Abstracts from the Literature

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Turner BS, Wainwright SP: *Corps de ballet*: the case of the injured dancer. *Soc Health Illness* 2003; 25:269–288.

The authors' stated aim is to understand the interaction between injuries, dancers' experiences of discomfort, and the social support that emerges from the ballet dancers as a social group. They draw on concepts of social solidarity and collective consciousness to show that injury is mediated through the social bonding of dancers into a professional ballet company, where injury is accepted as a sign of vocational commitment. Ballet injury also has to be understood within the context of historical change; modern ballet is more athletic, and companies are expected to produce a variety of dance styles and genres. The globalization of ballet also has put greater stress on the dancers, who perform a demanding schedule of international events. Through interviews, the authors attempt to show how a comprehensive account of ballet injuries would have to address the institutional and the social settings of injury that construct the conditions under which injury is possible, and the embodiment of ballet practices that constitute the habitus of ballet. Major injuries, such as toe fractures or damaged knees, can terminate a professional dancer's career at any time, but the translation of minor troubles into a serious injury is filtered through the social body of dancers. The authors offer several arguments against social constructionism in this aspect of health and illness. They state that the vocational commitment of the ballet dancer, the effervescence of dancing, and the spirit of the *corps de ballet* mean that an injured dancer keeps dancing—often with the support of physiologists, ballet teachers, and psychologists. An effective understanding of the rituals of pain requires a sociology of the embodiment of the injured dancer and an analysis of the social construction of injuries of the body, whereas the stuff of pain is channeled and made manifest through the collective and real *corps de ballet*.

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Bronner S, Ojofeitimi S, Rose D: Injuries in a modern dance company. *Am J Sports Med* 2003; 31:365–373.

Moving from the sociological to the therapeutic realm, this article reports on the effect of comprehensive case management and intervention on injury incidence, time loss, and patterns of musculoskeletal injury in a modern dance company. The authors analyzed injury data over a 5-year period, 2 years without intervention and 3 subsequent years with intervention, from 42 modern dancers. Injury was defined as any musculoskeletal complaint resulting in financial outlay and was subdivided further by time into minor, moderate, and severe subtypes. The number of workers' compensation cases and number of dance days missed due to injury were compared across a 5-year period. Results showed that comprehensive management significantly reduced the annual number of new workers' compensation cases from a high of 81% to a low of 17% and decreased the number of days lost from work by 60%. Most injuries occurred in younger dancers before the implementation of this program. Most injuries involved overuse of the lower extremity, similar to patterns reported from other ballet companies. Benefits of comprehensive management included early and effective treatment of overuse problems before they became serious injuries and triage to prevent overuse of medical services. Dancers and management in the study company strongly support the programs' continuance.

Candia V, Wienbruch C, Elbert T, et al: Effective behavioral treatment of focal hand dystonia in musicians alters somatosensory cortical organization. *Proc Natl Acad Sci USA* 2003; 100: 7942–7946.

New perspectives in neurorehabilitation suggest that behavioral treatment of movement disorders may modify the functional organization of central somatosensory neural networks. Based on the assumption that use-dependent reorganization in these networks contributes to the fundamental abnormalities seen in focal dystonia, the authors treated 10 affected musicians with sensory motor retuning. This behavioral therapy uses a splint that immobilizes one or more nonaffected digits and a set of sequential finger exercises for the free digits, including the dystonic ones. Results showed that effective treatment leads to alterations in the functional organization of the somatosensory cortex. Specifically, before treatment, somatosensory relationships of the affected fingers differ between the affected and the unaffected hands, whereas after treatment, finger repre-

sentations contralateral to the dystonic side become more similar to the less affected side. Somatosensory finger representations are ordered more according to homuncular principles after treatment. Also, the observed physiologic changes correlated with behavioral data. These results confirm that plastic changes in parallel with emergent neurologic dysfunction may be reversed by context-specific, intensive training–based treatment.

Harvey P, Saxon KG: Sleep and the singer. Part 1 and Part 2. *J Singing* 2003;60:61–66, 165–171.

