Pickard A. Exploring embodiment through choreographic practice. Front Psychol. 2018 Oct 15;9:1920.

This pilot study explored embodiment and gender representation through the lens of choreographic practice and sociology. The perspective derives from a comparative lack of status held by female (vs. male) choreographers in the United Kingdom. This study specifically addresses how choreography itself embodies and perpetuates sociocultural values. The method is a process of dance making called Sonnet that would expose habitual expectations of dance performances. It aims to heighten awareness of gender expectations and to challenge dancers and audience members to reflect on what they normally take for granted. Using Pierre Bourdieu’s social and cultural perspective, including the notion of habitus (embodiment), the study indicates a trend toward perpetuating social hierarchy in dance training and practice.

Ward RE, Fong Yan A, Orishimo KF, Kremenic IJ, Haggins M, Liederbach M, Hiller C, Pappas E. Comparison of lower limb stiffness between male and female dancers and athletes during drop jump landings. Scand Med Sci Sports. 2019 Jan;29(1):71-81.

Repetition of jumps in dance and sport training poses a potential injury risk; however, non-contact landing injuries are more common in athletes than dancers. This study aimed to compare the lower limb stiffness characteristics of dancers and athletes during drop landings to investigate possible mechanisms of impact-related injuries. Kinematics and kinetics were recorded as 39 elite modern and ballet dancers (19 men, 20 women) and 40 college level team sport athletes (20 men, 20 women) performed single-legged drop landings from a 30-cm platform. Vertical leg stiffness and joint stiffness of the hip, knee, and ankle were calculated using a spring-mass model. Stiffness data, joint kinematics, and moments were compared with a group-by-sex two-way analysis of variance. Multiple linear regression was used to assess the relative contribution of joint stiffness to variance in overall vertical leg stiffness for dancers and athletes. Dancers had more lower leg (p < 0.001), knee joint (p = 0.034), and ankle joint stiffness (p = 0.043) than athletes. This was facilitated by lesser knee joint moments (p = 0.012) and greater knee (p = 0.029) and ankle joint (p = 0.048) range of motion in dancers. Males had more leg (p < 0.001) and ankle joint stiffness (p < 0.001) than females. This occurred as a result of lesser ankle range of motion (p < 0.001) and greater ankle moment (p = 0.022) compared to females. Male and female dancers demonstrated reduced lower limb stiffness compared to athletes, indicating a more pliable landing technique. Dance training techniques could potentially inform approaches to injury prevention in athletes.

Blăsing BE, Coogan J, Biondi J, Schack T. Watching or listening: how visual and verbal information contribute to learning a complex dance phrase. Front Psychol. 2018 Nov 30;9:2371.

In this multidisciplinary project we conducted a study on the learning of dance movement through two modalities, observation of a human model in a video clip and listening to the audio-recording of a verbal movement instruction. Eighteen second year dance students learned two dance phrases, one from observation and one from verbal instruction, and were video recorded performing the learned material. At a second learning session they were presented with the complementary information from the other modality, and their performance was again recorded. A third recording was made as a retention test 10 days later. Completeness scores representing the recall of the dance phrases, expert ratings addressing the performance quality, and questionnaires reflecting the participants’ personal impressions were used to evaluate and compare the performance at different stages of the learning process. Results show that learning from observation resulted in better...
learning outcomes in terms of both recall and approximation of the model phrase, whereas individual interpretation of the learned movement material was rated equally good after initial verbal and initial visual learning. According to the questionnaires, most participants preferred learning initially from observation and found it more familiar, which points toward an influence of learning habit caused by common training practice. These findings indicate that learning dance movement initially from observation is more beneficial than from verbal instruction and suggest aspects of multimodal movement learning with potential relevance for dance teaching and training.

Edmonds R, Wood M, Fehling P, DiPasquale S. The impact of a ballet and modern dance performance on heart rate variability in collegiate dancers. Sports. 2018 Dec;7(1). pii: E3.

