MotoLife®

PASSIVE, ASSISTIVE, ACTIVE TRAINING

CHINESPORT® ITALIA

REHABILITATION and MEDICAL EQUIPMENT

CE

We aim to offer rehabilitation equipment and assistive devices that are useful to large institutions, smaller professional clinics and to end-users and their relatives at home. Our goal is to encourage people with reduced mobility to explore the limits of their individual abilities. We want to motivate our customers to improve everyday life conditions, creating a stronger desire to be more integrated with others.

Chinesport thanks all those who contribute to the development of the contents of this document.

ISO 9001
ISO 13485

MotoLife®

PASSIVE, ASSISTIVE, ACTIVE TRAINING


MOTOLife®
GUARANTEE YEARS 3 ANNI DI GARANZIA
CE 0476

MotoLife® is born with the objective of improving the lifestyle quality, the health state and the psycho-physical wellbeing of all the people who have a physical or neurological impairment of the lower and upper limbs. Therefore, it is of great help for the functional recovery or for the prevention and revert of the complications strictly related to the problems of mobility impairment and immobility.

It is adequate for home use or in clinics, medical Studios or at therapy centers for exercising the upper and lower limbs.

In order to be capable of training by yourself with the MOTOLIFE, users must have the condition of managing the device by themselves, after having received specific instructions by specialized personnel. Otherwise, the constant assistance of a properly trained carer is needed during the therapy sessions.

MotoLife® - *Therapeutic indications*

Benefits of the movement therapy with the use of a motorized cycle-ergometer are widely treated in several international papers. They deal mainly with the prevention or revert of the complications which are directly linked to the lack of movement and mobility and especially with the reduction of muscle spasticity, the revert of muscle atrophy caused by immobility, the increase of specific peripheral circulation and the improvement or maintenance of the joint mobility and the slow-down of the clinical picture of neurological pathologies such as a stroke, multiple sclerosis, Parkinson's disease, etc.

USERS

MOTOLIFE is ideal for users affected by palsy or limited mobility of the legs or arms, caused by:

- Neurological pathologies such as brain stroke, multiple sclerosis, Parkinson's disease, post-polio syndrome, traumatic brain injury, infantile cerebral palsy, cerebral palsy, spina bifida, paraplegia or tetraplegia;
- Orthopedic pathologies such as rheumatism, ostheoarthritis, total knee or hip endoprosthesis, injuries involving the knee ligament;
- Metabolism pathologies and of the cardiovascular system (e.g. arteriosclerosis, diabetes mellitus type 2, high blood pressure, PVD, osteoporosis);
- Further therapy for patients under hemodialysis, patients affected by chronic obstructed pulmonary disease or patients with low physical strength in general;
- Circulatory problems at the legs and in the internal organs;
- Geriatric conditions or other problems which lead to the reduction of the movement capacity;

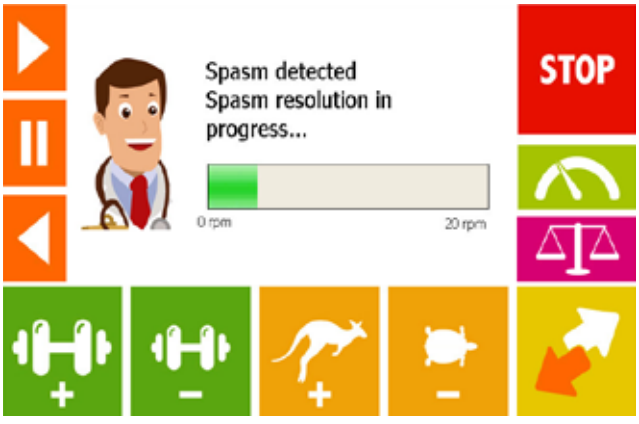
OBJECTIVES OF THE TREATMENT

Prevent, reduce and lessen the consequences of the problems related to the loss or limit of mobility especially:

- Avoid muscle weakness;
- Reinforce muscles as they are;
- Reduction of pain;
- Recovery of muscle tone;
- Keep and improve mobility;
- Activate or stabilize circulation;
- Increase resistance;
- Improve cognition and perception;
- Improve symmetry

PASSIVE TRAINING

In the case there is no residual motorial activity for the lower limbs, MotoLife® allows to perform passive pedalling movement, in which the feet and the legs are pulled by the motor at a speed previously set (passive kinesitherapy). When used for the upper limbs, in the case there is no residual motorial activity, MotoLife® allows to move passively the arms in a cyclic way.



SPASTICITY CONTROL

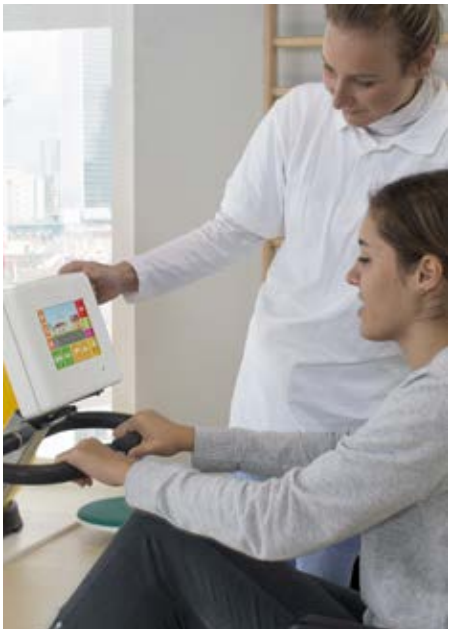
A safety control is present to detect at all times and in real time if there are any muscular spasms during therapy. The system interrupts the therapy in case a spasm is detected and inverts gradually the direction of the pedalling. The sensibility of the detection can be set to adjust the device in the best way for the user.

