A Profile of the Demographics and Training Characteristics of Professional Modern Dancers

David S. Weiss, M.D.,† Selina Shah, M.D.,† and Raoul J. Burchette, M.A., M.S.

Abstract

Modern dancers are a unique group of artists, performing a diverse repertoire in dance companies of various sizes. In this study, 184 professional modern dancers in the United States (males N=49, females N = 135), including members of large and small companies as well as freelance dancers, were surveyed regarding their demographics and training characteristics. The mean age of the dancers was 30.1 ± 7.3 years, and they had danced professionally for 8.9 ± 7.2 years. The average Body Mass Index (BMI) was 23.6 ± 2.4 for males and 20.5 ± 1.7 for females. Females had started taking dance class earlier (age 6.5 ± 4.2 years) as compared to males (age 15.6 ± 6.2 years). Females were more likely to have begun their training in ballet, while males more often began with modern classes (55% and 51% respectively, $p < 0.0001$). The professional modern dancers surveyed spent 8.3 ± 6.0 hours in class and 17.2 ± 12.6 hours in rehearsal each week. Eighty percent took modern technique class and 67% reported that they took ballet technique class. The dancers who specified what modern technique they studied (N = 84) reported between two and four different techniques. The dancers also participated in a multitude of additional exercise regimens for a total of 8.2 ± 6.6 hours per week, with the most common types being Pilates, yoga, and upper body weightlifting. The dancers wore many different types of footwear, depending on the style of dance being performed. For modern dance alone, dancers wore 12 different types of footwear. Reflecting the diversity of the dancers and companies surveyed, females reported performing for 23.3 ± 14.0 weeks (range: 2-52 weeks) per year; males reported performing 20.4 ± 13.9 weeks (range: 1-40) per year. Only 18% of the dancers did not have any health insurance, with 54% having some type of insurance provided by their employer. However, 23% of the dancers purchased their own insurance, and 22% had insurance provided by their families. Only 16% of dancers reported that they had Workers' Compensation coverage, despite the fact that they were all professionals, including many employed by major modern dance companies across the United States. It is concluded that understanding the training profile of the professional modern dancer should assist healthcare providers in supplying appropriate medical care for these performers.

David S. Weiss, M.D.,† is at the Harkness Center for Dance Injuries of NYU Hospital for Joint Diseases and in the Department of Orthopaedic Surgery at New York University School of Medicine, New York, New York. Selina Shah, M.D.,† is in the Department of Orthopaedic Surgery, Division of Sports Medicine, at Kaiser Permanente, Panorama City, California. Raoul J. Burchette, M.A., M.S., is in the Kaiser Permanente Research and Evaluation Unit, Pasadena, California. †These authors contributed equally.

Correspondence: David S. Weiss, M.D., NYU Medical Center, 530 First Avenue, HCC Suite 5D, New York, New York 10016; david.weiss@nyumc.org.

This work was presented at the 15th Annual Meeting of the International Association for Dance Medicine and Science in Stockholm, Sweden, 2005.

Modern dance (also known as "contemporary dance") originated in the early part of the twentieth century. While ballet has a basic underlying technique (albeit with regional and stylistic differences), modern dance does not. Each of the originators of modern dance discarded the techniques of their teachers and developed his or her specific technique. Over the years, as dancers have founded new modern dance companies, additional techniques have been created. These include Graham, Limon, Horton, Cunningham, Nikolais/Louis, and Hawkins techniques. Today, professional modern dance companies around the world perform dances based on one or more of these techniques. While the typical ballet dancer performs a variety of ballets, the typical modern dancer performs an even more diverse repertoire, incorporating many different movements, techniques, and styles of dance. Some of the larger modern dance companies in the United States today include Paul Taylor Dance Company, Merce Cunningham Dance Company, Alvin Ailey American Dance Theatre, Hubbard Street Dance Chicago, and Mark Morris Dance Group.

