

TORQWAY

Use of the TORQWAY device for the
purpose of physiotherapy and health
support



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Place and date of study:

Barczewo, 31 January 2016

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Foreword

TORQWAY is a device with a manual drive that combines functions of the sports and leisure vehicle. It can be used as a mini-gym and a mobility instrument supporting physiotherapy. TORQWAY consists of two independently driven front wheels, a set of rear torsion wheels (castors), two levers –handles, and the low-suspended, mobile platform enabling the user to assume a standing position. Each lever is connected to a drive mechanism built into each front wheel. The user, by putting the levers in motion, propels the vehicle. Innovation of the TORQWAY device results from the type of drive applied. Oscillatory movement of the levers is converted into unidirectional rotary motion of the wheel axles, which means that each motion of the user's shoulders - forwards and backwards - is productive and drives the vehicle. The speed of movement of the vehicle depends on the type of gear inside the mechanisms, frequency of movement of the user's arms, strength applied into pulling the levers, the levers' length, and also on the terrain in which the vehicle is operated.

The vehicle's drive method enforces a certain kind of physical activity that allows to obtain and to maintain an efficient and coordinated silhouette. Due to micro-movements of all muscles it may be of immense help to persons with motor or obesity problems. TORQWAY introduces a new, safe mobility method consistent with current trends of active leisure, healthy lifestyle, and environmental protection.

Riding on a TORQWAY vehicle has the following effects and benefits:

- (i) sports - improves the condition of its user, strengthens every group of muscles;
- (ii) recreational - guarantees relaxation and a sense of well-being;
- (iii) rehabilitative - improves the coordination and circulatory capacity of its user, such as post- injuries or surgeries.

Examination by the physiotherapist is to verify the assumptions and refine the opinion. The advised rehabilitative application of the vehicle will be a valuable indication for those TORQWAY users who are recommend exercise in aim to improving their health.

1. Testing of the TORQWAY vehicle

a. The time of observation and testing

In the period from 01/11/2015 to 01/31/2016 in the city of Barczewo and the surrounding area. The research had been carried out on patients undergoing physiotherapy in Beata Kurdynowska's wellness center. Ms. Kurdynowska is a qualified physiotherapist. The vehicle had been tested by 20 people with various ailments. Among them, persons treated for obesity, for joint problems, people whose condition required a holistic physical therapy, geriatric patients, and athletes with a variety of injuries of the lower limbs (footballers, cyclists).

b. Key Observations

i. Use in persons with injuries

TORQWAY is a good alternative to endurance training for people after injuries. It can be used in situations where it is necessary to maintain the overall efficiency of the organism when there is no possibility of using physical activity aggravating the lower limbs and their respective joints.

ii. The use in the elderly

The vehicle benefits the physiotherapy of the elderly. Most of all, it improves the overall performance, does not aggravate the joints, and does not result in compression when working on the device. **During the workout the physiological curvatures of the spine are preserved, thus allowing to avoid overstrains.** The equipment makes it possible to adjust the intensity of the workout to the individual ability of the user, in terms of general physical fitness, and circulatory and respiratory parameters (using the monitoring during exercise).

iii. The use in persons with poor motor coordination

TORQWAY not only allows to perform simple coordination tasks, but also, with the systematic training, improves the user's performance in this respect.

iv. The use in persons with reduced muscle strength

The vehicle works very well as a training / therapy aimed at strengthening the muscular corset, mostly because it provides a balanced activity of the spine muscles.

TORQWAY can be included in physiotherapy / training of the upper limbs. Suitable movement range and choice of terrain allows the user to develop an appropriate exercise program.

v. The use in persons with the joint diseases / injuries

The tested invention is a great alternative for people with coxarthrosis and gonarthrosis, because if the patient is able to assume a standing position they can use the device without aggravating the diseased joints.

At the same time it is possible to use TORQWAY, among others, in patients after arthroscopic knee treatment, even during the use of the orthosis.

vi. The use in persons with ailments of the vertebral column

Riding on TORQWAY has a positive effect on the spinal muscles. It is noted that during the ride any compression or positions allowing for overstraining are not present. The undertaken motion has a direct impact on strengthening the corset muscles. It is certain that TQ can be used not only as a form of prevention in the range of spinal pain, but also as a form of improving the work of paravertebral muscles.

vii. Use in the obese and overweight

The vehicle performs well as a form of activity supporting the processes of weight loss and light exercise, as well as dietary programs for overweight people. The effort on TORQWAY can be described as a moderate, resulting in burning calories at 384 kcal / h at a speed of 4.8 km / h. It is an effort greater than an intense marching while not aggravating the joints as such. (Exercise research report from the Academy of Physical Education in Krakow from 25.03.2015)

viii. TORQWAY as the vehicle for everyone

Riding a TORQWAY is an excellent form of an outdoor kinetic therapy for all.

Conclusion

Shortcomings

For the individuals with weak muscles of shoulder girdle and upper limbs getting started may be an issue. In such a case the user must be prepared by setting the levers accordingly.

The final opinion

TORQWAY is a vehicle suitable for physiotherapy. My observations indicate that the proposed motor innovation is an interesting solution, because it allows for personal training affecting the overall mobility, cardiorespiratory capacity, muscle strength of individual muscle groups, and coordination. I recommend driving on TQ to the following persons: the elderly, patients in the late period of cardiac rehabilitation, orthopedic and traumatological patients, in order to maintain the overall fitness, injured athletes undergoing physiotherapy or as an alternative form of training during the preparatory period, the obese and overweight, the healthy people in the prime of life as an interesting alternative to common forms of outdoor activity.

FORM OF THE USER: IMPACT ON THE MUSCLES

The Physiotherapist's studies have been commissioned by TORQWAY sp. z o.o.