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Positive Effects in Competitive Baton Twirling – Terms of Reference for Training and Monitoring

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Abstract

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Competitive Baton Twirling is a new discipline in Romania. It has been developed through two organizations: MBTA (Majorettes Baton Twirling Association) and AMR (Romanian Majorettes Association), which gather every year more and more clubs, both private and state organizations. Baton Twirling is one of the disciplines of this system. There is a wide range of effects on cadets or junior women: motor, artistic and aesthetic. The study of choreography performed by the “Euritmica” group from Children’s Club in district 6, Bucharest, trained by coach Adela Popescu, formed by 12 students aged between 12-15 years, including 9 coordination, speed and safety tests and 10 tests for control of technical execution, has revealed a part of the complex positive effects of practicing this sport and some terms of reference which can be used in the training and monitoring process. Intermediate results supported their importance and strategic value. General results confirmed the efficiency of the tests performed using different methods, such as the number of spins in 30 sec for reaching higher speed and execution velocity, as well as the efficiency of the tests “3 out of 3”, “5 out of 5” or “10 out of 10” spins to achieve stability, safety and precision of execution. All these assure the base structure in monitoring and the qualitative support in choreographing routines for competition.

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Keywords: Baton Twirling; coordination; safety; speed; control of execution.

1. Introduction

Twirling, also called “sticking” and “stick juggling”, is an art form, a sport or a recreational activity which involves spinning or rotating the twirled object, namely the manipulation of a metal rod with the hands, fingers, arms and other body parts. The metal rod is an instrument made of steel with rubber ends. Its length is approximately between 55-75 centimetres and it weighs 250 grams. The athlete uses a baton that is sized to the length of their arm from the shoulder to the tip of the fingers. It is weighted and balanced for air dynamic flow (Wikipedia, 2014).



Twirling combines technical baton movements with many forms of dance and gymnastics for a most entertaining performance skill. Twirlers enjoy many benefits such as coordination, ability to manipulate the object, outstanding carriage and posture, self-presentation (*Arkansas Baton Twirling*, 2015).

Baton twirling was limited in the past to those having gained the necessary aptitude to rapidly manipulate the baton among their fingers. This aptitude was gained only through considerable practice and skill (Rohmann, 1961).

Baton Twirling is a competitive sport that has grown in popularity throughout the United States and around the world, with the hope of being recognized by the International Olympic Committee as a sport worthy of Olympic competition (Marcus, 2014).

The specific characteristics of twirling are:

- “a number of motor control issues” (Strachan & Weir, 2006);
- release of the baton in the air and handling it;
- high level of dexterity, smoothness, fluidity and speed;
- beautiful visual images;
- body expression through dance and movement to create a demonstration of strength (NBTA, 2015);
- incorporation of gymnastics movements adapted to baton twirling;
- risk and excitement;
- artistic and aesthetic dimension;
- a particular training process.

Baton Twirling is a sport with similar aspects to those of a traditional military parade. Including both group and individual events, it is an aesthetic, original sport which requires great skill and ability. It is accessible to both boys and girls. To reach a superior level in baton handling takes long-term training. The competition system is open to those who practice this sport recreationally, as well as those who train for it competitively. From a methodological point of view, early initiation in this sport and scientifically-based training are recommended, along with perseverance and a great deal of practice with hundreds and thousands of repetitions. The performers manage to spin the batons quickly and gracefully.

The first World Baton Twirling Championships were held in 1980 in the USA, in Seattle, Washington, however, in Romania, attempts to introduce this beautiful and interesting sport as a youth activity have only been seen in the last few years. Currently, there are no books or scientific papers on this discipline in Romania, and therefore methodical or experimental information is limited.

For this reason, we have decided to use this paper to promote the discipline, while also trying to create a scientific foundation for the training of Romanian children and youths in this spectacular sport.

