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# THE IMPACT OF KYNOTHERAPY IN HANDICAPPED CHILDREN

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## SUMMARY

### Background

*Therapy using a dog and a specially trained guide (kynotherapy) makes use of a new form of interaction, intended to improve functionality in disabled patients. This form of work is especially useful in children with intellectual and motor disabilities, and complements traditional methods of rehabilitation.*

### Material/ Methods:

*The research group consisted of 8 handicapped children, who were taking part in sessions throughout the school year. During this time, the person conducting the sessions kept a daily record book, noting all changes in the participant's behavior as a result of the sessions. Additionally, a numerical measurement of the children's behavior was taken before and after therapy, by means of the Scale of Observation of the Behavior of Children and Parents.*

### Results:

*The results showed a considerable improvement in the children's behavior in all aspects studied: emotional, motor, cognitive, and social.*

### Conclusions:

*This research documented the utility of kynotherapy as a method to support the development of children with intellectual and motor disabilities. It also showed prospects for further study.*

**Key words:** *intellectual disability, motor disability, dog, rehabilitation*

## INTRODUCTION

This article is a summary of several years of interaction between handicapped children and dogs acting as “therapists.” Therapy that uses animals has earned respect in many countries, including Poland, as a method to support the rehabilitation of handicapped persons, as well as persons suffering from old age or loneliness. For a long time animals have served, and still continue to serve, a therapeutic function. This task is carried out not only by horses (hippotherapy), but also by dogs (kynotherapy). The image of a dog licking wounds or guiding sightless people is widely known. One of the most beautiful pieces of art that presents a dog serving as a therapist comforting a person is a picture painted by Piero di Cosimo (1462-1521), presenting a dying nymph being wept over by a satyr and a dog (National Gallery, London). A dog-therapist can also be observed on another picture by Diego Velazquez (1599-1660), entitled “Court ladies”. The picture shows the newly-born Queen Margaret among a gathering of courtiers. In the foreground a dog can be seen lying at the feet of a handicapped lady (Museo de Prado, Madrid).

The idea of using dogs in therapy was greatly influenced by the views of renowned therapists and scientists. In 1937 the daughter of Sigmund Freud, Anna Freud, pointed out that in the relation between dog and man there is a similarity about the processes of emotional understanding. Also Freud himself, together with Carl Jung, when working with mentally ill persons, noticed that spending time with animals induced projective mechanisms and positive emotions in patients. In Jung’s therapy, animals and their symbols created a pretext for the interpretation of archetypal contents. In 1942, Kris and Bellac, creating the *Children’s Apperception Test*, found that children form emotional bonds more easily with animals than with adults (Masgutova, 2004).

One of the first persons to describe the psychotherapeutic importance of rehabilitation with animals was a psychiatrist, Boris Levinson, who noticed that contact between one of his patients and a dog not only made it easier to communicate with the patient, but also improved and speeded up the process of therapy. Levinson also made interesting observations of the progress of autistic children who had the possibility of contact with their dogs. Therapy that uses animals was called by Levinson “pet therapy.” He supposed that direct contact of humans with animals contributes to gaining emotional balance, and also enables the individual to fulfill the primal necessity of sensitive contact (Levinson & Mallon, 1996). The meaning of such contact in a person’s development is emphasized by authors representing humanistic psychology. Bugental, in his excellent summary of the basics of humanistic psychology, points out that the very nature of a human being consists in her constantly being in relation to other people. Humanistic psychology always deals with the person in her interpersonal relations (Bugental, 1978). The problem of a person’s contact with the world was also one of main subjects of the thought of Professor Antoni Kepinski, who held that one’s relations with the

world are the foundation of one's personality: "The matter of emotional contact of the person with the environment, especially in the first years of life, plays an unquestionably essential role in the development of the personality also in mature life" (Kepinski, 1985). Persons suffering from various forms of disability are very frequently characterized by a weakened relation with surrounding reality. The use of "contact therapy" (kynotherapy is considered as such) helps to start communication with the environment. Sensitive contact - "a more basic and primal means of emotional communication than a word," enables our basic needs to be fulfilled (Kratochvil, 1988).

Two basic forms of conducting therapy sessions with a dog can be distinguished. The first is "therapeutic play," whose aim is to start touching and emotional contact with the dog-therapist. The second form of training is referred to as "effective co-operation," and is based on carrying out exercises with the dog to improve the health of the patient.

