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## CASE STUDY OUTLINE

**Objective:** To investigate the effects of massage therapy on treating the symptoms of a young patient with Cerebral Palsy. (CP)

**Setting:** The home of Jeremiah Botbijn, client with treatments being administered by Lee Botbijn, student massage therapist at MH Vicars School of Massage Therapy.

**Participant:** A 7-year-old male who was diagnosed with CP approximately 5 years ago. The patient had experienced benefits with massage before, but they were not a part of any other CP studies.

**Intervention:** The case study was done over 8 treatments, an initial baseline assessment, a midway assessment, and a final reassessment. Non-Swedish techniques as well as deep moist heat as a form of hydrotherapy.

**Main Outcome Measures:** Measured outcomes form, patient feedback, postural assessment, gait analysis and various special tests.

**Results:** The combination of hydrotherapy and massage therapy proved to be beneficial in correcting postural imbalances of a CP patient. The patient experienced an improved gait, better posture post treatments.

**Conclusion:** Massage therapy proved to be beneficial for functional postural changes in CP patients.

## INTRODUCTION

The aim of this case study was to investigate the effects of massage therapy on the signs and symptoms associated with CP.

Due to the changing nature of children's skills and abilities, the results of this report are intended for current use. Any future reference to them should be made with this caution in mind.

Jeremiah has a diagnosis of Right hemiplegic cerebral palsy. Jeremiah is in grade one and has been seen by a physiotherapist, Occupational Therapist, as well as a Speech and Language Pathologist for direct intervention and to provide consultation to his family and teacher for gross motor skill programming and development since 2012.

Jeremiah presents as a sweet little boy who loves to be active and was very motivated and determined to learn how to do things in sessions.

The reports from his therapists show that he has some difficulties using his right side with gross motor tasks, in particular tasks that require strength and endurance. He also has difficulty with skills that require motor coordination and planning or skills that need to be performed at a fast speed. Jeremiah has shown improvements in his overall strength and endurance as therapy continues each year. Based on standardized testing and observation provided by the therapists, Jeremiah presents with a severe delay of his gross motor skills.

In conclusion based on observation, parent questioning, and documents provided, Jeremiah is a 7 year old boy with a multiple diagnoses, however our focus will be on

his diagnoses of Cerebral Palsy.

## **DEFENITION**

Cerebral Palsy is considered a neurological disorder caused by a non-progressive brain injury or malformation that occurs while the child's brain is under development. Cerebral Palsy primarily affects body movement and muscle coordination.

### **Definition of Cerebral Palsy**

While Cerebral Palsy is a blanket term commonly referred to as "CP" and described by loss or impairment of motor function, Cerebral Palsy is actually caused by brain damage. Current research suggests the majority of Cerebral Palsy cases result from abnormal brain development or brain injury prior to birth or during labor and delivery. Accidents, abuse, medical malpractice, negligence, infections, and injury are some known risk factors that may lead to Cerebral Palsy.

Cerebral Palsy affects body movement, muscle control, muscle coordination, muscle tone, reflex, posture and balance. It can also impact fine motor skills, gross motor skills and oral motor functioning.

## **PATHOLOGY**

Cerebral Palsy causes physical impairment

An individual with Cerebral Palsy will likely show signs of physical impairment.

However, the type of movement dysfunction, the location and number of limbs involved, as well as the extent of impairment, will vary from one individual to another. It can affect

arms, legs, and even the face; it can affect one limb, several, or all. Cerebral Palsy affects muscles and a person's ability to control them. Muscles can contract too much, too little, or all at the same time. Limbs can be stiff and forced into painful, awkward positions. Fluctuating muscle contractions can make limbs tremble, shake, or writhe. Balance, posture, and coordination can also be affected by Cerebral Palsy. Tasks such as walking, sitting, or tying shoes may be difficult for some, while others might have difficulty grasping objects. Other complications, such as intellectual impairment, seizures, and vision or hearing impairment also commonly accompany Cerebral Palsy.

***Every case of Cerebral Palsy is unique to the individual***

Every case of cerebral palsy is unique to the individual. One person may have total paralysis and require constant care, while another with partial paralysis might have slight movement tremors but require little assistance. This is due in part by the type of injury and the timing of the injury to the developing brain.

***Cerebral Palsy is non-life-threatening***

With the exception of children born with a severe case, Cerebral Palsy is considered to be a non-life-threatening condition. Most children with Cerebral Palsy are expected to live well into adulthood.

