

# Benefits of Aquatic and Tomatis Therapy in PWS



**Dr. Vartosu Ioana**

Family physician

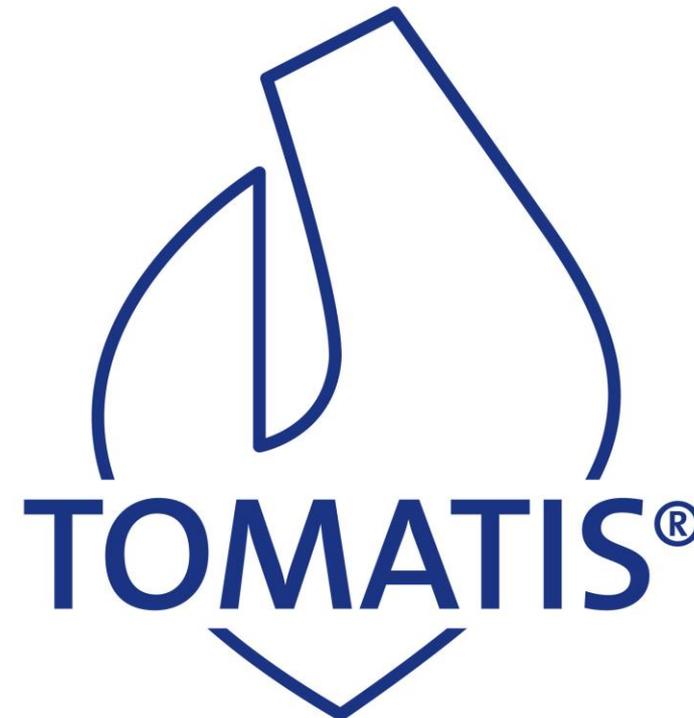
Hydrotherapy degree

Level 2 Practitioner in Tomatis

***Founder of Asociația Școala mamei Junior***



- \* 500 beneficiaries
- \* 3 PWS children
- \* 5 fiziotherapists specialized in aquatic therapy methods ( England and Switzerland)
- \* 1 Practicioner level 2 Tomatis ( Paris)
- \* 1 pshychologist



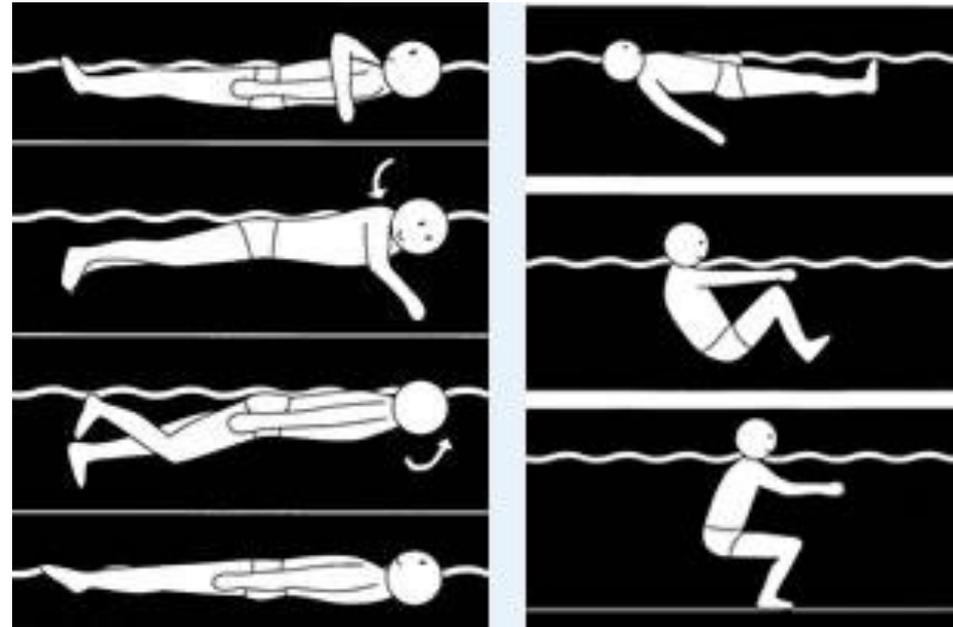
# Water Therapy



- \* Aquatic therapy encompasses a broad set of approaches and techniques, including aquatic exercise, physical therapy, [aquatic bodywork](#), and other movement-based therapy in water (hydrokinesiotherapy). Treatment may be passive, involving a therapist and a patient, or active, involving self-generated body positions, movement, or exercise. Examples include Halliwick Aquatic Therapy, Bad Ragaz Ring Method, Watsu, and Ai chi.
- \* **The brilliance of swimming or aquatic therapy is that you are able to benefit from the inherent properties of water** such as buoyancy, resistance, and hydrostatic pressure to work on things such as strengthening, balance, and even functional skills, while providing a unique environment that kids (and adults) can have fun in.

