

**A Medical Qigong Methodology for Early Intervention in
Autism Spectrum Disorder: A Case Series**

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Running title: A Qigong Methodology for Autistic Children

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Abstract

A Medical Qigong protocol (Cignolini, 2002) was applied to a group of 8 autistic children under the age of 6. The children received Medical Qigong Massage twice weekly from the physician and daily Qigong Massage from the parents for a five week period, followed by daily parent massage for an additional four weeks. Standardized tests showed a decrease in autistic behaviors and increase in language development in all the children, as well as improvement in motor skills, sensory function and general health.

Keywords: qigong, early intervention, autism, autism spectrum disorder

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INTRODUCTION

Autism has been known to Western science for less than 60 years. It was first named by Kanner (1943), who used the term to describe children who were socially withdrawn and preoccupied with routine, and who had delays in spoken language. Today, the DSM IV diagnostic criteria for the illness require a developmental delay in the area of communication and social interaction with onset prior to age 3 years, as well as evidence of repetitive or stereotypic behavior patterns (American Psychiatric Association, 1994). Diagnosis is complicated by the wide range of clinical manifestations in each of the triad of impairments. Recently systematic assessment tools have been developed which allow clinicians to measure the degree of impairment, as well as deciding whether an individual passes a threshold for diagnosis (Schopler, *et al.*, 1998; Krug, *et al.*, 1980a). Until 20 years ago, autism was regarded as a rare illness of unknown etiology that was thought to be partly the consequence of a genetic disorder (Cook, 1998), but the recently confirmed sharp rise in prevalence in young children over the past 15 years (Department of Developmental Services, 1999) points to an environmental cause or causes acting between conception and 3 years of age (Byrd, 2002). The cause or causes are as yet unknown, but research and lay concern have focused on exposures, before or after birth to drugs, infections, heavy metals, and vaccinations (Radda, 2001). Subtypes of autism, including a regressive form which appears at 15-19 months have been identified

(Volkmar & Cohen, 1989) but the significance of these are also not clear. Autistic children have physiological abnormalities of digestion (Shattock *et al.*, 1990; Shattock & Lowden, 1991., Horvath *et al.* 1999, D'Eufemia *et al.*, 1996) , sleep (Klinger & Dawson, 1996), the immune system (Singh, 1996; Gupta, 2000) and the liver detoxification of certain chemical compounds (Waring, *et al.*, 1997; Alberti, *et al.*, 1999). Research into these is active and ongoing and may eventually provide clues to the cause, prevention and treatment of the illness.

Autism is a life-long illness, and no long-term drug therapy has been proven safe and effective in promoting language, communication and interaction (Volkmar, 2001) . Long term treatment of behavioral symptoms with tranquilizers has been found to have an excessive risk of brain damage (Campbell *et al.*, 1997). Some promising European studies using the gluten free/casein free diet for autistic children have noted improvement in their behaviors and diarrhea (Knivsber *et al.*, 2001).

Successful use of massage therapy or other touch therapies has been reported in a very few articles. General touch therapy was reported to improve parent-child interaction and child cooperation in one small study (Cullen and Barlow, 2002), and the Touch Research Institute at the University of Miami School of Medicine has reported positive results from other research using systematic daily massage on autistic children (c.f. Escalona, et al., 2001; Field, 2002). No model is suggested to explain these results, however.

Chinese Qigong massage is based on the principle of Chinese science (Needham, 1956) whereby *Qi*, translated as 'energy' or 'force', is considered the foundation of all existence, and matter is created and transformed by Qi. In human beings, Qi is

considered to be the foundation of all physiological events and phenomena as well as the basis of all pathological events. Qi, being a force or energy, expresses itself as motion and transformation. When the correct motion of Qi is disturbed, transformation also becomes disrupted causing illnesses eventually modifying the material structure of organs and tissues (Needham & Lu, 1980). Qigong, massage and acupuncture act by re-establishing the correct flow of Qi, which in turn can modify the material defects, eventually restoring normality.

Chinese Medicine conceptualizes disease differently from Western medicine, and there is no specific diagnosis in Chinese Medicine which corresponds precisely with the diagnosis of autism commonly accepted in the West. Nonetheless, children with autism fit into syndromes described by Chinese Medicine causing delay of speech and motor development. In Chinese Medicine, children are rarely treated with acupuncture; massage is considered the treatment modality of first choice. Conditions such as diarrhea, toothache, vomiting, abdominal pain, asthma, mental retardation, epilepsy, delay of speech and delay of motor development, and others respond to specific Chinese massage modalities (Nan, 1990).