***Cerebral Palsy is incurable***

Cerebral Palsy is damage to the brain that cannot currently be fixed. Treatment and therapy help manage effects on the body.

*Cerebral Palsy is non-progressive*

The brain lesion is the result of a one-time brain injury and will not produce further degeneration of the brain.

*Cerebral Palsy is permanent*

The injury and damage to the brain is permanent. The brain does not “heal” as other parts of the body might. Because of this, the Cerebral Palsy itself will not change for better or worse during a person’s lifetime. On the other hand, associative conditions may improve or worsen over time.

*Cerebral Palsy is not contagious; it is not communicable*

In the majority of cases, Cerebral Palsy is caused by damage to the developing brain. Brain damage is not spread through human contact. However, a person can intentionally or unintentionally increase the likelihood a child will develop Cerebral Palsy through abuse, accidents, medical malpractice, negligence, or the spread of a bacterial or viral infection.

*Cerebral Palsy is manageable*

The impairment caused by Cerebral Palsy is manageable. In other words, treatment, therapy, surgery, medications and assistive technology can help maximize independence, reduce barriers, increase inclusion and thus lead to an enhanced quality of life.

*Cerebral Palsy is chronic*

The effects of Cerebral Palsy are long-term, not temporary. An individual diagnosed with Cerebral Palsy will have the condition for their entire life.

Every case of Cerebral Palsy is unique to the individual. One person may have total paralysis and require constant care, while another with partial paralysis might have slight movement tremors but require little assistance. This is due in part by the type of injury and the timing of the injury to the developing brain.

## ANATOMY

Cerebral palsy is restricted to lesions of the brain only; diseases specific to the peripheral nerves of the spinal cord (eg, spinal muscular atrophy, myelomeningocele) or to the muscles (eg, muscular dystrophies), although causing early motor abnormalities, are not considered cerebral palsy.

