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QUALITATIVE ASSESSMENT OF A SEQUENCE OF “ALLEGRO” IN CLASSICAL BALLET DANCERS WITH DIFFERENT TECHNICAL LEVEL

KVALITATIVNA OCENA SEKVENCE ‘ALLEGRO’ PRI KLASIČNIH BALETNIH PLESALCIH NA RAZLIČNIH TEHNIČNIH RAVNEH

ABSTRACT

Since training of professional classical ballet dancers is primarily focused on the aesthetic component of performance there is a necessity to assess its qualitative aspects. This study aimed to investigate whether the *Performance Competence Evaluation Measure (PCEM)* adapted version for classical ballet can be a valid and useful tool: 1) to assess the performance of an “Allegro” sequence; 2) to discriminate between different levels of dancers’ experience.

Twenty-four female classical ballet dancers divided in two subgroups [Ballet students (n = 12) and Pre-professional dancers (n = 12)] were recruited to perform a 70 seconds sequence of “Allegro” specifically choreographed. Each performance was assessed by three very experienced judges, which scores were based on a Likert scale (ranging from 1 to 5) to evaluate the following four parameters: 1) Full Body Involvement (FBI); 2) Body Integration and Connectedness (BIC); 3) Articulation of Body Segments (ABS); 4) Movement Skills (MS). The inter-rater reliability values were ranging from good (between 0.6 and 0.8) and very good (over 0.8) for all parameters, while the test-retest reliability showed a very good agreement for all parameters.

The Allegro is a dance sequence with greater dynamism that better highlights differences of execution between dancers with different technical levels and the Mann-Whitney test showed significant differences for all parameters (P=0.001) with lower values for the ballet students.

In conclusion, the PCEM adapted version for classical ballet showed to be a valid tool: 1) to assess the performance of Allegro; 2) to discriminate between different dancers’ level of experience

Keywords: training, classical ballet, Qualitative assessment

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IZVLEČEK

Ker se trening profesionalnih baletnih plesalcev osredotoča predvsem na estetsko komponento izvedbe, je nujno oceniti njene kvalitativne vidike. Namen te raziskave je bil preučiti, ali je lahko prilagojena različica orodja *Performance Competence Evaluation Measure (PCEM)* za klasični balet veljavna in uporabna za: 1) ocenjevanje izvedbe sekvence allegro, 2) razlikovanje med različnimi ravni izkušenosti baletnikov.

V raziskavi je sodelovalo 24 klasičnih baletnih plesalk, ki so bile razdeljene v dve podskupini [študentke baleta (n = 12) in predprofesionalne plesalke (n = 12)] in so izvajale 70-sekundno sekvenco allegro v posebni koreografiji. Vse izvedbe so ocenjevali trije zelo izkušeni sodniki, njihove ocene pa so temeljile na Likertovi lestvici (od 1 do 5) za ocenjevanje štirih parametrov: 1) vključitev celega telesa (FBI), 2) integracija in povezanost telesa (BIC), 3) izraznost delov telesa (ABS) in 4) gibalne spretnosti (MS). Vrednosti zanesljivosti med ocenjevalci so bile od ‘dobro’ (med 0,6 in 0,8) in ‘zelo dobro’ (več kot 0,8) za vse parametre, zanesljivost testiranja-ponovnega testiranja pa je pokazala zelo dobro ujemanje pri vseh parametrih.

Allegro je plesna sekvenca z večjo dinamičnostjo, ki bolje pokaže razlike v izvedbi med baletnimi plesalci na različnih tehničnih ravneh. Mann-Whitneyev test je pokazal statistično značilne razlike pri vseh parametrih (P = 0,001), z nižjimi vrednostmi pri študentkah baleta.

Zaključili smo, da je prilagojena različica PCEM za klasični balet uporabno orodje za: 1) ocenjevanje izvedbe sekvence allegro ter 2) razlikovanje med različnimi ravni izkušenosti baletnih plesalcev.

Gljučne besede: trening, klasični balet, kvalitativna ocena

INTRODUCTION

Classical ballet can be mainly seen as a performing art that includes drama and music (Stalder, 1990), develops creativity and expressiveness, as well as the accuracy of the movement in order to make the dancers perfectionists. For this reason, dancers are expected to be expressive while executing their performance in front of an audience (Mišigoj-Duraković et al., 2001). In this regard, Camurri et al. (1999) claimed that a dancer is an artist who tries to communicate his/her “Kansei”, that is his/her emotional feeling and sensibility through dance’s movement. Indeed, classical ballet is a high skill intermittent activity that requires a great emphasis on precision while integrating physical and cognitive skills to generate complex movements (Guss-West and Wulf, 2016). Therefore, the long process of dancers’ physical, intellectual and psychological preparation begins in childhood and continue until retirement (Twitchett et al., 2009)