Medical Qigong

Qigong has been an integral part of Chinese medicine since antiquity. There are three main branches of Qigong: Qigong exercises for health and longevity, martial arts Qigong, and Medical Qigong. Medical Qigong, administered by a trained Qigong master, has been the subject of modern scientific research in a number of hospitals in China since the 1980s. Chronic illnesses investigated have included cancer (Feng, 1988) and hypertension (Wang, *et al.*, 1990). There is little published in European languages on

Medical Qigong research on children: one study shows efficacy for short-sightedness (Xue, 1989) and another for bronchitis (Su, *et al.*, 1996). There are two studies on using Qigong to correct psychological abnormalities of school-aged children (Sato, 1992), and to increase children's intelligence (Liu, 1992). To the best of our knowledge, no research has been published regarding the use of Medical Qigong in the fields included in the Western diagnosis of autism.

Chinese Medicine and a Model for Autism

For Chinese Medicine, a developmental delay in the area of communication and social interaction and evidence of repetitive or stereotypic behavior patterns fit into a large classification of illnesses called “closure of the orifices”, “the orifices” being the term that corresponds to the Western cognitive sensory channels (Cignolini, 2002). The illness is explained as a partial or complete block of one or several of the sensory channels such that exteroceptive and proprioceptive sensory information cannot be properly received and processed. As a consequence, long term memory is not activated and learning is impaired. The distorted or excessive sensitivity of one or more of the sensory channels disturbs the normal flow of Qi, causing deficiencies or accumulations inside the head. These phenomena cause the many different hyper- and hypo-sensitivities that autistic children show in response to touch, pain, noise, taste, olfactory and visual stimuli. The abnormal behaviors of autism represent the child's response to this complex situation and are explained partly as an aversive or compensatory response to incoming sensory information, and partly as an emotional response to discomfort and difficulties in communication.

According to this model, treatment aims at removing the impairment to the flow of Qi in and out of the sensory channels. As the sensory impairments are removed, the child becomes aware of his/her environment, sensory information can be received and processed into short and long-term memory, and normal learning and development can resume or start anew. At the same time, the child's aversive behaviors in response to distorted sensory stimuli decrease and normal responses to touch, sound, taste etc. become possible.

A Medical Qigong Massage Protocol for Autistic Children

Dr. Anita Cignolini, having studied and observed the use of Medical Qigong for other conditions in China, devised an original Medical Qigong massage methodology to be used for young children with autism and related pathologies (Cignolini, 2002), and applied it to a number of children in her practice in Europe. To our knowledge, this was the first use of a Medical Qigong massage for children with the Western diagnosis of autism.

In the present protocol a physician trained in Chinese medicine gives a series of ten Medical Qigong massages to the child twice a week over a five week period. Concomitantly, the parents are asked to give the child the Qigong massage on a daily basis. After the physician has completed 5 weeks of Medical Qigong, the parents continue to give the child daily Qigong massage for an additional 4 weeks. Thus the protocol takes 9 weeks to complete.

The child's parents can be easily trained to perform the massage on their child, without having to be trained in the full range of Qigong massage. Chinese medicine considers that the parent and the child share the same Qi and have been exchanging it

since before birth. The parent-child bond is forged of thousands of touch, voice and feeling interactions and despite the sensory impairments, the child responds more readily to the parent than to any other person. Likewise, the parent is more than happy to be part of a treatment that can help their child. Because of this, Qigong massage given by the parents becomes very effective even though the parent has no prior experience in Qigong (Shao, 1994). The massage provided daily by the parent makes beneficial use of the parent-child bond, and augments the twice weekly treatment by the physician.

METHOD

Eight children under 6 years old received the Medical Qigong Protocol. Tests measuring autistic behavior, language and communication and motor skills were administered before and after the experimental period and the differences compared.

Selection Criteria

Children suitable for the study were identified by enrollment in the local Educational Services District for special services for autism. Letters about the study were sent to the parents, and interested respondents were screened by telephone interview. Of 22 respondents, 11 children met eligibility criteria for the study and were invited to participate. Three of the children had to be dropped because the parents consistently did not bring the children for scheduled treatment.

