

INFLUENCE OF LATIN AMERICAN DANCES TO BALANCE, REPETITIVE STRENGTH AND COORDINATION TRANSFORMATION

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Abstract

Main goal of this study was to determine whether there are any changes in the level of coordination, strength capacity and balance quality under the Latin American dance classes in primary school children. Sample includes 32 students aged 12.4±0.5 years old. Program of Latin American dance lessons lasted for six weeks. The aim was to establish positive transformational changes in motoric capability. Level of transformational effects was expressed as difference between initial and final measuring. Significant improvement was observed in Flamingo test ($p < 0.001$, $\eta^2 = 0.74$), Standing on one leg with eyes closed on a horizontal balance bench ($p = 0.01$, $\eta^2 = 0.86$), Standing on both legs with eyes closed on a horizontal balance bench ($p = 0.00$, $\eta^2 = 0.68$), Bat coordination ($p = 0.02$, $\eta^2 = 0.08$), Side walking ($p = 0.02$, $\eta^2 = 0.87$), Backwards training ground ($p = 0.03$, $\eta^2 = 0.91$), Push-ups ($p = 0.00$, $\eta^2 = 0.86$), Back straightening ($p = 0.00$, $\eta^2 = 0.55$), Lying-sitting ($p = 0.01$, $\eta^2 = 0.78$).

It can be concluded that significant improvement was observed in coordination, strength capacity and balance quality under the influence of additional attendance of Latin Dance classes.

Key words: **Latin American Dances**

Introduction

Dance research demands understanding of dance nature, culture functioning and being familiar with the most recent dance forms. (Kostic, Dimova, 1997). There is a significant interest of scientists and experts to explore dance as an art and sport-motoric activity in the fields of training, nutrition, wounds and development of certain human capabilities. Due to the fact that there is a huge number of different dances, the available research pays attention to partial and specific dance techniques (Pedersen at al, 1999). It has already been proven that all motoric capabilities have an important role to successfully interpret dance structures (Ross & Butterfield, 1989) and conative characteristics (Kostic at al, 1999). Specific ways of teaching certain dances when they are learned, repeated and perfected can greatly contribute to excellent dancing skills (Kostić, 1997. Koutedakis & Sharp, 2004., Cross at al, 2006., Brown and others, 2007. Chockley, 2008. And Weiss at al, 2008.) It is necessary to develop motoric skills in order to achieve success in dancing (Imamović & Ramadanović, 2011). On the other hand, there is not enough research to show which

dances and in what extent they positively affect motoric performance especially within younger age groups. When it comes to multidisciplinary approach in latest trends, this research follows how dance process can transfer to one part of motoric structures. According to the above mentioned, the aim of this research is to „determine level of changes in coordination, strength capacity and balance under the influence of Latin American dances practiced by primary school students“.

Methods

Sample of the Examinees

This research was done on 32 students aged 12 years old. Average height of boys was 162.5 ± 3 cm, average weight was 54.4 ± 0.7 kg. Parents' consent was given to do this research. Students who participated in the research were fully aware of its purpose. Students had regular lessons of Physical and Sports Education. No student was involved in

any sports club and dance program from this research was organized as extra-curricular activity at school. All measurements were done according to Helsinki declaration. Steps from three Latin American dances (Samba, Cha-cha-cha, and Jive) were used for transformation. Transformational program lasted for six weeks and the duration of one training was 45 minutes (details of the program presented in Table 1). The reason for such immense training was to check if it was possible to connect dance content with teaching process that is, Physical and Sports Education. Having in mind the additional information, it is expected to get positive transformation of motoric capabilities: Coordination, Flamingo (FLAM), on horizontal balance bench, standing on one leg with eyes closed (KL1NZO) within the primary school students.