The following persons can benefit from pet therapy:

- persons with developmental disorders;
- the mentally disabled;
- those who have suffered illnesses or injuries leaving permanent damage in physical and mental functioning;
- those suffering from sight or hearing problems;
- the socially disadvantaged;
- lonely persons, living in senior care homes or hospices.

A correctly prepared and applied program of pet therapy can lead to obtaining the following results:

- reduced muscular tension;
- improved locomotive capacities;
- stimulation of motor efficiency;
- improved emotional-sensitivity;
- stimulation of mental development;
- broadening of verbal capabilities and correction of speech disorders;
- development of social capabilities;
- character development through taking responsibility for other participants in the training and the dog;
- increased motivation to perform rehabilitation exercises;
- increased self-esteem;
- easier contact with the animal and other participants;
- integration of the family circle with the person taking part in training;
- creating the possibility of play;
- creating a natural link with the world.

## **MATERIAL AND METHODS**

The goal of this research was to evaluate the effectiveness of therapy carried out with a dog, based on sessions supporting the development of chil-

dren with intellectual and motor handicaps. The participants in the therapeutic sessions were school children attending lower classes with a special education profile. The observation and research was done in two different classes, with a total of 8 children. "Direct" sessions were carried out by two persons and a dog: a dog-guide who was also a clinical psychologist, a supporting person (additional helper) and a dog-therapist. Also, two teachers and a speech therapist took part in these sessions. Kynotherapy was conducted in 2003-2004. The sessions took place once a week, and lasted 45 minutes for each class.

All the children participating in the kynotherapy sessions dog and research were suffering from intellectual and motor disability (including infantile cerebral palsy, Down's syndrome, and autism). Some of the children had not yet received a final diagnosis. The majority of the children showed mental impairment in a moderate degree, some in a considerable degree, some profound. Table 1, including the results of qualitative observations, shows the characteristics of each child.

Two kinds of effectiveness measurements were used. The first measurement was of a qualitative nature. Throughout the year a journal was kept, in which the behavior of the children in various therapeutic situations was noted. Most importantly, positive changes in the children's behavior were noted. The second measurement provided quantitative data. The Scale of Observation of the Behavior of Children and Parents (prepared by Marta Bogdanowicz) was used for this purpose. This scale consists of 4 sub-scales, assessing the development of cognitive, emotional, social and motor functions. Each sub-scale covers specific developmental aspects. Cognitive development takes into account:

- concentration;
- understanding of information received from other people and interest in communication;
- understanding of one's own body and environment;
- learning to carry out new tasks;
- a creative attitude.

Emotional development is understood as:

- mood;
- emotional expression;
- capability to relax;
- reacting to physical contact and caresses;
- reactions to difficult exercises and failures.

In the method being talked about, social development is expressed as the relation of the participant to:

- the training session;
- tasks;
- the group partner;
- other children in the group.

Motor development refers to:

- level of physical activity;
- motor capability;
- independence in carrying out motor exercises;
- control of movements;
- adapting one's motions to the task and to co-operation with the partner.

These scales were completed by the trainers (two persons), the classroom teacher, the supporting therapist, and the speech therapist, so that each child was described by 5 persons. Each of the children was assessed twice: before the first session (September 2003) and after completion of the training (June 2004).

When assessing changes in the behavior of the children taking part in pet therapy, it is necessary to consider how the sessions were carried out. Each session consisted of a series of exercises (adapted to the capabilities of the given child), intended to stimulate motor efficiency, produce an emotionally sensitive state of mind, and improve the social relations, communication skills, and cognitive abilities of the participants. The characteristics are shown in Table 2.

For ball play, a ball made of sponge was used; during exercises in leading the dog on a leash, the child held a secondary leash, and the guide held a "proper" leash; the patterns used for art works and short stories were prepared in view of the sessions to be carried out. The exact description of tasks, drawing patterns, and content of short stories have been elsewhere published by the present author (2005).

## **RESULTS**

As mentioned above, the effectiveness of the training sessions was measured in two ways: first, based on a daily record book written throughout the year, in which observations regarding the improvement of the children's behavior were registered, and secondly, changes in the children's behavior were assessed by means of the Scale of Observation of the Behavior of Children and Parents, before starting and after the completion of training sessions, that is, after the school year was over.

The results of the observations of the children are shown in Table 2.

Even simple statistics show differences in the various aspects of development of the children, before commencement and on completion of kynotherapy. The data included in Table 3 represent the average results obtained by the children before and after therapy in four scales of development.

The means given in Table 3 show that the teachers were able to see the positive influence of kynotherapy in every area of the children's development, especially in the emotional field.