While there is a plethora of information on professional ballet dancers in the literature,[1-3] there is little informa-

Table 1 Demographics

	Male (N=49)			Female (N=135)			All (N=184)	
	Mean	SD	Median	Mean	SD	Median	Mean	SD
Current age	30.7	±7.7	29	29.8	±7.1	28	30.1	±7.3
Height (inches)	69.8	±2.4	70	65.1	±2.6	65	66.4	±3.3
(cm)	177.3	±6.1	178	165.4	±6.6	165	168.7	±8.4
Weight (lbs)	163.4	±19.0	165	123.9	±12.7	124.5	134.6	±22.9
(kg)	74.3	±8.7	75	56.3	±5.8	57	61.2	±10.4
Body Mass Index (BMI)	23.6	±2.4	23.1	20.6	±1.7	20.23	21.4	±2.4
Age at first dance class (yrs)	15.6	±6.2	16	6.5	±4.2	5	9.0	±6.3
Years studied dance	14.55	±7.0	13	22.5	±7.4	22	20.4	±8.0
Years danced professionally	8.9	±6.8	7	8.9	±7.3	7	8.9	±7.2

tion on the professional modern dancer. This may be due to the fact that the major ballet companies are relatively large (greater than 60 dancers) and the logistics of collecting information from them are therefore easier. Most modern dance companies are small (5 to 10 dancers); even the largest of the modern dance companies (including the ones listed above) have fewer than 30 dancers. In addition, professional modern dancers living in major dance cities in the United States often begin their careers as "freelancers," dancing with each of several very small part-time companies for short periods during the year. The few studies in the literature on modern dancers have focused on university students,[4] have combined data from professional and student modern dancers,[5] have combined data from professional ballet and modern dancers,[6] or have reported data on less than a dozen dancers.[7,8] The present study was performed to more fully describe the demographics and training characteristics of the professional modern dancer in the United States.

Materials and Methods

The directors of professional modern dance companies throughout the United States were contacted by telephone or e-mail requesting permission to enroll their dancers in the study. Eleven freelance modern dancers were also contacted. Sixty-three companies agreed to allow their dancers to participate. A total of 641 anonymous surveys were mailed to the dance company directors and freelance dancers.

The self-reported survey consisted of questions including details about demographics, forms of dance studied past and present, types of shoes worn, modern dance techniques studied, other forms of exercise, and health insurance.

The inclusion criteria consisted of any professional modern dancer in the United States aged 18 or older. Exclusion criteria included any dancer who was not dancing with a professional modern dance company, any freelance dancer who did not identify himself or herself as a modern dancer, or any professional dancer less than 18 years of age. Approval for the study was obtained from an independent ethics review board.

Descriptive statistics including nonparametric tests were used in the analysis. These tests included the Pearson chi-square test and Wilcoxon rank-sum test. The Wilcoxon signed rank test was used to compare dancers with themselves at two different points in time.

Results

One hundred and eighty-five dancers returned surveys anonymously by mail, for a response rate of 29%. One dancer did not meet inclusion criteria, so 184 dancers were included in the analysis.

Of the total participants, 49 (27%) were male and 135 (73%) were female. The average age was 30.1 ± 7.3 years (range: 18-55). The average Body Mass Index (BMI) for males was 23.6 ± 2.4, for females 20.5 ± 1.7 (Table 1).

Males took their first dance class at age 15.6 ± 6.2 years, while females started dancing at age 6.5 ± 4.2. Females had spent 22.5 ± 7.4 years studying dance, with 8.9 ± 7.3 (median: 7) years dancing professionally. Males spent 14.6 ± 7.0 years studying dance, with 8.9 ± 6.8 years (median: 7) dancing professionally (Table 1).

The style of dance initially studied varied significantly by gender (chi-square $p < 0.0001$). Of the males, more than half began their dance training in modern dance (51%), another quarter began in jazz (23%), and an eighth began in ballet (13%). For females, the modern and ballet numbers were reversed: more than half began their dance training in ballet (55%), less than a quarter began in jazz (19%), and only an eighth began in modern (12.5%) (Table 2).

