VERIFICATION OF SPECIAL AND TASK-ORIENTED MOTOR TEST AMONG COMPETITIVE BALLROOM DANCERS AT THE HIGHEST LEVEL OF ADVANCEMENT

Authors' contribution:

A. Study design/planning
B. Data collection/entry
C. Data analysis/statistics
D. Data interpretation
E. Preparation of manuscript
F. Literature analysis/search
G. Funds collection

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Abstract:

Aim. Verification of special and task-oriented fitness test by Rokita carried out amonghigh-level competitive ballroom dancers [1].

Basic procedures: The research material consisted of 76 dancers (38 European couples) of the highest international S dance class, who train ballroom dance in European countries, i.e.: Poland, Italy, the United Kingdom, Germany and the Ukraine. The research methodology included carrying out the test constructed by Rokita[1], consisting of a total of 16 "chaines" turns in 2/4 metre and at a rate of 40 bars per minute.

Results. The presented results constitute proof that the tool proposed by Rokita is not reliable for all competitive ballroom dancers. It is obvious that the most qualified male and female dancers show a higher level of physical fitness due to, for example, training. This, however, does not mean that there are no significant differences between them. Nevertheless, it is impossible to be measured using this test. Therefore, the conducted research led to considerations on the principles forthe construction of motor skills tests.

Conclusions. The presented results constitute proof that the tool proposed by Rokita is not reliable for all competitive ballroom dancers. This test does not fully meet the criteria for the construction of a motor skills test.

Introduction

Regardless of the discipline in question, the level of proficiency depends on many factors, from somatic condition, through fitness preparation, technique, tactics, to psychological preparation. The level of all factors is affected by genetic conditions, as well as the environment shaping acontestant. It is almost impossible to keep the value of indicators regarding individual factors at a relatively similar level during the entire period of contestant development. Therefore, it is very difficult to separate individual elements and have a specific role assigned to them.Among the researchers dealing with dance [2,4,6-8,10-11,13-16,18-19,21-23,27], only Rokita [1], when analysing motor activity among dancers of various cate-

gories, constructed a research tool, which, by definition, allows multi-faceted diagnosis of special and task-oriented fitness, and forecasts the future results of ballroom dancers.This seems very valuable for this discipline as so far, no assessment tool used by trainers has been evaluated on the basis of commonly accepted criteria for the creation of a motor skills test. Therefore, the aim of thearticle was to verify this test by examining the group of S class dancers who had thus far not been tested. In order to achieve the aim presented in this paper, the following hypotheses were formulated:

H1. The result of the task-oriented fitness test among ballroom dancers increases with their dance class.

H2. Female ballroom dancers show higher task-oriented fitness than male dancers.

H3. The task-oriented fitness test created by Rokita does not fully meet the criteria for the creation of a motor skills test.

Research materials and methods

The research material consisted of 76 dancers (38 European couples) of the highestinternational dance class S, who train ballroom dance in European countries, i.e. Poland, Italy, the United Kingdom, Germany and the Ukraine.The examined women were between the age of 16 and 38 ($\overline{x}$ 22 years), while men were between 16 and 39 ($\overline{x}$24 years). The dance experience of these couples ranged from 6 to 24 years ($\overline{x}$14 years for women, and $\overline{x}$ 15 years for men). The couples trained from 5 to 7 days a week (about 10-28 hours). The research involved couples who trained standard, Latin-American and a combination of 10 dances.The research was carried out once in the years 2013-2014. All of the dancers were examined in the same conditions (time of day between 4:00 – 8:00 p.m., specially prepared rooms, clothes, order of tests, etc.). All of the competitors were informed about the possibility of resignation at any time without any consequences, as well as about the way of using the results.

The research methodology included a test constructed by Rokita [1], consisting of a total of 16 "chaines" turns in 2/4 metre and at a rate of 40 bars per minute. The course of the test was as follows: 2 circles with a diameter of 30 cm were drawn on the dance floor, at a distance of 5 meters from each other. The subject started the test in the middle of a circle in the first ballet position, sideways to the direction of movement. Moreover, they independently selected the starting point of the test and the direction in which they made eight turns towards the opposite circle, then stopped, moved to the centre of the