Heart rate (HR) variability (HRV) is a useful tool for assessing cardiac autonomic function and identifying potential readiness to perform in athletic populations but has yet to be investigated in dance populations. As such, HRV may be able to provide valuable insight into the preparedness and the demands of performance in collegiate dancers. Twenty-nine female dancers were monitored leading up to and following a dance performance. Analysis of HRV focused on the square root of the mean squared differences of the successive RR intervals (RMSSD). A one-way ANOVA, with Bonferroni post-hoc, paired with magnitude-based-inferences (MBI) with effect sizes (ES) were used to analyze changes during the Winter Dance Concert, while the Recovery-Stress Questionnaire for Athletes (REST-Q Sport) measured the frequency of stress of dancers. When compared to baseline (69.8 ± 1.7 bpm), mean (HR) was increased at both pre-show recordings (76.5 ± 2.1 bpm and 75.6 ± 1.8 bpm). In contrast, RMSSD was significantly diminished (p < 0.05) at both pre-show recordings (40.6 ± 28.4 ms and 40.5 ± 21.8 ms) as compared to baseline (70.3 ± 38.4 ms). Dancers reported increased self-efficacy before the second show and at 36 hours post-concert (p < 0.05). As expected, Dance Exposure (DE) increased significantly (p < 0.05), while Academic Exposure (AE) was similar, during the week leading up to the dance concert. These results suggest that dancers respond to dance concert performances similarly to other athletic populations approaching intense competition by exhibiting decreased parasympathetic activity prior to performance, which returned to baseline values 36 hours after performance. Given the increase in self-efficacy, these fluctuations may indicate a readiness for performance comparable to that of other athletes.

McCormack MC, Bird H, de Medici A, Haddad F, Simmonds J. The physical attributes most required in professional ballet: a Delphi Study. Sports Med Int Open. 2018 Dec 20;3(1):E1-E5.

No previous study has sought to define the physical attributes thought to be most desirable for classical ballet by professional companies and vocational schools. These are likely to include both aesthetic features and attributes that reduce the risk of injury while enhancing performance. An initial survey question using the modified Delphi technique was sent by way of Opinion Survey Software to a selected international expert panel. This panel was drawn both from those involved in the selection of elite professional ballet dancers and international medical professionals who care for dancers. The first questionnaire was open-ended in search of the physical attributes most favored by the experts. There were 148 responses from the panel. In total 34 physical attributes were suggested. The two most recommended physical criteria for selection into the profession were overall flexibility and overall strength. These results are discussed in the context of the published literature on the mechanics, anatomy, and physiology of ballet. It is concluded that flexibility and strength are the two features most sought after in elite ballet dancers.

Bronner S, Chodock E, Urbano IER, Smith T. Psychometric properties of the Dance Functional Outcome Survey (DFOS): reliability, validity, and responsiveness. J Orthop Sports Phys Ther. 2019 Feb;49(2):64-79.

There are no outcome measures that focus on the unique functional requirements of dancers. The objective of this prospective cohort study was to evaluate the usefulness of the Dance Functional Outcome Survey (DFOS) for this purpose. A sample of 198 healthy and injured professional and pre-professional adult ballet and modern dancers was studied over 2 weeks, using intraclass correlation coefficients (ICC2,1). The following were examined: 1. construct validity, by comparing the DFOS to the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) using Pearson correlations; 2. exploratory factor analysis and internal consistency; and 3. sensitivity, by generating receiver operating characteristic curves and determining the area under the curve (AUC). In a subgroup of 47 injured dancers we found internal responsiveness across four time points using repeated-measures analysis of variance (p < 0.05). The injured dancers’ scores were analyzed for floor and ceiling effects. The DFOS demonstrated high test-retest reliability (ICC ≥ 0.93). Single-factor loading in exploratory factor analysis supported unidimensionality of the scale, with high internal consistency (α = .96). The DFOS total score and activities-of-daily-living (ADL) and dance technique sub-scores had strong construct validity compared with scores on the SF-36 physical component summary (r ≥ 0.77). This study found excellent sensitivity, with high AUC values (≥ 0.91). There were significant differences across time for DFOS scores (p < 0.001), demonstrating responsiveness to change. There were no floor or ceiling effects. It is concluded that the DFOS demonstrates acceptable psychometric performance as an outcome and screening measure for both healthy state and functional limitation following lower extremity or low back injury in adult ballet and modern dancers.