# 10 Point Program Halliwick Concept

1. Mental adjustment- breath control
2. Disengagement- physically and mentally independent
3. Transversal rotation control
4. Sagittal rotation control
5. Longitudinal rotation control
6. Combined rotation control
7. Upthrust- trusting you will float
8. Balance in stillness
9. Turbulent gliding
10. Basic swimming back stroke



# Procedure

- \* Water temperature 31-33 Celsius degrees
- \* 3 times a week, 45 minutes/session
- \* group therapy/ individualized programme
- \* Improved aquatic skills (Halliwick 10 points scale) by 48% in 6 months, by 64% in 12 months.



# Results reported for PWS in Toronto 2016 at International Convention of Aquatic Therapy

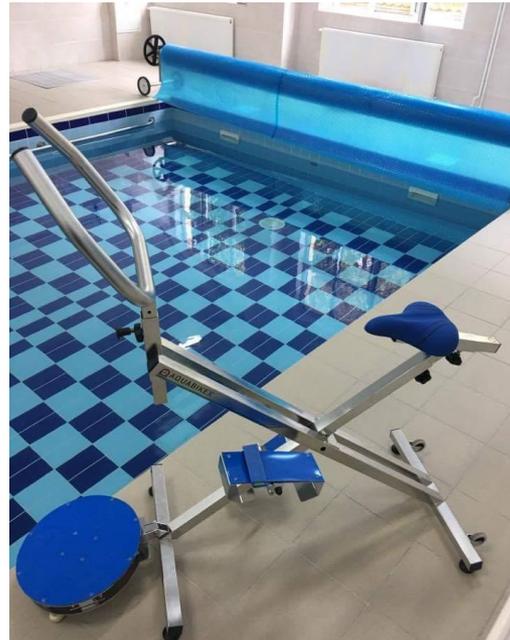
- \* Muscle strength and range of motion
- \* Coordination and equilibrium
- \* Walking indurance
- \* Body weight control
- \* Improved voice tone
- \* Fun activity



**From my professional perspective the therapeutic benefits I have seen for swimming in PWS patients are the same plus a reduction in scoliosis angle and an improvement in social engagement.**

# Decreased impact on joints

- \* Because of the buoyant properties of water, it is able to absorb some of our body weight. People of all ages get exercise via swimming, treading water, or walking in the water without putting excessive stress on their joints.
- \* This property allows overweight persons to exercise decreasing the risk of arthritis.



# Bodyweight control



- \* **Increased cardiovascular endurance** – Swimming laps is a great way to get cardiovascular activity in. In addition, practicing walking in the pool is also an excellent cardiovascular exercise, leading to a lower BMI and muscular mass/weight.
- \* **Use of the whole body** – Swimming involves the whole body. For swimming laps it is easy to see this, however, by nature of being submerged in water for other activities such as walking or playing, you are naturally engaging your entire body.

# Whole body sensory input

- \* The water touches all areas of the body when you are submerged in it. This can help with body awareness because as a person moves their arms, legs, or whole body through the water, they are getting immediate feedback from the water moving around them. This will enhance their awareness of their movement and their body over



# Tone regulation

- \* **Improved motor planning and coordination** – To swim laps and learn new strokes, it requires the coordinated effort of the arms, the legs, the trunk, and the head and neck. Each part of the body is doing its own thing and implies a lot of effort in coordination.
- \* **Muscle tone regulation** – By altering the temperature of the water and using the natural waves we tone the muscle and relax in areas that have high tones. This can help with stretching and ease of movement and lead to easier walking on land, jumping on one/two feet and standing on just one foot.

# Improved Oxygen levels



- \* Thorax hydrostatic pressure makes exhaling easier, improving speech and making breathing exercises a lot easier than on land
- \* Blood flow return due to water compression on limbs and thorax leads to a better SpO<sub>2</sub>% (procedure used even in patients artificially ventilated)



# Tomatis method

A sound therapy that uses music to:

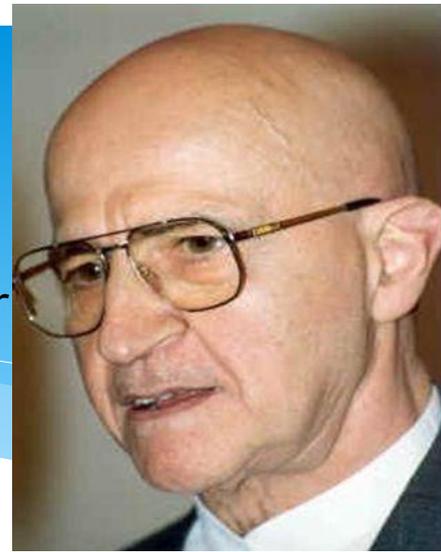
- Train listening
- Help improve Sensory, Cognitive, Motor and Neurological functioning
- Help improve Emotional wellbeing



# Dr. Alfred Tomatis

1st january 1920- 25<sup>th</sup> december 2001

Internationally known otolaryngologist and inventor



*"Sacred sounds charge the cortex of the brain and stimulate health and wellness."*

- Dr. Alfred Tomatis – French doctor

He formulated the theory that many vocal problems were really hearing problems. His theory that "the voice does not produce what the ear does not hear", is the hallmark of his research and his method.