Sample of variables

The measurement was done on date which was announced and determined beforehand. Order of the initial and final measurement was the same. Measurers were familiar with the technique of doing the tests and filing the results. The

Table 1 Basic program activities - dance

Content - Duration	Week 1 – Week 3	Week 4 – Week 6
Weekly Frequency	3 times a week	4 times a week
Volume or Training Duration	45 min	45 min
Number of Dances	3	3
Dance Type: Samba	Character: lively, pleasant Movement: crisscrossed path, „parading” circulating in space or at the spot Tact: 2/4 Tempo: 50 tacts per minute Emphasis: on second hit	
Dance Type: Samba	Body Movement: Samba bounce action Dynamics: Medium	
Dance Type: Cha-Cha-Cha	Character: bold, lively, passionate Movement: stationary, the pair is moving to opposite and same directions Tact: 4/4 Tempo: 30 tacts per minute Emphasis: on first hit Lifting and lowering: none Dynamics: Medium	
Dance Type: Jive	Character: rhythmic, „kicks” and „flicks” Movement: not progressive, from and to „moving center” Tact: 4/4 Tempo: 44 tacts per minute Emphasis: on second and fourth hit Lifting and lowering: none Dynamics: High	
Duration of Dance Implementation	Main A and B part 27 minutes, every dance lasts 9 minutes	Main A and B part 27 minutes, every dance lasts 9 minutes
Intro	Natural ways of movement (walking, running, skipping, sprint)	Natural ways of movement (walking, running, skipping, sprint)
Preparation	Nine Formation Exercises	Nine Formation Exercises

examinees were also introduced with the test due to their complexity.

Variables, by which motoric status is determined, are defined in 1998. by the authors Šoške and Rađo:

1. Variables to Determine Balance:
 - 1.1. Flamingo (FLAM)
 - 1.2. On horizontal balance bench, Standing on one leg with eyes closed (KL1NZO)
 - 1.3. On horizontal balance bench, standing on both legs with eyes closed (KL2NZO)
2. Variables to Determine Coordination:
 - 2.1. Bat Coordination (KOPAL)
 - 2.2. Side walking (KOUST)
 - 2.3. Backwards Training Ground (POLNAT)
3. Variables to Determine Repetitive Strength:
 - 3.1. Push-ups (SKLEK)
 - 3.2. Back Straightening (PODLED)
 - 3.3. Lying - Sitting (LEZSJED)

Experimental dance program

Dance program specifics are shown in Table 1.

Main A and B parts	Dance Steps SAMBA: - Samba Whisks L and R - Samba walk (side) - Stationary samba walk - Traveling Botafogo - Volta actions	Dance Steps SAMBA: - Samba Whisks L and R - Samba walk (side) - Stationary samba walk - Traveling Botafogo - Volta actions
	CHA-CHA-CHA: - Chasse to L, Chasse to R - Fan - Hand to hand - Hockey stick - Spot turn to L, spot turn to R	CHA-CHA-CHA: - Chasse to L, Chasse to R - Fan - Hand to hand - Hockey stick - Spot turn to L, spot turn to R
	JIVE: - Basic in place - Basic in fall away - American spin - Change to hands behind back - Change of place L to R	JIVE: - Basic in place - Basic in fall away - American spin - Change to hands behind back - Change of place L to R
End part	Stretching, 5 positions	Stretching, 5 positions

Table 2 Balance, coordination and repetitive strength differences observed after the program

	Mean	SD	N	Diff.	t	df	p	η^2
FLAM	16.51	2.64	31	2.90	9.29	30	0.00**	0.74
KL1NZO	14.91	2.44	31	4.10	13.59	30	0.01**	0.86
KL2NZO	17.50	5.76	31	2.45	8.05	30	0.00**	0.68
POLNAT	33.48	8.01	31	-14.69	-18.33	30	0.03**	0.91
KOPAL	7.64	2.25	31	-4.64	-10.99	30	0.02**	0.80
KOUST	11.01	1.21	31	-2.66	-14.65	30	0.02**	0.87
PUSH UP	20.09	6.69	31	2.51	14.06	30	0.00**	0.86
PODLED	50.41	13.52	31	1.38	6.14	30	0.00**	0.55
LEZSJED	41.87	8.90	31	2.93	10.41	30	0.01**	0.78

SD – Standard deviation; df – degrees of freedom, p – statistical significance; η^2 – partial eta square; ** - significant at 99%; Flamingo (FLAM) On horizontal balance bench, Standing on one leg with eyes closed (KL1NZO); On horizontal balance bench, Standing on both legs with eyes closed (KL2NZO); Bat Coordination (KOPAL); Side walking (KOUST); Backwards Training Ground (POLNAT); Push-ups (SKLEK); Back Straightening (PODLED); Lying - Sitting (LEZSJED)

Statistical analysis

For the needs of this research, given results were analyzed invariantly. The difference between initial and final state were determined with T – test for dependent samples. Level to determine the significance was set to 95% ($p=0.05$). Values above that were not treated as valid. Every T – test had a calculated quadrupled eta which is used as correlational ratio to determine quality of connection level from the T – test. This procedure was explained by authors Kolesarić & Tomašić-Humer (2016.).

