



KARATHERAPY PHYSICAL DISABILITIES-WEELCHAIR KARATE

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ABSTRACT:

Karatherapy is a medical discipline of rehabilitation which consist in the application of movements and positions taken from the karate movements, positions taken from the karate kata, and any respiratory dynamics and states of consciousness for use in health. Their applications in rehabilitation cover varied pathologies'. Wheelchair karate is a system of sport rehabilitation, which is specific of Karatherapy created to enhance this integration. It provides three aspects that I consider fundamental: Performance of a martial arts activity with the opportunity to experience the great incentive provided by the effort and concentration expended to progress from one degree to another. Increase in psychomotor abilities, vital capacity, relaxation and muscle development of the entire upper body. An excellent way of rehabilitation that is always better accepted than conventional rehabilitation. The common nexus in the practice of this sport is the wheelchair.*

KEYWORDS:

Karatherapy, Medicine, Rehabilitation, Physical Disabilities, Wheelchair, Sport, Integration, Amputees, Cerebral Palsy, Paraplegia, Hemiplegia, Inmunosupressed, Malformations, Bipedestation, Ambulation

INTRODUCTION :

The "Wheelchair Karate" system has been created as a playful method of rehabilitation for diminished physcists.

Karate in wheelchair provides a greater social integration by becoming accessible new rehabilitative and sports experiences providing three fundamental aspects:

1. Realization of a martial art, with the incentive effort and concentration to obtain a senior belt (must be borne in mind that can dress costume of karate and the belt shows the degree of learning).
2. Increase in the psychomotor skills, visual capacity, relaxation and all the higher train muscle development.
3. It is an excellent way of rehabilitation, that breaking break the monotony is better received than conventional rehabilitation is.

MATERIAL AND METHODS

During a period of six months was teaching Karate in a wheelchair to a group of 10 volunteers integrated by:

4 lumbar level paraplegics
1 paraplegic dorsal level.
1 two lower limbs amputated
1 amputation of lower limb
2 cerebral palsy grade 6
1 polio

Circulatory control with electrocardiograph and tension apparatus took place. Study of body mass with manual and electronic measurement. The physical test were carried out in adapted ergometer

The training took place in five weekly sessions of 70 - 80 minutes in length.

All BMI body mass index was between 26 and 29 , being 24 the value of normality. The heart rates at rest were between 80 and 95. In five of them blood pressure figured in 140-95, very close to values of hypertension.

The skills and speed with the wheelchair in a circuit with obstacles (plastic cones on the floor) was very poor. (Test of 20 mtrs and 10 cones, more than one minute, and demolition of cones between 4-6)

The physical tests carried out showed consumption of poor oxygen located between 20-30 mltrs/Kg/mnt.

CHARACTERISTICS OF THE DIFFERENT GROUPS

Our center has worked with many disabilities. The main groups to whom this technique is directed are:

- (a) amputee
- (b) affected by poliomyelitis
- (c) certain types of Cerebral Palsy
- (d) certain types of sclerosis
- (e) certain mental deficiencies
- (f) congenital malformations of lower limb

The common link of practice is the wheelchair although perhaps some may wander about with crutches.

An initial checkup is desirable and necessary in order to diagnose the degree of invalidity and the possibilities of the activity.

The practice of karate-do in wheelchairs should not be problem for the instructor to choose people who can practise it. In principle the amputees and affected by polio, whose involvement is simply one of lower limbs, have no contraindication. The cerebral paralysis and sufferers of multiple sclerosis with little control of upper limbs, presented many more problems with a view to the practice of this activity

Our experience in the system with different disability groups allows us to expose the features of the working groups so that the instructor can have a clear picture with regard to the appropriateness of this activity:

CEREBRAL PALSY. It is defined as any abnormal alterations of movement or motor function caused by defect, injury, or inflammation of the tissue nerve content in the head box. Also all

persistent disorder of movement or posture that appears in the first years of life, due to a non-progressive brain injury.

There are two etiologies; the early, due to prenatal, perinatal and postnatal causes - meningitis - by 30% and the later form, highlighting as the triggering causes intracranial bleeding, thrombosis and stroke of brain vessels, meningitis, and intracranial tumors.

The most common clinical forms are:

- 1) spastic
- 2) ataxic
- 3) athetotic
- 4) rigid
- 5) Mixed
- 6) atonic

All of them correspond to pyramidal symptoms. We discuss the first three object of our study, as a result has been possible in some cases. With others (rigid, atonic and mixed) we have not able to obtain results:

(a) SPASTIC form. Characterized by permanent exaggeration of the stretch reflex, by resistance of muscle to the stretching or deformation of the members.