Eligibility criteria for the study were as follows:

1. Formal diagnosis of uncomplicated autism by DSM IV criteria. Children with other medical conditions such as cerebral palsy or seizures were excluded,
2. Age less than 6 years, and

3. Willingness of the parent not to initiate any new treatments while the study was underway.

Participants

The eight children who completed the study were between the ages of 3 and 6. The mean age for the children at the start was 52 months (range 39-66). All eight children were diagnosed with autism by DSM IV criteria. Of the eight, four had the regressive form of autism. No children had other siblings with autism. Seven children had sensory disturbances, five had chronic diarrhea and three had sleep disturbances. There were 7 males and 1 female. See Table 1 below.

Table 1
Description of Children

Child	Age in months	Gender	Diagnosis	Sensory abnormality	Diarrhea	Poor Sleep
1	66	M	autism	Y	Y	Y
2	45	M	autism-R	Y	Y	N
3	40	F	autism-R	Y	N	Y
4	45	M	autism	Y	Y	Y
5	44	M	autism	Y	N	N
6	59	M	autism	Y	N	N
7	59	M	autism-R	Y	Y	N
8	54	M	autism-R	N	Y	N

Age of child is at start of study.

"autism-R" indicates regressive form of autism

Evaluation and Testing

A combination of 4 behavioral tests, 2 parent questionnaires and the physician's evaluation was used to evaluate the children before and after the treatment series. Of

particular interest were autistic behaviors, language development, social interaction, motor skills, sensory abnormalities, diarrhea and sleep.

An initial 90 minute evaluation and observation of each child was done by the authors, at which time the child's history and past medical evaluations were reviewed, the child was examined, a Chinese medical diagnosis was ascertained and further information was provided to the parents and any questions answered. Parents of the children who participated signed an informed consent.

In addition to abnormalities of language and social interaction, a large proportion of autistic children experience severe diarrhea and markedly abnormal sleep patterns from birth. Because we felt that these conditions could aggravate the autism, we were also interested to observe the effect of the protocol on those children with diarrhea and sleep disturbances. Parent questionnaires administered both before and at the end of the study asked about any abnormalities in sleep, diarrhea, sensory abnormalities, social development, language, motor skills and autistic behaviors.

The testing was done by an independent autism specialist/speech pathologist and by an occupational therapist in the children's homes. The home was selected as the testing site to minimize the difficulty that autistic children have in accommodating to new people, tasks and settings.

Two autism rating scales were used to assess overall severity of autism: the Childhood Autism Rating Scale (CARS) (Schopler, Reichler & Renner, 1988) and the Autism Behavior Checklist (ABC) (Krug *et al.* 1980a, Krug *et al.* 1980b). Social and language development was measured by the Rossetti Infant-Toddler Language Scale (Rossetti, 1990) and in cases where the child's language exceeded the norms for the

Rossetti, the Preschool Language Scale (PLS-3) was administered (Zimmerman, *et al.*, 1992). Motor development was measured with the Peabody Motor Scales (Folio & Fewell, 2000).

The Childhood Autism Rating Scale is a standardized 15-item behavioral rating scale developed to identify children with autism and intended for use by trained professionals. It is intended primarily as a diagnostic tool to distinguish autistic children from developmentally handicapped children without the autism syndrome and is relatively insensitive as a measure of progress. The severity of autistic symptoms is rated on a scale from 15 to 60:

<30	not autistic
30-37	mildly/moderately autistic
>37-60	severely autistic

The Autism Behavior Checklist is a checklist of non-adaptive behaviors, capable of providing a general picture of how an individual “looks” in comparison with others and yields an overall score as well as five separate subscales. Only the total score was used for this study. Information was obtained by a parent questionnaire given by a trained examiner. The ABC is sensitive as a measure of a child’s progress or development.

Categories are as follows:

<54	not autistic
54-67	borderline
above 67	high probability for autism

Several authors have evaluated the reliability and validity of the ABC. While there is some question regarding appropriate cut-off scores and the construct validity of

the individual subscales proposed by the instrument's authors, the overall measure is accepted as a valid measure of autistic behavior (Krug *et al.* 1980a; Krug *et al.*, 1980b; Miranda-Linné & Melin, 1997; Miranda-Linné & Melin, 2002; Volkmar *et al.* 1988; Wadden *et al.*, 1991).

