

# Effects of animal-assisted therapy on different ages and patients

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## Abstract

Animal-Assisted Therapy (AAT) is when an animal is used to work with a patient or patient with a therapeutic goal. In this study, different medical backgrounds were compared within an age group to see how effective AAT is as a therapy. The factors used to determine effectiveness were anxiety reduction, stress reduction, physical improvement, social improvement, self-care improvement, cardiovascular improvement, increase attention, control of emotions, decrease pain, increase motivation, blood pressure and heart rate improvement, and decrease in salivatory cortisol. Each study does not include all these factors. Some studies find a negative or no significant changes to the patients which are also recorded. AAT has been studied in children for various condition and seems to be very effective. AAT helps with mental disabilities in adult and can have short term improvement for pain and chronic illness. Most studies that have been done for elderly patients is for dementia and Alzheimer's disease and mostly improves factors associated with social behaviors.

*Keywords:* therapy, animal-assisted therapy

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## Background

Animal-Assisted Therapy is a category of Pet Therapy. Animal-Assisted Therapy (AAT) uses animals in a clinical setting to help a patient while having a therapeutic goal in mind. Animal-Assisted Activity (AAA) is in a casual setting where a group interacts with the animals with no therapeutic goal in mind. This study will focus on Animal-Assisted Therapy. The term "Pet Therapy" was first use in the 1960's by Dr. Boris Levinson, American Child Psychiatrist.. He is accredited with being the first to do scientific research on the effects of Pet Therapy on patients, but animals being used to help people can be traced back to the 1700's. In 1961, he started documenting his observations on how a dog's presence affects a child and how it can be used to initiate communication. The dog's presence seems to calm the child (Hooker et al. 2002). In this relaxed environment, the child can open up and therapy can then be more affective. Later studies looked at how the animal's presence can affect mental, emotional, and physical recovery.

## Methods

Three age groups were used to analysis results, children and adolescents, adults, and elderly. Children range in age from 3 to 18. Adults range in age from 18 to 60, though most are middle-aged. Elderly range in age from 58 to 99. Within these groups, different conditions were looked some in a clinical setting. Some of the conditions were mental disabilities, chronic illness, chronic pain, and post-surgery. In each study, certain factors were looked at to see how affective AAT was for the patient or patients. These factors were taken to be complied in comparable tables within each age group. The factors recorded for the studies: anxiety reduction, stress reduction, physical improvement, social improvement, self-care improvement, cardiovascular improvement, increase attention, control of emotions, decrease pain, increase motivation, blood pressure and heart rate improvement, and decrease in salivatory cortisol. Each study does not include all these factors. Some studies found a negative or no significant changes to the patients which are also recorded.

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## Results

### Children and Adolescents

Table 1. Results of 10 experimental studies with children and adolescents using animal-assisted therapy. There is a range in the child's condition from student mental health, mental disorders, individual therapy, chronic conditions, cancer, post-surgery and pain relief. The studies shown in Table 1 did not test for all factors, shown in the last column. All except for 2 showed positives in each that they tested for.

	Found	Opposite was found	Factor was not Studied
Anxiety reduction	4	-	6
Stress reduction	6	-	4
Physical improvement	1	-	9
Social improvement	3	-	7
Self-care improvement	1	-	9
Cardiovascular improvement	1	-	9
Increase attention	4	-	6
Control Emotions	3	-	7
Decrease pain	2	-	8
Increase motivation	1	-	9
Blood pressure and/or Heart Rate	1	1	8
Decrease Salivary Cortisol	-	1	9

A study using AAT to help post-surgery children found that it increases in beta waves which correlates to an increase in attention (Calcaterra et al, 2015). Also showed improvement in motivation, pain tolerance, and aid in fast recovery. Another study worked with kids with leukemia with solid tumors (Silva et al. 2018). Both the children and their caregivers reported improvement in pain tolerance, communication, motivation, and overall psychological health. Physical factors, like oxytocin, cortisol levels, serotonin, increased after AAT in support of the reports (Braun et al. 2009). A study that just focused on the reduction of pain with children in acute hospital setting showed that the children showed pain reduction 15 minutes after being visited. They compared it to adults using oral acetaminophen for pain management.

Animal Assisted Therapy can also help outside of the hospital. A case study with a 14-year-old boy who showed severely low self-esteem because he was scarred on his face used the dog to create a rapport and build confidence (Lubbe and Scholtz 2013). The

therapist was able to connect to the boy who showed improvement in communication by initiating conversation by the end of therapy. A study done in 2015 looked at the benefits on first-year female undergraduates (Crump et al. 2015). In the final study the students were split into two groups. One would be with the trained dogs for 15 minutes in groups of 3 or 4 with two dogs in the middle and the other would spend 15 minutes coloring or drawing. These groups would then switch. Before and after measurements on Cortisol levels were taken using saliva, Perceived Stress Scale, and Stress-Arousal Checklist were taken during both sessions after 20 minutes of resting. Both groups saw an improvement in mental arousal and a decrease in stress levels, but there was three times more increase in arousal and a 63% greater loss in stress when the patients after the participates were with the animals. Cortisol level showed no change. In the classroom setting it was showed to help students have better attitudes towards school (Beetz 2013, Fedor 2018). One study that compared an AAT classroom with a controlled classroom and found that even through they showed the same depression score, the AAT classroom scored higher in socioemotional school experiences.