Table 1. Guidelines for test evaluation

Components to be evaluated	Points			
	1	2	3	4
MAINTAINING THE ASSIGNED RHYTHM	Turning is not rhythmical and inconsistent with the tempo	Turning is rhythmical but not in tempo (too slow or too fast)	Falling out of and returning to the assigned rhythm	Performing the movement in accordance with the rhythm and tempo
ARM WORK TECHNIQUE	The first ballet position, when stepping forward, the arms remain in the first position, and at the moment of turning, the arms are moved to the side to the third ballet position, the arms move at different heights	The first ballet position, when stepping forward, the arms are moved to the side in the third ballet position, at the moment of turning, the arms are drawn to the body, the arms move at different heights	The first ballet position, when stepping forward, the arms are moved to the side in the third ballet position, at the moment of turning, the arms return to the first ballet position, while the elbows are lowered, the arms move at different heights	The first ballet position, when stepping forward, the arms are moved to the side in the third ballet position, at the moment of ending the turn,the arms return to the first ballet position; the arms move transverselyat the same height
MAINTAINING POSTURE	Raised shoulders, sunken chest, hips pushed out while turning the vertical axis of the body and head forward or backward	Raised shoulders, lowered chest, bent hips, maintainingvertical position when turning, the head turnsalong with the torso	Raised shoulders, chest slightly raised, hips under the body, maintaining avertical position when turning; when turning, the head is not maintained in the vertical axis with the body and begins to turn with a slight delay, but ends it before the rotation of the torso	Lowered shoulders, chest slightly raised, hips under the body, the head in line with the vertical axis of the body begins to turn with a slight delay, but ends it before the rotation of the torso, keeping the body vertical when turning
MAINTAININGDIRECTION, USE OF SPACE	Turning in a curved line, turning with different step lengths	Turning in a curved line, turning with the same length steps	Turning in a straight line from one circle to another, turning with different step lengths	Turning in a straight line from one circle to another, turning with the same length of steps
LOWER LIMB TECHNIQUE	Whole feet on the ground, bent knees, step forward from the heel while turning the foot at great distance	Standing on tiptoes, bent knees, step forward from the heel, while turning, feet separated	Standing on tiptoes, straight knees, step forward on the toes, while turning, feet separated	Standing on tiptoes, straight knees, a step forward on the toes, and turning on toes with joined feet

Source: Rokita[1], data collectedby the authors of the paper.

nearest circle, and made eight turns back in the opposite direction. Thetask was evaluated by 3 dance judges, assigning the appropriate number of points (from 1 to 4) for each element assessed among five components (Tab. 1). The result of the test was the sum of the obtained points (from 5 to 20).

The obtained data was subjected to a statistical analysis using the Statistica programme. The numerical characteristics of the test results obtained by its author in lower dance classes (D, C, B, A) were presented and supplemented with basic statistical parameters from tests carried out by the authors of this article among the competitors of the highest international dance class (S).

Results

The results obtained by S class dancers were presented separately for left and right turns, respectively for male and female dancers (Fig. 1). A slight variation in the test resultswas observed due to gender. However, this is not surprising, as such a trend was expected because of the significantly higher number of turns in the choreographies of female partners.Following such reasoning, it was considered that if more turns to the right are performed during competitive dancing by female partners, this direction would prevail in the study. Nevertheless, the better results of both female and male dancers were recorded in the case of turns to the left. Therefore, it is

difficult to interpret these results without detailed analysis of functional asymmetry and its variability.

The obtained data was compared with the data collected by Rokita[1] in the lower dance classes (Tab. 2). Analysis of this data showed that the test result increases with dance class.

The presented results constitute proof that the tool proposed by Rokita is not reliable for all competitive ballroom dancers. It is obvious that the most qualified male and female dancers show a higher level of physical fitness due to, for example, training. This, however, does not mean that there are no significant differences between them. Nevertheless, it is impossible to be measured using this test. Therefore, the conducted research led to considerations on the principles for the construction of motor skills tests.

