
This study evaluated the physiological demands of classical ballet performances. Using video analysis of 48 performances the authors were able to examine differences between the demands placed on artists, soloists and principal dancers. In order to evaluate the physiological demands the authors selected the following items to record in 30-second intervals: work intensity, body movement, partner work, and transitory movements. This provided data on the number of jumps, falls, lifts, pliés and direction changes performed, the mean time spent at various intensities, and work-to-rest ratios compared by gender and type of performer. The results showed that varying demands are made of the different members of a company, which is reflected in past physiological assessments. For example, principals had the least amount of rest and performed at higher intensities, while soloists had the greatest rest time but performed more jumps per minute than artists or principals. Comparisons of the same variables were also provided for male and female dancers. This highlights the need to differentiate between rank and gender for supplementary training, and also suggests that the performances themselves will have a different training effect on the dancers depending on their roles.


Both in dance science research and in dance education one commonly has to assess performance proficiency. This could be done for the purposes of entrance screening, evaluating the effectiveness of some teaching/training intervention, giving a grade in an academic setting, moving students to different levels or providing individual feedback, etc. There are some aspects of technical performance that can be evaluated using quantitative measures, such as degrees of turnout or height of a vertical jump, but others require qualitative approaches, that is, subjective judgments made about performance competency. This requires developing specific criteria for what components of ‘technique’ are being evaluated, and achieving a high degree of agreement between judges in scoring those criteria. This study identifies some of the challenges inherent in this process. It involved 41 participants who were videotaped performing compulsory and improvisational segments of movement. Three judges were trained to use a set of progressive scoring criteria that included evaluation of technique, space, time and energy, phrasing and presence, with a score between 1 and 5 given in each area. Results showed that using this system produced a high degree of inter-judge agreement and also high intra-judge reliability; that is, judges were highly consistent in their own repeated scorings. The assessment was also able to place the dancers correctly in their dance experience level, which indicates that the assessment tool has sensitivity and specificity. The author provides the following helpful recommendations for future development and use of qualitative evaluation tools: 1. rigorous preliminary training with the judges; 2. pilot testing; 3. more than one judge and/or repeat test administration; and 4. inclusion of an improvisational component in addition to a compulsory component.


A team of researchers asked if mental practice can increase strength in the ankle dorsiflexor (ankle flexor) muscles. They defined mental practice as the cognitive rehearsal of a task in the absence of movement. They recruited 24 healthy students between the ages of 19 and 24 who were not engaged in any exercise program. These participants were randomly assigned to one of three groups: a mental practice group, an exercise group, and a control group (one that did not exercise). The students’ baseline isometric dorsiflexor strength was tested on a Biodex System 3.0 isokinetic dynamometer. Then, three times per week for four weeks, the mental practice group was instructed to close their eyes, take a deep breath, focus on a white screen, and imagine the feel of the exercise they engaged in during baseline testing. They imagined the exercise for five seconds, repeated ten times. The students were monitored to ensure that muscle contraction was not occurring. The exercise group performed the exercises on the Biodex system using the same frequency. The control group
did not exercise. After four weeks all of the groups were retested for strength. The exercise and mental practice groups’ strength improved by 25.28% and 17.13% respectively. The control group did not improve. Other researchers have similarly shown strength or performance improvements through the use of mental practice, although the mechanism is not completely understood. Some suggest the improvement may be the result of better preparation and anticipatory movements. Other researchers have shown that minute impulses from the nerves provide kinesthetic feedback, facilitating corrections in the motor program and neuromuscular coordination. This study indicates that mental practice has useful implications for improving muscular strength in many muscle groups and for facilitating improvements in coordination. Dance teachers may find this technique helpful when training students.


These authors reviewed the literature on core strengthening. They defined the “core” as the muscular corset around the lumbar spine that is used to stabilize it. The core can also be visualized as a box, with the abdominals and spinal muscles in the front and back, the diaphragm on the top, and the pelvic floor as the bottom. Passive bone, fascial and ligamentous structures, and muscles serve as stabilizing forces. The article describes the specific function of each passive structure: the paraspinals, the quadratus lumborum, the abdominals, the hip girdle musculature including the gluteals and the psoas, the diaphragm, and the pelvic floor. The authors provide a detailed strengthening program, including recommendations for functional progression, activation patterns, and time of day. The focus is not just on strengthening, but includes endurance training. It also addresses motor re-learning when the muscles are inhibited (do not fully contract) or less active than normal. The authors explain that transverse or rotational movements are often overlooked, which is a problem because sport activities occur on three planes. They discuss the benefits of enhanced neuromuscular control and methods to facilitate it. Recommended exercises include utilizing co-contraction, plyometrics (which are jump exercises that allow a muscle to achieve maximum force in the least time), protocols for balance work, perturbation challenges (these train reaction to unexpected forces such as balancing on an unstable surface or quick direction changes), and sport-specific skills. Injury prevention and improved performance are the goals of this comprehensive program. The article includes photos and descriptions of useful exercises.