

The influence of movement quality on heart rate frequency while performing the dance-specific aerobic fitness test (DAFT) in pre-professional contemporary dancers.

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Objectives: Physical screening of contemporary dancers' aerobic capacity at the beginning of a new season can be very helpful to detect dancers that have low levels of aerobic fitness. The dance-specific aerobic fitness test (DAFT) was developed for measuring aerobic fitness of contemporary dancers. However, the effect of quality of movement during the DAFT has not been studied before. Therefore, the aim of the current study was to explore if movement quality influences heart rate frequency when performing the DAFT.

Study design: A quasi-experimental design.

Methods: Thirteen contemporary dance students (54% male; mean age 19 ± 1.46 years) participated in the current study. The participants underwent two trials performing the DAFT while wearing a Polar heart rate monitor (Kempele, Finland). During Trial 1 the dancers were asked to perform the movements as if they were performing on stage. During Trial 2 some instructions were given to reduce the quality of movement, based on the observation criteria as suggested in the manual of the test (e.g. lower jumps, less pointed feet, lower effort levels). The outcome measures were heart rate frequency values (HR) for all 5 stages of the DAFT (mean value over the last minute of the stage), HR recovery (1 and 2 minutes after finishing the DAFT), a movement quality (MQ) score and a rate of perceived exertion (RPE) score on a 6-20 Borg scale. The MQ scores were based on the criteria as suggested in the manual of the test. A higher MQ score reflects a poorer movement quality.

Results: All students were able to complete the DAFT during both trials. At the end of the DAFT (stage 5) the mean HR was 190 bpm in Trial 1 and 142 bpm in Trial 2. The results showed that there were significant differences in HR values between Trial 1 and Trial 2. For all stages and both recovery periods the HR was lower during Trial 2 ($p \leq 0.001$). Also, RPE scores were lower during Trial 2 ($p \leq 0.001$), and MQ scores were significantly higher during Trial 2 ($p \leq 0.001$) indicating a poorer movement quality.

Conclusion: Poor movement quality is associated with a lower HR frequency. Therefore, we strongly recommend to take movement quality into account when performing the DAFT. Further studies are required to explore the reliability of the current method for observing movement quality.

Relevance for dance and music medicine: High levels of aerobic fitness are required for contemporary dancers in order to complete their classes and performances. The DAFT is a helpful tool to determine aerobic fitness levels in dancers. However, the results of the present study indicate that it is necessary to take into account the quality of movement when conclusions are drawn from the heart rate measurements during the DAFT.