Since professional dancers have to show their technical and aesthetic mastery, their training is primarily subordinated to this performance component. Hamilton et al., (1992) referred to this characteristic of the “art of classical ballet” as “the indefinable line that separates the good from the great”, claiming also that dancers’ performance cannot be judged only by physical parameters. In fact, while demonstrating extreme ranges of movement (either statically or dynamically) or jumping control ability, the elite dancers need also to give the impression to the audience that their exertions are “effortless”. Since these characteristics seem to be very important for the quality of classical dance performance, in literature has been highlighted the necessity to develop valid indicators to assess these aspects despite the awareness that is very difficult to quantify aesthetic improvements. Furthermore, it is also necessary to understand if changes in physical parameters could modify the overall quality of performance in order to design effective training programs without compromising the aesthetic of movements (Angioi et al., 2009).

With regard to the dance aesthetic component there is a lack of studies despite has been validated an assessment tool (i.e. a questionnaire) developed by Krasnow and Chatfield (2009) and named “Performance Competence Evaluation measure (PCEM). However, this work has been preceded by a study of Chatfield and Byrnes (1990) where the authors developed an assessment tool named Aesthetic Component Evaluation (ACE) which was a descriptive form based on four parameters (each one with five levels of ability): 1. technique; 2. space, time, and energy; 3. phrasing; and 4. presence. In a second study, by Parrot et al. (1993) the authors designed an evaluation method based on five categories of assessment adapted by the gymnastic code of points: 1. alignment; 2. clarity of movement intention; 3. precision of movement; 4. expressivity of the body; and 5. musicality. Finally, a third study by Koutedakis et al. (2007) included the following parameters: 1. posture and alignment, 2. use and articulation of upper body and arms, 3. use and articulation of lower body and feet, 4. total body coordination, and 5. presentation of movement.

The final tool developed by Krasnow and Chatfield (2009), the PCEM, was based on four evaluation categories (each one with three levels of skill): a) Full body involvement in movement; b) body integration and connectedness; c) articulation of body segment and 4) general ability of movement. In this study, the authors asked three judges from the professional dance community to assess (by means of video recordings) the performance of 20 students from a university dance program in a combination of contemporary dance. After that the logical validity was established coupled with high intra- and inter-rater reliability correlation coefficients, the authors concluded that the PCEM was a useful measurement tool for future dance science research. However, the validation of PCEM was focused on contemporary dance, which is a different form of dance respect to classical ballet. Then, Mannacio et al. (2017) validated a PCEM adapted version for

classical ballet, asking three professional judges from the dance community to assess female classical ballet dancers during the execution of an “adagio” specifically choreographed for the study purpose. Notwithstanding, the sample of this study was entirely composed by dance students, therefore whether the PCEM adapted version for classical ballet can be effective also to discriminate between professional and student dancers remains still an open question.

Thus, considering the abovementioned aspects this study was aimed either to investigate whether: 1) the PCEM classical ballet adapted version could be a valid tool to assess the performance of an “Allegro” sequence, which represents a type of exercise with more dynamic and rapid movements respect to the “Adage (‘Adagio’)” one; 2) it can be a useful tool to discriminate between different levels of dancers’ experience.

MATERIAL AND METHODS

Participants

Twenty-four female classical dancers, divided in two subgroups: 1) Ballet students (n=12): 2) and 2) Pre-professional dancers (n=12) were recruited on voluntary participation to the study after the signature of an informed consent. The study was approved by the local Ethical Committee (code CARD2018/22) of the University of Rome “Foro Italico” (Rome, Italy).

All participants were free of injury and not involved in any supplementary fitness training program or other sport activity.

Procedures

All participants were involved for two consecutive days: 1) day 1 to be familiarized with the “Allegro” sequence; 2) day 2: to perform the “Allegro” assessment.

The “Allegro” sequence” lasted 70 seconds and was specifically choreographed for the purpose of this study. Each performance was video recorded, randomly ordered in an edited video and

ADAPTED VERSION P.C.E.M. FOR CLASSICAL BALLET					
Observer:					Date:
Dancer:					
	Poor	Not sufficient	Sufficient	Good	Excellent
Full Body Involvement Evaluation of use of stabilized base and limb energy					
Integration Connectdeness spine articulation, and inter-relationship of body segments					
Articulation of Body Segments Evaluation of lower limb activity, and upper limb activity					
Movement Skills Evaluation of direction changes, dynamics, overall rhythmic accuracy, fluidity and other qualitative aspects of the movement phrase					

handed together with assessment guidelines to three very experienced judges. The judges' analysis of performance was provided by means of the PCEM classical ballet adapted version (figure 1) (Mannacio et al., 2017).

