
Two of the articles in this issue of the IADMS Bulletin for Teachers report on the effectiveness of outside-of-class training programs on pelvic alignment and on leg extension. This study examines the benefits of two different types of 6-week strength training programs on the jumping ability of ballet dancers. One of the contributions that the movement sciences have made as they have gone beyond sport to explore dance training is that we have learned more about the physical demands and athleticism of dance.

There is increasing recognition that supplementary training outside of the technique class is needed for maximum performance. While the benefits of strength training for athletes is well known, very little is know about its effects on dancers. This study compared a traditional approach to strength training, via four lower body isotonic leg exercises with gradually increasing weights, to a plyometric program of active one- and two-legged jumping exercises of increasing height and intensity. Both training methods were effective in increasing laboratory leg strength and power measurement, including the height of vertical jumps.

A question of interest in the study, however, was how these improvements in physical fitness might affect the aesthetics of the jumps. Dance faculty evaluated ballon, aesthetic jump height, ability to point the feet in the air, and overall jumping ability during a petite allegro. Improvements were seen in perceived jump height and ability to point the feet, but there was no change in any group for ballon or overall jumping ability. The authors suggest that the supplemental training was effective in developing higher jumps but the improvements did not necessarily translate into aesthetically more pleasing jumps, which are best mastered through technical training. Of note, however, is that the control group demonstrated no changes in any measure of jumping ability from the 6 weeks of dance classes. One of the benefits of supplemental training to improve physical fitness may be that it allows the dancer to focus on the artistry of the movement in class instead of the physical demands.


Within the dance science and medicine community a tremendous amount of effort has been spent investigating screening protocols, standardization of screening methods, and injury reporting. One of the lines of thought is that with the information collected through screening, dancers and those who train and care for them will be better equipped to identify risk factors for injury and possibly promote more efficient injury prevention programs. This team of researchers conducted a five-year retrospective review of data collected through yearly screenings and physical therapy treatments at an elite pre-professional ballet boarding school. One of their purposes was to see if screening data could be used to distinguish between injured and non-injured dancers. They defined as injured any dancer who sought at least one physical therapy treatment. They looked at demographics, past medical history, posture, strength, flexibility, various orthopedic tests, and dance function. Another purpose was to look at types of injuries and when injuries occur throughout the season.

Their conclusion was that some, but not all, of the information collected was consistent with risk factors for injury in dancers. Interestingly, they found no significant difference between injured and non-injured dancers in: age, onset of menses, regularity of menses, hip popping (with and without pain), upper extremity strength (shoulder and arm), core stability, flexibility, hip rotation (turning in or out) and knee over second toe alignment during grand plié. However, there was a significant difference between the injured and non-injured dancers when they measured: history of injury, history of low back pain, lower extremity...
strength (hip and leg), pronation (rolling in) of the foot - (although this was true only for the right foot) and lack of plantar flexion (pointing the foot; true also only for the right foot).

They also concluded that most injuries are caused by overuse, and the number of injuries spike with sudden increases in training schedules and rehearsal time. Other researchers have found similar patterns. They feel that fatigue and stress may play a role. Finally, they suggest that a possible benefit to screening is for dancers to understand “their own personal musculoskeletal profiles.”


This review article tackles a subject that is hardly ever addressed in the literature-- professional or recreational dancers continuing to dance while pregnant. Since dance does not fit neatly under the category of “familiar” exercise such as walking or running, and can contain a very broad range of movements depending on the dance forms, there is little guidance to be found from the medical profession specifically directed at dance activities. The guidelines that seem most applicable are those for exercise in general during pregnancy.

The author has compiled an impressive review of existing guidelines that deal with such topics as hormone-related changes in the musculoskeletal system, such as ligamentous laxity and bone changes, the impact of pregnancy on the abdominal muscles, back pain, changes in the hip and pubic symphysis, temperature control and blood flow, and considerations for duration and intensity of exercise. What is helpful is that she not only describes the effects of pregnancy on a woman's body, but also illustrates how this impacts dancing, what movements to avoid, and signs that suggest it’s time to stop dancing.

Her conclusion is positive in terms of supporting dance as beneficial exercise during pregnancy. “Aside from a few minor adjustments, dancers can maintain their current level of activity as long as no warning signs are experienced.” For any pregnant dancer, or a teacher who receives a request for information, this is a good source for understanding what body adjustments to expect and how to continue to dance safely.


How do dancers accomplish the specific aesthetic elements and the correct mechanics of a grand rond de jambe en l’air en dehors? The focus of this study examines the complex interaction of the gesture leg, the supporting leg, and, specifically, the role that pelvic movement plays. In an earlier study Wilson and colleagues demonstrated that skilled ballet dancers show more pelvic motion than unskilled dancers when performing this movement. In this 3-dimensional motion analysis study of the hip joint they wanted to see how hip motion changed as height of the gesture leg increased from 90 to 105 degrees and then to the dancers’ maximal active range of motion. They looked at hip motions going forward (flexion), backward (extension), to the side (abduction), and turned out (external rotation). They measured pelvic motion as it dropped to the front (anterior tilt), to the back (posterior tilt), and to the side (lateral tilt).

The authors found that pelvic motion is integrally tied to leg motion and height. Grand rond de jambe at 90° or more is, in fact, a combined motion that includes contributions from the hip and pelvis. When the leg is raised to the front, backward (posterior) pelvic tilt contributes 4%-16% of leg height. Up to 60% of leg height in arabesque is generated from the pelvis tilting forward (anteriorly). Leg height to the side included a pelvic contribution of 45% to 60%. This exciting information may modify existing training techniques.