Further statistical analysis made it possible to determine the statistical significance of the observed differences (before and after therapy). The test of signs was used for this purpose. The results are shown in Table 4.

Table 1. Characteristics of the individual program of kynotherapy

<b>Exercise type</b>	<b>Elements of the exercise</b>	<b>Area of impact</b>
Coming to the dog	Heeling, creeping,	Locomotion, emotional-sensitive, seeking courage (gaining confidence)
Leading the dog	Leading the dog on a leash, in a wheelchair or with the help of an adult; holding the leash; issuing commands to the dog and conversation with the dog	Locomotion, motor efficiency, exercising communicating skills, positive influence on self-esteem and confidence
Fetching a ball	Throwing a ball to the dog together with a command; retrieving, giving rewards to the dog	Motor efficiency, executing proper communicating skills, mood (having fun)
Playing with a leash and various accessories	Attaching and unfastening the leash, fastening the collar, tying ribbons on the neck, paws or tail, giving snacks, brushing the dog, buttoning and unbuttoning pockets (the dog wears a special garment, equipped with pockets with velcro tape)	Motor efficiency, mood capability of co-operation children
Lying with the dog	Placing the head on the dog, cuddling (frequently to the forehead).	Positive effects on mood, muscular tension (caressing, lying nearby, drowsing, loosening of palm muscles)
Conversation directed on development	Conversation with child by therapist, acquisition of knowledge: What color is the dog? What colors do you know? How many paws does it have? How high can you count? Where does the dog live? In what houses do other animals live? etc.	Communicative-cognitive area. Playing with a dog, children acquire new information and learn the correct forms of statements
Individual speech therapy exercises	Exercises based on correct breathing, articulation of syllables (saying elongated vowels, the same way the dog howls - "aaaaa", "uuuuu"), pronouncing difficult syllables (growling like a dog - "rrrrr"), differentiating similar sounds in Polish	Fluency, fullness and correctness of pronunciation
Playing with the dog	Playing hide-and-seek (the dog is searching for a hidden child; children on wheelchair are hidden below a blanket), throwing a ball to the dog and to other children	Emotional sensitivity and social relations
Artistic works in which the dog is depicted	Drawing a schematic figure of a dog by joining pre-defined points, drawing a dog by pattern, coloring a drawing depicting a dog, searching for the way in a labyrinth (a dog looks for its bowl), cutting pieces of paper – completing parts of a dog's body into the whole figure, counting with the dog (working material is a series of drawings, enabling a child to count dogs), spontaneous theme works	Motor efficiency, positive influence on functions of communication and cognition, stimulation of spontaneous creation and improvement of mood
Making up happy endings of short stories and fables about a dog	Listen carefully to this story and imagine the ending of it. Tell your version or draw it on a piece of paper. Short story titles: "A dog and thunderstorm," "Little Johnny and a dog," "The dream".	Stimulation of cognitive-sensitive and artistic functions, "unblocking" hidden fears and emotions, polishing motor functions



The results from Table 4 show that the differences in the children's behavior and development noticed by the teachers were statistically significant. In order to establish which aspects of development in individual dimensions were more receptive to the therapy, a Marginal Homogeneity (MH) Test was

Table 2. Changes in children's behavior after taking part kynotherapy for one year, on the basis of entries in the daily record book