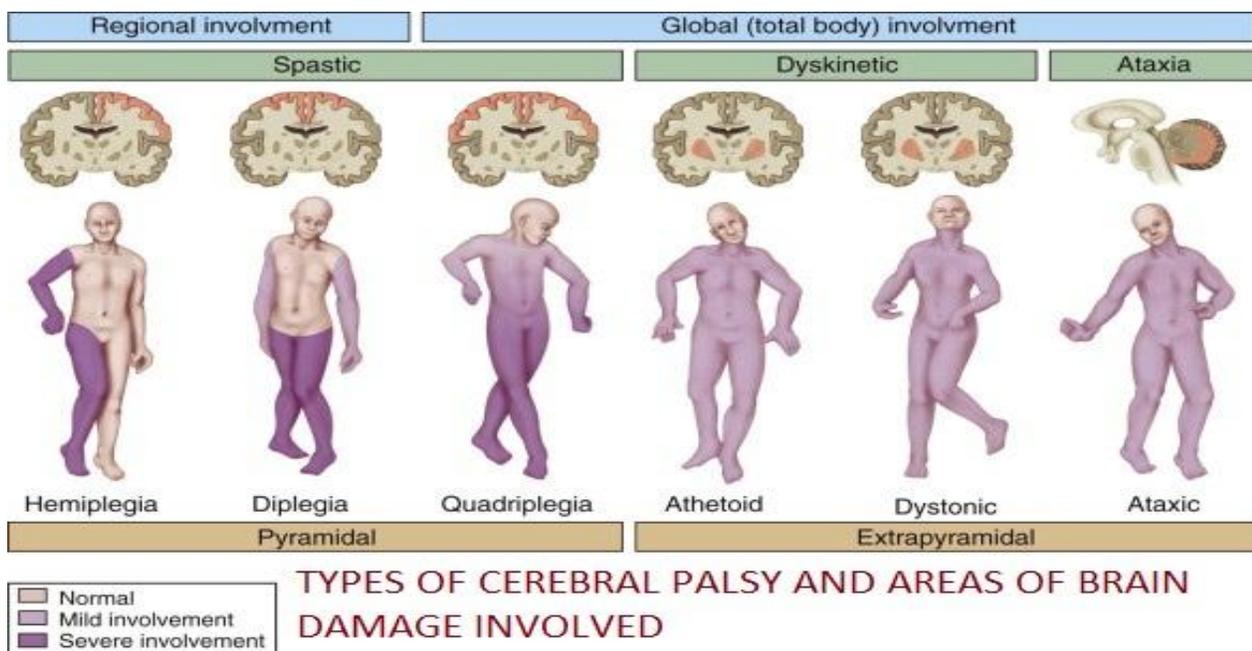


*Figure 2a – Case Study Presentation*



*Figure 2b - Typical CP Present*

## MASSAGE THERAPY: TREATMENT FOR CERBRAL PALSY



### Screening and Diagnosis of Cerebral Palsy

Diagnosing cerebral palsy (CP) at an early age is important to the well-being of children and their families. Diagnosing CP can take several steps:

Developmental Monitoring

Developmental Screening

Developmental and Medical Evaluations

Developmental Monitoring

Developmental monitoring (also called surveillance) means tracking a child's growth and development over time. At each well-child office visit, the doctor monitors the child's development. The doctor does this by asking parents if they have any concerns about their child's development, taking or updating the child's developmental history, and watching the child during the exam to see how he or she moves.

It is important for doctors to monitor the development of all children, but especially those who are at a higher risk for developmental problems due to preterm birth or low birthweight.

If any concerns about the child's development are raised during monitoring, then a developmental screening test should be given as soon as possible.

### *Developmental Screening*

During developmental screening a short test is given to see if the child has specific developmental delays, such as motor or movement delays. Some developmental screening tests are in the form of interviews or questionnaires completed by parents, others are tests that the doctor gives to the child. The American Academy of Pediatrics recommends that all children be screened for developmental delays during regular well-child office visits at:

9 months

18 months

24 or 30 months

When a child is 9 months of age, many issues involving movement can be seen easily. However, mild movement delays that were not found at the 9-month screening might be easier to see when the child is 18 months of age. By the time the child is 30 months of age, most movement delays can be found.

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A developmental screening test also can be given whenever the child's parents or doctor or others involved in the care of the child have concerns about the child's development. If the results of the screening test are cause for concern, then the doctor will make referrals for:

Developmental and medical evaluations

AND

Early intervention or early childhood services

Developmental and Medical Evaluations

The goal of a developmental evaluation is to diagnose the specific type of disorder that affects a child. To evaluate movement or motor delays, the doctor will look closely at the child's motor skills, muscle tone, reflexes, and posture, and take a careful medical history from the parents. The doctor will try to rule out other disorders that could cause similar problems.

Because many children with CP also have related developmental conditions such as intellectual disability; seizures; or vision, hearing, or speech problems, it is important to evaluate the child to find these disorders as well.

The developmental evaluation can be performed by the primary care doctor or by a specialist. Specialists who can do this type of developmental evaluation include:

## MASSAGE THERAPY: TREATMENT FOR CERBRAL PALSY

Developmental pediatricians or neurodevelopment pediatricians (doctors with special training in child development and in evaluating with children with developmental problems).

Child neurologists (doctors with special training in childhood diseases of the brain, spine, and nerves).

Pediatric physiatrists or pediatric rehabilitation doctors (doctors with special training in physical medicine and rehabilitation for children).

In addition to the developmental evaluation, additional tests can be done to look for a cause of CP. Specialists might suggest brain imaging tests, such as x-ray computed tomography (CT scan) or magnetic resonance imaging (MRI). An electroencephalogram (EEG), genetic testing, or metabolic testing, or a combination of these, also might be done.

CP generally is diagnosed during the first or second year after birth. But if a child's symptoms are mild, it is sometimes difficult to make a diagnosis until the child is a few years older.

### **TYPES OF TREATMENT**

A person's ability to transcend his or her physical limits is in no small part due to the kinds of therapies that are used to fine-tune his or her abilities. Therapy fosters

functionality, mobility, fitness, and independence. The types of therapies vary based on a person's unique needs, type of Cerebral Palsy, extent of impairment and associative conditions. Therapy can also help parents and caregivers.

### *Therapies for Cerebral Palsy*

Physical therapy, occupational therapy, speech and language therapy, along with adaptive equipment, are popular forms of treatment for children with Cerebral Palsy. Used within a coordinated, comprehensive treatment plan, therapy plays a vital role in managing the physical impairment while optimizing mobility. Therapy is deployed to manage impairment (primarily spasticity, contractures and muscle tone), manage pain, and provide optimum quality of life by fostering functionality, self-care, and independence. Therapy also yields mental, emotional, academic, and social benefits for individuals with Cerebral Palsy.

