

Dear Chair, Ladies and Gentlemen,

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In our research at the Gezenguz Foundation we asked the following question: how efficient is the intensive Halliwick and water specific therapy in the case of children with injuries of the central nervous system?

Our primary goal was to improve their movement function on land. Further, we wanted to enhance adaptation to water.

We wanted to provide them with a community experience similar to what their healthy siblings enjoy.

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Three children participated in the research who receive a regular weekly therapy at the central institution of the Foundation. They received 45 minute Halliwick and water specific therapy sessions through five days.

On Monday and Friday I made tests. On land I used the Time up and go test, as well as functional reach tests forward and sideway in sitting and standing, and the three minute walk tests. In the swimming pool I made the WOTA 2 test.

The results achieved in August made parents ask for a repetition of the intensive week therapy in February. The protocol was the same. Photo and video documentation was also made during the therapy. Parents permitted me to use them here in my presentation.

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To make my presentation easy to follow, I shall discuss the therapy and the results right after introducing each child. Their names were changed.

Tom was five last summer. Due to a thoracic spinal tumor he lost his capability to gait. When he was three, a partial tumor resection was conducted. As a consequence of his illness, spastic paraplegy and a scoliosis developed that is now of 47 Cobb degree. He is able to gait now with two sticks. He wears AFO on both of his legs, as well as a corsette and TheraTogs.

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Crucial goals of therapy were mental adaptation, the mobilization of the spine, the improvement of the trunk control, the technical development of standing up and sitting down, as well making his gait more secure. During the six months between the two intensive therapy weeks he did not receive hydrotherapy.

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The video shows you that at the beginning, Tom reaches out sideway less far and compensates with massive arm movements. At the end of the week, however, he is able to reach out farther away with control.

I also stress that in August, he became capable of focusing on tasks. During gait he was more capable of turning and changing direction. In February, Tom became easy-going in water, submerging for joy and floating on his back.

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On this slide you can watch a part of the three minute walk test recorded in February, on the closing Friday session.

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Among the results achieved, let me stress the better Time up and go test results by the end of each week. The WOTA 2 test showed a 59% (percent) improvement in August, and a 178% improvement in February by Friday.

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Ben was seven last summer. A year earlier, he underwent an operation because of cervical spinal tumor. After it a hypotonic tetraplegia developed, his trunk leans towards left, and he didn't use his left arm functionally.

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The aim of the therapy was strengthening his muscles, improving his trunk alignment, and supporting him to use his left arm in ADL functions. Further, mental adaptation was also crucial.

Ben went to school in autumn. His trunk control deteriorated, he let his left arm hang passively besides his trunk. He was given TheraTogs but he wore it only one day a week, as well as AFO that he did not want to wear. To fix his shoulders we developed a special orthosis for him that he will have to wear working at desk at home.

We agreed with the parents to provide him the following therapy during the intensive therapy week in February: a 45 minute hydrotherapy and 60 minute physiotherapy every day, and four ergotherapy, each 60 minutes long, and two psychology consultations.

Our goal was, beyond improving his physical condition, to make him and his family accept the orthosis he needs to use.

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Improving trunk control and centralizing humerus head were the most important tasks of physiotherapy. Ergotherapy were devoted to the practice of fine motor skills. We made great efforts to adapt land-based positions to water in hydrotherapy.

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The video shows you that at the beginning of the February intensive therapy week Ben is unable to control his trunk, is unwilling to use his left arm, does not hold the TheraBolly firmly, and has difficulties with lifting it up from the water. By the end of the week, he moves in water rather stably, performs his tasks with greater precision and speed.

By the end of both intensive therapy weeks, the paracoordination role of the lumbalis lordosis was reduced, the trunk control has become more stable, humerus head got to a centralized position, elbow flexion appeared. He began to use his left arm in ADL functions, his fine movements became more sophisticated. He was less afraid of new situations.

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On this slide you can watch a part of the three minute walk test recorded in February, on the closing Friday session.

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Among the test results I call your attention to the changes of the WOTA 2 test. In August, Ben's performance increased from 17% to 55%, in February, from 62% to 69%.

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Anna was six last summer. She was diagnosed with spastic paraplegia when she was 18 months. Six months earlier, she underwent an orthopedic operation, but the integration of the new greater range of movement into motor patterns hasn't succeeded yet.

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In the foundation she received neuro-hydrotherapy, and later she began to attend special swimming sessions. She feels safe in and under water.

During the intensive therapy weeks, our goals were improving her trunk control, stable standing, learning standing up and sitting down, practising turning and changing directions during gait, and preventing falling.

Between the weeks Anna did not receive Halliwick Therapy.

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The video shows you that at the beginning of the week, Anna would have usually fallen without protective reaction, despite warning. By the end of the week, however, she could protect herself with arms efficiently even in case of a sudden impulse.

I further emphasize that she could make use of what she had learnt in later situations. She could herself stabilise her standing rightly, her trunk control became stabler, her reaction time quicker. In insecure balance positions, she showed exaggerated extension tone less frequently.

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On this slide you can watch a part of the three minute walk test recorded in February, on the closing Friday session.

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Test results were impressive in August, achieving 79% improvement in the three minute walk test. By the end of each week, the Time up and go test results became better, too. In August, we could achieve significant improvement at the functional reach tests. These achievements persisted. However, Anna got so tired by Friday in February that her results became worse during the tests.

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Summing up our results we can safely say that we could achieve changes in motor functions in each case that were demonstrable both on land and in water. We got positive feedback from children and parents alike.

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Tom is now able to walk more and in a more coordinated way than previously. He can accompany his parents during shopping. He began to walk on stairs by alternating steps. After the February intensive week he began doing swimming as a parasports activity.

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Ben began to use his left arm after completing each therapy week. After the February therapy, the parents noted that his posture had not been so straight for two years. He stated himself that „I became stronger“ and he often repeated, refusing the usual help, that „don't help me.'

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Anna could start gaiting and stop without assistance fast after the August therapy. Her alignment became better after the second day. She could sit down and stand up without assistance. She began to jump with parallel feet. Since the February week she can regain her balance even in insecure positions. When falling, she often and more efficiently uses protective reactions. Her walking on stairs became more dynamic, more frequently using alternating steps.

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Our results confirm that for children with central nervous system injuries it is recommended to insert an intensive therapy week into their regular weekly therapy program.

During these weeks we experienced and recorded significant improvements in their moving capacities, their movement patterns became more refined and new types of movements appeared. Thereby we could come much closer to our long term therapy aims. Finally, the achievements persisted.

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Thank you for your attention.