ACTIVE AND ASSISTED TRAINING

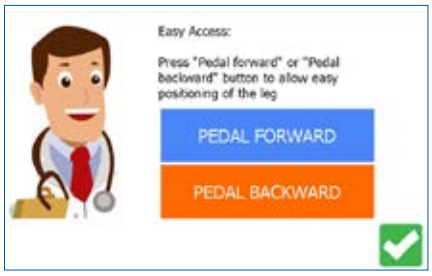
Whenever the user is capable of pedalling, even weakly, by using his or her own force, the motor offers assistance to start and maintain the motion at the pre-set speed (assisted movement). If the user is capable of going over the speed of the motor and keep a pedalling by himself or herself MotoLife® may make resistance and it can be adjusted in order to increase the work of the muscles and improve the cardiopulmonary efficiency (active kinesitherapy). Passing from one mode to the other can happen automatically: the on-board computer checks in real time and continuously the force exerted on the pedals or on the handgrips by the user and it adjusts the level of assistance o resistance of the motor accordingly.

To avoid the risk of a possibility of high stress of the joints and to the musculoskeletal system, the pedalling speed with the legs and arms with Motolife is limited to 100 RPM. Whenever the afore mentioned speed is reached, the motor limits its further increase.

In particular, during passive or active therapies, it is possible to check in real time, on a display, the active work performed by the limbs (power) and the symmetry between right and left limbs as it is represented graphically in a simple and intuitive way.



MotoLife® - *The main features*



ACCESSIBILITY

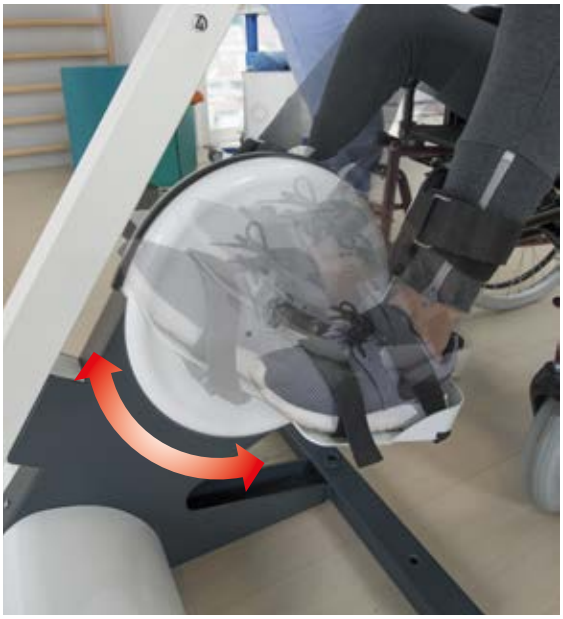
The minimum requirement to use the MotoLife® is that the user is capable of keeping an upright position while sitting. It is possible to access to it while still sitting on the patient's chair or any other suitable chair, which must be very stable without castors and which does not swivel. It must have a high backrest.
The arrangement of the pedals and of the arm-ergometer as well as the elements for the base have been designed to allow access directly from the patient's wheelchair without having to transfer to any other chair. A power-assisted system helps the positioning of the feet on the safety foot shells.

MotoLife® - *The main features*

Made in Italy

THE STRUCTURE

The metal structure of the MotoLife®, onto which are fixed the motors, the transmissions, the pedals and the handgrips, has been designed to be balanced and resistant to the stress of active pedalling with arms and legs or by eventually muscular spasticity. The broad base and the levelling rubber feet give the structure the best stability on any kind of horizontal floor.



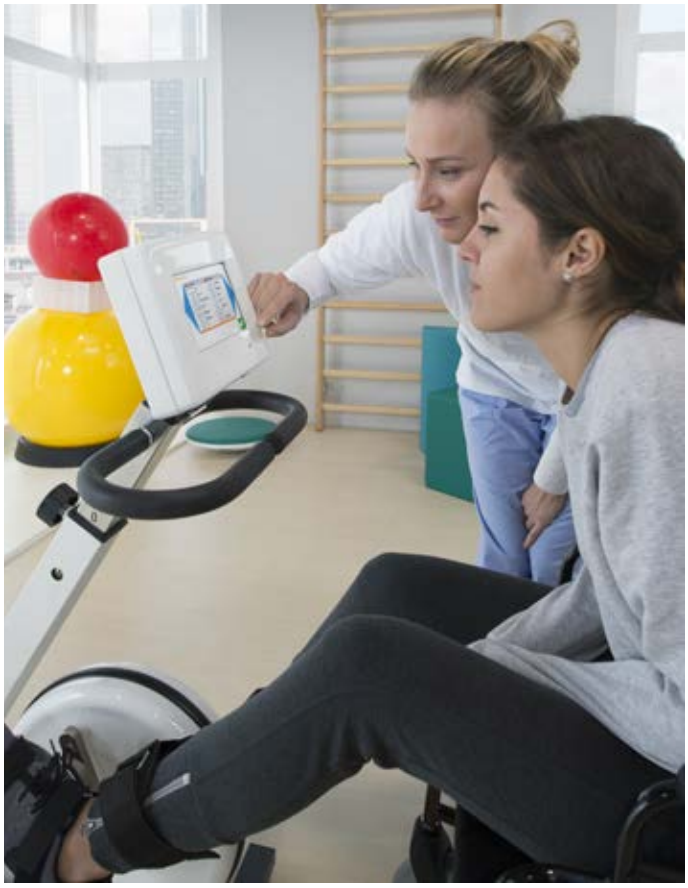
ELECTRONIC FLYWHEEL EFFECT

An electronic motor torque effect has been considered and included to reduce the weight and size of the cycle arm-ergometer and to make it easy to move it around. The continuity of the movement is not assured by a flywheel as in the stationary bicycle, but by a torque effect which is electronically generated in real time by the motor.

