

## THE INFLUENCE OF MARTIAL ARTS ON GENERAL MOTOR PERFORMANCE OF CHILDREN AT PRIMARY SCHOOL

### VPLYV ÚPOLOVÝCH ŠPORTOV NA VŠEOBECNÚ POHYBOVÚ VÝKONNOSŤ ŽIAKOV 1.STUPŇA ZÁKLADNEJ ŠKOLY

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#### ABSTRACT

The author in his article solves the problem of using martial arts at primary school, especially the influence of martial arts on general motor performance of young children at primary school. The main research methods were pedagogical experiment and motor tests: shuttle run 4x10m, 12minute run, sit-ups 60 s, standing broad jump, bent arm hang and JCMT. Number of respondents was 205 pupils at 4.th classrooms, 96 boys and 109 girls. The author found out the significant results at experimental group and improvement especially in speed and strenght abilities. Martial arts together with excercises from athletics, sports games, motor games, gymnastics had positively influence on general motor performance of pupils at primary school. The author is recommending putting martial arts to P.E. lessons at primary school.

**Keywords:** martial arts, general motor performance, primary school

#### SÚHRN

Autor v svojom príspevku rieši problém využívania úpolových športov v telesnej výchove na 1.stupni základnej školy. Zameriava sa najmä na zistenie ich vplyvu na všeobecnú pohybovú výkonnosť žiakov. Hlavnými výskumnými metódami bol pedagogický experiment a motorické testy. Vo výskume boli použité motorické testy: člnkový beh 4x10m, 12 min. beh, ľah-sed za 60s, skok do diaľky z miesta, výdrž v zhybe a Jacíkov celostný motorický test (JCMT). Výskumnú vzorku tvorilo 205 žiakov 4.ročníka ZŠ, z toho bolo 96 chlapcov a 109 dievčat. Autor výskumom zistil štatisticky významný vplyv úpolových športov na zlepšenie rýchlostných a silových schopností žiakov, členov experimentálneho súboru. Úpolové športy spolu s cvičeniami z atletiky, gymnastiky, športových a pohybových hier pozitívne ovplyvnili všeobecnú pohybovú výkonnosť žiakov na 1.stupni základnej školy. Autor odporúča zaradiť úpolové cvičenia pravidelne do vyučovacích hodín telesnej výchovy v súlade s učebnými osnovami.

**Kľúčové slová:** úpolové športy, všeobecná pohybová výkonnosť, 1.stupeň základnej školy

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#### Introduction

The expression "martial arts" or "eastern martial arts" usually means systems originating in Asia. The expression "martial" is linked with fighting and war. The etymology of this word, which comes from Latin, speaks of its link to Mars (Ares in Greek), god of war. Art means competence, artfulness, mastery obtained in study and practice. Martial art is not only the physical part but also artfulness linked to one's body. It also includes specific notions of martial skills, it deals with fighting in a wider sense, focusing on creating something new but not destroying the extant. The

most highly developed as well as the most integral system of martial arts can be found in Japan. The Japanese expression budó is commonly translated as "martial arts", or even better martial ways.

The martial arts should ideally lead to non-violent ways of solving problems. This approach is promoted in Europe especially by innovative educational philosophies. Even the Waldorf school system criticises the opinion that martial activities can be bypassed, nevertheless, in this direction we should attempt to dispel the myths. Exercise, especially for children and the young, needs to teach them not only the technique, but also needs to

use the technique to teach them the proper relation to their social surroundings (Reguli, 2004).

At primary schools are using basic combatives and also falls techniques, like part of martial arts.

Falls are an important component of any basic combat training system. They are significant not only for fighting but also in other movement activities (either as intentional or unintentional falls) but also in everyday life as protection against avoidable injury. Falls, meaning the intentional movements, are used also in many a sport which does not fall into the category of martial arts/combatives, mainly sport games (e.g. goalkeepers, in volleyball defence, in handball when throwing into the goal). The main aim of any fall technique is to prevent injury when falling or at least minimise the probability of injuring oneself (Bartík, 1998).