Then, the judges' score for each of the four PCEM parameters [1) Full Body Involvement (FBI); 2) Body Integration and Connectedness (BIC); 3) Articulation of Body Segments (ABS); 4) Movement Skills (MS)] were collected and ranked based on a Likert scale ranging from 1 to 5 in order to assess the between-groups differences.

STATISTICAL ANALYSES

The reliability of the PCEM was evaluated using the same three very experienced judges described above. After two training sessions to familiarize with the PCEM adapted version procedures (guide and score), the judges were asked to assign a score on two separate occasions, one week apart, to the same subjects videotaped during an “Adagio”. Both inter-rater and test-retest reliability were measured by means of the Kappa statistics.

With regard to inter-rater reliability, the Kappa values were ranging from good (between 0.6 and 0.8) and very good (over 0.8) for all parameters, while the test-retest reliability showed a very good agreement for all parameters.

Differences between groups (pre-professional dancers and ballet students) were investigated by means of the nonparametric Mann-Whitney U test. The level of significance was fixed as ($p \leq 0.05$).

RESULTS

The descriptive statistics (means and DS) of the anthropometric characteristics of the two groups (pre-professional dancers and ballet students) are presented in table 1.

The descriptive statistics (means and DS) of the four PCEM parameters (FBI, BIC, ABS and MS), for the entire group and two subgroups, as well as the between-groups differences are presented in table 2.

Data showed significant differences for all parameters ($P=0.001$) with lower values for the ballet students.

Subgroups	n	Age (y)	Height (cm)	Body mass (kg)	Classical Ballet Experience (y)
Ballet students	12	19.6±2.5	164.5±5.2	53.5±3.2	7.8±2.3
Pre-professional dancers	12	24±3.5	163.5±4.7	52±3.9	14.5±2.5

PCEM parameters	Total Dancers (n=24)	Ballet Student (n=12)	Pre-Professional (n=12)	Differences between groups
FBI	3.38±1.1	2.56±0.9	4.19±0.5	P=0.001
BIC	3.56±1.1	2.83±1.0	4.28±0.6	P=0.001
ABS	3.68±1.2	2.97±1.2	4.39±0.7	P=0.001
MS	3.36±1.2	2.53±1.0	4.19±0.6	P=0.001

DISCUSSION

The main findings of this study were that the PCEM adapted version for classical ballet: 1) turns out to be a valid evaluation tool also to assess the performance in an Allegro sequence; 2) is effective to distinguish between the different level of experience of dancers.

In our first study focused on the validation of an PCEM's adapted version for classical ballet we analyzed the performance of an “Adagio” (Adage) sequence (Mannacio et al., 2017), which is characterized by slower movements compared to the “Allegro” one. In fact, the Adage has been defined as a combination of slow and graceful movements that can be simple or complex and that develops a sustained power, alignment, balance and dynamic force (Agostini, 2010; Rodrigues, 2017). Further, all these characteristics can be trustfully assessed through the four parameters of the PCEM adapted version (Mannacio et al., 2017). Nevertheless, for the purpose of this study we evaluated the performance during an “Allegro” sequence, which is, together with “Adagio” and “Turns”, the main part of the center floor of a classical ballet lesson.

Indeed, the “Allegro” is a much faster and rapid exercise than the Adage and it is more focused on the dancers' ability to execute rapid movements in which there is a continuous “*change of weight*”, intended as redistribution of the body weight in foot axis (Prochazkova et al., 2014; Shah, 2009), fluidity of movement and rhythmic accuracy. Considering all these components that make up the Allegro performance, the adapted version of the PCEM revealed to be useful for qualitative assessment of this specific ballet sequence.

Furthermore, to successfully perform the Allegro a high technical level is required to the dancers, in fact it contains elements of virtuosity as jumps and multiple turns that must be performed with an excellent control (Twitchett, 2011). Reasonably, all these abilities are usually more developed in dancers with more years of experience, then it should be necessary to assess different dancers' skill levels. In our study, we have registered a higher score in all the four PCEM's parameters (FBI, BIC, ABS and MS) for the pre-professional dancers compared to the ballet-students. Based also on the available literature, it can be speculated that the higher FBI score of our pre-professional group should be seen as the result of a better postural stability given by a more developed proprioceptive sensibility (Kiefer et al., 2013). In fact, as demonstrated by Rein and his colleagues (2011) the more a dancer increase his/her level of ballet ability the more tends to have a better “weight distribution” (as above mentioned), as well as she/he will be also more capable to remain balanced on the anterior side of the foot for a longer time. Specifically, this characteristic is one of the most important required by the discipline and an element of comparison of the technical level between pro- and non- professional dancers, with the latter whom spend longer time on the medial-posterior side (Rein et al., 2011). In support of our findings there is also a study of Crotts et al. (1996) which previously claimed that professional dancers have a better stability of the support base due to their adoption of better strategies to adapt their body weight to the different balance conditions that are continuously required by the dance movements.