(b) ATHETOSIC form. Characterized by spontaneous involuntary movements, general and local permanent turmoil.

(c) ATAXIC form. Characterized by poor coordination and balance disorders.

In principle, must be ruled out severe spastic forms and the athetotic, considering only the ataxic form. To better clarify the concepts it is interesting to be guided by the CP-ISRA (cerebral palsy) classification system

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CLASSIFICATION

CLASS1: Moderate to severe spasticity in four limbs. Poor functional strength in upper limbs and trunk. Uncapable to push a wheelchair with arms. You need a electric propulsion wheelchair.

Conclusion. You can not practice this activity

CLASS2: Severe quadriplegia. Drives the wheelchair with legs. Poor functional strength. Problem of control of upper limbs. Conclusion. Unable to practice this activity.

CLASS3: quadriplegia / weak triplejia. Moderate hemiplegia. Pushes the wheelchair with arms.

Conclusion. Evaluation of spasticities or uncontrolled movements to decide.

CLASS4: good functional strength. Minimum problem of control in upper limbs. Conclusion. If there are no significant rigidities or alterations, the control of the movement can be incorporated fully.

CLASS5, 6, 7: Capable to walk in the majority of cases without using the wheelchair.

Conclusion: Capable to practice activity. Class 7 enjoys great autonomy and perhaps can be

directed towards the standard sport.

As a conclusion: there are three factors that are going to prevent the practice of this activity:

- a. lack of strength in the upper extremities.
- b. large spasticities in the upper limbs.
- c. Athetosis

MULTIPLE SCLEROSIS. Neurological progressive disease that can start after birth with head tremors and athetotic movements and ataxia, intentional tremor, and progressive paralysis of the limbs.

There is a form, called symmetric lateral, characterized by the gradual disappearance of peripheral motor neurons; especially at the level of the cervical spinal cord and medulla oblongata. Clinically it is translated as progressive muscular atrophy. The evolution is progressive and pyramidal disorders may appear.

Conclusion

The soundness of the upper limbs is enough to be able to practice this activity. It should not be forgotten that the disease is progressive, so it is recommended the monitoring and evaluation of the patient.

PARAPLEGIAS – Some considerations - inside of the group of the trauma core, very common in road traffic accidents, there are various clinical tables according to the scope of spinal cord injury. Higher located the injury more physical problems will be raised. Neck injury can cause death, and in the best of cases a severe tetraplegia with four limbs paralysis, possible respiratory involvement and lack of control of the sphincters. If the injury occurs in lower locations engine commitment will be still lower. The injury to dorsal-lumbar level can cause a paraplegia with motor impotence of the lower extremities, the functions of the sphincter may be compromised.

According to the above above, paraplegics can benefit from this type of activity without any problem. It is convenient for the instructor to assess if the patient have control of sphincters and if so at what level, if carries urine bags, etc. In this way, and taking appropriate measures, the practice of the activity will not present additional problems.

HEMIPLEGIA. Produced, mostly, by head trauma or vascular accidents (brain haemorrhage). They give rise to a pattern of functional impotence at the level of medium body with involvement of the progress and challenges for managing the upper limb. In principle there is not a suitable patient to perform karate in a wheelchair, given that for this activity its required a high availability of the upper limbs which must be total.

CONGENITAL DISORDERS OF LOWER EXTREMITY. Individuals with complete autonomy, which can practice karate in wheelchair very are easily. The problem of this group as all those who may possess some autonomy in the progress, is given by his initial refusal to use the wheelchair.

POLIOMYELITIS. Sequelae in lower limbs allow the practice to the full satisfaction

MEDICALASPECTS

Through the practice of this system is intended to perform an eminently rehabilitative function. Through his practice are going to experience the following benefits

- Development of the muscles of upper limbs.
- Development of respiratory muscles, diaphragm and intercostal.
- Development of psychomotor skills and attention span.
- Development of abdominal muscles.
- Joint working muscle isometry and isotony.

- Improvement in the ability and strength for the displacement of the chair.
- The rehabilitation becomes pleasant, motivation is acquired and can be practiced without just means.
- Activates metabolism with increased sweating and heart rate, and can develop aerobic and anaerobic training.

WORKING PHYSICIST IN KARATE IN WHEELCHAIR WHEEL PREPARATORY WORK

It is recommended the launch of the cardiac activity before undertaking the effort. What is known as global warming. It should deal with us at least 15 minutes.

TRAINING FOR KARATE IN WHEEL CHAIR

We should not treat the disabled with excessive protection, because it can be increased the feeling of physical inferiority. An excess of paternalism and protection should be avoided.