The Rossetti Infant-Toddler Language Scale is a criterion-standardized instrument designed to assess the language skills of children from birth through 36 months of age. It assesses preverbal and verbal areas of communication and interaction on six categories. Each category is scored up to a maximum age equivalent level (ranging from 18 to 36 months) beyond which further development is not measured. It is also suited to measure older children who are developmentally delayed and have language and interaction skills younger than 36 months. Some of the children in the study exceeded the norms measured by the Rossetti, and in these cases, we used a language assessment instrument that is designed for older pre-school children, the PLS-3. The PLS-3 Preschool Language Scale is a standardized instrument measuring auditory and expressive communication that is valid up to the age of 6.

The Peabody Developmental Motor Scale is a standardized test evaluating gross and fine motor skills for children from birth through 6 years. Six subtests measure interrelated motor abilities. The test records a child's age equivalents and can be used to display the child's performance to determine strengths, weaknesses and progress.

All four tests were administered to each child at the beginning of the study, and after the child had completed the nine-week treatment period.

Treatment

Following initial testing, the children were given their first Medical Qigong massage treatment in the medical clinic, and the parents were given oral and written instruction in the specific Qigong massage to be used in this procedure. At that time, they confirmed their commitment to giving the treatment to their child at home each day.

The parents then brought the child to the medical clinic twice a week for five weeks, to receive a total of 10 treatments by the principal author. After the end of five weeks, the parents continued to give the Qigong massage each day for an additional four weeks. Nine to 10 weeks after the start of the treatment, each child was post-tested in their home by the same autism specialist/speech pathologist and occupational therapist.

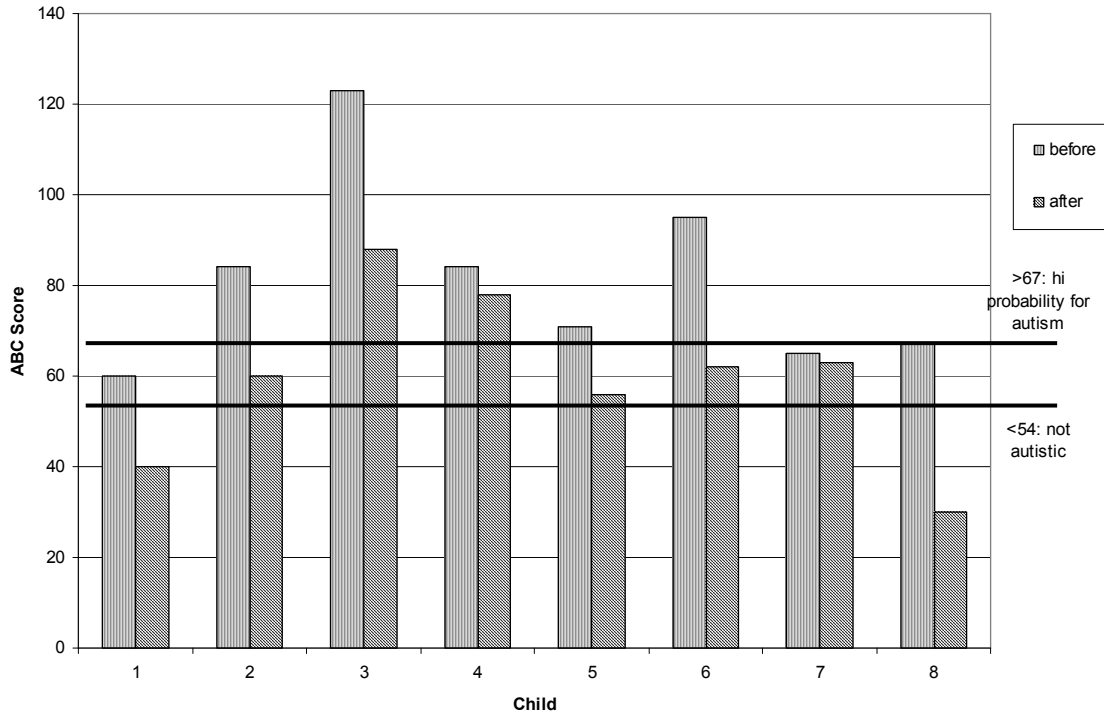
The interval between pre and post testing for the first 5 children was 10 weeks. Parent scheduling changes after the initial evaluation caused the pre-post test interval for child 6 to be 5.5 months, child 7 to be 4 months, and child 8 to be 5 months.