MotoLife® - *The main features*

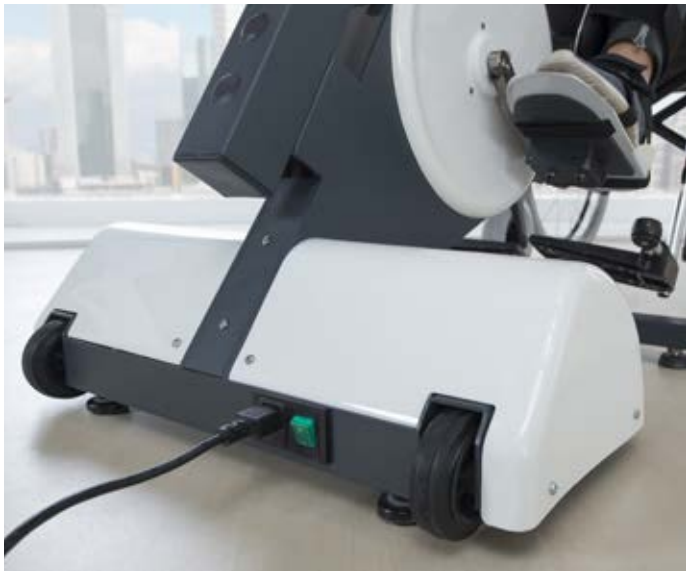
THE DISPLAY

The big full-color touchscreen display (7”), allows to keep under control at all times the development of the exercise by displaying detailed and clear information and it is used to set quickly by means of the big buttons, the parameters of the therapy in question. The buttons are highlighted with different colors for their different functions as well as pictograms for an easier understanding. The colors are contrasting but not too bright in order to avoid eye strain.



SAFETY FOOT SHELLS

In order to make the device be used by patients with zero or reduced mobility of the feet, the pedals are made with a shell shape which assures the holding of the foot at the back and side part. The feet are also fixed to the pedals by two elastic straps. Dimensions: W 14 cm x D 28 cm x H 10 cm



TRANSFERRING

MotoLife® includes a couple of wheels/castors with a rubber coating and a large handlebar for transferring the device easily indoors. The large handlebar, in the case of only legs model, is also a support for the hands during the therapy.

MotoLife® - *The adjustments*

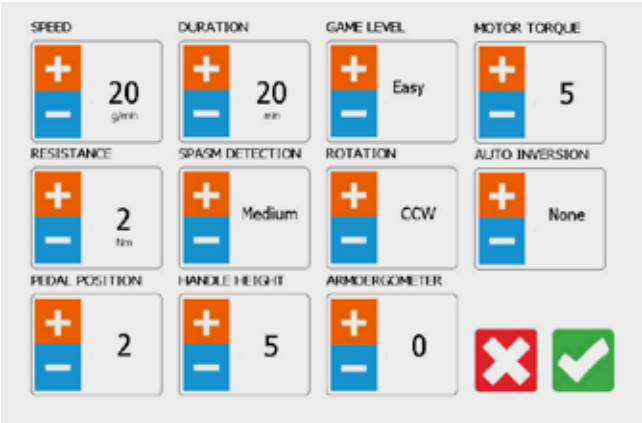
MotoLife® has been tried by physiotherapists and rehabilitation specialists to test its characteristics and functionality, with a special care for usability and safety. Especially, the possibility to adapt MotoLife® to persons of various height and body shapes has been very positive.

HEIGHT OF THE STRUCTURE

The handlebar is adjustable in height, with a total range of 22,5 cm in 10 pitches, the arm-ergometer can be adjusted in height from a minimum of 90 cm to a maximum of 109 cm from the floor, to make its use more comfortable. The adjusting mechanism works with a blocking star-shaped handle and a pull system ruota e tira, to ensure safety and the possibility to return to a previous position the lifting is aided by a gas spring which reduces to a minimum the necessary strength for the adjustment.

DEPTH OF THE ARM-ERGOMETER

The arm-ergometer can be adjusted in depth, with a total range of 12,5 cm in 6 pitches. This adjustment gives more ergonomy to the user according to the type of movement that is intended to be done with the upper limbs. Furthermore, during sessions of training with the legs the arm-ergometer can be completely pushed/set backwards to avoid hindering the movement.

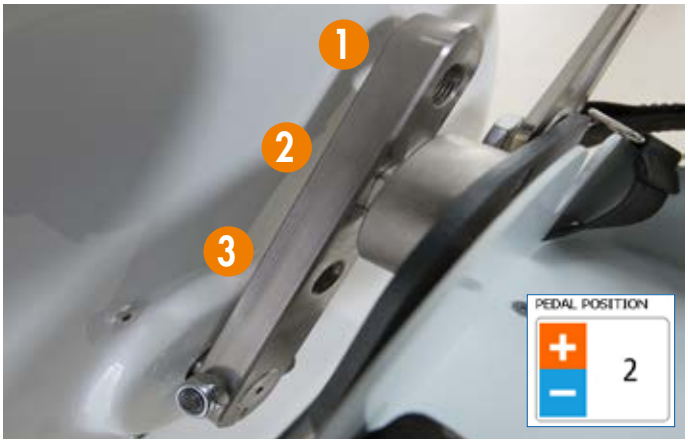


INDIVIDUAL SETTINGS STORAGE

All the working parameters can be adjusted from the therapy settings panel. Considering the MotoLife® runs a multiuser software, for each account the settings are kept in a database and can be recalled subsequently. Also the parameters regarding the settings of the depth of the arm-ergometer, pedal position, etc. are stored by using the settings panel and can be recalled subsequently.