The subject of sleep and its importance to singers has never been explored despite preliminary research that indicates that sleep deprivation may alter respiratory function and affect speech patterns, especially intonation, articulatory precision, and rate. Given the large numbers of singers who report disrupted sleep, the importance of restorative sleep to vital health, and the dangers of even short-term sleep deprivation, the understanding of sleep warrants a place in performing arts medicine. The authors have written a two-part article that provides vocal musicians with a basic tutorial on human sleep biology, sleep stages, and current research on sleep and human health. Part 1 describes the purposes of sleep, sleep components and cycles, circadian rhythms, the purposes and physiologic effects of sleep, and the consequences of sleep deprivation. In part 2, the authors cover sleep evaluation methods and three conditions within the major sleep disorder category of dyssomnias: insomnia, restless leg syndromes, and obstructive sleep apnea. Techniques to increase alertness also are discussed. This part concludes with results from a preliminary survey of 56 singers in a single opera company located in a large city. More than 90% reported sleep problems that varied according to their rehearsal and performance schedules. The most common complaints were difficulty with breath support (82%) and reduced focus and inability to concentrate (86%). Of singers, 62% had scores on a sleepiness scale instrument that indicated pathologic sleepiness; many of these vocalists described their sleep as "adequate."

Cuddy LL, Kilgour AR: Time tagging: a key to musicians' superior memory. *Mus Percept* 2003;20: 307–313.

Long-term benefits of music training on cognitive development have been claimed. Music training has been associated with the development of sequencing and spatial abilities, prenumber concepts, mathematical abilities, and reading. Additionally, musicians are reported to exhibit superior preattentive auditory processing and aural discrimination ability, enhanced short-term memory, and better mastery of planning abilities. The mechanisms linking music training to such benefits are far from clearly understood, however. The authors hypothesize that musical training affects the development of verbal abilities indirectly by strengthening auditory temporal processing skills—which allow us to make fine discriminations between rapidly changing acoustic events. The purpose of this study was to determine whether temporal-order processing ability mediates the relationship between years of formal music instruction and accuracy of recall of spoken phrase. Sixty undergraduate students with varying lengths of musical training underwent a battery of tests, including auditory capabilities, memory, spatial ability, and vocabulary. The positive correlation between years of musical training and verbal recall was highly significant, as was that between years of music training and the composite score from the temporal-order tests. Other components of the test also were highly significant, but not all variables that correlate with years of training were shown to have a mediating effect. The findings suggest that enhanced verbal memory performance in musicians is a by-product of the effect of music instruction on the development of auditory temporal-order processing abilities. Further studies are suggested, particularly whether the age at which individuals are first introduced to formal music instruction is related to the strength of effects seen with verbal and nonverbal tasks.

Miller G, Peck F, Brain A, Watson S: Musculotendinous anomalies in musician and nonmusician hands. *Plast Reconstr Surg* 2003; 112:1815–1822.

Musculoskeletal abnormalities of musicians' hands and upper extremities are well-recognized and potentially career-threatening problems. Of the many types of problematic musculoskeletal disorders that could be evaluated, this study focused on joint instability and musculotendinous anomalies. The hands of 92 collegiate music students were compared with the hands of 64 nonmusician control subjects. Flexor musculotendinous anomalies were observed much more frequently than the anomalies on the extensor side; clinical evidence of the Linburg-Comstock anomaly (an abnormal connection in the distal forearm between the tendons of the flexor pollicis longus and the flexor digitorum profundus, usually to the index digit) was noted in 60% to 70% of subjects in both groups. Further analysis of this anomaly showed that the sites of pain among test-positive subjects were variable, test positivity was more frequent in the left hand and among string players, and test positivity tended to decrease from the radial side to the ulnar side of the hand. There were only two definite extensor musculotendinous anomalies (1.3%), and both involved a subluxating extensor mechanism of the little fingers. Additionally, 43% of all subjects exhibited some degree of instability affecting the joints of their digits.