

Title:

Measuring a Pirouette: Validating a dance-specific measure for double pirouette performance

**Abstract Required Headers for:**

**Intervention Research, Descriptive Studies, Clinical Case Report, Conceptual Analysis, Practitioner Wisdom, & Movement Sessions**

Each abstract has a 350 maximum word count and headings are required. (Note: the system goes by character count; 2,500 maximum characters.)

The following headers are suggestions (however, header title can be based on the type of abstract submitted):

- **Purpose:** Identify the specific question you set out to answer or the specific objective of the study. And/or identify the objectives of the session and what you hope participants to gain.
- **Literature review:** Outline the relation to current literature.
- **Methods (participants, setting, equipment, procedure):** State whether a human subjects committee approved your study and if participants gave consent (See Ethics Review section below). As most appropriate for your study, describe the design, participants, the methodological procedures, rationale, origin, and/or analysis of the research or proposed presentation.
- **Results and Discussion:** Present the results and succinct relation to current literature. Discuss the implications of these results related to the field.
- **Conclusion:** Summarize your conclusions, highlighting their relevance to treating, training, or conducting research with dancers and implications for future research in dance medicine and science.

(352/350 words, 2364/2500characters – it is probably fine with the character limit ;) )

**Purpose:** Pirouettes are challenging for dancers to perform, and complex for researchers to analyze. Various empirical approaches have been taken to assess pirouette performance. However, it is challenging to draw conclusions from the present field of work, since optimal performance is quantified with disparate measures in a range of studies. Therefore, the present study aimed to validate a dance-specific measure for performance of double pirouettes.

**Methods:** Forty-nine dancers in Australia and Switzerland provided informed consent prior to participation in the study, which was approved by the respective universities' ethics committees. The dancers performed a collective total of 356 double pirouettes while 3D motion capture recorded their performance. Dancers then rated their own pirouette performance on a scale from 1-10. The movement data was then used to create stick-figure videos, which were then rated by experts on a scale from 1-6.

The reliability of expert ratings was first assessed with an Intraclass Correlation. A correlational approach was then taken to determine the relationships between various biomechanical measures cited in the literature and (1) subjective dancer ratings of performance as well as (2) objective expert ratings of performance. The biomechanical measures in question include, among others: maximum deviation of the pelvis over the supporting foot (i.e. max topple angle),

average topple angle during rotation, average vertical axis deviation, and absolute displacement of the supporting foot.

**Results and Conclusion:** Overall, there was a high level of agreement among the expert ratings (ICC = .92). As the data were not normally distributed, Spearman correlations were performed for all variables. Dancers ratings' were most highly correlated with the average topple angle ( $r_s = -.54$ ,  $p < .001$ ); while expert ratings most strongly correlated with the deviation of the vertical axis ( $r_s = -.56$ ,  $p < .001$ ). Interestingly, absolute displacement of the supporting foot – a common measure for performance – was only weakly correlated with both dancer ratings ( $r_s = -.22$ ,  $p < .001$ ) and expert ratings ( $r_s = -.28$ ,  $p < .001$ ). The findings of this study thus identify key measures that are most representative of performance, and encourage the implementation of such measures for comparable research on pirouettes in the future.

### Recommended Reading

Each abstract is required to have one, up to three maximum, recommended readings. These should be in Chicago Manual of Style format and listed alphabetically by author name.

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### Bibliografía

Cicchella, Antonio y Cioia Caminiti. "Effect of different sporting heights on ballet pirouette performance." *Acta Kinesiologiae Universitatis Tartuensis* 21, no. 0 (2016): 19.  
<https://doi.org/10.12697/akut.2015.21.03>.

Lin, Chia-Wei, Shing-Jye Chen, Fong-Chin Su, Hong-Wen Wu y Cheng-Feng Lin. "Differences of ballet turns (pirouette) performance between experienced and novice ballet dancers." *Research quarterly for exercise and sport* 85, no. 3 (2014): 330–40.  
<https://doi.org/10.1080/02701367.2014.930088>.

Lott, Melanie B. y Kenneth Laws. "The Physics of Toppling and Regaining Balance during a Pirouette." *Journal of dance medicine & science official publication of the International Association for Dance Medicine & Science* 16, no. 4 (2012): 167–74.

### Presentation Format

15 min presentation

### Presentation Type

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<sup>1</sup> Melanie B. Lott y Kenneth Laws, "The Physics of Toppling and Regaining Balance during a Pirouette," *Journal of dance medicine & science official publication of the International Association for Dance Medicine & Science* 16, no. 4 (2012).

<sup>2</sup> Antonio Cicchella y Cioia Caminiti, "Effect of different sporting heights on ballet pirouette performance," *Acta Kinesiologiae Universitatis Tartuensis* 21, no. 0 (2016), <https://doi.org/10.12697/akut.2015.21.03>.

<sup>3</sup> Chia-Wei Lin et al., "Differences of ballet turns (pirouette) performance between experienced and novice ballet dancers," *Research quarterly for exercise and sport* 85, no. 3 (2014), <https://doi.org/10.1080/02701367.2014.930088>.

## Descriptive Studies

### Keywords

Balance; Biomechanics; Turning

### Relevance

\* IADMS enhances health, well-being, training, and performance in dance by cultivating medical, scientific, and educational excellence. Describe your presentation's relevance to this purpose (approximately 100 words/500 characters max):

(61/100 words)

The current study aims to enhance the empirical analysis of pirouettes by identifying the most representative measures of performance; accounting for both dancers' perceptions and expert impressions of the aesthetical and technical aspects of dance. By suggesting key measures that can be used across future studies, we hope to encourage comparable research that may stimulate research-informed techniques for optimizing pirouette performance.