A pioneer in the field of neuroscience, the Tomatis® Method is now practiced in more than 2,000 specialized centers. The Tomatis® Method stimulates the brain effectively and naturally. It is a complementary approach to medical and traditional therapeutic treatments.

# How it works?



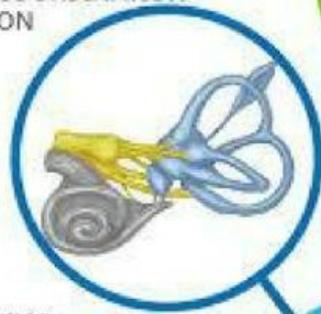
- \* The Tomatis® Method operates through a device called [TalksUp®](#) designed to treat music and the voice based on specific parameters. This tool has features including “[Electronic Gating®](#)”. The switch is a unique non-invasive procedure that allows sound contrasts with the sudden transition from low frequency to high frequencies. This back and forth between low and high frequencies causes a major effort of adjustment from the ear and creates a stimulation of the brain.
- \* During sessions patients listen to music with a headset that transmits sound through earphones (air conduction) but also by bone vibration (bone conduction).
- \* During the "active" sessions, patients are reading with a microphone. This time it is the voice that is instantly processed to work on the auditory feedback loop.

# Corrective actions



## Vestibular system

BALANCE  
SENSORY INTEGRATION (TOUCH, SMELL,  
TASTE, VISION, AUDITORY)  
ALL MUSCLES OF THE BODY ARE  
CONNECTED TO THE VESTIBULAR  
SYSTEM  
MOVEMENT AND COORDINATION  
SENSE OF DIRECTION  
SPATIALISATION  
MUSCLE TONE  
BODY IMAGE  
TIME  
RHYTHM  
FINE AND GROSS  
MOTOR SKILLS  
SEQUENCING,  
PLANNING,  
ORGANISATION SKILLS  
SPORTS



## Cochlea

SPEECH  
LANGUAGE  
COMMUNICATION  
SPEECH ARTICULATION  
AUDITORY PROCESSING  
UNDERSTANDING  
SOUND DISCRIMINATION AND/  
OR RECOGNITION  
LEARNING ABSTRACT CONCEPTS  
MUSIC  
SINGING  
LEARNING  
FOCUS, ATTENTION  
MEMORY  
CREATIVITY  
INTUITION  
EMOTIONS  
ENERGY  
THINKING