TILTING DISPLAY

The base of the display can be tilted even up to a horizontal position. This allows a perfect visibility at any light condition and the possibility for the therapist to be able to set the parameters without the need of having to bend down.



PEDAL POSITION

According the user's ergonomic measurements and the needs corresponding to the type of therapy it is possible to vary the pedal position by three sizes: 5 cm, 8,5 cm and 12 cm. For each user the established position can be stored in the settings of the legs therapy and it can be recalled subsequently.

HANDLE POSITION

In the legs and arms version it is possible to adjust also the handlebar position in two different sizes:
7 cm and 10 cm. The established position can be stored for each user in the settings of the arms therapy and it can be recalled subsequently.

MotoLife® - *The software*

The software is multi-user type, and it allows to create, modify and delete different accounts. The settings are stored for each user in a database and they can be recalled when a given account is selected. The account stores the settings of the therapy, both for legs and arms. It also keeps a record of all the training sessions for each account.

MOTOLIFE

- The buttons Start/Stop of the therapy have great visibility, they can be easily interpreted and they are easy to reach, both by the patient and by the carer.
- MotoLife® is easy to use at home due to its friendly interface with simple and big buttons, large and colorful pictograms/icons and a very bright display.
- The setting panel for adjusting the details of the therapy and for setting the safety parameters (e.g. spasticity control) are easily accessible and easy to interpret.

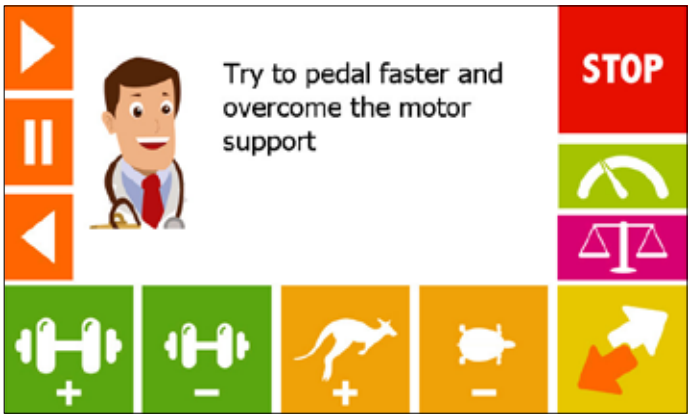
EASY DATA ANALYSIS

By inserting a USB memory drive in the port on the right of the display it is possible to export the data in a text file, in comma separated values (CSV). Such information can be easily imported into an excel file to study the results.

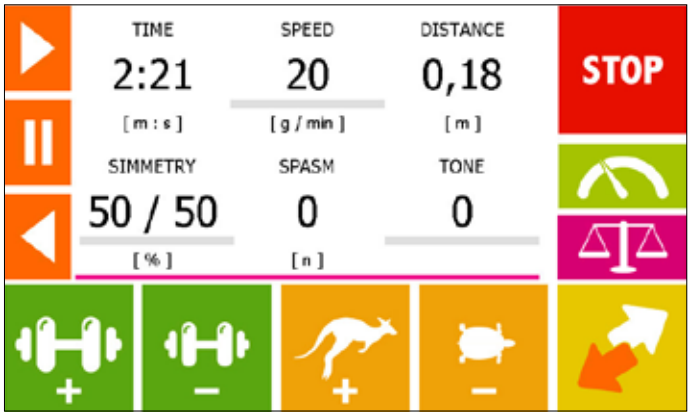
MotoLife® - *The software*

Made in Italy

The software has been projected in order to be easy to use and with the objective of involving the user in such a way as to keep him or her focused on the training and feels well looked after at all times. The colorful interface and the detailed information, as well as the games, keep a high ratio of interest by the users of MotoLife®.



The colorful and easy to use interface keeps the user's attention focused by means of sliding screens which show all the details of the training and aim at improving the exercise by using encouraging expressions which change according to the progress of the sessionIt is possible to understand in real time the balance between active and passive therapies, having a clear view of the key parameters involved.



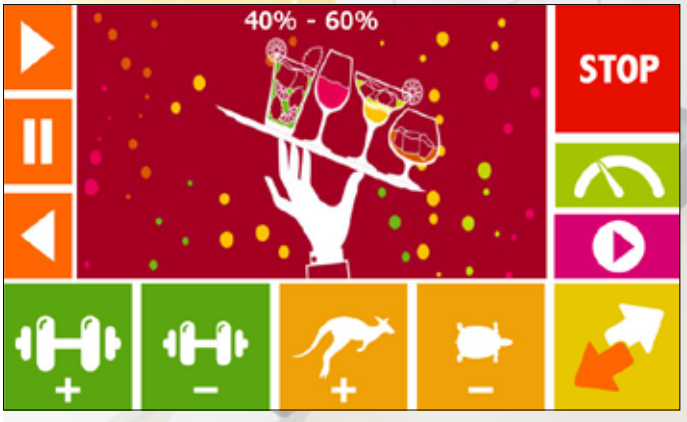
The sliding of the screens can be set from the settings panel but during a training session it is also possible to use the side sliding buttons to move on, back or block the screens.