Child's name	Child's characteristics before pet therapy	Changes in child's behavior on completion of therapy
Paweł (9 years old)	Down's syndrome, serious mental disability; too spontaneous, has concentration problems, troublemaker, unsocial, egoistically oriented, does not cooperate with others, stutters	Less emotionally tensioned, calmer, talks eagerly and asks questions, interested in the world, tries to behave nicely and remains in good relations with other children, stutters less frequently, correctly uses commands to the dog
Krysia (9 years old)	infantile cerebral palsy, serious mental disability; sad child, withdrawn, shows major problems with regulation of muscular tension, friendly towards children and teachers	Kynotherapy sessions revive Krysia and open up her mind to others; though moving only on a wheelchair, she fulfills all tasks. Has improved her grasp, so that when brushing the dog, she holds a brush correctly and is able to brush the dog's fur in the direction the grain; quite efficiently remembers various additional information that shows up during training sessions; seems to be better fit physically and her works of art are marked with a greater precision and accuracy
Paweł (11 years old)	infantile cerebral palsy, serious mental disability; serious personality disorder and behavioral problems (fits of anger and hysteria); naughty and vulgar, he was afraid of the dog and used to wash his hands after each contact with an animal	Is still reserved towards the dog, but has accepted contact with the animal, (even licking his hands, which he does not wash obsessively anymore); he learned to throw a ball to the dog (also using the "weaker" hand); he likes to watch the dog frolics, physical contact helps reduce muscular tension (lying on the dog's back relaxes him); more eagerly than before he participates in social life of his class
Łukasz (9 years old)	infantile cerebral palsy, moderate mental disability, charming child, balanced, well brought up, but very sad	The dog adores Łukasz and Łukasz loves the dog. Though confined to a wheelchair, he participates in all tasks. Cannot fasten the leash, but has learned to throw the ball very far; uses correct commands to the dog; asks many good questions; his vocabulary has increased a great deal, and above all he builds complex sentences, which he pronounces more and more correctly; he smiles a lot more
Daniel (9 years old)	Final medical diagnosis not completed (autism?); mentally disoriented to considerable degree, speech poorly developed (both parents are mute and deaf); gives the impression that he lives in his own world; very fearful	Started to notice the dog after a few weeks; at the beginning he used to caress the shape of the dog in the air, then, encouraged, he started to caress the dog's hair; presently he hugs the dog very tight and kisses him. Has started to talk, talks to the dog. During one of the sessions he sang aloud a popular tune about a dog. He still talks indistinctly, but shows the will to speak up publicly
Rafał (14 years old)	Down's syndrome, moderate mental disability; next year, will be in speech therapy; introverted, when he was a young child, his dog died and he used to spend whole days under the table afterwards; very lonely	Brightens up seeing the dog; wants to lead him on the leash constantly; has begun to talk. His first words were: "Trapper (dog's name), sit, go"

Table 2 (cont.). Changes in children's behavior after taking part kynotherapy for one year, on the basis of entries in the daily record book

Mariusz (10 years old)	Mentally disoriented to a moderate degree; very tense and aggressive towards others; outbursts of aggression, also directed at the dog; seems to be deeply wounded and unhappy	Contact with the dog therapist revealed the boy's fears and problems; he started to talk about them (especially about his difficult family situation); can be nice and polite; training sessions increased considerably his knowledge of the world; asks extraordinary questions
Paweł (14 years old)	Autism and profound mental disability; no emotional control; violent; lives in his own world	At first sight of the dog fell into an hysterical fit; with time he shortened the distance between himself and the dog and tried to caress him in the air; currently greets the dog by touching his forehead to the dog's forehead; also able to lie on the dog's back and drowse; during one of the sessions he learned to communicate about himself in first person singular

Table 3. Results for sub-scales of development (cognitive, emotional, social and motor development) of the tested children before and after therapy (mean, standard deviation, standard error of the mean)

Developmental sub-scales	Mean (N = 8)	Std. deviation	Std. Error Mean
Cognitive development			
Before	12.9375	3.45830	1.22269
after	15.8750	3.6921	1.30504
Emotional development			
Before	10.9375	3.17847	1.12376
after	15.7500	3.99106	1.41105
Social development			
Before	11.6429	4.40373	1.66445
after	14.4286	3.40867	1.28836
Motor development			
Before	12.9375	5.77208	2.04074
after	15.9375	4.84353	1.7124

Table 4. Development sub-scales before and after therapy: Sign Test

	Cognitive development	Social development	Emotional development	Motor development
Exact Sig. (2-tailed)	.008 (a)	.016 (a)	.016 (a)	.008 (a)

a. Binomial distribution used

b. Sign Test

performed (the test is an expanded version of the McNamara Test, and uses schedule chi squared). The results are shown in Table 5 (A-D).

The data in Table 5 (A-D) show that some of the development sub-scales were particularly sensitive to the therapy. The conclusion can be drawn from Table 5A that the greatest advantage in the area of cognitive development was



Table 5A. The impact of pet therapy on the children's cognitive development

	Cognitive develop- ment	Concentration	Understanding of and interest in communication	Knowledge of one's own body and environment	Learning to perform new tasks	Creative attitude
Distinct Values	12	5	8	5	4	7
Off- Diagona l Cases	103.500	12.000	11.000	12.000	15.000	8.500
Observed MH Statistic	115.250	15.250	12.250	13.750	19.000	10.000
Mean MH Statistic	4.562	1.250	.901	.901	1.581	.866
Std. Deviation of MH Statistic	-2.576	-2.600	-1.387	-1.941	-2.530	-1.732
Std. MH Statistic	.010	.009	.166	.052	.011	.083
Asymp. Sig. (2- tailed)						