## Vagus nerve

APPETITE  
SLEEP  
HEART BEAT  
BREATHING  
DIGESTION  
URINARY AND  
REPRODUCTIVE  
ORGANS  
SELF REGULATION



## Eye

VISION  
READING  
TRACKING  
WRITING  
VISUAL  
PROCESSING

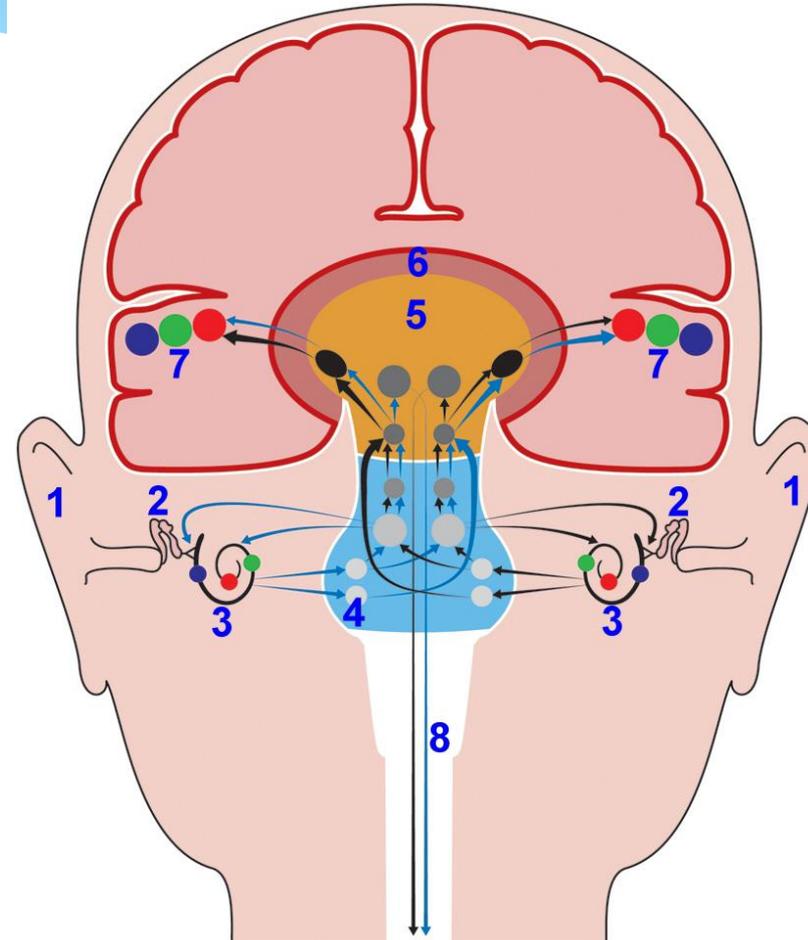
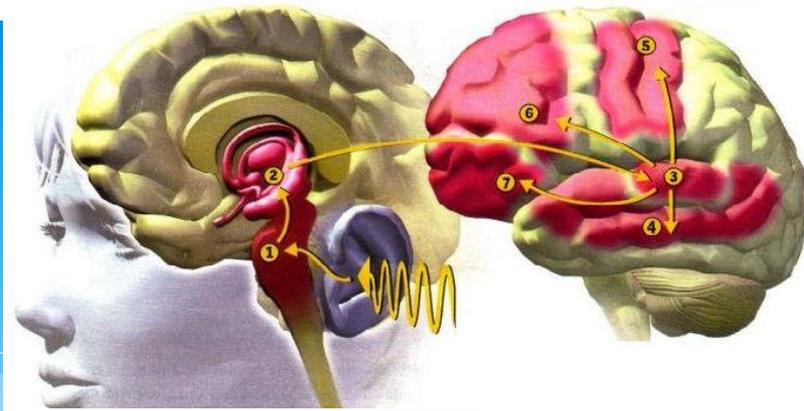


# Effect on the brain

The ear is connected to 7 of the 12 pair of cranial nerves

- II, III, IV and VI- visual
- VIII- vestibulo-cohlear
- X- vagus
- XI – spino-accesory

Trough the auditory pathways Tomatis method affects the entire nervous system.



# Procedure



1<sup>st</sup> session: 13 days, 1-2 hours/day, passive work

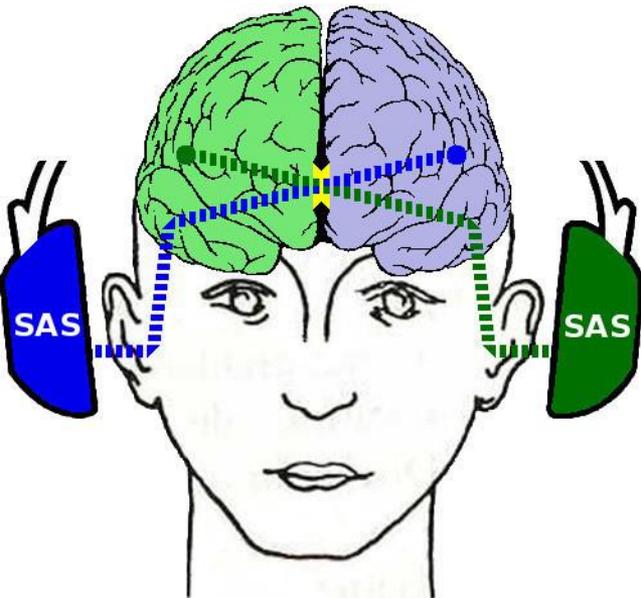
4 weeks pause

2<sup>nd</sup> session: 13 days, 1-2 hours/day, active work

4-8 weeks pause

3<sup>rd</sup> session: 13 days, 1-2 hours/day, active work

# Personal program



- \* Active/passive
- \* Type of music : Mozart, Gregorian, Wals
- \* Gating: time of delay or precession
- \* Filtering: high pass/low pass band 250-500-100-2500 Hz
- \* Listening time
- \* Bone conduction vibration level
- \* Lateralization level

# Results in PWS patients

Judith Kroll, 2018 International Tomatis Convention Warshow

- \* Right brain domination- conscious decisions over emotions
- \* Improved resilience towards frustration, self-regulation
- \* Improved sleeping patterns
- \* Deep relaxation
- \* Higher tone voice, improved quality of speech
- \* Improvement in visual/auditory-motor coordination
- \* Balance improvement
- \* Weight control combined with psycho-educational program

# Conclusion

Water therapy and Tomatis method are fun, enjoyable activities with reliable results in personal wellbeing in PWS patients.

