
Abstracts from the Current Literature

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Ducher G, Kukuljan S, Hill B, Garnham AP, Nowson CA, Kimlin MG, and Cook J. Vitamin D status and musculoskeletal health in adolescent male ballet dancers: a pilot study. *J Dance Med Sci*; 2011;15(3):99-107.

These investigators explored vitamin D levels in adolescent male ballet dancers. Sun exposure increases vitamin D levels and the investigators questioned if people who participate in an indoor activity such as dance would have lower levels. The authors also questioned if dancers have lower levels because vitamin D is stored in adipose (fatty) tissue and dancers have lower body fat. The article carefully explains the benefits of vitamin D, which include brain development, effects on the cardiovascular and immune systems, blood sugar homeostasis (the body's equilibrium), and bone health. The investigators explain that vitamin D "regulates calcium levels in the body; thus, an insufficiency could be detrimental to the growing skeleton." They expected about 30% of young male ballet dancers would have levels below those recommended even though they live in sunny Australia. Eighteen subjects were enrolled in the research project and sixteen were ultimately tested during July (winter) when sun exposure was lowest. The authors found a large percentage of the subjects to be low in vitamin D—nine subjects were either deficient or insufficient and seven (less than half) had normal vitamin D levels. No correlation was found between percentage of body fat and vitamin D levels, nor was there a link between vitamin D levels and stress fractures. The authors emphasized that the study did not have many subjects and more research is needed. Ultimately the authors concluded that more than half of their subjects had below normal levels of vitamin D and were at risk due to lack of sunshine. The authors cited research from Paris, the Middle East, Tasmania and New Zealand that found vitamin D levels are low in athletic and non-athletic males during the winter months. The authors recommend that additional research should address the relationship between vitamin D and a dancer's health.

Walker IJ, Nordin-Bates SM, and Redding E. A mixed methods investigation of dropout among talented young dancers: findings from the UK Centres for Advanced Training. *J Dance Med Sci*. 2012;16(2):65-73.

The authors questioned why young talented dancers in an elite training program drop out. They described research which explored why athletes drop out, because there is a lack of such research for the dance population. They found a variety of reasons that teenage athletes drop out, including feeling there is too much pressure from coaches, disliking their coach, not expecting success, and not having enough fun. The authors said the most "consistent results from descriptive studies indicate that time conflicts and having other interests are the most frequently cited reasons for sport dropout." Additional research in sport looked at motivation and compliance and noted that dropout rates seem higher when the athlete specializes in a single sport at a young age. The authors note that more research into dance dropout needs to be done. The authors interviewed dance students between ages 12 and 18 years of age who had dropped out of Centres for Advanced Training (CATs) in the United Kingdom. Interviews ranged from 17 to 45 minutes and researchers concluded that there was no one particular type of student who was likely to be at risk of dropping out. Dancers stated a variety of personal reasons such as lost passion and feelings of incompetency. Some felt the time spent was too great because of other issues like "college stuff," schoolwork, friends and family. The authors go on to explain in great detail each of these reasons and others. Many dancers continued to dance after dropout but at a different intensity. The authors report, "Enhancing the quality of the experience should be the goal, so that benefits are gained from training regardless of the eventual outcome." This article is an important read for teachers of young students.

Holt KM, Welsh TM, Speights J. A within-subject analysis of the effects of remote cueing on pelvic alignment in dancers. *J Dance Med Sci.* 2011;15(1):15-22.

Maintaining correct pelvic alignment during dynamic dance movements is a challenge for most dancers. Identifying what ideal pelvic placement is, measuring it both standing and moving, and attempting an intervention to change alignment are also challenging for both researchers and teachers. A number of studies have attempted a variety of feedback techniques to change alignment closer to an ideal. One of these intervention studies by Deckert and colleagues was included in the IADMS Bulletin for Teachers 2009:1(1). In the present study, instead of using only a verbal feedback intervention, the authors designed a remote cueing technique, consisting of a pager sewn into a front hip pocket that could be activated when the dancer was misaligned. Two dancers in a professional training university program participated. Videotape recording was used for the assessment and training sessions. Their pelvic alignment was evaluated standing in parallel and turnout, as well as in a series of five ballet bar combinations. Their ideal pelvic placement was determined by experienced technique teachers. Cue training began by having an assistant properly align the dancer, having the dancer relax into their normal position, activating the pager, providing verbal feedback cues and asking the dancer to find the correct alignment. The same pager cue was given as the dancer performed the combinations whenever she was misaligned, including a final combination without pager activation, to assess if the dancer was responding to the training. Training was carried out twice a week over eight weeks. Results indicated that, using this individualized training approach, pelvic alignment improved to the level determined to be ideal for each dancer. The dancers were also asked about their experience in open-ended questionnaires. They reported a change in their alignment awareness which they attributed to the cue training. This would appear to be supported by the dancers' ability to make adjustments during the final combination without pager activation. Further study is clearly needed to determine if this type of cue training or simple verbal cueing in training sessions can transfer to awareness of correct alignment during a technique class.

Ambegaonkar JP, Caswell SV, Winchester JB, Aswell AA, Andre MJ. Upper-body muscular endurance in female university-level modern dancers: a pilot study. *J Dance Med Sci.* 2012;16(1):3-7.

Numerous research studies have documented the physical demands of dance and established that dancers are athletes. With the awareness of the muscular and cardiovascular demands placed on dancers, it has been recognized that technique classes alone are not sufficient to train the dancer for these demands and it has been recommended that additional physical training take place outside of the classroom. We have included a few of these studies in past articles and reviews in the IADMS Bulletin for Teachers, including the Wyon and Kozai articles in this issue.

The authors of this study compared upper-body muscular endurance of 17 female university-level modern dancers to 15 physically active non-dancers, using a modified push-up test. They suggest that falls, handstands and unusual partner lifts in modern dance place more demands on the upper-body musculature than in ballet, and that dancers may be more at risk for upper-body injuries. The question was whether these increased demands were reflected in increased upper-body muscular endurance. Results showed no significant difference in the number of push-ups performed by the two groups, even though the dancers were physically active for a greater amount of time per day and more often per week than the non-dancers. Comparing both groups to population norms for university females, it was found that both groups scored above the 90th percentile (19 to 21 pushups). However, when compared to norms for a variety of university athletes the dancers scored lower. Although the sample of modern dancers was five times more physically active than the non-dancers, it appears this increased dance activity was not sufficient to make muscular endurance gains. For most of the dancers in this study, dancing was their only physical activity. The authors recommend that participation in additional alternative exercise programs is necessary for improving many physical attributes, such as muscular endurance, and may help to prevent injury. They recommend that dance educators encourage dancers to perform cross-training and strengthening of their upper body outside of their dance activities.