Thus, our methodical paper will add to the areas of interest, in terms of research, developed by the French towards sociology (Malatesta, Jaccoud, & Golay, 2014) (Golay et al., 2012) (Malatesta, Golay, & Jaccoud, 2012) and the Americans regarding functional aspects of adaptation to specific effort.

2. Materials and methods

By means of our study on how choreography is created in the “Euritmic” group (Fig. 1) from Children’s Club in district 6, Bucharest, trained by coach Adela Popescu, made up of 12 students aged between 12-15 years, we have been able to identify some of the complex beneficial effects which can be obtained through the practice of this sport at a competitive level while confirming the most efficient procedures, techniques and means of monitoring - training. The experiment lasted 3 months. Number of training sessions: 2/week. Total number of hours of training: 28.

The tests presented below were selected with a dual purpose: to determine the beneficial effects of practicing this sport and qualitative monitoring of the assimilation of choreography and training the athletes for competition.

A. Tests for coordination, speed, safety/consistency

- A.1. Horizontal figure 8 – number of repetitions in 15 sec.;
- A.2. Vertical figure 8 – number of repetitions in 15 sec.;
- A.3. Overhead figure 8 – number of repetitions in 15 sec.;
- A.4. High/low two-hand spin – number of repetitions in 15 sec.;
- A.5. Under arm toss “3 out of 3”; “5 out of 5”; “10 out of 10”;
- A.6. Under leg toss “3 out of 3”; “5 out of 5”; “10 out of 10”;
- A.7. Throw - catch with the same arm in a crouched position “3 out of 3”; “5 out of 5”; “10 out of 10”, successfully;
- A.8. Throw - catch 360° spin “3 out of 3”; “5 out of 5”; “10 out of 10”, successfully;
- A.9. Lateral arm roll “3 out of 3”; “5 out of 5”; “10 out of 10”, successfully.

B. Tests for execution technique

- B.1. Horizontal figure 8;
- B.2. Vertical figure 8;
- B.3. Overhead figure 8;
- B.4. High/low two-hand spin;
- B.5. Under arm toss;
- B.6. Under leg toss;
- B.7. Throw - catch with the same arm in a crouched position;
- B.8. Throw - catch 360° spin;
- B.9. Lateral arm roll;
- B.10. Execution of a full routine.

Evaluation of the technical tests was achieved through ratings transformed into points, as follows: ‘Very good’ – 9-10 pts., ‘Good’ – 8 pts., ‘Satisfactory’ – 6-7 pts.

In order to record their progress, two tests were carried out: Testing 1 (T1) was performed at the halfway point in their training program, and Final Testing (FT) was carried out before their participation in a competition. The results were compared and subject to statistical validation through the T-test.



Fig. 1. “Euritmic” group

3. Results

The test results, which represent the beneficial effects of this sport (as shown in Tables 1 and 2) confirm the possibility of developing certain qualities, abilities and competencies of execution. These are linked to the speed of execution in conditions of superior coordination and stamina, general coordination, hand-eye coordination, rhythm, balance, kinaesthetic awareness, flexibility, strength, endurance, agility, confidence, self-confidence, self-esteem, self-image, expression and communication. It has been found that these objectives can be improved and developed harmoniously through systematic scientific training for competition.

As can be seen in Table 3, the progress and performances achieved in terms of handling, throwing and catching have been statistically confirmed.

Table 1. Results for Testing 1, tests A1 - A4

No.	Initials	A1	A2	A3	A4
1	B.D.	31	18	16	15
2	B.I.	26	14	16	12
3	C.M.	26	14	12	14
4	G.E.	24	14	12	12
5	I.S.	27	15	16	16
6	L.L.	34	17	13	16
7	N.E.	32	16	15	16
8	N.M.	30	16	14	15
9	P.I.	27	16	16	16
10	S.B.	32	17	15	17
11	T.T.	35	17	15	18
12	Z.A.	32	17	15	17
AVERAGE		29.7	15.9	14.6	15.3