Table 5B. The impact of pet therapy on the children's emotional development

	Emotional development	Mood	Expression of emotion	Capacity to relax	Reaction to direct contact	Creative attitude
Distinct Values	14	6	4	6	7	4
Off- Diagonal Cases	8	7	6	8	6	6
Observed MH Statistic	87.500	15.500	13.000	15.000	15.000	10.000
Mean MH Statistic	106.750	19.750	16.500	20.250	18.500	12.750
Std. Deviation of MH Statistic	7.207	1.677	1.500	1.953	1.541	1.146
Std. MH Statistic	-2.671	-2.534	-2.333	-2.689	-2.271	-2.400
Asymp. Sig. (2- tailed)	.008	.011	.020	.007	.023	.016

Table 5C. The effects of pet therapy on the children's social development

	Social development	Value of classes	Attitude to tasks	Relationship to partner in the pair	Attitude to other children	Relationship to the group and task
Distinct Values	10	6	5	5	5	3
Off-Diagonal Cases	8	7	8	3	4	3
Observed MH Statistic	81.500	13.500	13.000	5.500	9.000	3.000
Mean MH Statistic	91.250	17.500	16.250	7.250	11.500	5.500
Std. Deviation of MH Statistic	4.070	1.581	1.250	1.031	1.323	1.658
Std. MH Statistic	-2.396	-2.530	-2.600	-1.698	-1.890	-1.508
Asymp. Sig. (2-tailed)	.017	.011	.009	.090	.059	.0132

Table 5D. The impact of pet therapy on the children's motor development

	Motor development	Level of physical activity	Motor efficiency	Independent movement in the tasks	Control of movements and adaptation to action	Adaptation of movement, in cooperation with a partner
Distinct Values	12	7	7	6	6	5
Off-Diagonal Cases	7	4	6	5	6	4
Observed MH Statistic	80.500	7.000	14.000	9.500	11.500	8.500
Mean MH Statistic	92.500	9.250	16.500	11.750	14.500	10.500
Std. Deviation of MH Statistic	4.950	1.250	1.061	1.031	1.275	1.061
Std. MH Statistic	-2.424	-1.800	-2.357	-2.183	-2.353	-1.886
Asymp. Sig. (2-tailed)	.015	.072	.018	.029	.019	.059

noticed in the sub-scales for the understanding of information given by others and interest in communication. The next table, 5B, shows that for the participants in pet therapy, sensitive contact with the dog had the deepest meaning. Emotional contact created positive changes in the tension of all groups of muscles, particularly the palm muscles. The data given in Table 5C suggest that pet therapy caused the children to show a positive attitude toward the sessions, and the results contained in Table 5D reveal that the training sessions had a positive influence on the children's motor activity and efficiency.

The results shown so far indicate that sessions carried out as a supplementing therapy positively influenced the overall development of the participants.

## **DISCUSSION**

In the present study, a concept and program of pet therapy was described. The concept involves actions to support the development of children with intellectual and motor disabilities.

Results pertaining to the effects of training were shown. The effectiveness of kynotherapy, measured quantitatively and qualitatively, involved only 8 children; however, it should be pointed out that both observations and measurements were carried out in the same environment (a single institution), which was attended only by a small number of children at a given age. The journal (qualitative measurement) was kept systematically throughout the whole year, and presented a package of valuable observations and notes concerning changes in the children's behavior during kynotherapy.

The observations (qualitative data) revealed that the children participating in therapy in which a dog and its guide (a psychologist) took part made significant progress during this year. The behavior of the children changed due to training sessions. The children became more active and interested. They better co-operated in the group. They became more open-minded and relaxed. When engaged in physical contact with the dog, they became less strained, and the motor efficiency of children suffering from cerebral palsy clearly improved. Almost all the children were observed to make great progress in communication skills. For some of them, contact with the dog was a return to the world of speaking people.

When measurement scales were used, improvement was noted with regard to all measured functions: emotional, motor, cognitive and social.

The most sensitive sub-scales turned out to be:

- for emotional development – reaction to physical contact and caresses;
- for motor development – level of physical activity and motor efficiency;
- for cognitive development – understanding of information received from others and interest in communicating;
- for social development – attitude toward the sessions.

The results of the observations were therefore confirmed by quantitative measurement. The results obtained showed the positive influence of pet the-

rapy on the overall development of these handicapped children. The effects of the therapy suggest that further training with a dog may be helpful, and further research is indicated.

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