MotoLife® - *The software*

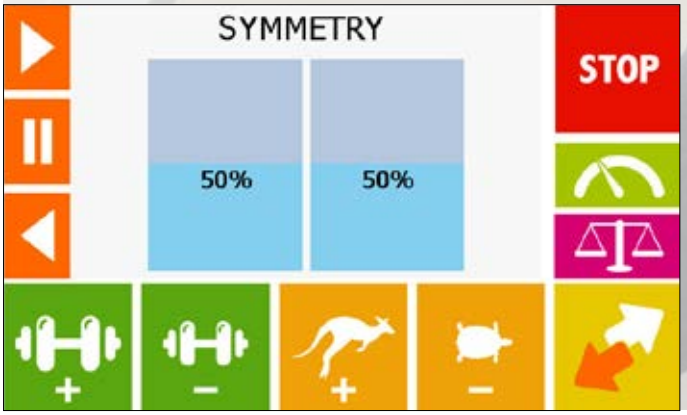
MOTIVATING SOFTWARE

Play-therapy: three different play-therapies with a biofeedback are present to improve the involvement of the patient, increasing his or her commitment, during the treatment.

The game related to the pedalling speed shows a ride along a city street. According to the speed of the pedalling the ride becomes faster or slower.



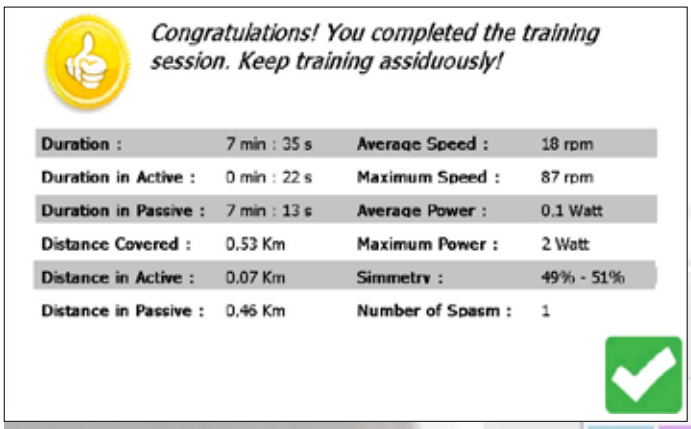
The first game related to symmetry requires balancing a tray and allows the user to be directly involved in the improvement of the balance between both limbs.



The second game is related to the symmetry and it is represented by two colored bars. It improves the involvement of the patient to improve the symmetry of the pedalling.

REPORT

The results, the progress of the exercises and the setting parameters of each session are stored in the database on the device to make it easier for doctors to access to them. This helps to check the on-going of the home therapy and its clinical use. It also allows a better control of the progress of the therapy.



At the end of every training session, all the key parameters are listed and divided between active and passive therapy.

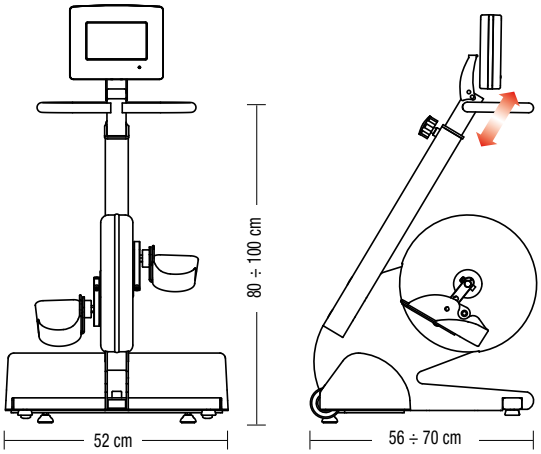
Furthermore, it is possible, from the main screen, to access to the sessions log to view the progress of the time employed considering each parameter.

The MotoLife® database, allows not only to record the parameters of the therapy for the different users, but it also allows to export the data of all the sessions performed in a given period of time.

MotoLife® - *The models*

AR20011 MOTOLIFE BASIC

The device can be qualified as motorized stationary cycle-ergometer for the movement of the lower limbs. It includes a computerized control system which allows to perform a cycling exercise by pedalling with the lower limbs from a sitting and semi-reclined position. It is possible to access the device while sitting in the patient's own wheel chair. The device is made mainly by a metal structure for the frame which contains the motor for the lower limbs. The frame is also the support for the computer unit with a touch screen display from which it is possible to manage all the functions. It is also the support for the large handlebar for support and transport. In the case there is no residual motorial activity for the lower limbs, MotoLife® allows a passive pedalling motion, in which the feet and the legs are passively pulled by the motor at a given pre-set speed (passive kinesitherapy).
MotoLife® is suitable for home use as well as for clinics, medical Studios and other institutions and it is adequate for passive, assisted or active kinesitherapy. It can adapt itself automatically and in real time to the conditions of the user.
Dimensions: W 52 cm x D 56 ÷ 70 cm x H 80 ÷ 100 cm; Weight: 48 kg