Dancers were asked to report on the number of hours they spent in class and rehearsal each week. On average they spent 8.3 ± 6.0 hours in class (N = 168) and 17.2 ± 12.6 hours in rehearsal (N = 176). Of those dancers who responded, 80% took modern technique class. Two-thirds of the dancers reported that they took ballet technique class. The breakdown for the number of hours spent in various dance classes each week is shown in Table 3. The breakdown for the number of hours spent in rehearsal each week is shown in Table 4.

Dancers were asked to specify the type of modern technique they regularly studied in class. Only 84 responded

Table 2 Type/Style of Earliest Dance Class (Number of Dancers)

Type/Style	Men	Women	All
Ballet	6	74	80
Modern	24	17	41
Jazz	11	26	37
Tap	4	5	9
Hip Hop	1	2	3
Pointe	0	3	3
Other	1	8	9
Total	47	135	182

Table 3 Time in Dance Class Per Week (Number of Hours)

	Men (N=43)			Women (N=125)		
Type/Style	# Dancers	Hours	SD	# Dancers	Hours	SD
Modern	35	5.1	±3.1	100	5.2	±3.8
Jazz	8	3.8	±4.6	22	3.4	±3.9
Ballet	29	5.2	±3.1	83	4.4	±2.7
Pointe	2	1.5	±0.7	8	2.9	±1.9
Tap	3	1.3	±0.6	4	1.5	±0.6
Hip-Hop	3	6.0	±7.8	11	2.2	±2.0
Other	7	3.1	±2.1	27	3.5	±1.8

Table 4 Time in Rehearsals Per Week (Number of Hours)

	Men (N=46)			Women (N=130)		
Type/Style	# Dancers	Hours	SD	# Dancers	Hours	SD
Modern	45	20.1	±11.1	126	14.5	±9.6
Jazz	4	10.5	±13.1	7	8.4	±4.7
Ballet	5	9.8	±11.5	13	11.1	±10.3
Pointe	0	–	–	6	5.3	±4.2
Tap	4	3.3	±2.6	0	–	–
Hip-Hop	3	11.0	±16.5	3	5.7	±1.5
Other	4	6.3	±4.4	12	6.0	±4.6

Table 5 Styles of Modern Dance Technique Studied in Class (N=84)

Style	Men	Women	Total
Graham	21	53	74
Horton	12	26	48
Cunningham	13	37	50
Limon	15	59	74
Release	17	55	72
Acrobatic	9	16	25
Other	22	51	73

to this question, and most reported studying between two and four different modern techniques (Table 5).

When asked to determine how often they performed each year the females reported an average of 24.9 ± 24.3 performances (range: 2-100) per year, or 23.3 ± 14.0 weeks of performance (range: 2-52 weeks) per year; the males reported an average of 35.3 ± 30.2 performances (range: 4-130) per year, or 20.4 ± 13.9 weeks of performance (range: 1-40) per year. Males report significantly greater number of performances per year than females ($p = 0.02$, Wilcoxon rank sum test).

The type of shoe worn for each style of dance studied is shown in Table 6. For ballet, dancers reported using four different types of footwear; most used the split sole ballet slipper, followed by the classic ballet slipper, then socks. For pointe, most dancers used the classic vamp pointe shoe. For tap, most used a shoe with less than a one inch heel. For modern, dancers reported wearing 12 different types of footwear. The overwhelming majority of dancers wore no shoes for modern, followed by socks, then the classic jazz shoe, then the classic ballet slipper. For jazz, dancers reported wearing eight different types of footwear: most used the split sole jazz shoe, followed by barefoot, then the classic jazz shoe, then the jazz sneaker. For hip-hop the preferred footwear was street tennis shoes, followed by the jazz sneaker.

Dancers were asked what other forms of exercise they participated in and the number of hours per week they spent doing each. Some participated in each of the fifteen exercise forms listed, exercising for a total of 8.2 ± 6.6 hours per week (Table 7). The most common type of exercise was Pilates (private, mat, or group classes), followed by yoga, and then upper body weightlifting. Otherwise, 48 dancers participated in walking, stretching, aerobics, jumping rope, sit ups and push ups, rollerblading, tennis, Alexander technique, Yamuna body rolling, and kayaking.

