For the same period, in the treated group, pain was reduced not only because of anti-inflammatory effect of cryotherapy, but also of the local anesthetic [10]. Given that the SJ test requires a greater eccentric muscle contraction, where we assume that ruptures of Z membranes had a most significant share due to the isometric component, we believe that DOMS is more pronounced too, which explains the lower performance of the control group at 48 hours. Better SJ values recorded by the treated group at 48 hours indicates that immersion into ice-water is a symptomatic therapy for DOMS. The results may also indicate that the immersion in ice water is indicated for the short-term muscle recovery.

CONCLUSIONS

1. Values of strength evaluation indices showed statistically significant variations in 48 hours and 6 days respectively compared to the initial determination, the recovery of force after six days being lower at treated group.
2. To Squat Jump values recorded at 48 hours were lower in the control group, possibly because of the pain caused by a delayed onset muscle soreness more pronounced.
3. The results show that ice water immersion is a symptomatic therapy of late-onset muscle soreness, suitable for short-term muscle recovery.

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REDUCING SPASTICITY IN CHILDREN WITH CEREBRAL PALSY USING KINESIO TAPE

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Abstract
This paper aims to verify whether Kinesio Tape can help in reducing spasticity in children with cerebral palsy. It is known that these kinesio tapes were and are successfully used to treat muscle and joint pain among athletes. This study shows that the efficacy of the kinesio tapes is not limited to this kind of problems.
Keywords:*spasticity, cerebral palsy, kinesio tape, neuro-rehabilitation ;*

INTRODUCTION

1.1 General information about cerebral palsy

In the medical dictionary cerebral motor infirmity is defined as "a pathological non-progressive state and with an intellectual deficiency often moderate, subsequent to cerebral injury of the central motors.

In the book "Physical Therapy in neuropediatrics" Pasztai Zoltan defined cerebral motor infirmity as "all neurological manifestations caused by congenital brain lesions (abnormal development during the first trimester of pregnancy) or acquired (produced by a difficult birth or accidental injury in first months of life).

In conclusion we can say that cerebral motor infirmity or cerebral palsy, as it is called, is a chronic disorder of posture and movement caused by a lesion of the central nervous system. Cerebral motor infirmity is part of the clinical picture of sequelary infantile encephalopathy and consequence of damage or abnormal brain development. The lesion or dysfunction can occur during pregnancy, during birth or in the first 2-3 years of life.

Classification of motor disorders determined outlining five clinical forms of motor impairment in children with cerebral palsy: spasticity, athetosis, rigidity, tremors and ataxia. The most prevalent form of cerebral palsy is spastic form, which occurs in about 75% of cases.Depending on the location of spasticity, we meet children with spastic hemiparesis, paraparesis or tetraparesis.

Spasticity term derives from the Greek "spastikos" which means traction. "Spasticity is a motor dysfunction, characterized by a velocity increase in tonic stretch reflexes with exaggerated tendon reflexes, resulting from hyperexcitability of the stretch reflex, as one component of motor neuron syndrome" (Lance, 1980).

Spasticity is manifested by resistance to passive movements of the limbs, which is high in initiating movement and who succumb to a higher pressure.

1.2 The bases of Kinesio Taping application

Kinesio Taping is a rehabilitative, therapeutic modality based on the body's own natural healing processes. The Kinesio Taping methods exhibits its efficacy through the activation of the neurological and circulatory system. Using an elastic tape, it was discovered that muscles and other tissues could be helped by outside assistance.

When a muscle is inflamed, swollen, or stiff due to fatigue, the space between the skin and muscle is compressed, resulting in constriction of the flow of lymphatic fluid. This compression also applies pressure to the pain receptors beneath the skin, which in turn determines signals to the brain and so the person experiences pain. Conventional athletic tape is designed to constrict and immobilize the movement of affected muscles and joints. For this purpose, several layers of tape must be rolled around or over the afflicted area, applying significant pressure.

In practice, there are four major functions of Kinesio Taping that have been observed: support of the muscle, removal of the congestion to the flow of the body fluids, activation of the endogenous analgesic system and correction of joint problems.

METHODS AND MATERIALS

The purpose of this paper is to verify whether Kinesio tape can reduce muscle spasticity in children with cerebral palsy. The study was made on twelve children with cerebral palsy aged 4 to 8 years.

Table 1 The forme of cerebral palsy of the subjects

The forme of cerebral palsy	Number of sujects
Spastic Hemiparesis	6
Spastic Tetraparesis	2
Spastic Paraparesis	4

In children with cerebral palsy, spasticity affects the upper and lower limbs different. On the upper limb spasticity affects flexor and pronator muscles while lower limb spasticity occurs on extensor muscles, especially the triceps surae. To evaluate spasticity we used the Ashworth scale with 5 levels:

0 - there is no resistance to passive stretching of the muscle;

1 - minina resistance occurs at the end of passive stretching of the muscle;

2 - resistance appears halfway of the motion during passive stretch of the muscle;

3 - resistance is increased throughout the passive stretch of the muscle;

4 - permanent contracture, the segment being fixed and passive stretching is not possible

Table 2 The Evaluation of Spasticity Grade

Spastic Muscles	Spasticity Grade	Number of subjects
Elbow Flexors	3	5
	2	3
Forearm Pronators	3	5
	2	3
Plantar Flexors	3	9

	2	3

Kinesio tape was applied at the beginning of each session of physical therapy on antagonists muscles, namely: on the upper limbs on the elbow extensors and the supinator muscles and on the lower limb on the dorsal flexors of the foot. To obtain reducing spasticity, I applied the band with a stretch of approximately 80% on the segment positioned antagonistic towards spastic muscles. Thus by applying the Kinesio tape stretched we help retain normal posture and combat the appearance of spasticity. Each subject had at least 10 applications from initial evaluation to final evaluation.

RESULTS AND DISCUSSIONS

Values obtained from the initial and final tests were recorded in the table below:

Table 3 Results of the initial and final evaluation

Spastic Muscles	Initial		Final	
	Spasticity Level	Number of subject	Spasticity Level	Number of subject
Elbow Flexors	3	5	3	1
	2	3	2	2
	-	-	1	4
Forearm Pronators	3	5	2	4
	2	3	1	4
Plantar Flexors	3	9	3	2
	2	3	2	6
	-	-	1	4

From the table above we can observe a decrease in the degree of spasticity almost in all subjects in all three segments, some subjects getting even a drop of 2 levels of spasticity.

Table 4 The level of spasticity in percentage

Spastic Muscles	Initial	Final	Difference (Initial-Final)
Elbow Flexors	65,6%	40,6%	25%
Forearm Pronators	65,6%	37,5%	28,1%
Plantar Flexors	68,7%	45,8%	22,9%

The biggest progress we have achieved in the forearm pronators, with a decrease in the degree of spasticity of 28.1%, while the smallest improvement was observed in the plantar flexors with a decrease of 22.9% of spasticity level.

CONCLUSIONS

After applying Kinesio tape we obtained a significant reduction of muscle spasticity in children with cerebral palsy. By decreasing the degree of muscle spasticity, the physical therapy program subsequently applied may have a higher efficiency. Also Kinesio tape applied in stretched form on antagonistic musculature to spastic muscles can help fight the vicious postures of the segments due to spasticity and even muscle retractions.

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CONTRIBUTION REGARDING SPEED DEVELOPMENT ON CHILDREN AGED BETWEEN 12-14 YEARS