Table 2. Results for Final Testing, tests A1 - A9

Evidence of coordination, speed, safety																				
No.	Initials	A1	A2	A3	A4	A5	A6	A7	A8	A9										
						3	5	10	3	5	10	3	5	10	3	5	10	3	5	10
						of	of	of	of	of	of	of	of	of	of	of	of	of	of	of
						3	5	10	3	5	10	3	5	10	3	5	10	3	5	10
1	B.D.	42	24	20	23	3	5	8	3	4	7	3	5	9	2	3	6	3	5	10
2	B.I.	38	20	18	18	2	4	6	2	3	7	1	3	6	1	2	5	3	4	7
3	C.M.	39	21	19	21	2	3	6	2	4	6	1	3	7	1	2	4	3	4	8
4	G.E.	39	21	19	21	3	5	8	3	4	8	2	4	8	2	3	7	3	4	7
5	I.S.	40	22	20	22	3	4	9	3	5	8	2	4	8	2	3	6	3	4	8
6	L.L.	42	24	20	23	3	4	9	3	5	9	3	5	8	2	3	6	3	4	8
7	N.E.	41	22	21	23	3	5	8	3	4	9	2	4	9	1	3	7	3	4	9
8	N.M.	42	24	20	24	3	5	10	3	5	10	3	5	10	3	4	9	3	5	10
9	P.I.	38	22	20	23	3	5	9	3	5	8	3	4	8	2	3	7	3	4	8
10	S.B.	40	23	20	24	3	5	8	3	5	9	3	4	9	2	4	8	3	5	9
11	T.T.	41	23	20	23	3	5	10	3	5	9	3	5	10	3	5	8	3	5	10
12	Z.A.	43	24	21	25	3	5	10	3	5	10	3	5	10	3	4	9	3	5	10
AVERAGE		40.4	22.5	19.8	22.5	2.83	4.58	8.42	2.83	4.5	8.33	2.42	4.25	8.5	2	3.25	6.83	3	4.42	8.67
AVERAGE %						94.3	91.6	84.2	94.3	90	83.3	80.7	85	85	66.7	65	68.3	100	88.4	86.7

Table 3. T-Test values for tests A1 - A4

EVENT	A1	A2	A3	A4
T-TEST	7.96092E-09	8.22996E-13	1.17587E-08	1.65406E-11

The results obtained in tests A5 - A9 confirm the triple role of the exercises performed: training, evaluation and superior motivation. In this form, control and concentration on the details, which lead to successful execution, were constantly stimulated. With the exception of test A8, the percentage of successfully completed elements for each test oscillated positively between 80.7-100%.

Table 4. Results for execution technique – Testing 1

No.	Initials	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	B.D.	8	8	7	6	7	8	7	7	7	7
2	B.I.	6	6	6	6	6	7	6	6	6	6
3	C.M.	6	6	6	6	7	7	7	6	7	6
4	G.E.	7	7	7	7	7	7	7	6	7	7
5	I.S.	7	7	7	7	7	7	7	6	6	7
6	L.L.	7	7	7	7	7	7	7	7	7	7
7	N.E.	7	8	8	7	7	8	8	7	8	7
8	N.M.	8	8	8	7	8	8	8	7	8	8
9	S.B.	7	7	6	7	7	8	8	7	7	7
10	T.A.	6	7	6	6	7	7	7	6	7	6
11	T.T.	8	8	8	7	8	8	8	7	8	8
12	Z.A.	7	8	8	8	8	8	8	7	7	8
AVERAGE		7	7.25	7	6.75	7.166	7.5	7.333	6.583	7.083	7
MAX		8	8	8	8	8	8	8	7	8	8

Comparing the points received in the technical series of tests (B1 - B10) with the two tests presented in Table 4 - Testing 1 and Table 5 - Final Testing, we can see the obvious qualitative progress achieved in the learning and perfecting of the elements specific to competitive Baton Twirling, as well as in the whole choreography. The results are confirmed statistically (Tables 6 and 7).