Regarding the BIC parameter, since classical ballet is characterized by complex movements involving different body segments at the same time (Kiefer et al., 2011), dancers need an excellent coordination level to achieve higher performances. Also for this parameter our study has revealed higher values for the pre-professional subgroup compared to the ballet students one. These findings are also in agreement with those of Thullier and colleagues (2004) that showed as higher experienced dancers are more likely to perform coordinated movements. Moreover, previous

studies have shown that a good proprioceptive sensitivity (i.e. based on an excellent coordination level) can be acquired thanks to a type of training called “somatic training” (Gamboian et al., 2000). Such form of training focuses on what the authors call the “anatomical knowledge” of the body, on the sensory rehabilitation, the “release of tension” and on a correct use of the body during the execution of the movements. This condition can also lead to an easier transitioning when the dancer transfers her/his body weight. Such characteristics are certainly more suitable and easier to administer with professional dancers. In addition, as also stated by Bläsing et al. (2009) the coordination of the dancers also depends by the mental representations that they have of the different movements, since this would reduce the cognitive efforts and the time necessary to activate the information related to those movements to be performed. Also in this case, this feature will be more developed in professional dancers who have a broader background of specific ballet knowledge.

The third parameter investigated in our study was the ABS and also in this case the highest values emerged in pre-professional dancers could be speculated as a result of their greater and more specific daily training. Naturally also the articular mobility, fundamental in many dance movements, seems to be impossible to reach without a good level of muscular flexibility and, as it can be expected, dancers with more training would have developed greater strength and flexibility to support their range of motion (Wilson et al., 2004).

Finally, also the fourth parameter investigated in our study showed better movement skills (MS) in pre-professional dancers compared with the ballet students. In general, a classical ballet performance includes several characteristics that make its quantification very difficult, including the musicality that makes the movement smooth and aesthetically pleasing to see. In this regard, the professional dancers show a good rhythmic fluidity thanks to their ability to anticipate the action that allows their movements to adhere to the musical time on which they are designed, as also affirmed by Bruynell et al. (2010). These authors also revealed that the age and the number of hours practicing dance influence the dancer’s ability to anticipate action and to device a slight balance realignment according to perceptive cues, enabling them to reduce the spatial and temporal uncertainty (Bruyneel et al., 2010).

Furthermore, in a study of Twitchett (2011) it is also claimed that a dancer’s performance can be improved by additional aerobic and resistance training without interfering with the aesthetic key of the discipline. In this sense, we must consider that such intensive and more specific training sessions of this study (Twitchett, 2011) were also performed by our group of pre-professional dancers, who spent many more hours per day in a dance class respect to the ballet students group.

A further consideration is that in a classical ballet class the presence of the mirror can be considered an element of distraction that could induce the less experienced dancers (e.g. the classical ballet students of our study) to count more on visual feedback by looking in the mirror, rather than being focused on their kinaesthetic skills (Radell et al., 2004). In this regard, for less experienced dancers, the loss of concentration on own body, while focusing on an external element, could cause a reduction of the proprioceptive capacity that also will result, in turn, in a loss of musicality and a lower ability to sustain the *Andante* rhythm of the *Allegro*.

CONCLUSIONS

Our study demonstrated that the adapted version of PCEM is a valid tool to evaluate the performance of an "Allegro" in classical ballet. Further, our findings have also demonstrated how this tool can discriminate between dancers with different level of experience. In particular, due to its greater dynamism, the performance of an "Allegro" lends it more effective to grasp the differences of execution between dancers with different technical levels.

In classical ballet, the dancer's experience involves different "dimension" as physical virtuosity, coordination of the limbs, flexibility, strength as well as aesthetic elements (Bläsing et al., 2012). Indeed, these aesthetic elements are in general more developed in professional dancers due to their more developed and accurate sense of proprioception (Bruyneel et al., 2010). Moreover, for this reason they depend less on visual information compared to less experienced dancers, which explains why professionals have a greater fluidity of performance while keeping the balance in dynamic movements (Golomer and Dupui, 2000).

In classical ballet, the quality of a performance also depends by the adaptation of the dancers' movements to the music of choreography. In this regard, a dancer's skill to maintain the rhythm (i.e. music cadence) depends in turns by her/his accumulated motor experience for the specific movements required by the ballet. For example, the anticipation of the positions to be achieved may allow a quick adjustment of the rhythmic errors by the higher experienced dancers compared to the ballet students. Also in this case, the professional dancers achieve this goal even better by optimizing the motor synergies and consequently reducing energy costs in terms of strength and muscular tension (Thullier and Moufti, 2004; Wilson et al., 2004).

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