Fundamental methods:

This aspect is very particular, although the characteristics of this group of people I recommend the following methods:

- 1 Racing wheelchair
- 2 Working with medicinal balls of increasing weight
- 3 Work with dumbbells
- 4 Working with pulleys and extenders
- 5 Work on the ground
- 6 Working with trellising
- 7 Working with deep breathing to generate metabolic increase
- 8 Flexibility and elasticity.

1) Races in a wheelchair. Aerobic and anaerobic resistance work.

1-1) Aerobic resistance.

We intend to cause the development of the heart muscle by volume to get a good physical shape to increase resistance to the effort. Reduction of heart rate, blood pressure and a decrease in fat percentage of the patient is achieved in a few weeks. Methods to develop aerobic capacity are:

- a. March in a wheelchair for 20 to 30 minutes
- b. March in a wheelchair 50 m to the front and 50 to the rear. Make 20-30 series. At the conclusion of each 50 mtrs will be launched two fist techniques - called "Tsukis" in Karate Do - with a strong cry.

During this work the heart rate must not exceed 140p/m or below 110.

(1.2) Anaerobic strength. The objective of this training is to cause a cardiac muscle development at the expense of its walls, which will optimally prepare the subject. Nor should we forget that the anaerobic pathway stimulates the metabolism of glucose and subsequent oxidation, while anaerobic work develops the combustion in the absence of oxygen and leads as a waste product lactic acid, responsible for the "stiffness". It is interesting to accustom the body to withstand high figures of lactic acid, and this is achieved with the anaerobiosis and methods I discuss.

IT Interval Training.

Consists in the realization of races of 100/300 mtrs with recovery including; for example:

- Racing wheelchair 10 times 200 mtrs
- Racing wheelchair 20 times 100 mtrs

Racing wheelchair 8 times 300 mtrs

Distances and repetitions are variable and are left to the discretion of the instructor, who must determine the amount according to the evolution of the student. Is sine qua non that the FC reach 170/180 pulsations and must not start the next series while the frequency does not descend to 110 115. It's very hard work of accommodation and should not be abusing it. The anaerobic work should not exceed two weekly sessions on a daily basis to maintain aerobic work.

(2) Work with medicinal balls.

There are many sizes and weights: from 1 to 5 kg. Its not recommended to work with more weight. It allows to develop strength in all the higher train, skill, dexterity and marksmanship being ideal as a work of psychomotor skills. There are different types of work:

- Launch a ball in couples with progressive alienation
- Power launch (the distance is measured)
- Launch in height.
- Precision launch.
- Launch backwards.
- Lateral launch.
- Circuit (20 mtrs with wheelchair, take the ball, pass to mate and reverse)
- Bearing of the ball on the ground.

It should not exceed the 15 minutes of training.

(3) Working with dumbbells.

The dumbbells are essential to acquire a good muscle tone vigorously developing all the muscle groups involved in each exercise. Next I detail the training of the different muscle groups:

Biceps.

3 / 4 series of 10-12 repetitions. Suitable exercises: "Curl with bar" "Alternate Curl with dumbbell" "Curl concentrated"

Triceps.

3/4 series of 10-12 repetitions using exercises: "Press after neck with bar" "Press after nape with strap"

Pectoral.

3 series of 10-12 repetitions using the following exercises: "Press-banking with bar" "Press banking with dumbbells" openings with dumbbells.

Deltoid.

3 series of 10 repetitions. Exercises: "Military Press" and "Birds with dumbbells"

Neck.

Opposed resistance both extension and flexion of the neck. Using a towel that holds another partner.

Abdominal.

Through isotonic isometric abdominal contraction exercises.

(4) Working with pulleys and extenders.

Indeed it is a complement to the muscle-building work done with dumbbells. We work in this case the isokinetic contraction. Pulleys and extenders are essential for muscle development.

(5) Work on the ground.

Perhaps the most hard for the patient because its deprived of help from its chair. The exercises that we use most are:

Relay races.

In this kind of races are established competing teams placed in two lines, facing each other with the components of each team one after another. To the voice of "go" they are pulled to the ground from the chair and tracking on the floor with their arms they reach the opposite side, where stands the mate, who must do the same. The team which cover the relay first win.

Individual races.

Consisted in reach the goal as soon as possible. From the chair to the floor and then crawling up the goal.

Racing against time.

Variant of the previous consisting of improving the time in the same distance.

Exercises on the floor:

- Flexo extensions of arms
- Launch of balls from the ground (lying down)
- Launch of balls from the ground (seated)
- Elevations of arms from the ground
- Fight on the ground.

(6) Work in espalier.

It is very useful in rehabilitation and allow a great number of exercises. Particularly recommended in a leg amputated.