Concerning health insurance, 34 dancers (18%) did not have any insurance. Some marked multiple forms of insurance. Most commonly insurance was provided by the employer (81 dancers, 54%), followed by self-purchased insurance (35 dancers, 23%), then insurance provided by the family (33 dancers, 22%), and finally, Workers' Compensation (24 dancers, 16%).

Discussion

This is the first study conducted specifically to describe both the demographics and the training characteristics of the professional modern dancer. Demographic data for professional ballet dancers and musical theater dancers are available for comparison. Limited demographic data for modern dancers are also available.

Solomon and Micheli[5] surveyed professional modern dancers in the Boston, Massachusetts, area and modern dance students at four American universities. The focus of their report was injuries as they related to different modern dance techniques. Only limited demographic data regarding their 164 respondents were presented, and this information included data pooled from both professional and student modern dancers. Chmelar[7,8] reported on the physiologic profile (aerobic and anaerobic capacity) of a small group of professional and student female dancers, both modern and ballet. The nine female professional modern dancers studied (30.4 ± 3.0 years old) were similar in height (63.7 ± 2.9 inches), weight (117.3 ± 9.7 pounds), and BMI (20.4) to the present study, but no other demographic data or exercise characteristics were reported. Dolgener[9] reported on the body composition of female dancers in Cincinnati, Ohio, including 10 professional modern dancers who were also similar in height (64.5 ± 1.0 inches), weight (117.0 ± 3.4 pounds), and BMI (19.8) to females in the present study. Bowling[6] surveyed 188 professional dancers in the United Kingdom, including ballet (N = 139) and modern (N = 49), and received responses from 141 dancers. There is no breakdown of the response rate between ballet and modern dancers, and the demographic data are not reported separately for modern dancers.

Many demographic studies of ballet

Table 6 Type of Shoe Worn for Each Style of Dance

Dance Shoes Worn for Ballet	Men	Women
None (barefoot)	2	5
Socks	8	11
Classic Ballet Slipper	17	21
Split Sole Ballet Slipper	20	82
Total	47	119
Dance Shoes Worn for Pointe	Men	Women
Classic Pointe Shoe	3	32
Long Vamp Pointe Shoe	1	7
Total	4	39
Dance Shoes Worn for Tap	Men	Women
(Tap) Heel < 1 inch	8	23
(Tap) Heel 1-3 inches	3	13
(Tap) Heel > 3 inches	1	1
Total	12	37
Dance Shoes Worn for Modern	Men	Women
None (barefoot)	45	129
Socks	8	12
Foot Thong	2	5
Half Sole	3	1
Classic Jazz Shoe	5	14
Split Sole Shoe	2	3
Ankle Boot Jazz Shoe	0	3
Jazz Sneaker	0	3
Classic Ballet Slipper	4	8
Street Tennis Shoe	0	1
Other	2	3
Foot Tape	1	2
Total*	72	186
Dance Shoes Worn for Jazz	Men	Women
None (barefoot)	8	25
Socks	2	3
Grecian Sandal	0	1
Classic Jazz Shoe	7	23
Split Sole Shoe	7	34
Jazz Sneaker	5	19
Classic Ballet Slipper	0	1
Street Tennis Shoe	1	0
Total	30	106
Dance Shoes Worn for Hip-Hop	Men	Women
Socks	0	1
Split Sole Shoe	0	1
Jazz Sneaker	5	13
Street Tennis Shoe	5	22
Total	10	37

*Greater than total number of dancers surveyed (184) since some dancers used more than one shoe type for modern

dancers have been conducted. Ballet dancers' average BMI ranges from 21 to 22 in males and 18 to 19 in females.[1] Byhring[3] studied 41 dancers with the Norwegian National Ballet and found the BMI for males was 21.9 and for females 18.6. From a study of 28 principal and soloist dancers in New York, New York, by Hamilton, the BMI can be calculated at 21.9 for males and 18.3 for females.[2] Thus many female ballet dancers would be considered underweight (BMI < 18.5) by World Health Organization criteria.[10] Both male and female modern dancers in the present study were heavier than their ballet counterparts, with BMI for professional modern male dancers of 23.6 and females of 20.6 (these BMI's are considered to be in the normal range, which is 18.5-25).[10]

Evans surveyed professional musical theater dancers and actors in the United States (Broadway and tours)[11] and the United Kingdom (West End).[12] The reported BMI for musical theater dancers in both the USA (males 23.8; females 20.0) and the UK (males 22.8; females 19.9) were similar to the modern dancers in the present study. Of interest is the fact that the BMI for musical theater actors (i.e., performers who were not trained as dancers) were higher (USA—males: 25.0, females: 22.0; UK—males: 24.2, females: 21.6).

