

A Quantitative Analysis of Competitive Breaking Judging Systems en Route to the Olympics

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Introduction

Breaking (aka breakdance) is a dance that emerged from the street culture of New York City’s underserved minority communities in the 1970s. It has grown into a global culture and art form with international competitive events following a journey similar to that of skateboarding, surfing, or e-sports. Historically, competitive breaking events have used informal procedures to decide winners, which has had criticisms of subjectivity and variance. Leading up to breaking being an event of the Summer Olympic Games in Paris 2024, there had been a concerted effort to establish formal structures for judging competitive breaking that are intended to be more objective and consistent (Robitzky 2022). Events in which these systems were deployed, including the Olympic Games and its qualifiers, have produced a large quantity of data regarding competitive breaking and judging. This paper utilizes quantitative data analyses to evaluate these competitive breaking judging systems.

Methods

The participating competitors and their scores submitted by judges at numerous breaking competitions using various judging systems over the past decade have been archived online such as the websites of and8 and World DanceSport Federation, and we have extracted and compiled that data using Python and JavaScript webscraping code. We then used descriptive statistics to test hypotheses regarding various aspects of competitive breaking and judging such as the categories being scored in each system, the completeness of judge score inputs, and the predisposition towards certain outcomes.

Judging System	Trivium	WDSF System	Threefold	WDSF Pseudo Threefold	Single Slider	Round by Round	Traditional
# judge categories	6 Technique (20%) Variety (13.3%) Performativity (20%) Musicality (13.3%) Creativity (20%) Personality (13.3%)	5 Technique (20%) Vocabulary (20%) Originality (20%) Execution (20%) Musicality (20%)	3 Physical (33.3%) Artistic (33.3%) Interpretive (33.3%)	3 Technique (33.3%) Variety (33.3%) Performativity (33.3%)	1 <i>unnamed</i> (100%)	n/a	n/a
latest event date	Feb 24, 2023	Aug 10, 2024	Jul 16, 2023	Jun 3, 2023	Jun 11, 2023	May 29, 2021	Apr 30, 2023
earliest event date	October 6, 2017	Apr 14, 2023	Nov 27, 2022	Jun 11, 2022	Sep 17, 2016	Mar 1, 2014	Nov 4, 2017
# events	20	13	35	4	34	18	41
# battles	1526	1239	1456	176	1000	334	730
# rounds	2976	2644	2927	401	1748	673	n/a
# unique competitors	508	384	1054	145	894	256	545
# unique judges	62	64	113	21	110	67	107

Figure 1: Overview of the dataset contents used in our analyses

Results

Our analyses reveal that

- Competitors that stood on the blue side of competition stages won more battles than competitors that stood on the red side
- Judges were more likely to use the Technical and Physical categories of the judging systems to decide the winner of battles
- Battles that used judging systems with more categories had higher rates of incomplete scores input by judges
- Competitors are judged to have performed better by relatively slim majorities across categories
- 3-round battles have different rates of A-B-B versus B-A-B win pattern across judging systems
- Rate of 3-round battles that were decided in 2 rounds were different across judging systems

Conclusion

Taken as a whole, our analyses reveal that the judging systems produce bias in favor of certain competitors, have categories that are not treated with equal weight, and are used inconsistently by judges.

The outcomes of our analyses suggest that despite building out more formal structures for judging competitive breaking, there are still deficiencies in the judging systems that have been built and used. As continuous improvement is among the principles underlying the movement to design better competitive breaking judging systems (Robitzky 2022), this research is intended to highlight opportunities for further work in designing, implementing, and evaluating judging systems.

References

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