



The TheraSuit[®] Method at Therapy in Praxis

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TheraSuit Method™ was created by Izabela and Richard Koscielny (Physical Therapists and parents of a daughter with Cerebral Palsy). It is a very holistic approach to treatment for those affected by neurological dysfunction like Cerebral Palsy, Developmental Delays, and Traumatic Brain Injuries. It combines the best elements of various techniques and methods, and has a sound rationale based on physiology of exercises.

The key element is a strengthening program established for the participant based on his/her individual needs, strengths and weaknesses. Increased strength reflects in daily functional activities that usually follow or are combined with the strengthening exercises.

TheraSuit Method™ is based on an intensive and specific exercise program. Elimination of pathological reflexes and establishing new, correct, and functional patterns of movements is of significant importance.

TheraSuit Method™ utilises various tools and exercises. However, there are 3 key elements

- TheraSuit®
- Universal Exercise Unit [UEU]
- Special belt with 8 bungee cord attachments





THE HISTORY OF THERASUIT®

The space suit was an invention that originated in Russia to counteract the negative effects (muscle atrophies, osteoporosis) that the astronauts experienced (lack of gravity) during their long trips in space. The 'Adeli' suit was developed in 1971 by the Russian Centre for Aeronautical and Space Medicine to prevent hypo-kinesis in cosmonauts who were exposed to prolonged weightless conditions. In the 1990s the suit proved to be successful in medical applications in rehabilitating individuals with neuromuscular disorders

In 1997 the suit was introduced to American children

In 2002 TheraSuit® was designed and registered with the FDA

In 2011 Therapy in Praxis introduced TheraSuit® and TheraSuit Method™ to the clinical practice.

It is important to note that the TheraSuit Method™ requires specialist therapy professionals to undergo advanced and specialist training.

WHAT IS A THERASUIT®?

TheraSuit Method™ utilises various tools and exercises. One of them is the soft dynamic proprioceptive orthosis called TheraSuit®. TheraSuit® aligns the body as close to normal as possible.

Re-establishing the correct postural alignment plays a crucial role in normalising muscle tone, sensory and vestibular function

TheraSuit® consists of:

- cap
- vest
- shorts
- knee pads
- arm attachments
- shoe attachments
- connecting rubber cords

TheraSuit® is a breathable soft dynamic orthotic made up of a 2 piece suit composed of a series of attachments and rubber cords. It provides an additional vertical load of 30 to 80lbs resulting in increased vestibular dynamic proprioceptive correction.

All the elements of the suit are connected with each other through a system of rubber cords. Therapists use the TheraSuit® to hold the body in proper physical alignment. During specialised exercises, the therapist adjusts the elastic connectors that topographically mirror flexor and extensor muscles, trunk rotators and the muscles of the lower limbs.

Additional attachments correcting the position of the feet, head and other areas of the body may also be used.

WHAT ARE THE GOALS FOR THERASUIT® USE?

The major goal is to improve and change proprioception (pressure from the joints, ligaments, muscles), reduce the individual's pathological reflexes, restore physiological muscle synergies (proper patterns of movement) and load the entire body with weight (process similar to a reaction of our muscles to the gravitational forces acting upon us for 24 hours).

All of the above normalises afferent vestibulo-proprioceptive input (information arriving to the vestibular system). The vestibular system is a very important centre. It processes, integrates and sends back all the information that arrives from muscles, joints, tendons etc. It influences muscle tone, balance and the position of the body in space. The more correct proprioception from the joints, ligaments, muscles, tendons, joint's capsule etc., the more correct the alignment.

A child diagnosed with Cerebral Palsy and other neuro-motor disorders, requires hundreds of repetitions of any particular movement. TheraSuit Method™ supports the view that as individuals we all have a "magic" number. For example: a baby that is trying to push-off the floor will need to repeat this movement a few hundred times in order to master it. Another one may need either more or less repetitions to learn the same skill. For the Cerebral Palsied child however, this fairly low "magic" number grows to a thousand or more repetitions to learn and master new skills.

HOW DOES THERASUIT® WORK?

TheraSuit Method™ is a structured programme that enhances growth and development of each individual child. The child wearing the TheraSuit® goes through various exercises including 'how to walk'. The TheraSuit® works as an elastic frame surrounding the body and does not limit the amplitude of movements but adds an additional weight load on it within designed limits.