The age at which professional modern dancers first started taking dance class in the present study (males: 15.6 years; females: 6.5 years) falls within the range reported for ballet dancers starting classes (males: 12-16 years; females: 4-9 years)[1,2] and for musical theater dancers (males: 10.8-15.9 years; females: 6.5-8.5 years).[11,12] In this study we find that female modern dancers began their dance studies more often with ballet than modern (55% vs. 13%), whereas male modern dancers began less often (13% ballet vs. 51% modern). This may simply reflect the types of training classes available for students at different ages, as females begin studying at a much younger age than males. However, it may also mean that very young girls are more likely to be attracted to ballet when they begin their dance studies.

The average number of years of dancing as a professional is dependent on whether any additional selection criteria are applied. Hamilton and colleagues[2] studied only principal dancers and soloists in two New York based ballet companies, and found that these dancers had danced longer professionally (male: 11 years; female: 13 years) than the modern dancers of all levels who were surveyed in the present study (males and females: 8.9 years). Byhring[3] surveyed all ballet dancers in a Norwegian company and found a slightly lower number of years dancing as a professional (males and females: 7.5 years) as compared to the modern dancers in the present study. Musical theater dancers in the UK spent about the same number of years dancing professionally (males: 8.5 years; females: 8.4 years) as the modern dancers in the present study,[12] while musical theater dancers in the US spent more years (males: 11.0 years; females: 9.5 years).[11]

Table 7 Other Types of Exercise Engaged in by Dancers

Exercise Method	# Dancers	All Hours Per Week Mean	All Hours Per Week SD	Men Hours Per Week Mean	Men Hours Per Week SD	Women Hours Per Week Mean	Women Hours Per Week SD
Pilates private lessons	24	1.6	±0.9	1.4	±0.4	1.7	±1.1
Pilates on own or small group	33	2.1	±1.3	2.8	±1.9	1.9	±1.2
Pilates mat exercises	84	2.2	±1.4	2.5	±1.3	2.1	±1.4
Yoga	89	2.9	±2.4	2.2	±1.4	3.1	±2.6
Gyrotonic private lessons	11	1.9	±0.7	3.0	±0.0	1.8	±0.6
Gyrotonic on own or small group	12	3.5	±2.4	1.8	±0.4	3.9	±2.5
Run (treadmill or outdoors)	35	3.0	±5.0	1.5	±0.8	3.6	±5.8
Bicycle (stationary or outdoors)	26	2.4	±2.3	2.8	±3.1	2.3	±2.1
Elliptical or cross country ski machine	36	2.4	±2.6	1.9	±1.2	2.6	±2.9
Swim	22	3.1	±6.1	2.0	±1.5	3.4	±6.9
Lift weights upper body	64	2.3	±1.8	3.3	±2.1	1.7	±1.2
Lift weights lower body	37	1.9	±1.5	2.7	±2.1	1.5	±0.9
Martial arts	7	1.9	±0.9	2.5	±0.5	1.5	±1.0
Gymnastics	8	1.4	±0.6	1.5	±0.6	1.4	±0.8
Team sports	2	1.0	±0.0	1.0	±0.0	1.0	±0.0
Other	48	4.7	±6.3	7.9	±12.0	3.8	±2.8
Total	172	8.2	±6.6	8.7	±7.9	8.0	±6.0

While the number of performances ranged widely, few comparison data are available in the literature. As part of a study on case management and intervention in a large modern dance company and its associated junior company, Bronner[13] reported 31 and 23 performance weeks per year, respectively. Weiss reported that four large professional modern dance companies performed 24 ± 4.6 weeks during the one year period investigated.[14,15] However, both these reports presented data from the dance companies on total number of contracted weeks and not data provided by the dancers themselves. In the present study it appears that dancers in larger and better established companies performed more frequently. Males reported performing more often than females. This may be due to the fact that there are fewer male dancers, which might require them to be used more often.

