RF (2008) Autism is distinguished not by a single symptom, but by a characteristic triad of symptoms: impairments in social interaction; impairments in communication; and restricted interests and repetitive behavior. Other aspects, such as atypical eating, are also common but are not essential for diagnosis (Filipek PA et al. (1999).

Children with high-functioning autism suffer from more intense and frequent loneliness compared to non-autistic peers, despite the common belief that children with autism prefer to be alone. Making and maintaining friendships often proves to be difficult for those with autism. For them, the quality of friendships, not the number of friends, predicts how lonely they feel. Functional friendships, such as those resulting in invitations to parties, may affect the quality of life more deeply.(Burgess AF, Gutstein

SE (2007)

Although many alternative therapies and interventions are available, few are supported by scientific studies. (Sigman M, Spence SJ, Wang AT (2006) Treatment approaches have little empirical support in quality-of-life contexts, and many programs focus on success measures that lack predictive validity and real-world relevance. (Burgess AF, Gutstein SE (2007)

Aim of Tai Chi is to foster a calm and tranquil mind, focused on the precise execution of these exercises. Learning to do them correctly provides a practical avenue for learning about such things as balance, alignment, fine-scale motor control, rhythm of movement, the genesis of movement from the body's vital center, and so on. Thus the practice of Tai Chi can in some measure contribute to being able to better stand, walk, move, run, etc. in other spheres of life as well. Many practitioners notice benefits in terms of correcting poor postural, alignment or movement patterns which can contribute to tension or injury. Furthermore the meditative nature of the exercises is calming and relaxing in and of itself (Adler PA, Roberts BL, 2006).

Reflexology is a science that deals with the principle that there are reflex areas in the feet and hands that correspond to all of the organs and systems in the body. (Mildred Carter (1969) Doing reflexology means more than working on the feet. It is actually working with the person, attempting to mobilize inner energies (physical and mental in conflation) in order to fight any imbalance in the system. Reflexology deals with the principle that there are reflex points on the hands and feet which correspond to all of the body's glands, organs and structures. By manipulating or applying specific pressure techniques to the different reflex points, it is possible to initiate healing in the corresponding area of the body. When illness or imbalances occur, the energy channels that flow through our bodies become blocked. A Reflexology treatment aims to destroy these blockages, allowing energy to flow freely again and restoring the body's natural balance and good health. (Judith Berger and Judith Sachs, 1997)

Bremer E, Crozier M and Lloyd M (2015) reviewed and demonstrated that exercise interventions consisting individually of jogging, horseback riding, martial arts, swimming or yoga/dance can result in improvements to numerous behavioural outcomes including stereotypic behaviours, social-emotional functioning, cognition and attention. Horseback riding and martial arts interventions may produce the greatest results with moderate to large effect sizes, respectively and suggested greater focus on early childhood and adolescence, to better understand the extent of the behavioural benefits that exercise may provide these populations. Weaver LL (2015) examined interventions addressing work, activities of daily living (ADLs), instrumental activities of daily living (IADLs), education, and sleep for people with autism spectrum disorder and suggested that daily yoga and brief exercise may improve classroom performance and behavior; group physical activities may assist with school readiness variables. Koenig KP, Buckley-Reen A, and Garg S. (2012) examined the effectiveness of the Get Ready to Learn (GRTL) classroom yoga program among children with autism spectrum disorders (ASD) and found students in the GRTL program showed significant decreases ($p < .05$) in teacher ratings of maladaptive behavior, as measured with the Aberrant

Behavior Checklist, compared with the control participants. Rosenblatt LE et al. (2011) assessed the therapeutic effect of a novel movement-based complementary and alternative medicine approach for children with an autism-spectrum disorder (ASD) found changes on the Behaviour Assessment System for Children (BASC-2), primarily for 5-12-year-old children. Further, the post-treatment scores on the A typicality scale of the BASC-2, which measures some of the core features of autism, changed significantly ($p=0.003$).

