



KinisiForo
SYSTEM OF ELLIPTICAL TRAINING

www.kinisiforo.com

“Quality of Life is Everyone's Right”

- 1/** KinisiForo Hospital Unit
- 2/** KinisiForo Home Unit
- 3/** K-SET method
- 4/** NicoMed Rehabilitation Center Franchise Model

KinisiForo

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KinisiForo
SYSTEM OF ELLIPTICAL TRAINING

Kinisiforo Ltd was founded in 2011, and has its main office in Limassol, Cyprus. The Company specializes in the development and supply of equipment for the rehabilitation of patients with neurological conditions and is run by qualified professionals who understand the needs of their patients.

Our main product is a cutting-edge rehabilitation system called Kinisiforo. This system was designed and developed based on the results of long-term clinical and scientific research and implements a new method of neurological rehabilitation called K-Set. This method was developed in collaboration with different Rehabilitation Center that has significant experience in rehabilitation of neurological conditions including cerebral palsy, stroke, brain and spinal cord injuries.

Kinisiforo Ltd constantly works on improvement of its products in order to maintain strong competitive capabilities. We continually strives to combine the highest standards of quality and efficiency. We believe we have the latest and best innovative healthcare system and product of this type. Furthermore, we are able to treat every patient and serve every customer on an individual basis.





The NicoMed Rehabilitation Centers are registered trade marks of Kinisiforo Ltd. and can be found in Cyprus in Limassol, Paphos, Nicosia and in Lithuania Vilnius. The centers are specially designed for people with a wide range of motor impairments and patients with physical disabilities.

NicoMed was established in 2004, with a mission to offer, "A Holistic Approach to Rehabilitation, for Quality of Life!". A truly independent, rehabilitation center, providing physical therapy and rehabilitation services, such as Clinical Psychology, Speech Therapy and a Workshop for Orthosis and Prosthesis all under one roof at NicoMed Center.

Our staff and management are highly motivated, well-respected and compassionate professionals who are fully qualified and very experienced.

We have been providing trusted and quality care for the rehabilitation needs of our patients for over a decade, specializing in Orthopedics, Post-operative Rehabilitation, Sports Medicine, Amputees and Pediatric Physiotherapy. We have staff able to communicate in English, Greek and Russian language as necessary. Our treatment programmes are specifically designed for each patient's rehabilitation needs.



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KinisiForo Hospital Unit

1.a How does KinisiForo work?

Initially, the patient wears a special harness and lifted unto KinisiForo with an electric hoist headed by the device.

The upper and lower extremities are placed at specific receptions which are adjusted according to the physical characteristics of each patient.



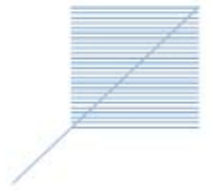
The same device can be used for children & adults.

The **KINISIFORO HOSPITAL UNIT** operates through symmetrical elliptical motion whilst simultaneously exercise the upper and lower limbs as well as the trunk muscles. Exercise is active and passive, which together with a mechanism of counterweight control accurately counts the intensity of the exercise at each drive cycle. In addition, KinisiForo has a display which shows virtual video and has sound that helps the automation learning of motion.

1.b Specifications



Fully accessible and easy to assist from therapist.



Dimensions:

Length 2950 m

Width 900 cm

Height 2600 m



Weight

750 kg



Electrical Connecting one phase

220 - 240 V, 950 W



Patient characteristics

Max patient weight 150 kg

Min patient weight 10 kg

Max patient height 200 cm

Min patient height 90 cm



Operating conditions

For internal use only

Temperature 5 °C - 45 °C

Humidity 10% - 95%



Speed range

0-10 km / h



Changing the step size

The length of the pitch
+/- 30 cm. On each extremity
The level of Step +/- 12 cm.
On each extremity
The width of the pitch
+/- 20 cm. On each extremity



Space required

At least 4 square meters
of free space

* 2 Years full guarantee and maintenance



1.c Operating Settings

KinisiForo can produce symmetrical elliptical motion during one pedal stride without any acceleration promoting active exercise instead of passive.

Simultaneously exercises arms, legs and torso muscles.

Automatically adjustment of the weight bearing and force acting on the lower extremities of the patients during the exercise.