### Adults

Table 2. Results of 7 studies done using AAT with adults of different backgrounds including patients with intellectual disabilities, physical disabilities and intellectual disabilities, long stay psychiatry, inpatient, brain injury, and heart failure. The studies shown in Table 2 did not test for all factors, shown in the last column.

	Found	Opposite was found	Factor was not studied
Anxiety reduction	4	-	3
Stress reduction	2	-	5
Physical improvement	1	-	6
Social improvement	1	-	6
Cardiovascular improvement	1	-	6
Increase attention	1	1	5
Control Emotions	1	-	6
Increase motivation	2	-	5
Blood pressure and/or Heart Rate	1	1	5

When working with patients having brain injuries, it was found that there was no positive improvement after the session but there were also no negative effects (Gocheva et al. 2018). The patients were distracted

during the therapy session which may have influenced how affective the session was for the patient. Another study done on inpatients of multiple hospitals (Phung et al. 2017). Before the AAT session, 84% thought that it would be beneficial to them. After, 94% thought that it would be. The patients said they felt more energized and helped their mental health. Studies were also done on patient without intelligent disabilities but have other medical conditions. AAT showed short-term improvement in patients with heart failure (Cole et al. 2007). Neurohormone levels and anxiety lowered while epinephrine levels increase. With anxiety lowered it relieves stress from the heart while epinephrine promotes increased heart rate.

*Elderly*

Table 3. Results of 4 studies using AAT with elderly patients. Most studies done on elderly patients are on Alzheimer’s Disease and dementia. The studies shown in Table 3 did not test for all factors, shown in the last column.

	Found	Opposite was found	Factor was not studied
Physical improvement	1	-	3
Social improvement	3	-	1
Self-care improvement	1	-	3
Increase attention	2	-	2
Control Emotions	1	-	3
Decrease Salivary Cortisol	2	-	2

A case study done on a 84-year-old women with dementia found long-term improvements (Nordgren and Engstrom 2012). Many improvements were seen even after 3 months from using AAT including physical improvements , less distorted , and though there were relapses, overall had better behavior. Another looked at how it can improve the lives of elderly patients with illnesses like Alzheimer’s, Dementia, mood disorder and psychotic disorder (Moretti et al. 2011). The patients filled out a questionnaire on their self-perceived quality of life, mini mental state examination, and a geriatric depression scale. The research found that all patients in the study saw improvement even in the control, but the ones that were able to interact with the dogs for 90 minutes a week for 6 weeks had higher improved scores that the patients that were not able to interact with the animals directly. Women with

dementia have no significant improvement using the multidimensional observation scale for elderly subjects (MOSES) but had increased apathy, improved irritable behavior, and increase social interaction (Motomura et al. 2004). There was a greater improvement in apathy than in irritable behavior and there was a significant increase in social behaviors. Seventy-five percent of patient said that they enjoyed the therapy and sixty-three percent said they liked dogs better after using AAT.

**Discussion**

Reviewing the studies, in the case of a hospitalized setting. Hospitalization can cause unintentional stress. Animal-assisted therapy helps with temporary pain relief and stress relief which therefore indirectly helps with recovery. This temporary pain relief and stress relief comes from the emotional response the patient feels when working the animal also from the social connection a person feels with the animal. This is seen in the studies mentioned earlier with children post- surgery and with leukemia (Calcaterra et al. 2015, Silva et al. 2018). It also promotes recovery by affecting biological factors like increasing cardiac parameters and hormone release (Cole et al. 2007). Stress can amplify symptoms in a hospital setting. Using this therapy can help patient recover faster. As seen in Table 1 and 2, both children and adults both have had many cases where anxiety and stress were decreased whether it was measured or the patient reported it through a survey. In the case of the children who were hospitalized after surgery, the cardiovascular response while being visited by the animal helped with this aspect of recovery (Calcaterra et al, 2015). Also seen in adults with heart failure, using AAT short term affects were seen to help with heart health (Cole et al.2007). It also helps with the mental state of the patients. Interacting and having to help take care of the dog cause the patient to be involved and physically active. In a case study of a man in long- stay psychiatry, his confidence built while working with the dog, he started taking the dog to be walked and throwing her treats to catch (Hall and Malpus 2000). When working with inpatients, many believing that AAT helped them mentally (Phung et al. 2017). Many felt as though they felt more energized after their session.

In the case of patient with mental illness, it helps promote social interactions, self-care, and behavior management. In Table 3, elderly patients saw improvement in social interactions and increased attention in many of the studies. Working and caring for the dogs help to promote confidence in caring and the animal promotes a non-judgmental environment for the individual to express themselves. Improvement in social interaction also usually came with improvement physical movement. The patients usually started to be

more active after their session, as is the case with the 84-year-old women with dementia (Nordgren and Engstrom 2012). Also helped with focus, though many of the effects are only seen for three months. More long-term studies need to be done. The pattern seems to be that the session needs to be repeated to help make the effects more permanent.

Using AAT on children and adolescents have been studied across many different background and medical conditions. The therapy is very effective at decreasing anxiety and stressed. It helps children relax, whether it is in a hospital setting or in a classroom. For adults, it is very effective with patient with mental disabilities. It helps reduce anxiety, stress, and improve motivation. In elderly patients, the main condition studied was dementia and Alzheimer's disease. AAT helps individuals with building confidence in social interactions and promoting self-care. This type of therapy is more effective with populations with mental and physical conditions, but can also help the everyday person with stress and anxiety as seen when working with students.

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