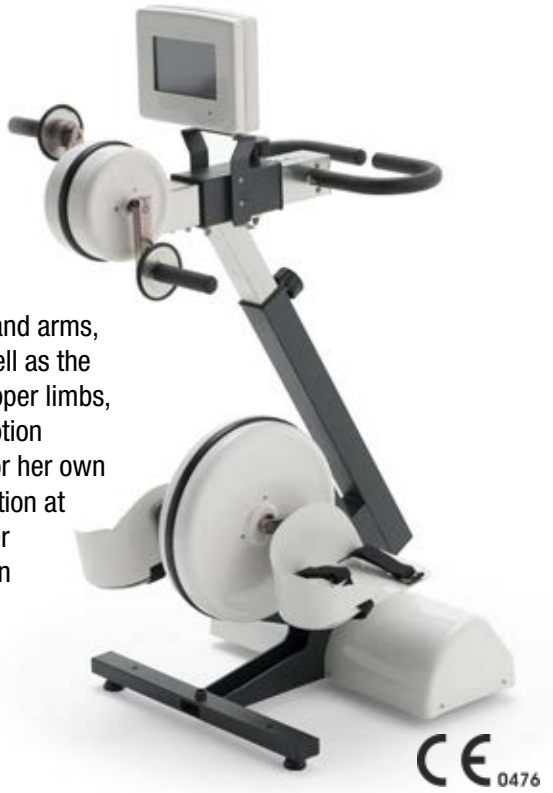
TECHNICAL DATA		
User inferface		7'' Colored display with touchscreen
Movement therapy		active, assistive, passive
Resistence levels		20 levels, 2-20 N / m
Standard Passive Motor Speed		60 RPM (Rotation per minute)
Motor Speed for Parkinson		100 RPM upon specific request
Max Active Pedal Speed		100 RPM
Motor unit		1
Power Supply	Europe	220-240V ~/50-60Hz - 0,83A
	USA, Canada	110-120V ~/50-60Hz - 1,6A
Medical device class		II a
Frame height adjustment		min 90 cm / max 109 cm
Tilt display adjustment		0 - 90°
Pedal radius		3 different positions
Use modality		on wheelchair / other suitable chair
Easy transferring		included 2 castors w/rubber coating
Spasticity control function		3 control levels / Inversion of rotation
Motivating training		Gaming / biofeedback
Individual data storage		Setting parameters and final outcomes
Software update / Data export		by USB key at home

The belts have an adjustable hook anchoring to the structure of the chair.

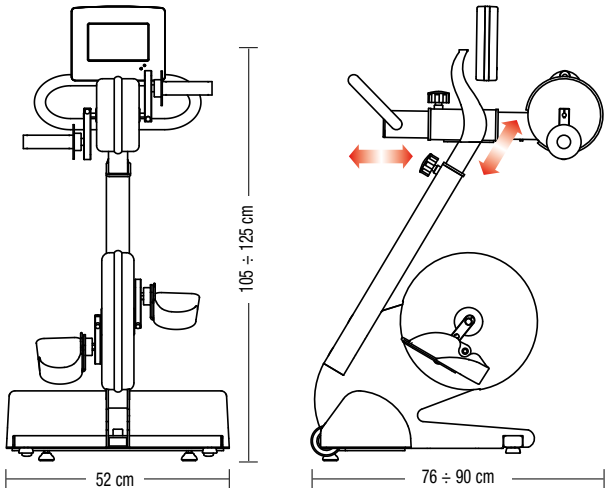
ACCESSORIES:

AC1076 BELT RETRACTOR
AC1077 EXTRA BELTS
AC1078 LEG SUPPORT
AC1079 SHOE PEDAL FOR CHILDREN

AR20012 MOTOLIFE EVO



This is a cycle-ergometer for movement therapy of the upper and lower limbs. This model's main feature is the arm-ergometer which features a second stand-alone motor for the movement of the upper limbs. This device provides the possibility of a cycling exercise by pedalling with the lower or upper limbs from a sitting and semi-reclined position. It is possible to access the device while sitting in the patient's own wheel chair. In this model for exercising legs and arms, the structure holds also the arm-ergometer with its motor and handlebar, as well as the motor for the exercise of the lower limbs. When doing the exercises with the upper limbs, if there is no residual motorial activity, MotoLife® allows a passive pedalling motion for the arms. Whenever the user is capable of pedalling, even weakly with his or her own muscle strength the motor will provide assistance to start and maintain the motion at a pre-set speed (assisted movement). If the user is capable of reaching a higher speed than the one set the motor will create an adjustable resistance which can be set in order to improve the work of the muscles and the cardiopulmonary efficiency (active kinesitherapy).
Dimensions: W 52 cm x D 76 ÷ 90 cm x H 105 ÷ 125 cm; Weight: 56 kg



TECHNICAL DATA		
User inferface		7'' Colored display with touchscreen
Movement therapy		active, assistive, passive
Resistence levels	Lower limbs	20 levels, 2-20 N / m
	Upper limbs	2 - 8 N / m
Standard Passive Motor Speed		60 RPM (Rotation per minute)
Motor Speed for Parkinson		100 RPM upon specific request
Max Active Pedal Speed		100 RPM
Motor unit		2 / alternative use
Power Supply	Europe	220-240V ~/50-60Hz - 0,83A
	USA, Canada	110-120V ~/50-60Hz - 1,6A
Medical device class		II a
Frame height adjustment		min 90 cm / max 109 cm
Arm-ergometer depth adjustment		range of 12,5 cm in 6 pitches
Tilt display adjustment		0 - 90°
Handle radius / Pedal radius		2 different positions / 3 positions
Use modality		on wheelchair / other suitable chair
Easy transferring		included 2 castors w/rubber coating
Spasticity control function		3 control levels / Inversion of rotation
Motivating training		Gaming / biofeedback
Individual data storage		Setting parameters and final outcomes
Software update / Data export		by USB key at home

Allows training also for the people who have little or no hand-grip force, keeping the patient safely anchored onto the handgrip.

ACCESSORIES:

AC1076 BELT RETRACTOR
AC1077 EXTRA BELTS
AC1078 LEG SUPPORT
AC1079 SHOE PEDAL FOR CHILDREN
AC1080 WRISTBAND FOR THERAPY GRIP
AC1081 ARM REST FOR THERAPY GRIP

AC1076 TIP-UP PROTECTION

To fasten the wheelchair onto the MotoLife®, avoiding it to move from place or tipping up during therapy. The belts have an adjustable hook anchoring to the structure of the chair (two pieces).