If implemented as part of an early intervention program while the child is still developing, some therapy for Cerebral Palsy can lessen the impact of impairment and minimize the child's potential for developing associative conditions.

Therapy can be used alongside other treatment options, such as drug therapy, surgery, assistive technology, complementary medicine and alternative interventions. When the multidisciplinary team of practitioners determines the child's care plan goals, they will determine appropriate therapy options. Over time, as the child develops and as conditions arise, other therapies may also be considered.

Therapy is not limited to the child. Therapy can be helpful to caregivers and parents, as well. For instance, nutrition counseling can help a caregiver understand the dietary needs of the child. Behavioral therapy can help a parent learn how to best reinforce the child's therapy progress in a positive manner.

Therapy comes in many forms, for differing purposes, and may be applied at various stages of the child's development or during adulthood

Types of treatments:

- Acupuncture
- Aqua therapy
- Behavior therapy
- Physical therapy
- Conductive education
- Nutrition and diet counseling
- Massage therapy
- Occupational therapy
- Play therapy
- Recreational therapy
- Respiratory therapy

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- Sensory integration
- Speech and language therapy
- Vocational counselling
- Music therapy
- Chiropractic intervention

### **ETIOLOGY**

Jeremiah was born with cerebral palsy in 2010. The development of this is likely linked to prolonged time with no oxygen. Since birth, Jeremiah has experienced multiple seizures and episodes of asphyxia and hemorrhaging of the brain. These incidents would lead to an official diagnosis sometime between 2010 to 2012.

### **DOCUMENTED ORTHOPEDIC ASSESMENTS**

## PROGNOSIS

Cerebral palsy doesn't always cause profound disabilities and for most people with CP the disorder does not affect life expectancy. Many children with CP have average to above average intelligence and attend the same schools as other children their age. Supportive treatments, medications, and surgery can help many individuals improve their motor skills and ability to communicate with the world. While one child with CP might not require special assistance, a child with severe CP might be unable to walk and need extensive, lifelong care.

Through the intervention of non-Swedish massage therapy techniques, functional change can be made to the postural imbalances of a client with CP.

Diaphragmatic breathing techniques were used during the treatments. Upon further discovery, these breathing techniques were proven to be very beneficial to the client. Given the age of the client, I've managed to devise a game that allows the client to get used to the table and my treatments to ensure longer sessions which in turn lead to improved results.

As sitting is seen as a difficult tasks for patients, the client went from sitting in the "W" position to a cross legged position during this case study period. This lead to an improvement in the client's posture and gait. Clients of this age group (ages 4-9) are more likely to relax while showing a kid-friendly show in lieu of music playing in the background. This has created an extended period of treatment that would last

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anywhere between 30 to 45 minutes. These treatments will include background distractions and light homework assignments for both the child and parent to participate for the next session.

While there are is no new prognosis for the client for this case study, future treatments will stay the same as conditions continue to improve. As stated above, these treatments will be around 30-45 minutes with the use of background visual distractions instead of audio as it would hold the client's attention while treatment is conducted.

### CONCLUSION

Based on the results and the patient feedback, massage therapy did in fact decrease symptoms associated with CP. Though the symptomatic relief was short-term, its impact on motor function helped the patient walk more steadily after each treatment, and decreased their pain. Overall, it was a safe and effective treatment for the patient and their condition, CP.

### REFERENCES

Resource : <http://www.cerebralpalsy.org/about-cerebral-palsy/definition>

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Resource: <http://emedicine.medscape.com/article/1179555-overview?pa=xt2oa4%2FuYgD%2FuqDKZWwJET2b4mDfv8I3iER7GIC6WPe9A%2FJS1jAVGBGifEqCDBspsdq5GGKHwm8J7gGHa%2BVI8cfkq9g2DPn5sb65MIOIqA4%3D#a3>

MASSAGE THERAPY: TREATMENT FOR CERBRAL PALSY

Resource: <https://www.cdc.gov/ncbddd/cp/diagnosis.html>

Resource: <http://www.cerebralpalsy.org/about-cerebral-palsy/treatment/therapy>

Resource: <https://www.ninds.nih.gov/Disorders/All-Disorders/Cerebral-Palsy-Information-Page#disorders-r2>