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Dance Class Structure Affects Youth Physical Activity and Sedentary Behavior: A Study of Seven Dance Types

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Abstract

Purpose—Study aims were to determine: (a) how class structure varies by dance type, (b) how moderate-to-vigorous physical activity (MVPA) and sedentary behavior (SB) vary by dance class segments, and (c) how class structure relates to total MVPA in dance classes.

Methods—Participants were 291 boys and girls ages 5–18 yr. enrolled in 58 dance classes at 21 dance studios in Southern California. MVPA and SB were assessed with accelerometry, with data aggregated to 15-sec epochs. Percent and minutes of MVPA and SB during dance class segments and percent of class time and minutes spent in each segment were calculated using Freedson age-specific cut points. Differences in MVPA (>3 METS) and SB (<100 counts/min) were examined using mixed effects linear regression.

Results—The length of each class segment was fairly consistent across dance types, with the exception that in ballet, more time was spent in technique as compared to private jazz/hip-hop classes, and Latin-flamenco and less time was spent in routine/practice as compared to Latin-salsa/ballet folklorico. Segment type accounted for 17% of the variance in the proportion of the segment spent in MVPA. The proportion of the segment in MVPA was higher for routine/practice (44.2%)

than technique (34.7%). The proportion of the segment in SB was lowest for routine/practice (22.8%).

Conclusion—The structure of dance lessons can impact youth's physical activity. Working with instructors to increase time in routine/practice during dance classes could contribute to physical activity promotion in youth.

Keywords

accelerometry; instruction; sedentary behavior; sports

Engaging in moderate-to-vigorous physical activity (MVPA) can improve youths' overall health, reduce risk for obesity, and increase academic achievement and self-esteem (Centers for Disease Control and Prevention, 2010; U.S. Department of Health and Human Services, 2008a, U.S. Department of Health and Human Services, 2008b). Despite these benefits, self-report data suggested that about 29% of adolescents met the physical activity guidelines of engaging in at least 60 minutes of MVPA per day (Centers for Disease Control and Prevention, 2012). Objective accelerometer data indicated that only 42% of children ages 6–12 and 8% of adolescents met physical activity guidelines (Troiano et al., 2008). Sedentary behavior (i.e., sitting) in youth has been associated with obesity, risk of high blood pressure, low reading levels, poor cognitive test grades, low self-esteem, low perceptions of self-worth and high depressive symptoms (Tremblay et al., 2011). There are age and gender disparities in physical activity and sedentary behavior among youth in the U.S., with boys having higher physical activity levels than girls, and adolescents doing less physical activity and having more sedentary time than children (Whitt-Glover et al., 2009).

Out-of-school structured physical activity programs, such as after-school programs, organized sports and activity classes provide opportunities for physical activity promotion in youth (Huang, Hook, Zandieh & Bostwick, 2012; Silva et al., 2010; Trost, Rosenkranz & Dzewaltowski, 2008). Dance is a popular and preferred activity, especially among girls (Barr-Anderson et al., 2007; Grieser et al., 2006; National Center for Education Statistics, n.d; O'Neill, Pate & Liese, 2011). However, youth physical activity levels vary within and across sports (Guagliano, Rosenkranz & Kolt, 2012; Leek et al., 2011; Sacheck et al., 2011) and across dance types (Cain et al., 2013; O'Neill, Pate & Beets 2012; Sims, 2013). Evidence suggests dance classes contribute to 29% (O'Neill, Pate & Hooker, 2011), 40.6% (Sims, 2013) and more than 50% of youth's physical activity (Huang, Hook, Zandieh & Bostwick, 2012). Thus, investigating factors that are associated with the variation of physical activity in dance classes could lead to recommendations for improved physical activity promotion in youth.