Discussion

The only task-oriented fitness test regarding competitive ballroom dancing was proposed by Rokita in 2006. However, it did not gain popularity and for over 12 years, it wasnotused in scientific studies. Due to the fact that the most important factors required to achieve championship in this discipline are coordination abilities [2, 4, 6-7, 10-11, 13-16, 17-19, 23, 27], the proposed test, which is based on the similarity of movements performed during dance and which distinguishes coordina-
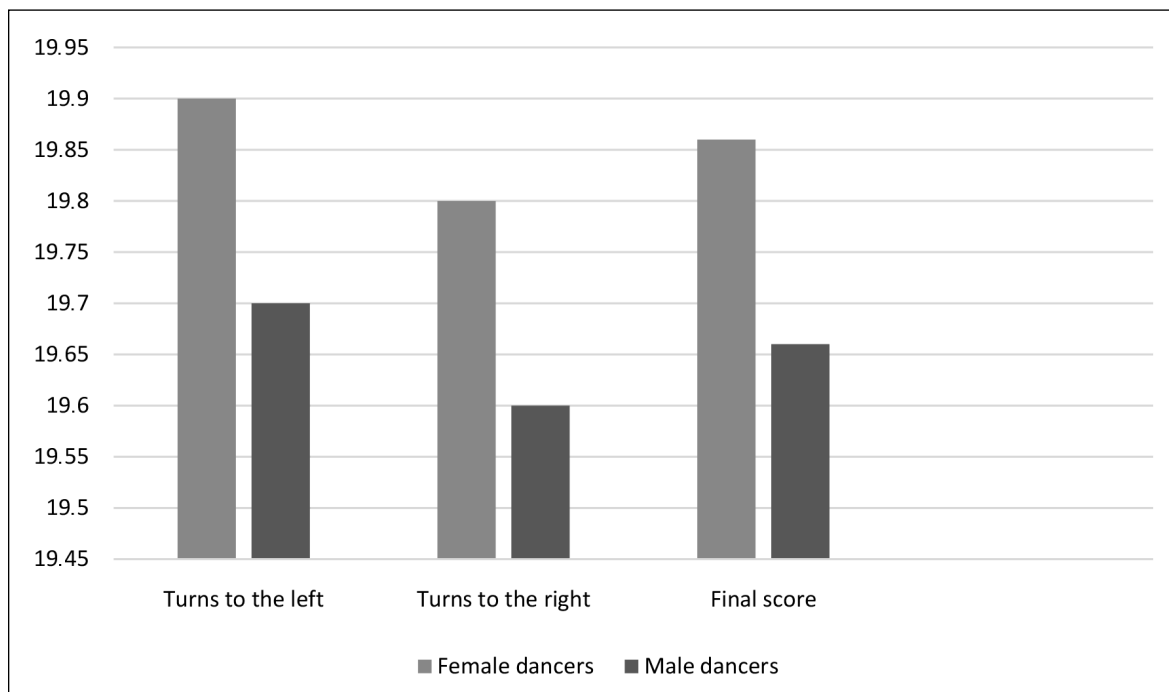

Figure 1. Graphical interpretation of the results of the task-oriented fitness test among dancers forming a couple for competitive ballroom dancing at the highest level of advancement

Table 2. Results of the task-oriented fitness test among individual dance classes

Dance class		Female dancers			Male dancers		
		L	R	TOTAL	L	R	TOTAL
D	$\bar{x}$	8.1	7.5	15.6	8.0	7.04	14.7
	SD	1.6	1.4	2.6	1.3	1.12	2.3
	Min	6.0	5.0	12.0	6.0	6	12.0
	Max	11.0	11.0	21.0	10.0	10	18.0
C	$\bar{x}$	12.5	11.2	23.6	11.1	10.40	21.5
	SD	1.3	1.5	2.5	1.3	1.27	1.6
	Min	11.0	9.0	20.0	9.0	9	19.0
	Max	15.0	13.0	27.0	13.0	13	25.0
B	$\bar{x}$	16.2	14.3	30.5	15.2	13.68	28.9
	SD	1.1	1.2	1.8	1.0	0.89	1.3
	Min	14.0	13.0	28.0	13.0	13	27.0
	Max	18.0	16.0	34.0	17.0	15	32.0
A	$\bar{x}$	17.1	15.6	32.7	16.7	15.07	31.7
	SD	0.8	1.8	2.1	1.2	1.58	2.4
	Min	16.0	13.0	29.0	15.0	13	28.0
	Max	18.0	18.0	36.0	18.0	18	36.0
S	$\bar{x}$	19.9	19.8	19.86	19.7	19.6	19.66
	SD	0.3	0.5	0.4	0.7	0.7	0.7
	Min	19	18	38	17	17	34
	Max	20	20	40	20	20	40

Source. Results obtained by Rokita[1] in D, C, B, A classes supplemented by the results of the highest S class couples.

tion abilities, combiningthem into complexes (in accordance with theoretical assumptions, including Hirtz[9] and Blume [3]), seems to be noteworthy.