Although most of dancers' time is spent in rehearsal, professional modern dancers, as expected, still take dance class to keep up their technical skills. Ballet dancers almost always take a regular ballet class, usually provided by the ballet company itself ("company class"). This contrasts with the practice of musical theater dancers, less than half of whom took regular dance class (USA—males: 31.2%, females: 39.3%; UK—males: 43%, females: 48%).[11,12] Most but not all modern dancers in the present study took some type of modern dance class (80%), studying anywhere from one to four different styles or techniques. The style variation is likely due to the fact that most companies utilize a range of modern dance techniques, while only a few companies concentrate on one specific technique. Many modern dancers studied other forms of dance; ballet was the most common (67%), followed by jazz (18%). This supports the commonly held notion that ballet class has become an integral part of the day-to-day training of the professional modern dancer. As ballet alignment issues are different as compared to those of modern dance, this is an important fact for healthcare providers to consider when caring for the injured modern dancer.

As expected, most of the dancers did not wear any shoes for modern dance. However, 11 types of footwear were mentioned, including ballet slippers. Several dancers reported using socks for ballet, modern, jazz, and hip-hop. This may create a potential for injuries caused by slipping. Dance shoes in general do not provide much cushioning for jump landings, except for the jazz sneaker. Despite the availability of the jazz sneaker, many dancers still used the classic jazz shoe, probably because it is easier to "feel" the dance floor, giving the dancer a better sense of control and stability.

The present study indicates that outside of formal dance training many modern dancers do participate in diverse types of other forms of exercise. The most common form of exercise for males was weightlifting, followed by Pilates; for females the most common was Pilates, followed by yoga.

An unexpected finding of the present study was that most of the dancers (72%) reported having some type of health insurance. Requa and Garrick[16] surveyed all dance companies in the San Francisco, California, area and found that 53.8% had Workers' Compensation insurance and 42.5% had some type of employer-provided insurance. They also found that dancers in smaller companies were less likely to have health insurance. However, on closer inspection of the present study, one notes that many of the modern dancers surveyed had purchased their own insurance, while others received insurance coverage through a family member. In the present study, 54% of the dancers had health insurance provided by their dance company, similar to Requa and Garrick's finding of 42.5%.

Another unexpected finding is that only 16% of dancers in the present study reported that they had Workers' Compensation insurance for on-the-job injuries. Most employers in the United States, including dance companies, are required by law to have Workers' Com-

pensation coverage for their employees. It is unclear whether this low percentage is because the dancers work only part-time or are freelance, because under these classifications they are considered "independent contractors" and thus are not treated as employees, or because they have been told by their dance company that they cannot file a claim even though they technically do have Workers' Compensation coverage. These questions all warrant further investigation. The present study included dance companies of various sizes, but likely missed some of the very small (and part-time) modern dance companies, and also likely missed many freelance modern dancers. Both these groups are less likely to have health insurance, including Workers' Compensation.

Five dancers did not report any hours spent in modern dance rehearsal when they completed the survey. These dancers were verified to be members of modern dance companies, and did meet the inclusion criteria. Although other dancers in these same companies indicated that they spent time in modern dance rehearsals, these five dancers indicated that they rehearsed only jazz, tap, theater dance, or hip-hop. These were self-reported responses. It is possible that these five dancers misinterpreted the survey question, perhaps because they personally had not been called for any modern dance rehearsals during the one particular week when they completed the survey.

The present investigation is limited by the fact that the data were self-reported by the dancers. The response rate was only 29%, in keeping with similar studies, but still low and this is a possible source of bias in the results. Although we attempted to collect data from modern dance companies throughout the United States, we likely missed some very small companies with part-time schedules. Contacting freelance dancers also proved problematic. We contacted some directly, and tried to reach others via the small dance companies. However, freelance modern dancers are likely under-represented in this study.