On the easier elements, we can distinguish averages which come close to or exceed the mark 9 (B1, B2, B5, B6, B9). On the elements with a high level of difficulty, for example B4, the more modest results obtained show the need for special training and practice.

The average obtained for the execution of the full routine (8.166), on the one hand, confirms the progress of the subjects, but on the other hand, it offers solid dimension to the objectives which need to be aimed for in the future in order to raise quality of the general level or performance on the group. Each member of the team must contribute to the acquisition of new general qualities in terms of the choreography project.

Table 5. Results for execution technique – Final Testing

No.	Initials	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	B.D.	10	10	10	7	9	8	9	7	8	8
2	B.I.	8	8	7	7	8	9	8	6	7	7
3	C.M.	8	8	7	6	8	8	7	6	8	7
4	G.E.	9	9	8	8	9	9	8	7	9	8
5	I.S.	9	9	9	8	9	8	9	7	7	8
6	L.L.	9	9	9	8	9	9	8	8	10	8
7	N.E.	10	10	10	8	9	10	9	8	10	9
8	N.M.	10	10	10	10	10	10	10	8	10	10
9	S.B.	9	9	8	8	9	10	9	8	9	8
10	T.A.	8	8	7	7	8	8	8	6	9	7
11	T.T.	10	10	10	8	10	10	10	9	10	9
12	Z.A.	10	10	10	8	10	10	10	9	10	9
AVERAGE		9.1666	9.166	8.75	7.75	9	9.083	8.75	7.416	8.916	8.166
MAX		10	10	10	10	10	10	10	9	10	10

Table 6. The significant progress shown through the T-test

TEST	B1	B2	B3	B4	B5	B6	B7	B8	B9
T/TEST	3.95384E-10	5.93783E-11	4.74411E-07	0.000330157	2.34463E-09	2.57E06	7.32977E-06	0.001005	1.23722E-06

Table 7. The significant progress in choreography learning

	Variable 1	Variable 2
Mean	7	8.166666667
Variance	0.545454545	0.878787879
Observations	12	12
Pooled Variance	0.712121212	
Hypothesized Mean Difference	0	
Df	22	

t Stat	-3.386456128
P(T<=t) one-tail	0.001327874
t Critical one-tail	1.717144374
P(T<=t) two-tail	0.002655748
t Critical two-tail	2.073873068

4. Discussions and conclusions

Competitive Baton Twirling develops, through its specificity and requirements, exceptional qualities, abilities, and both simple and complex competencies. It harmonizes through complex elements to music, and at the same time, segmental coordination, balance, creative handling of the baton, body language, speed, stamina, ambidextrousness, balance, creativity, the ability to combine, original incorporation of movements, special orientation, rhythm and tempo, diverse special organization and team organization.

All of the tests presented in this study, regarding physical and technical preparation, can be successfully integrated into algorithmic type programs for learning the elements, structures and parts of the exercise, as well as the full choreography.

The consistency exercises used in this study - '3 out of 3', '5 out of 5', and '10 out of 10' - can become the most efficient means of sustaining the ratio of volume and quality, which is so necessary in learning and perfecting the elements.

The requirements regarding the automatism of precision, refinement, speed, control coordination and synchronization bring the performers and their execution close to an art form. The higher the level of performance, the greater the volume of work is, both individually and with the group. From the training schedule of the experiment group presented (2 training sessions a week, each lasting 2 hours) they must reach 10-12 training sessions/week. Then the skill level will improve greatly.

Even as a recreational sport, baton twirling is an excellent means of physical and behavioural education for children. This sport is aimed at both girls and boys equally, the different events being: individual, pair and group. It can be taken up at as young as 3 years old by means of Mini-twirl programs. It would be a great addition to and would earn its place in Physical Education classes in schools, school sports clubs and competitive sports clubs.

The group studied has participated and continues to participate in national and international competitions. Furthermore, the experience and information gathered will ensure the development of this new sports discipline in Romania. We eagerly anticipate the creation of a Romanian competition system and new management that will promote private sports associations.

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