Results

All variables had normal distribution of data.

Statistically significant balance difference was determined in all three tests that descriptively show difference between initial and final state of motoric capability. Value p for FLAM is (0.00) and calculated eta coefficient is (0.74) and shows great impact. Second variable for balance – KL1NZO shows T-test value (0.01) and eta coefficient is

(0.86). This variable as well as KL2NZO with T-test (0.00) and eta coefficient (0.68) had great improvement compared to initial state.

Variables that define coordination motoric capability, also show difference between initial and final measuring. Value p for POLNAT is (0.03) and calculated eta is (0.91). Value p for KOPAL is (0.02), eta (0.80) and variable KOUST with T-test level (0.02), eta value level (0.87). Given the fact that level of T-test significance was set to (0.05), all three determined differences are on statistically important level. Eta coefficients for all three variables also show great improvement in realized content so values have changed between initial and final state.

Repetitive strength has also shown positive changes during the period of implementing the program, in other words, it has developed further. Variables with T-test values: PUSH UP (0.00) and eta (0.86), Back Straightening (0.00) and eta (0.55), Lying – Sitting (0.01), eta (0.78). These results show us there is an important difference between initial and final measuring. Implemented program achieved wanted effect.

Discussion

Results of T-test for dependent samples show development of all three motoric capabilities. This statement can be justified by the given research and confirm that Latin American dances significantly affect transformation of coordination, repetitive strength and balance within primary school students (Kostić and others 2006; Jocić, 2004). The level of T-test value was set to (0.05) and projected that the development of above mentioned motoric capabilities is on the highest level (p value of T-test in this research were from 0.00 to 0.03). To confirm how big is the T-test value, eta coefficients were also calculated for each variable separately (nine variables overall) and its reach for each of them is from 0.55 to 0.91. According to Gamst, 2008, eta coefficient of 0.22 has „great impact“so it can be stated that realized program had good transformational influence on all motoric capabilities. (Lobo&Winsler, A. 2006, Vlastic, 2007) So, content of the program realized within six weeks enhanced the balance, coordination and repetitive strength of the boys (Alricsson, 2003; Zagorc, 2005). This script has not discussed whether there was better understanding of movement structures for each specific dance (so called motoric knowledge) (Kostic, 2004). Explanation of changes that happened can be found in very sensible development period within the researched population – 12-year-old boys, when they enter specific and faster phases of growing and developing. (Kostic, 1999). Also, explanation for transformational efficiency comes from well picked dances (Samba, Cha-cha-cha, Jive) which were acceptable to researched population since they have well-structured movement and rhythm (Volgar, 2002; Zagorc, 2000). Also, it is important to mention that teaching staff made appropriate and quality planning of all activities, that is, means of transformation were in accordance with cat-

egory of population were content was realized (Uzunovic, 2009). The set aim of research is completely achieved, given the fact that in all nine researched variables there were positive and statistically significant changes. Above mentioned dances can be recommended as means to influence transformation of motoric capabilities. However, there should be prepared curriculum of activities as put in Table 1 – with main program characteristics. Guidelines for other research papers can be set by checking the effects of this program on different age categories or sexes. Also, it would be good to investigate if for example classical dances, with the same curriculum and age groups can achieve same or similar transformational effects.

Conclusions

Content of Latin American dances is recommended as additional content in Physical Education lessons.

Realized curriculum of activities can be recommended for teaching process due to the fact that every observed motoric capability has suffered significant positive transformation – program was effective within male part of population.

There are questions opened for new researchers if for instance, classical dances with same curriculum and age groups can achieve same or similar effects of transformation.

Also, effects of this program can be verified within same Latin American dances on different population or sex group.

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