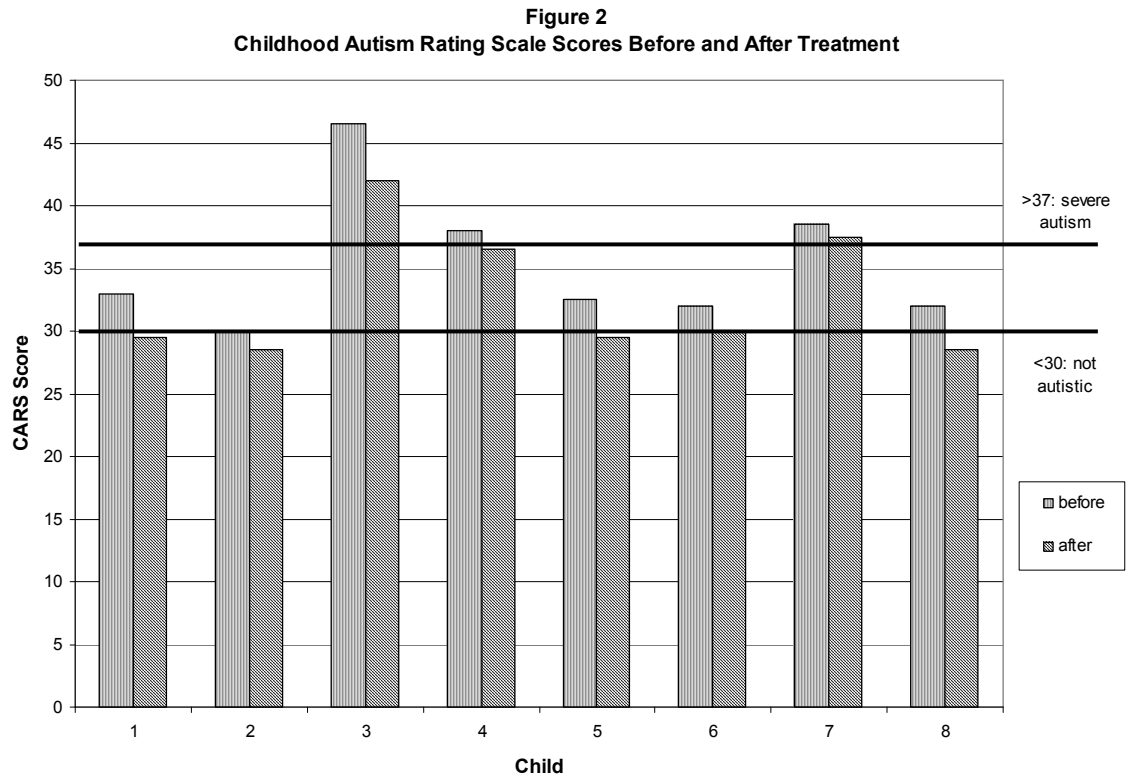
After the post-testing was completed a final visit was held with the parents and child to discuss the results of the testing with the parents, and to administer the post-study parent questionnaire.

RESULTS

All eight children had lower (less autistic) scores on both the CARS and ABC scales after treatment. On the ABC, 3 children dropped from the high probability range to the borderline range, and two children dropped from the borderline range to the non-autistic range (Figure 1). For the CARS, 4 children dropped from the moderately autistic to the non-autistic range, and one from the severely to moderately autistic range (Figure 2). Differences were statistically significant: Paired sample t-test for ABC $t(d.f.=7) = 4.60, p < .001$; for CARS $t(d.f.=7) = 5.86, p < .001$.

Figure 1
Autism Behavior Checklist Scores Before and After Treatment





Valid before and after scores are available on the two language scales for all eight children. On these scales 7 out of 8 children advanced their prior level of language comprehension or expression, and one remained the same. The average improvement was 5.5 months in language comprehension and 4.4 months in language expression (see Table 2).

Because all of the children had delayed or arrested language development when first evaluated (average language delay 30 months), and might be expected to show little or no development over the study period, we were interested to see whether there was no change in language development, a resumption of language development consistent with the number of months elapsed, or an acceleration or “catch-up” in language development.

Three children showed a normal rate of development, remarkable because for two of them this meant that they began to respond to their name and say their first words.

Four children showed an accelerated rate of language acquisition, and one had no change.