The theoretical foundations based on previous researches have found that Tai Chi can in some measure contribute to being able to better stand, walk, move, run, etc. in other spheres of life such as, correcting poor postural, alignment or movement patterns which can contribute to tension or injury. Reflexology treatment aims to destroy the blockages, allowing energy to flow freely again and restoring the body's natural balance and good health. A right exercise programme is the need for the benefit of autistic children, especially of their psychomotor variables, static balance and dynamic balance. In this research the investigator was interested to compare the influence of Tai Chi and reflexology on selected psychomotor variables among autistic children.

METHODOLOGY

Pre test post test design was used in this research. 45 autistic children ($N = 45$) were randomly selected for this study. The subjects who were selected for the study were leading purely sedentary life style. From the medical reports and other details of the subjects that the school possesses, the researcher was able to mark out the educable autistic children who acted as the subjects for the study. The selected subjects were divided into three groups, namely, experimental group I to undergo Tai Chi training, experimental group II to undergo reflexology and third group was considered as control group, which did not undergo any special treatment. Pre tests were conducted on all the 45 children before experimental treatments on selected psychomotor variables, static balance and dynamic balance. The experimental group underwent respective treatments for 12 weeks. Each subject was paired with non autistic exercise partners so that the subjects were well trained on the respective treatments. Immediately after completion of experimental period, post test scores were collected from all the 45 subjects, which formed the final scores on selected variables. The differences between the initial and final scores of the selected dependent variables were considered as the effect of experimental treatments. To test the statistical significance, the obtained initial and final scores were subjected to statistical treatment using ANCOVA.

RESULTS

Tab 1: EFFECTS OF TAI CHI AND REFLEXOLOGY ON SELECTED PSYCHOMOTOR VARIABLES AMONG AUTISTIC CHILDREN

Tests	MEANS OF			Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
	Tai Chi Group	Reflexology Group	Control Group					
RESULTS ON STATIC BALANCE								

Pre Test	8.63	8.89	9.02	Between	1.21	2	0.60	0.09
				Within	283.78	42	6.76	
Post Test	16.53	17.09	9.29	Between	567.91	2	283.96	12.19*
				Within	978.68	42	23.30	
Adjusted Post Test	16.87	17.01	9.02	Between	626.53	2	313.27	43.34*
				Within	296.37	41	7.23	
Mean Diff	7.90	8.19	0.27					
RESULTS ON DYNAMIC BALANCE								
Pre Test	22.40	23.47	21.53	Between	28.13	2	14.07	0.53
				Within	1121.07	42	26.69	
Post Test	26.73	25.20	21.20	Between	244.84	2	122.42	6.86*
				Within	749.73	42	17.85	
Adjusted Post Test	26.78	24.51	21.84	Between	182.18	2	91.09	16.97*
				Within	220.04	41	5.37	
Mean Diff	4.33	1.73	-0.33					

Table F-ratio at 0.05 level of confidence for 2 and 42 (df) =3.22, 2 and 41 (df) =3.23.

*Significant

Due to experimental treatments, namely, 12 weeks Tai Chi and reflexology psychomotor variables, static balance and dynamic balance were improved among autistic children as the obtained F value 43.34 and 16.97 were significant at 0.05 level. To test which of the two experimental groups was significantly better than the other post hoc analysis was made to compare the paired adjusted means and the results presented in Table II.