Benefits:

- Re-trains central nervous system
- Restores osteogenic development
- Provides external stabilisation
- Normalises muscle tone
- Aligns the body to as close to normal as possible
- Provides dynamic correction
- Normalises (corrects) gait pattern
- Provides tactile stimulation
- Influences the vestibular system
- Improves balance and coordination
- Decreases uncontrolled movements in ataxia and athetosis
- Improves body and spatial awareness
- Supports weak muscles
- Provides resistance to strong muscles to further enhance strengthening
- Improves speech production and its fluency through head control and trunk support
- Promotes development of both fine and gross motor skills
- Improves bone density
- Helps to decrease contractures
- Helps improve hip alignment through vertical loading over the hip joint



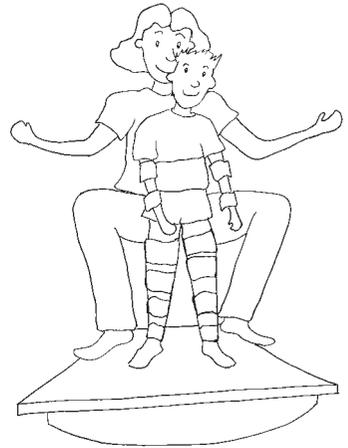
TheraSuit® worn over a prolonged time will correct proprioception and accelerate the progress. TheraSuit® combination of TheraSuit® and physical movement (therapy) ensures that the skills practiced will become more fluent and require less and less effort.

Therefore, TheraSuit® facilitates the development of gross and fine motor skills like sitting, standing, walking. For the best results, while wearing the TheraSuit® the child should participate in physical activities that promote functional skills, strengthening and ambulation.



Indications:

- Cerebral Palsy [CP]
- Hypertonia (spasticity /increased muscle tone)
- Hypotonia (low muscle tone)
- Ataxia / Athetosis
- Traumatic Brain Injury [TBI] Acquired Brain Injury [ABI]
- Developmental Delays
- Post stroke (CVA)
- Spinal Cord injuries
- Spina Bifida



Contraindications:

- Hip subluxation greater than 35 - 45%
- Severe scoliosis
- Hip dislocation

Precautions:

- Heart conditions
- Uncontrolled seizure activities
- Hip subluxation
- Hydrocephalus (VP shunt)
- diabetes
- kidney problems
- high blood pressure



Side Effects:

There are no unwanted side effects. The TheraSuit® and TheraSuit Method™ is a NON-INVASIVE treatment based on a combination of traditional and contemporary rehabilitation techniques.

It is important to note the use of the TheraSuit® is only one component of the overall approach. The combination of the TheraSuit®, spider and UEU make the intensive physical therapy programme so effective. The length of time in a TheraSuit® depends on the therapist's assessment, recommendations and the child's abilities.

THE RASUIT METHOD® MULTI-GYM OR UNIVERSAL EXERCISE UNIT [UEU]

Universal Exercise Unit [UEU] is used to train one the abilities to isolate the desired movements and strengthen the muscle groups responsible for that movement. The Universal Exercise Unit allows the child to gain range of motion, muscle and joint

The UEU or multi-gym unit is used to teach the child the normal pattern of movement and to strengthen muscles associated to the pattern. By induction of resistive force [pulleys and weights] and isolating weakened muscle or groups of muscles, while gravitational force is eliminated, the exercise can be focused on a particular movement. The weight limit to use the UEU is 350lbs.

Although the concept seems to be very simple, professional training is required to ensure the safety of the child.



The UEU has a very broad application including [but not limited to]:

- Neurological disorders [cerebral vascular accidents, cerebral palsies, spina bifida, spinal cord injuries]
- Orthopaedics
- Burns
- Developmental delays
- Sensory processing dysfunction
- Vestibular rehabilitation
- Sports injuries
- Rheumatoid arthritis

Benefits include

- Dramatic strength improvements
- Increase range of motion
- Improved balance and co-ordination
- Promotes motor learning and planning
- Promotes developmental milestones
- Can be safely applied to a variety of diagnoses and disorders
- Allows one to measure the improvement



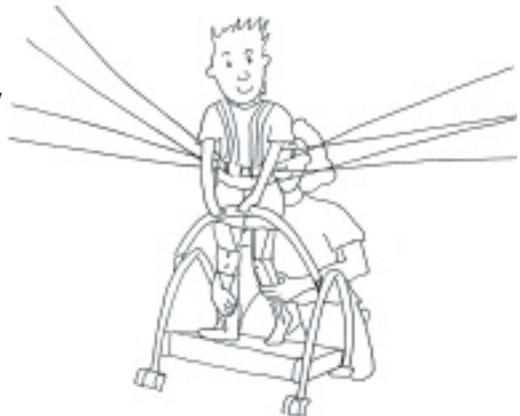
SPIDER THERAPY

The 'spider' involves attaching elastic bungee cords to specific points on a special belt and UEU. This suspension allows the child to move independently while controlling their movements as well as strengthening parts of the body affected by their condition. The 'spider' allows the therapist to work with the child standing independently in a correct physiologic position. Therefore, the therapist can stimulate and strengthen the muscles and other parts of the body that need rehabilitation. Rehabilitation through spider is based on neuro-developmental treatment [NDT – Bobath] & Proprioceptive Neuromuscular Facilitation [PNF] and Sensory Integration [SI].