However, due to the limited number of articles referring to the task-oriented fitness of competitive ballroom dancers, the possibility of comparing the obtained research results with other materials was limited. Therefore, the authors performed their ownmeasurements, which prompted the following reflections.

The author of the test aimed at constructing such a diagnostic tool that would effectively separate motor and technical-tactical predispositions from factors dependent on aesthetics (the couple's appearance, sports outfit, etc.). As ballroom dancing belongs to artistic sports, it was important to limit the factors that are not taken into account in the training but affect the sports score.

The basic premise was that the test was supposed to measure the task-oriented fitness of dancers, which it does by assessing a combination of different coordination and technical skills. However, the methodical distribution of exercises included in the tests is determined by the degree of their similarity (in terms of internal and external structure) with sports competitions [25].Thus,

the better the test imitated a dance tournament, the more it would be considered a special task. It is difficult to talk about the similarity between one type of turns (in this case – chaines) and complex, acyclic tournament choreographies.The author claims that "[...] during the performance of the dance, the couple presents a series of movements combining the work of the head, arms, torso and lower limbs. In the test, this is reflected by the inclusion of the turns with simultaneous work of arms and head" [1]. However, it is worth noting that the performance of even one dance requires mastering a very large number of elements of varying complexity, as in this discipline, 10 different dances are performed (5 in each style).

Furthermore, Rokita[1] claims that the validity of the test can be indirectly proved by the figures regarding factor analysis, where one of the identified factors was called "special fitness" comprising dance class, general test result, partial test results (separately for turns to the left and right) and the number of points in the rankings of the Polish Dance Association obtained from the beginning of the competition period. This is also debatable, as such rankings are unreliable. Due to the judgingsystem

in ballroom dancing, in order to be rapidly promoted "in the table", it is enough to adjust the policy and tactics of participation in contests. Other authors [5] have earlier questioned the desirability of searching for this type of direct relationship.

In order for the test to meet the criterion of objectivity, it would have to be constructed in such a way that the measurement result be independent of the person conducting the research. In the case of ballroom dancing, this is impossible as the result is not quantifiable – it is the sum of judges' subjective assessments, and the refereeing system is not properly regulated, leaving much to be desired. In the case of the analysed test, no measuring instruments such as centimetremeasuring tapes, anthropometers, stopwatches, etc. were used, the results depending on factors difficult to objectify.

As far as the reliability of the discussed test is concerned, the method of measuring repeatability was used [24,12]. As presented in the results, Rokita [1] obtained the value of the reliability coefficient for his test at the acceptable level. In the case of couples being examined for the purposes of this study, these coefficients have reached the range of good reliability (according to the intervals for the purposes of sports analyses by Zaciorski[26]). Thus, the criterion of reliability is confirmed.

Moreover, the test meets the standardisation criterion, as it has been unified. The description is detailed; it explains the method and conditions of measurement, as well as the necessary equipment; it precisely defines the desired course of the movement and the method of evaluation, leaving no doubts as to the interpretation. However, normalisation of the test was not possible, due to lack of sufficient material that would be representative for the whole population.

In conclusion, the fitness test proposed by Rokita [1] does not meet all the criteria for the construction of a motor skills test. It seems to be a proper tool for analysing the skills of combining motion into chaines, where coordination skills are of key importance as they constitute the basis for comprehensive technical skills. The test seems to be an interesting alternative to the global coordination test createdby Starosta [20]. Until now, it has not been possible to determine the hierarchy of importance of individual abilities due to the difficulty of finding highly accurate and reliable special fitness tests for competitors of this discipline, and in our opinion, the proposed test has not changed this.

Conclusions

As a result of the conducted research and the analysis of the collectedempirical data, the hypotheses included in the article were confirmed and led to the following conclusions:

1. The task-oriented fitness test constructed by Rokita does not fully meet the criteria for the construction of a motor skills test.
2. It is suggested that this test could be a simpler equivalent ofStarosta's global coordination test.
3. The results of the task-oriented fitness test of competitive ballroom dancers increase with their dance class.
4. Female dancers, when compared to male ballroom dancers, show slightly higher task-oriented fitness.
5. Due to the relatively easy technique of performing the movement task, the test is not suitable for diagnostics of competitors at the highest level of sporting proficiency.

The authorsattempted to formulate theiropinion very carefully, making it possible to further verify the hypotheses.

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