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The estimation of leap performance with maintaining open legs in grand jeté for professional ballet dancers

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INTRODUCTION:

Ballet dancers are required to perform the same beautiful movements on both sides of the body for choreographic purposes. However, the evaluation of beautiful movement is ambiguous because there is no specific index for ballet. Therefore, we interviewed ballet instructors about the grand jeté, a dynamic and frequently used movement. The respondents answered that the most beautiful moment was during the leap and it was important to keep the legs open during the leap. Therefore, maintaining the open legs and leaping is considered to be the high performance of the grand jeté. It is considered difficult to maintain more than 50% of the leg-open posture for a short period of time during leaping. But few studies have focused on ballet movement and leg-opening posture.

In this study, we defined the performance of the leg-opening during the grand jeté as whether or not the legs were open for at least 50% of the leap time. The purpose of the study is to examine the relationship between the indexes and the differences in leg opening posture and movement.

METHODS:

Fifteen professional ballet dancers (age: 26.5 ± 3.2 years, height: 160.5 ± 3.8 cm, weight: 47.1 ± 3.4 kg) were subjects. The subjects were given an explanation of the study, a consent form, and a brief questionnaire. Kinematic data were obtained from three grand jeté trials on each side. The trial with the highest leaping height was selected for analysis. The mean value of the maximum leg opening angle at the time of leaping was calculated for the trials under analysis. The threshold angles for the three conditions ((1)mean+1SD, (2)mean, (3)mean-1SD) were set based on the average values. The leg-opening maintenance rate was defined as the percentage of leg-opening retention time divided by the leaping time. In this study, leaping movements with a leg-opening maintenance rate of 50% or higher were evaluated as high performance.

RESULTS:

The average leg-opening angle during leaping was $137.2 \pm 28.3^\circ$. The dancers who maintained 50% or more leg openings in the three conditions during leaping were (1)0, (2)1 dancer on the right, (3)4 dancers on the right, 1 dancer on the left, and 6 dancers on both conditions. There was no correlation between leaping time and leg-opening maintenance rate.

CONCLUSION:

The correlation results suggest that even if the leaping time is longer, it does not necessarily mean that the leg-open posture is maintained. The result of the leg-open maintenance rate suggests that the right grand jeté maintained the leg-open posture for a long period of time than the left-leaping grand jeté. This suggests that there is a left-right difference in leg-open posture performance.

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