Three of the children initially scored at the upper limit of discrimination on the Rosetti subscale of interaction/attachment (15-18 months), of the five remaining, three showed a three month or greater growth, and two tested the same. Pragmatics and gesture subscales had limited value as over half the children exceeded the upper limit of sensitivity for the subscale.

Table 2
Rosetti Infant-Toddler Language Scores Before and After Treatment

scale:		Interaction - Attachment		Language Comprehension		Language Expression		Pre-post test interval
child	start age	before	after	before	after	before	after	
1	66	5	17	32	32	26	35	2.5mo
2	45	17=max		25	34	25	26	2.5mo
3	40	2	5	2	5	2	8	2.5mo
4	45	5	5	2	5	2	2	2.5mo
5	44	17=max		26	26	20	20	2.5mo
6	59	8	8	39	50	37	41	5.5mo
7	59	5	8	23	29	8	20	4mo
8	54	17=max		8	20	26	29	5mo
Average (N=8)				19.6	25.1	18.3	22.6	
Average change				5.5		4.4		

Notes: (1) Scale scores are given as age-equivalence levels in 3-month ranges (e.g. 3-6 months), and recorded here as the mid-point of that range (e.g. 5 months)

(2) Child 2 and child 6 exceeded the Rosetti scores in Language Comprehension and Language Expression, thus PLS-3 scores for Auditory Comprehension and Expressive Communication are reported for those cells.

With regard to the Peabody Motor Skills measures, one child was uncooperative at the final test, thus comparison is available only for seven of the children. Of these, six made more than three months progress on the Stationary scale, and three made more than

three months progress on the Locomotion scale, with another three making two months progress. Four made more than 3 months progress on Object Manipulation (and one made 3 months progress) while four also made more than three months progress on Visual-Motor Integration (and the other 3 made 2 to 3 months progress).

Table 3
Peabody Developmental Motor Skills Inventory Before and After Treatment

child	scale: start age	Stationary		Locomotion		Obj Manipulation		Grasping		Visual-Motor Integr	
		before	after	before	after	before	after	before	after	before	after
1	66	18	46	31	50	19	43	20	20	24	50
2	45	35	41	40	42	33	39	40	46	28	31
3	40	9	14	18	19	26	30	20	20	20	23
4	45	18	18	19	21	25	25	34	34	10	12
5	44	21	na	23	na	24	na	40	na	12	na
6	59	55	71	38	57	32	32	34	37	43	48
7	59	33	41	37	49	39	66	47	43	46	57
8	54	11	35	30	32	36	39	55	55	37	43
Average (N=7)		25.6	38.0	30.4	38.6	30.0	39.1	35.7	36.4	29.7	37.7
Average change		12.4		8.1		9.1		0.7		8.0	

Note: Scores are given as age-equivalence level in months.

Table 3 shows these scores. On four of the five scales, the children's average improvement was between 8 and 12 months. Only the Grasping measure did not change.

Finally, improvements were also reported by parent questionnaire with regard to sensory abnormalities, sleep and digestive disturbances. Of the seven children with sensory abnormalities, the parents rated 3 as markedly improved and 4 as slightly improved. The principal author agrees with these evaluations based on her observations of the children's response to the Qigong massage. Of the 5 children who had diarrhea, parents reported that 3 showed mild improvement and 2 showed marked improvement. Intriguingly, the two children with marked improvement in their diarrhea were the same

two who dropped into the non-autistic range on both their CARS and ABC by the end of the study. Of the three children with poor sleep, parents reported that one showed mild improvement and two showed marked improvement.

DISCUSSION

All the children in this trial showed a reduction in autistic behaviors as well as an increase in markers of normal social, language and motor development. The change was small for some children, but pronounced for others. In addition, the children who had associated diagnoses of sensory abnormality, chronic diarrhea and poor sleep showed improvement of their sleep and bowel function by parent questionnaire. These results suggest that this Qigong massage methodology may represent a promising form of treatment for autism and for the secondary diagnoses that can influence the severity and course of the illness.

This clinical report is based on a small number of children, without the opportunity for a control group comparison. Nonetheless, a sudden improvement in language, social and motor development is not a common characteristic of the natural history of autism, and the positive response shown by all the children is therefore promising. A larger, controlled study is planned for 2004 to test these findings and to more specifically delineate sensory abnormalities and their response to treatment. Other questions to be addressed include whether repeating the treatment after an interval brings further improvement, and whether the effects of the Qigong massage persist after treatment is ended.

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