AC1077 EXTRA BELTS

These are useful to fasten the device onto a wheelchair to avoid movements or tipping up, recommendable to save the structure of the chair from scratching (two pieces).

AC1078 LEG SUPPORT

To allow the use by people with leg adduction or abduction problems keeping them safely anchored onto the pedals. (two pieces).

AC1079 SHOE PEDAL FOR CHILDREN

Allows the use also by children or short-height people due to the use of a smaller and less deep foot shell which keeps the pedal position closer to the user. **Dimensions: W 11 cm x D 23 cm x H 5 cm** (two pieces).

AC1080 WRISTBAND FOR THERAPY GRIP

Allows training also for the people who have little or no hand-grip force, keeping the patient safely anchored onto the handgrip. (two pieces).

AC1081 ARMREST FOR THERAPY GRIP

Whenever the use of the wristband may not be enough, the armrest allows to hold and anchor the whole forearm to allow a correct training of the upper limbs even to tetraplegic patients. (two pieces).

Insights

into the effectiveness of the movement therapy with MotoLife®

Insights into the effectiveness of the movement therapy

The loss of the functionality of the upper and/or lower limbs as a result of any neurological pathology (e.g. stroke, spinal cord injury, multiple sclerosis, cerebral palsy, Parkinson's disease), by orthopedic pathologies, by heart pathologies, by an accident or by age, may imply a partial or total loss (according to the degree and of the thoroughness of the injury) of the capability of keeping standing straight, of moving around or of the ability to hold and use everyday objects (for feeding, for personal self care).

The therapeutic objective at which we aim, i.e. the recovery of the movement and motion ability as close as possible to a healthy person's ability, is still considerably distant in spite of the amount of efforts invested on this topic so far.

Nevertheless, although the results obtained on the field of the motion recovery can still be unsatisfactory for the most serious cases, aerobic exercises carried out regularly have proven to produce excellent results when preventing and treating the serious effects caused by the lack of movement of the limbs.
It is important to keep in mind that muscles have the function not only of moving the joints in counter gravity but they are also important for their physiological effect of "pump" for the circulatory system.

After hospital discharge, generally, patients affected by serious motion problems (paralysis) lead a sedentary lifestyle in a wheelchair or do not perform any type of physical activity. Therefore, important degenerative consequences can manifest: at the beginning, a loss of weight but a subsequent obesity and a reduction of the levels of HDL cholesterol, muscle atrophy, osteoporosis, fractures, joint contractions, breathing problems, reduction of the cardiopulmonary condition, deafferentation chronic pain, edema in the paralyzed limbs, pressure ulcers, spasticity, phlebothrombosis, recurrent urinary tract infections, erectile dysfunction and several other secondary medical complications, which carry along a depression and a sense of insatisfaction for the training done as well as for the results obtained in acute phase and in the chronic phase, poor life prospect and improvements which hinder the social reintegration of patients and burden the medical and social costs. [1-6]

Even in less serious cases such as for patients who have been prescribed immobility after surgery or an accident, for those who are bed ridden due to prescription or due to the age, immobility has always negative consequences (deconditioning) on several body systems: musculoskeletal, cardiovascular, metabolic, endocrine, respiratory, genito-urinary, gastrointestinal, skin and emotional.

According to what has been described above, it is recommendable to do proper exercises with the paralyzed limbs in order to prevent or revert the severe problems caused by immobility.

Benefits of movement therapy with the use of a motorized cycle ergometer are widely treated in several international papers. They deal mainly with the prevention or revert of the complications which are directly linked to the lack of movement and mobility and especially to the reduction of muscle spasticity, the revert of muscle atrophy caused by immobility, the increase of specific peripheral circulation and the improvement or maintenance of the joint mobility and the slowing-down of the pathological pictures of neurological pathologies such as a stroke, multiple sclerosis, Parkinson's disease, etc.

Benefits of movement therapy with motor assisted cycle arm-ergometer are documented by several papers.

Post-Stroke rehabilitation or Brain Trauma [7-19]

A stroke implies major changes in the lifestyle of those affected by it: hemiparesis makes the usual movements difficult while performing everyday activities and compromises the person's self-reliance. While rehabilitating from a stroke, movement therapy with a motor assisted cycle ergometer, both for upper and lower limbs has proven to be very helpful. It is particularly of great aid for relearning the type of movements which were lost with the stroke: strength and resistance are trained at the same time as well as coordination. Also the muscle spasticity is reduced. Specifically:

- *Improves muscle strength and resistance*
- *Reduces muscle spasticity*
- *Brings muscle tone back to normal*
- *Improves coordination and movement abilities*
- *Improves balance and gait*
- *Reduces contractures and improves the range of joint articulation*
- *Reduces pain in the case of complex regional pain syndrome*
- *Stimulates the cardiovascular system and improves peripheral circulation*
- *Activates metabolism*
- *Reduces fluid retention*
- *Improves the stability of the trunk*
- *Improves cognition and the general psychophysical state of the patient*

Multiple Sclerosis [20-25]

Clinical trials demonstrate that therapy with motor-assisted cycle ergometer improves the quality of the lifestyle of the patients affected by multiple sclerosis: the symptoms of this pathology can be reduced and its course can be slowed down by a mild and specifically programmed physical activity. Joints must be exercised often in order to keep the range of movement. In particular:

- *Improves muscle strength and resistance*
- *Reduces muscle spasticity*
- *Brings muscle tone back to normal*
- *Improves coordination and movement abilities*
- *Improves the articulation range*
- *Stimulates the cardiovascular system*
- *Stimulates the immune system*
- *Improves cognition and the general psychophysical state of the patient*
- *Improves independence and helps patients in social reintegration*