The movement can be adjusted independently for each leg, as well as the height, width or length of the pedal stride according to patients' characteristics.

Zero vibration during the exercise (The upper and lower extremities are lock to device reception in certain position to reduce redundancy to minimum).

Patient can choose from passive mode to active mode and vice versa at any time of the exercise as the device can adapt the patient's choice.



The device follows the patient's motion and helps only where is necessary. The operator can adjust precisely the intensity and the speed of the exercise. The patient doesn't require extra assistance from his/her therapist or others during exercise however, the therapist has an easy access for assistance or evaluation during the exercise where is needed.

KinisiForo can be used in standing or sitting position or for balance and coordination using an interactive board implemented on KinisiForo.



Can be used for balance exercise too.



Two patients can exercise simultaneously.

Adjustable arm handle



Adjustable arm grip



*Very solid
Mechanism*



*Adjustable
knee grip*



*Adjustable pedal for drop
foot and inversion
or eversion deformities*



Reception of Harness



2/

KinisiForo Home Unit



A technical Comparison

KinisiForo Hospital Unit	Other Robotic Devices
1. Simultaneously exercises the upper and lower extremities as well as torso muscles and the user's coordination.	Exercises only the lower extremities.
2. Adjustable height, length and width of the step independently in each dimension and independently at each extremity resulting to exercise specific area and in higher intensity.	Adjusted only to natural gait position resulting in limited exercise from the aspect of intensity and step size.
3. Able to work passively and actively with constant robotic assistant.	Ability to work passively and actively with constant robotic assistant.
4. Ability of forward and backward movement.	Ability to move ONLY forward.
5. Ability to exercise in a sitting position.	Not applicable.
6. Ability to exercise in a static dynamic standing position.	Not applicable.
7. Ability to act as an elliptical trainer, gait trainer, step trainer or balance trainer.	Only Gait Trainer.
8. Height, Length and Width of both hand and leg bars can be independently adjusted.	Only for Legs and no width adjustment.
9. Patients can be placed on the device in less than 5 minutes.	Patients can be placed on the device in 15-30 minutes.
10. Ability to exercise 2 people simultaneously.	Ability to exercise 1 person at a time.
11. User can adjust the intensity of the leg movement through a system called counter-weight and in every pedal stride to be adjusted differently.	Device can adjust intensity to the legs constantly.

KinisiForo Hospital Unit	Other Robotic Devices
12. Ability to adjust if one leg is shorter.	Not applicable.
13. The footplates can be adjusted in case of drop foot. Unequal length, inversion or eversion of the foot as well as if there are knee or hip deformity.	Not applicable.
14. The handlebars can be adjusted in case of limited range of motion in shoulder ,elbow or wrist joints and even if there is severe deformity.	Not applicable.
15. Performance feedback and display with virtual video games that help in the automation learning of motion.	Different system.
16. Kinisofofo includes 3 different adjustable harnesses for patients of different height and size. Same device can be used for adults and childrens in standing or sitting position.	Not applicable.
17. A balance board is used to teach the user balance and agility by the virtual games interaction.	Not applicable.
18. Heart rate and oxygen saturation tools to record patient performance.	Assessment and Reporting Tools to record patient performance.
19. Can adapt to individuals with height from 0,90cm to 200cm height and up to 150kg weight. The same device can be used both by children and adults alike.	Needs two diffeent devices for children and adults.
20. Able to differentiate muscle spasticity from patient's efforts and enables the patient to exercise to his maximum capacity and if the spasticity occurs, the freewheel mode comes into effect and continues as the muscle tone is reduced.	Not applicable.
21. Patient management system to collect information on individuals and their performance.	Assessment and Reporting Tools to record patient performance.



International Presentation of K-SET Method



Petrich, Bulgaria



Peireas, Greece



Nes Ziona, Israel



Nazareth, Israel



Abu Dhabi, UAE



Limassol, Cyprus



Paphos, Cyprus



Senevita, Lithuania



Palanga, Lithuania



Vilnius, Lithuania

What is KinisiForo Home Unit?



KinisiForo Home Unit is a small device in size, compared to KinisiForo Hospital unit, which is customized based on the needs and body type of the patient for home use.