(7) Respiratory work.

It is a very interesting activity at the practice of the Karate-do and especially in a wheelchair. There are several types of breathing that we train:

Thoracic breathing.

Little used breathing that is only activated when its performed a very intense physical exercise. It is interesting to train this type of breath at rest for which the practitioner is lay mouth above and place a disk of 2 kg on its chest, raising its ribcage in a way that is clearly observed the mobilization of the disc; inspiration and expiration are carried out by the nose. Its practice develops the intercostal muscles. 2-3 Minutes must be made in lying position and assume many others.

Abdominal breathing.

It is usually normal breathing. This type of breathing strengthens the diaphragm making it rise and fall rhythmically so the inspire descends and ascends upon expiry. His practice conscious should be concentrated in the abdomen during 2-3 minutes.

Complete respiration.

It consists of the sum of the two previous ones. The body is filled with oxygen and reaches a state of general relaxation and well-being.

Shallow breathing nose.

Variant of thoracic breathing conducted energetically and without introducing large amount of air in the lungs. The rate is 30 breaths in 15 seconds. making inspiration and expiration by the nose. It is used to activate the sweating and train vessel mechanisms indispensable for the exercise-regulators

Shallow breathing mouth.

This is another variant of the chest but much more intense than the shallow nose. The rhythm to follow is 25 breaths in 15 seconds. It is important to do it properly, it can generate high concentrations of CO₂ and produce dizziness. It has the same purpose as the shallow nose.

Wheezing breathing.

It occurs almost without warning in situations of stress or of great fatigue. Its conscious practice, well done, strengthens the diaphragm. It is practiced in periods of 20-25 seconds. To practice it, air is introduced through the mouth very quickly, expelling it rapidly

*We choose the techniques developed by Dr. Alvaro Aguirre de Carcer. Preparación a la maternidad por sofropedagogía obstétrica. Alvaro Aguirre de Cárcer, Rodrigo Gordo Méndez, José María Carnero Madrid : El autor, 1979. ISBN 84-300-1413-6

LEARNING OF TECHNIQUES OF ATTACK DEFENCE AND REALIZATION OF KATA.

At this stage are learned techniques of attack and defence as well as the assimilation of "kata". Kata in the East has a specific meaning: succession of attacks and varied defenses to one or more imaginary enemies. There is no physical contact between practitioners.

TECHNIQUES OF ATTACK AND BLOCKADE*

Intended to assimilate different movements attack defense that will be subsequently implemented in the "kata". The exercises that we use are:

- 3 series of one minute of attacks by combining high, medium, and low.
- 3 one minute of high arms blockades, medium and low series.
- 3 series of one minute of attacks and high medium and low blocks with partner (one attack and another blocks)
- 3 series of one-minute knocking to a padded shield that another partner holds.

There are a variety of attack and defence techniques by which these will be incorporated progressively to assimilate the initials.

KATA TECHNIQUES

We trace a "embusen" on the ground. "Embusen" is a route, with progress, setbacks and twists that the practitioner has to run with accuracy and precision. To reach each point fixed in advance on the route will be made specific techniques of attack or defence depending in "kata" making also specific breaths.

The practitioner must fully memorize the exercise to reproduce it without equivocation. The teaching of "kata" is progressive until its total assimilation. The program has 7 "Kata"

RESULTS

Paraplegics group obtained in one year in general a great improvement of strength, improvement managing the wheelchair and dexterity with a significant decrease in fat mass. One of them and as the height of the injury allowed, was able to make small steps in parallel

The body mass index BMI all of them after six months of training spent 26 and 29 to 22-25. The heart rates at rest which were between 80 and 90 were reduced to 60-75. Five of them blood pressure figures numbered 140-95 close to honest values of hypertension. After training they put on 130-75.

The skill and speed with the wheelchair in a circuit of obstacles (cones of plastic on the floor) improved spectacularmente3.(Test 20 mtrs and 10 cones between 30-45 seconds and demolition of between 0-2 cones)

Carried out physical tests which showed consumption of poor oxygen located between 20-30 mltrs /Kg/mnto increased to 45-55.

* Attack and blockade -Choreographed exercises to develop motor skills. Never done fighting

*Kata (型 or 形 literally: "form") is a Japanese word describing detailed choreographed patterns of movements practised either or in pairs

CONCLUSION.

The practice of "Karate in a wheelchair" its useful to socially integrate the handicapped. Greatly increases the health getting rehabilitation to become a recreational activity with greater benefit for their own pathology. Improves the ability of reflexes and handling of the wheelchair .Later, problems such as obesity, hypertension and osteoporosis are avoided by increasing the metabolism raising the level of physical activity.

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