Summary

The present study describes the demographic and training characteristics of the professional modern dancer. This population has both similarities to and differences from professional ballet and musical theater dancers. BMI for modern dancers is higher than ballet dancers, but similar to musical theater dancers. The modern dancer males were more likely to begin studying modern dance, while the females were more likely to begin studying ballet; the age that they began studying was similar to ballet and musical theater dancers. Two-thirds of both the male and female modern dancers took ballet technique class as part of their current dance training. Most, but not all, took modern technique class. Those who did, studied between one and four modern dance techniques and also participated in a multitude of different exercise regimens, with weight training and Pilates most common for males and Pilates and yoga most common for females. Most modern dancers had some health insurance, with about half having employer-provided insurance, and slightly less than half having insurance either from their family or by purchasing it on their own. Very few modern dancers had Workers' Compensation coverage, for reasons that are unclear.

Understanding the training profile of the professional modern dancer and the similarities and differences as compared to the ballet and musical theater dancer should assist healthcare providers in supplying appropriate medical care for this unique group of performers.

Acknowledgments

We thank Daniel Vigil, M.D., and Joseph Luftman, M.D., from the Primary Care Sports Medicine Fellowship Program, Kaiser Permanente, Los Angeles, California, for their support of the research. We also thank Beth Moore, who provided data entry.

References

1. Ryan AJ, Stephens RE. The epidemiology of dance injuries. *In:* Ryan A, Stephens R (eds): *Dance Medicine: A Comprehensive Guide*. Chicago: Pluribus Press, 1987, pp. 3-15.
2. Hamilton WG, Hamilton LH, Marshall P, Molnar M. A profile of the musculoskeletal characteristics of elite professional ballet dancers. Am J Sports Med. 1992;20(3):267-73.
3. Byhring S, Bo K. Musculoskeletal injuries in the Norwegian National Ballet: a prospective cohort study. Scand J Med Sci Sports. 2002;12:365-70.
4. Mittleman K, Keegan M, Collins C. Physiological, nutritional, and training profile of university modern dancers. Med Probl Perform Art. 1992;7:92-6.
5. Solomon RL, Micheli LJ. Technique as a consideration in modern dance injuries. Phys Sportsmed. 1986;14 (8):83-90.
6. Bowling A. Injuries to dancers: prevalence, treatment, and perceptions of causes. Br Med J. 1989;298:731-4.
7. Chmelar RD, Schultz BB, Ruhling RO, et al. A physiologic profile comparing levels and styles of female dancers. Phys Sportsmed. 1988;16(7):87-96.
8. Chmelar RD, Fitt SS, Schultz BB, et al. A survey of health, training, and injuries in different levels and styles of dancers. Med Probl Perform Art. 1987;2 (2):61-6.
9. Dolgener FA, Spasoff TC, St. Johns WE. Body build and body composition of high ability female dancers. Res Q Exerc Sport. 1980;51(4):599-607.
10. WHO. Physical status: the use and interpretation of anthropometry. Report of a WHO Expert Committee. WHO Technical Report Series 854. Geneva: World Health Organization, 1995.
11. Evans RW, Evans RI, Carvajal S, Perry S. A survey of injuries amongst Broadway performers. Amer J Pub Health. 1996;86(1):77-80.
12. Evans RW, Evans RI, Carvajal S. Survey of injuries among West End performers. Occup Environ Med. 1998;55:585-93.
13. Bronner S, Ojofeitimi S, Rose D. Injuries in a modern dance company: effect of comprehensive management on injury incidence. Am J Sports Med. 2003;31(3):365-73.
14. Weiss DS. Medical care of the professional modern dancer (Abstract). J Dance Med Sci. 2000;4:137.
15. Weiss DS. Medical care of the professional modern dancer. Presented at the Tenth Annual Meeting of the International Association for Dance Medicine and Science, Miami, Florida, USA, 2000.
16. Requa RK, Garrick JG. Do professional dancers have medical insurance? Company-provided medical insurance for professional dancers. J Dance Med Sci. 2005;9(3&4):81-3.