Tab II: Multiple Comparisons of Paired Adjusted Means and Scheffe's Post Hoc Analysis Results Among Tai Chi and Reflexology on Selected Psychomotor Variables

Variables	MEANS OF			MD	C.I Reqd
	Tai Chi Group	Reflexology Group	Control Group		
Static balance	16.87	17.01		0.15	2.50
	16.87		9.02	7.85*	2.50
		17.01	9.02	8.00*	2.50
Dynamic balance	26.78	24.51		2.27*	2.15
	26.78		21.84	4.94*	2.15
		24.51	21.84	2.67*	2.15

* Significant

DISCUSSIONS

Autistic children with varying degrees of functioning share common behavioral and psychomotor characteristics. A specially designed instructional approach with positive social attitude is necessary when dealing with this population. A social attitude of equality and acceptance plays a major role in their successful inclusion in society. (Aharoni H (2005). Keeping this in mind the investigator has experimented with Tai Chi and reflexology treatments on selected psychomotor variables, static balance and dynamic balance among this population. The experimental treatment was well followed by the subjects and the results presented in Tables I and II proved that Tai Chi and reflexology for 12 weeks, significantly improved psycho motor variables, static balance and dynamic balance compared to control group. The improvement was found to be significant at 0.05 level. Comparisons between the treatment groups proved that there was no significant difference on static balance and Tai Chi was found to be superior than reflexology on dynamic balance. The findings of this study were in agreement with the findings of Adler PA, Roberts BL, (2006) who reported Tai Chi contribute to being able to better stand, walk, move, run, etc.

CONCLUSION

The adaptation of Tai Chi and reflexology among autistic children along with paired non autistic exercise partners was well received by the subjects. The experimental treatments suggested may be followed by future researchers. It was concluded that the Tai Chi can be better used than reflexology to improve selected psychomotor variables, static balance and dynamic balance among autistic children.

REFERENCES

- Adler PA, Roberts BL. (2006) "The use of tai chi to improve health in older adults". **Orthopaedic Nursing**.25(2):122-126.
- Aharoni H (2005), "Adapted physical activities for the intellectually challenged adolescent: psychomotor characteristics and implications for programming and motor intervention.", **Int J Adolesc Med Health**. Jan-Mar;17(1):33-47
- Bremer E, Crozier M and Lloyd M (2015)., "A systematic review of the behavioural outcomes following exercise interventions for children and youth with autism spectrum disorder.", **Autism**. Jan 28.
- Burgess AF, Gutstein SE (2007). "Quality of life for people with autism: raising the standard for evaluating successful outcomes". **Child Adolesc Ment Health** 12 (2): 80–6
- Filipek PA et al. (1999)., "The screening and diagnosis of autistic spectrum disorders". **J Autism Dev Disord** 29(6): 439–84.
- Geschwind DH (2008). "Autism: many genes, common pathways?". **Cell** 135 (3): 391–5.
- Judith Berger and Judith Sachs (1997), **The A–Z Guide to Healing with Pressure**

Points, (New York: Lynn Sonberg Book Associates) 3.

Koenig KP, Buckley-Reen A, and Garg S. (2012), "Efficacy of the Get Ready to Learn yoga program among children with autism spectrum disorders: a pretest-posttest control group design.", **American Journal of Occupational Therapy**. Sep-Oct;66(5):538-46.

Mildred Carter (1969), **Helping Yourself with Foot Reflexology**, (West Nyack: Parker Publishing Company, Inc.) : IX.

Pinel JPG. (2011) **Biopsychology**. Boston, Massachusetts: Pearson; 2011

Rapin I, Tuchman RF (2008). "Autism: definition, neurobiology, screening, diagnosis". **Pediatr Clin North Am** 55 (5): 1129–46.

Rogers SJ (2009). "What are infant siblings teaching us about autism in infancy?". **Autism Res** 2 (3): 125–37

Rosenblatt LE et al. (2011), "Relaxation response-based yoga improves functioning in young children with autism: a pilot study.", **Journal of Alternative Complement Medicine**. Nov;17(11):1029-35.

Sigman M, Spence SJ, Wang AT (2006). "Autism from developmental and neuropsychological perspectives". **Annu Rev Clin Psychol** 2: 327–55.

Weaver LL (2015), "Effectiveness of Work, Activities of Daily Living, Education, and Sleep Interventions for People With Autism Spectrum Disorder: A Systematic Review.", **Am J Occup Ther**. Sep-Oct;69(5):6905180020p1-11