Parkinson's disease [26-29]

Parkinson's disease is one of the commonest degenerative pathologies of the nervous system in the elder. It is possible to slow down the effects of the pathology if the right therapy is used and thus stay independent as longer as possible. Physical exercise can provide also psychological benefits and contribute to a sense of well-being with a positive impact in lifestyle quality. Especially:

- *Favours mobility*
- *Reduces tremor and bradykinesia*
- *Makes the muscular tone regular and reduces muscle rigidity*
- *Improves cognition and emotional state*
- *Stimulates the cardiovascular and metabolic systems*
- *Improves independence while doing everyday activities*

Paraplegia [30-31]

Spinal injury and paralysis as its consequence is an important traumatic event which is most of the times irreversible and which brings along major changes for the lifestyle of the patient and his or her relatives. The main objectives of exercise rehabilitation are in this case to get the patient back to an active and independent everyday lifestyle. In the case of incomplete paraplegia, early exercise rehabilitation can help the patient to relearn the movements that were lost. In the case of complete palsy, though, the movement therapy helps to keep the muscles, tendons and joints healthy. It also helps to maintain metabolic, cardiopulmonary, circulatory and immune functions. Especially:

- *Reduces contractures and improves the range of joint articulation*
- *In the case of incomplete palsy, improves the strength, resistance and muscle coordination; it also helps motor relearning*
- *Stimulates the cardiopulmonary conditioning*
- *Activates metabolism*
- *Favours digestion and the functions of the intestine and bladder*
- *Reduces fluid retention*
- *Improves peripheral circulation*
- *Reduces the possibility of pressure ulcers*
- *Improves the stability of the trunk*
- *Improves the general psychological and emotional state of the patient*

Cerebral palsy [32-33]

Patients with infantile cerebral palsy and spastic palsy can train muscles specifically. Passive physical exercise, assisted by a motor helps to reduce spasticity. Regular and frequent exercises with the motorized cycle ergometer can contribute to the relearning of complex movements and reinforce the physical and mental wellbeing of patients. Especially:

- *Favours the regulation (avoids the diminishing) of the muscle tone and improves the range of joint movement*
- *Favours the relearning of complex movements and coordination even with children*
- *Improves balance in a standing position and gait symmetry*
- *Improves independence for everyday activities*
- *Increases the patient's motivation for everyday training*
- *Improves the efficiency of the movement and implies a saving of resources*
- *Reduces the duration of therapy*

Orthopedic Rehabilitation [34-35]

Whenever doing physical exercise becomes difficult due to rheumatic, arthritic pain or arthritis or after an orthopedic trauma, the use of the motorized cycle ergometer in kinetic therapy helps prevent irreversible damages caused by immobility and also to keep joints and muscles healthy. Furthermore, it has proven to be useful for the rehabilitation of the hip adductor muscles of the muscles of the shoulder and the arms, as well as serving as a balance for the work of the muscles of the quadriceps in a post-surgery phase. Especially:

- *Slows down the degeneration of articular cartilage*
- *Stimulates the articular metabolism*
- *Reduces the contractures and helps in muscle rehabilitation*
- *Improves balance in the use of the muscles*
- *Favours mobility*
- *Stimulates the cardiopulmonary system*
- *Stimulates the mind*

Cardiopulmonary conditioning, Hypertension and Peripheral circulation [36-44]

In case of hypertension, doing physical exercise with the motorized cycle ergometer can help reduce in a natural way the blood pressure and help to a reconditioning of the cardiopulmonary system. At the same time, the increasing age has as a consequence the loss of blood vessel elasticity. The consequences are frequent circulatory problems. Thinner and partially obstructed veins do not carry enough blood, and therefore the oxygen and nutrients that reach the muscles are less. By doing physical exercise regularly, either with the use of one's one muscle force or aided passively by a motor, it is possible to favour peripheral circulation. Doing physical exercise regularly is the best way to be physically and mentally fit, even for the elderly. Movement therapy with the aid of a motorized cycle ergometer ensures a moderate type of exercise using the capacity left without overloading the musculoskeletal and cardiopulmonary systems. Especially:

- *Helps to maintain and improve mobility*
- *Improves gait performance (speed, safety, stress)*
- *Improves balance*
- *Improves independence for everyday activities*
- *Stimulates the cardiopulmonary system*
- *Even in the cases of age dementia (Alzheimer) this therapy has proven effective to favour physical exercise at home and help independence for everyday activities.*

Movement Rehabilitation in geriatrics [45-50]

Doing physical exercise regularly is the best way to be physically and mentally fit, even for the elderly. Movement therapy with the aid of a motorized cycle ergometer ensures a moderate type of exercise using the capacity left without overloading the musculoskeletal and cardiopulmonary systems. Especially:

- *Helps to maintain and improve mobility*
- *Improves gait performance (speed, safety, stress)*
- *Improves balance*
- *Improves independence for everyday activities*
- *Stimulates the cardiopulmonary system*
- *Even in the cases of age dementia (Alzheimer) this therapy has proven effective to favour physical exercise at home and help independence for everyday activities.*

Psycological Benefits

Several beneficial effects can be obtained as a result of movement therapy also considering the patient's psychological aspect and concerning the release of the dopamine. Various patients who have participated in a training program have reported to feel stronger, more energetic, less tired and experience a higher sensation of wellbeing and therefore the movement therapy is capable of improving mood disturbances and improve the perception of one's own state of health for the physically impaired. Furthermore, aerobic exercise favours a greater quantity of oxygen for the brain with its consequential improvement for the cognitive capacities.

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