Basic combatives are fighting exercises carried out by relatively simple movements. In fact, they do not have to be practised to any great degree before using them. They are so called basic combative relations. We differentiate them according to vectors of power and application and their

biomechanical complexity:

- centrifugal (pulls),
- centripetal (pushes),
- opposition (resistance):
  - pulling opposition,
  - pushing opposition,
  - own opposition.

## Methods

The main research was pedagogical experiment during schools year 2004/2005 at primary schools in Banská Bystrica. At experimental groups boys and girls we used basic combatives and falls techniques during P.E. lessons. The pupils were 10 years old. Before and after experiment we realised measurements of general motor performance by tests: shuttle run 4x10 m, 12 minute run, sit-ups 60 s, standing broad jump, bent arm hang and JCMT test. 1.st measurment was realised at September 2004 and 2. nd measurment at June 2005.

## Results and discussion

The results of tests we described at table 1-8. Table 1-8 The level of physical development and general motor performance at experimental and controlled groups.

**Table 1. Experimental group – 1.st measurment (girls-n= 29)**

**Tab. 1. Experimentálna skupina – 1.meranie (dievčatá -29)**

	BH (cm)	BW (kg)	SR 4x10m	SBJ (cm)	RUN 12 min.	SU (n)	BAH (s)	JCMT (n)
M	137,34	33,10	12,95	142,14	1777,48	34,17	6,81	53,14
SD	5,347	6,155	0,806	19,699	356,208	10,124	6,805	13,242
Medium	138	32	13	143	1722	35	5,2	51
Minimum	126	26	11	95	1121	18	0	30
Maximum	150	47	14,9	178	2354	52	31	72

**Table 2. Experimental group – 2.nd measurment (girls-n= 29)**

**Tab. 2. Experimentálna skupina – 2.meranie (dievčatá- 29)**

	BH (cm)	BW (kg)	SR 4x10m	SBJ (cm)	RUN 12 min.	SU (n)	BAH (s)	JCMT (n)
M	140,59	36,45	12,28	146,55	1873,7	37,31	10,27	60,83
SD	5,577	5,998	0,922	18,230	372,55	10,082	9,272	14,320
Medium	141	35	12	147	1837	40	8,5	60
Minimum	130	29	11	108	1150	21	1	35
Maximum	155	50	14	180	2523	56	40	83

## t-test and correlation (Pearson)-between 1. st and 2.nd measurments (girls)

t-test	12,650**	13,679**	4,827**	7,086**	5,615**	6,178**	4,624**	12,998**
Pearson	0,969**	0,977**	0,630*	0,987**	0,969**	0,963**	0,919**	0,976**

**Table 3. Experimental group – 1.st measurment (boys-n= 22)****Tab. 3. Experimentálna skupina – 1-meranie (chlapci -22)**

	BH (cm)	BW (kg)	SR 4x10m	SBJ (cm)	RUN 12 min.	SU (n)	BAH (s)	JCMT (n)
M	136,91	34,36	12,10	148,09	1920,7	37,27	11,05	63,68
SD	4,927	5,645	0,765	18,068	340,90	12,721	9,750	10,353
Medium	138,5	33	12	152,5	1959	34	10,5	62
Minimum	128	26	11	100	1290	22	0	42
Maximum	147	48	13,9	173	2400	85	40	81

**Table 4. Experimental group – 2.nd measurment (boys-n= 22)****Tab. 4. Experimentálna skupina – 2.meranie ( chlapci – 22)**

	BH (cm)	BW (kg)	SR 4x10m	SBJ (cm)	RUN 12 min.	SU (n)	BAH (s)	JCMT (n)
M	140,09	37,09	11,77	152,32	2060,6	40,05	15,15	71,55
SD	5,117	6,023	0,813	16,887	437,56	12,061	10,490	10,879
Medium	140,5	35,5	12	156,5	2034,5	38,5	14,6	74
Minimum	131	28	11	107	1299	24	1	49
Maximum	150	51	14	178	2837	84	48,5	88

**t-test and correlation (Pearson)-between 1. st and 2.nd measurments (boys)**

t-test	10,645**	11,876**	3,836*	5,615**	4,018**	5,076**	6,652**	7,585**
Pearson	0,962**	0,985**	0,876**	0,982**	0,942**	0,980**	0,962**	0,896**