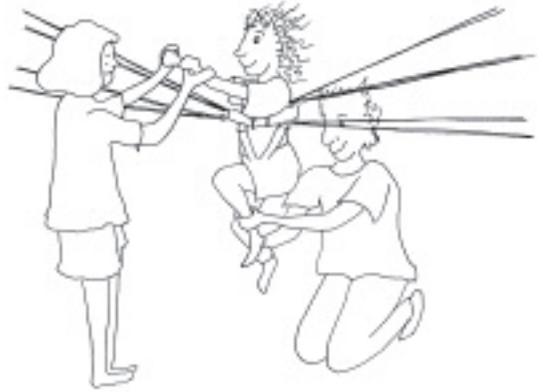
The 'spider' enables the therapist to:

- Implement a full course of recommended exercises in any chosen position
- Exercise selected parts of the body and /or selected muscles in a controlled manner
- Attain vertical position of the body when this is not usually possible
- Perform activities of daily living such as sitting, crawling, walking
- Improve spatial awareness
- Decrease the intensity of pathological movements and ataxia [lack of co-ordination]
- Improve stability and voluntary movements of the body
- Improve balance and co-ordination of the body
- Align the body in a way that stimulates the proprioceptors in the muscles and joints
- Improve the performance of the vestibular system
- Teach blind children to move and orientate in space, [gravitational orientation]



Space Walking!

The child is suspended and positioned at the centre of the UEU by the use of the suspension belt and bungee elastics. The tension of the bungees can then be adjusted to allow the child to be independently kneeling or free-standing and ready for individualised exercises which can include crawling, standing, knee walking, walking on the treadmill, etc.



Manual Off-Suit Therapy

This is to monitor improvements from the TheraSuit Method™ and is manual physically focused therapy.

It lasts for 30 minutes and consists of 6 manual off suit exercises chosen in accordance with the evaluation.



Cooling Down Therapy

After the vigorous work of the suit therapy the child must be cooled down and work with less effort but without complete rest.

TYPICAL INDIVIDUALISED INTENSIVE PROGRAMME

Therapy of each child is individually scheduled and is constructed and established after reviewing the received medical documents and during the preliminary baseline physical and functional management assessments.

3 - 4 hours per day

5 days a week

for 3 - 4 weeks

Week 1:

Working on tone reduction, decreasing pathological movement patterns, and increasing active proper movement patterns, & general strengthening

Week 2:

Working on strengthening specific muscle groups responsible for the function

Week 3-4:

Using the increased strength and endurance to improve the child's level of function (sitting, crawling, walking)



QUALIFICATION CRITERIA

There is a minimum age of 2.5 years of age and a minimum height of 32.5 inches [83 cm] required to qualify the child for the therapy session with the application of the TheraSuit® at Therapy in Praxis.

Therapy in Praxis offers an intensive programme of therapies for infants and children up to 2.5 years of age but without the use of the suit.

In order to qualify a child for TheraSuit® and TheraSuit Method™ at Therapy in Praxis, the following documentation is required:

X-Ray pictures [A-P] view of the hips or other problematic parts of the body

Copies of medical reports, e.g., physiotherapy, paediatrician, orthopaedic, neurologist, occupational therapy, specialist epilepsy nurse etc.

Any additional information that parents or persons with parental responsibility feel may help to clarify the child's current medical condition / status

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DISCLAIMER

TheraSuit® is intended to be used only as a therapeutic device.

TheraSuit® should be used only by trained individuals.

TheraSuit® should never be used without prior consultation with a physician.

TheraSuit® [and any of its parts] is NOT intended to be used as a toy.

Each user and each therapy session requires individualised assessment and adjustment of the TheraSuit®.

THERAPY IN PRAXIS

Assessment, management advice and direct intervention are provided on a nationwide as well as local basis. The clinic is well equipped with professional training facilities, rehabilitation gym, sports and highly specialist sensory integration gyms and activity rooms, a friendly parents' room, observation windows and quiet clinic rooms.

As well as in-house sessions the team provide regular outreach to schools, social care facilities and families for children with a wide range of learning, communication and physical disabilities

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