From the position of the wheelchair or chair can be operated as a passive / active elliptical bike for the legs, as well as independently exercise the arms with 3 different exercises in different dimensions.

It offers elliptical aerobic exercise for the upper and lower extremities as well as the trunk muscles.



A person in a wheelchair can be lifted upright, with the assistance of the lift available for more exercises in standing position.

It has a display which shows virtual video and has sound that helps the automation learning of motion. It can monitor Heart rate and oxygen saturation.



Specifications

Dimensions:

Length 1900 m
Width 80 cm
Height 2000 m
Weight 250 kg

Electrical Connecting one phase:

220 - 240 V, 950 W

3/ K-SET method

3.a What is K-SET method?

The K-SET method is an innovating rehabilitation approach that is based on the science of Brain plasticity. In the last decade neuroscience research has given us considerable evidence that the adult brain can undergo significant reorganization after injury through a variety of molecular, genetic, physiological and anatomical facts.

Through the specific exercise of the K-SET method, we can see that to achieve the creation of a new neuron connection (refer to neuron synapse) to establish a new memory of a certain movement and finally be a stereotype of the brain must consider the following **seven parameters**:



1

Frequent repetition of the same movement (refers to the speed of the exercise).

2

Frequency of the sessions (intensive course with daily sessions for 3 weeks, and Stability course 2 times per week for 3 weeks).

3

The importance of the angle joint movement refers to decrease/increase muscle tone (hypertonia/hypotonia) in certain muscle groups and at the same time muscle strengthening.

4

Intensity of the exercise referring to the weight Bearing for upper extremities and loading for the lower extremities.

5

Avoid shock absorption and vibrations in order to maintain a smoother movement.

6

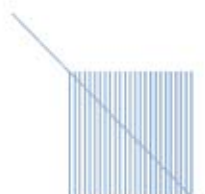
Reduce movement redundancy. The upper and lower extremities are locked in a certain position avoiding the patient to make any movement mistakes and repeat the same movement uninterrupted.

7

Attention during the exercise refers to Virtual Reality environment during the movement to promote biofeedback.

3.b Indications of K-SET method

- Rehabilitation after stroke
- Brain injuries
- Spinal cord injuries
- Cerebral palsy (children and adults)
- Multiple sclerosis
- Parkinson disease
- Tetraplegia
- Hemiplegia
- Hemiparesis
- Neuromuscular disorders
- Post-polio syndrome
- Ataxia and uncoordinated movements
- Balance disorders
- People with visual or audio, lingual disorders
- Postoperative rehabilitation
- Act as a tool for cardiovascular endurance test (stress test) or Vo2Max for people with different motor impairments or elite athletes.





In sitting position we can exercise in greater range of movement than normal bicycle.

3.c What are the effects of K- SET method?

- Improves movement
- Improves coordination
- Improves gait
- Regulates muscle tone
- Reduces muscle spasm and spasticity
- Increases muscle strength (even if low or absent)
- Aerobic exercise on upper and lower extremities as well as torso muscles
- Increases endurance
- Improves oxygen intake
- Increases range of motion in all articulations
- Keeps all joints agile and flexible
- Compensates right - left deficits
- Improves balance
- Reduces pain due to muscle immobility
- Reduces ataxia
- Reduce constipation
- Improves self-esteem
- Improves visual and sensory perception
- Improves reaction time



“ The K-SET method offers you concrete, effective and immediate ways to easily tap into your brain’s enormous potential. With the Essentials, the brain becomes overactive leading to breakthroughs in movement abilities, pain, and peak performance.



4/

NicoMed Rehabilitation
Center Franchise Model

4.a What is the NicoMed Rehabilitation Center Franchise Model?

The NicoMed Rehabilitation Center model consists of an independent team of experienced therapists' individuals, aimed at rehabilitation services. Is designed specifically for people with physical or mental disabilities. Its mission is to offer "a holistic approach to Rehabilitation, to ensure a better quality of life". The proposed model takes approximately between 300 - 500 square meters which consists of the Physiotherapy department and Hydrotherapy. The staff consists of Physiotherapists and Kinesiologist as well as various experts who collaborate with the Nicomed Rehabilitation Center.