**Table 5. Controlled group - 1.st measurment (girls-n = 66)****Tab. 5. Kontrolná skupina – 1.meranie (dievčatá – 66)**

	BH (cm)	BW (kg)	SR 4x10m	SBJ (cm)	RUN 12 min.	SU (n)	BAH (s)	JCMT (n)
M	139,62	31,70	13,07	140,15	1849,2	32,15	12,26	59,89
SD	8,152	6,631	1,008	16,467	381,05	10,207	11,153	14,965
Medium	140	30	12,85	141	1811	33,5	10,2	60
Minimum	123	20	11,4	100	1100	11	0	31
Maximum	160	57	16,3	174	2840	53	63,5	90

**Table 6. Controlled group - 2.nd measurment (girls-n = 66)****Tab. 6. Kontrolná skupina – 2.meranie (dievčatá – 66)**

	BH (cm)	BW (kg)	SR 4x10m	SBJ (cm)	RUN 12 min.	SU (n)	BAH (s)	JCMT (n)
M	143,52	34,95	12,76	145,68	1905,0	37,73	13,58	61,73
SD	8,448	6,891	0,893	16,710	367,93	8,522	11,765	14,756
Medium	143,5	33	12,6	145	1909	38	11,8	62,5
Minimum	126	22	11,3	108	1190	20	0	27
Maximum	165	60	15,3	180	2870	57	65,5	91

**t-test and correlation (Pearson)-between 1. st and 2.nd measurments (girls)**

t-test	23,654**	21,706**	6,140**	6,867**	4,366**	7,546**	4,016**	4,972**
Pearson	0,988**	0,984**	0,916**	0,922**	0,962**	0,809**	0,974**	0,979**

**Table 7. Controlled group - 1.st measurment(boys-n = 56)****Tab. 7. Kontrolná skupina – 1.meranie (chlapci – 56)**

	BH (cm)	BW (kg)	SR 4x10m	SBJ (cm)	RUN 12 min.	SU (n)	BAH (s)	JCMT (n)
M	139,04	30,93	12,68	150,61	2089,7	38,66	20,50	63,93
SD	6,941	5,059	0,814	13,229	323,10	7,359	14,356	14,476
Medium	140	30	12,6	150	2059	38,5	15,65	63
Minimum	123	21	11,1	115	1612	22	0	34
Maximum	155	46	14,6	175	2963	56	60	101

**Table 8. Controlled group - 2.nd measurment(boys-n = 56)****Tab. 8. Kontrolná skupina – 2.meranie ( chlapci – 56)**

	BH (cm)	BW (kg)	SR 4x10m	SBJ (cm)	RUN 12 min.	SU (n)	BAH (s)	JCMT (n)
M	142,98	33,91	12,46	154,21	2137,3	41,07	21,38	66,27
SD	6,924	4,981	0,792	15,081	341,27	7,599	15,089	14,334
Medium	144	33	12,2	154,5	2125	41	16,7	66
Minimum	126	24	10,9	117	1480	24	0	36
Maximum	157	45	14,2	185	2992	60	65,2	104

Legend:

BH - body height

BW – body weight

SR(4x10m) – shuttle run 4x10 m

SBJ – standing broad jump

RUN (12 min) – 12 min. endurance run

SU - sit ups

BAH – bent arm hang

JCMT – Jacik's test

M – arithmetic mean

SD – standard deviation

\*  $p < 0,05$

\*\*  $p < 0,01$

Using of martial arts, especially wrestling games and excercises during the pedagogical experiment positively influenced the general motor performance of young children at primary school. Martial arts had big contribution to development of strenght abilities, especially static strenght of hands. By research it was discovered that lessons which consisted from martial artswere highly appreciated by pupils. From these reasons we recommend putting of martial arts to physical training process at primary school.

## REFERENCES

Bartík, P.(1998). Using of wrestling games in adapted physical activities. *In Monograph of the CEEPUS project „Adapted physical activities in Central Europe*. Olomouc: FTK UP, pp. 111-118.  
Reguli, Z.(2004). *Combative activities*. Brno: Paido, p. 37.

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