4.b The proposed model will provide the following services:

1

Kinesiology and gait analysis

2

Rehabilitation and K – SET METHOD

3

Physiotherapy for orthopedics problems

4

Clinical and Counseling Psychology

5

Speech therapy and Speech Pathology

6

Occupational Therapy

7

Hydrotherapy

8

Sales of Homecare-assistive equipment

9

Accessible cars for transporting people in wheelchairs

10

Rooms for residential Patient and Medical tourism







Background and aim

Walking dysfunction occurs in more than 80 percent of stroke survivors. After applying different techniques of physiotherapy most of the patients are able to recover their walking ability, though this recovery is partial and remaining walking dysfunction does not limit the patient's daily and social activities only in rare cases. In order to restore gait function robot-assisted gait training is being used increasingly. However, according to some authors, the effects of robot-based therapy are comparable to those of regular gait training exercises with no clear advantages.

The aim of research: To evaluate the effects of different physiotherapy techniques on gait recovery in patients after stroke.

Methods

12 first stroke patients (subacute period, age 55-70 years, muscles strength of affected leg, grade \geq 2-3) who underwent rehabilitation at Palanga Rehabilitation Hospital in 2019, were randomly assigned into two groups. I group received gait training with KinisiForo System; II group - over ground gait training exercises. Duration of research was 3 weeks. Measurements: Manual muscle testing, Postural Assessment Scale for Stroke Patients (PASS), 10 meter walk test (walking speed, gait asymmetry, stride length, step width), Timed "Up and go" test, Berg balance Scale, Wisconsin Gait Scale for assessment of hemiplegic gait.

NB: The authors declare no conflict of interest.

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Results

After 3 weeks of training with KinisiForo the strength of ankle plantar flexion muscles showed more changes than after over ground gait training. Among the group I participants strength of the ankle plantar flexion muscles on the affected side showed an increase of 1.0 score (according Lovett scale) and reached grade - 4.5 scores.

Analyzing results according to PASS scale a bigger improvement in trunk control was found after training with KinisiForo.

Group I also showed bigger changes in stride length, gait asymmetry and walking speed (m/s). After applying KinisiForo stride length increased approximately by 38 cm (in group II the increase was smaller - 18 cm). Analyzing the Group 10-meter walk test data, we found a double increase in walking speed in group I. It changed from 0.31 (m/s) to 0,66 (m/s) after 3 weeks of physiotherapy with KinisiForo. Walking speed in group II also improved with a change of 0.22 m/s.

Summing „Up & Go“ test results between groups, group I patients showed a bigger change in task performance speed- time decreased by about 20 s. Group II patients showed less improvement - 15 s. Berg's balance scale changes between groups differ less. After gait training with KinisiForo Berg's test results improved by 16 points, applying gait training exercises - 12 points.



KINISIFORO The robotic elliptical gait trainer

Symmetrical elliptical motion whilst simultaneously exercise the upper and lower limbs as well as the trunk muscles

Conclusion(s):

Results have shown that after gait training with KinisiForo patients experienced a bigger improvement in gait. End-effector type robot-assisted gait training systems strongly influence changes in propulsion generation during gait cycle. The principle of elliptical motion insures better trunk control and influences change in gait symmetry. The above mentioned factors strongly influence change in walking speed.

“

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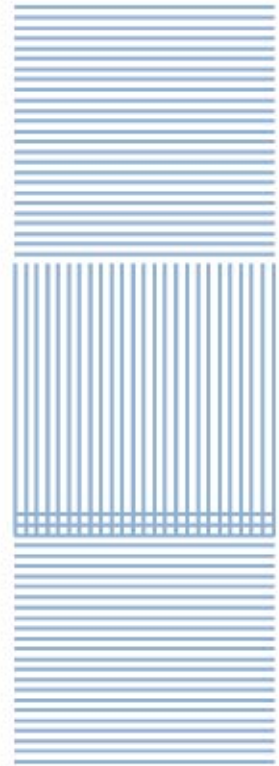
Our Mission

KinisiforoLtd was established with the dream of providing high quality rehabilitation therapies and support to adults and children who suffer with a wide range of physical impairments, using the latest medical technology for our innovative methods.









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