Class structure, defined as the amount of time youth engage in different segments during dance class (e.g., technique vs. routine/practice), is one potential explanatory variable of the variability in physical activity levels in dance classes that has been seldom investigated. Only one study examined the structure of dance classes and how it relates to physical activity levels. Findings were that the amount of choreography during the class was not associated with MVPA levels during the class (O'Neill, Pate, & Beets, 2012). Since choreography was the only activity or segment investigated in this previous study, more

research is needed to better discern if and how class structure impacts youths' physical activity during dance class.

The current study examined: (a) how class structure varied by dance type, (b) how MVPA and sedentary behavior varied by dance class segments (warm-up, technique, routine/practice, cool down, fun/games, break), and (c) how class structure related to total MVPA in dance classes, adjusting for dance type. It was hypothesized that class structure would vary across dance types and that class structure would be associated with total MVPA in dance classes.

Methods

Participants and Procedures

Dance studios in Southern California were identified from searching the Internet and local telephone book, with 551 private and public dance studios identified. Eligible studios offered group classes to youth and taught at least one of the dance types identified *a priori*. Two-hundred eighty-seven studios did not meet these criteria, and 54 were closed. Thirty-one studios were randomly selected to contact from the list of 210 eligible studios. Ten studios declined to participate in the study, and 21 agreed (17 private studios and 4 community centers; 68% participation rate). The 17 private studios taught the following types of dance: ballet, partnered dance, private jazz/hip-hop, Latin-flamenco, Latin-salsa/ballet folklórico and tap. The public community centers were specifically recruited to assess studios serving low-income students, and they specialized in jazz/hip-hop. Thus, private and public jazz/hip-hop classes could be compared. The average number of classes assessed per studio was 2.5 (SD = 1.5), the average number of dance types per studio was 1.7 (SD = .80), and the average number of instructors assessed per studio was 1.6 (SD = .80).

Research staff visited the dance studios when classes were being taught and recruited children and parents into the study. Eligibility criteria were for the child to be between 5 and 18 years old and willing to wear an accelerometer during the dance lesson. All classes served introductory-level students and most classes were labeled "beginner" classes. Classes serving adolescents were often labeled "beginner and early-intermediate" but were still considered introductory classes for this age group. Advanced and competition classes were excluded. A total of 291 children were enrolled and all completed the study. Parental consent and child assent were obtained, and the study protocol was approved by the sponsoring university's IRB.

Measures

Children characteristics—Parents reported their children's, gender, and race/ethnicity (coded as White non-Hispanic vs. other), height and weight. Body Mass Index (BMI) was calculated using the following formula $BMI = \text{weight (in kg)} / \text{height (in meters)}^2$. BMI-for-age and gender percentiles were calculated using the 2000 CDC Growth Charts (Kuczmarski et al., 2000).

Dance instructor characteristics—Dance instructors reported their age, gender, race/ethnicity (coded as White non-Hispanic vs. other), and years of experience teaching dance.

Dance class characteristics—Research staff observed each dance lesson and documented the number of children present for the class and the start and end time of the lesson.

Coding of dance class characteristics—The researcher completed a minute-by-minute time log to describe the type of activity being covered by the instructor and noted when the lesson transitioned into a new type of activity. The open-ended descriptions were later coded to derive a measure of class “segment”, which represented the different purposes of activities within the dance lesson. Six segment types were identified: (a) *warm-up*, which included descriptions such as stretches, sit-ups, jumps, jogging, barre work or planks at the beginning of class; (b) *technique*, which included descriptions such as demonstrating moves and working on “dance technique”, shuffles, or kick ball change; (c) *routine/practice*, which included descriptions such as performing dance, usually with feedback from the instructor; (d) *fun/games*, which included descriptions such as playing games or engaging in freestyle dance; (e) *break*, which included descriptions such as a resting period or time to get water; and (f) *cool-down*, which included descriptions such as stretching, push-ups, squats and crunches at the end of the lesson.

Once the segment codes were developed, two researchers applied these codes to the segment logs, and the coding between the two researchers was compared. The coders agreed on 145 of the 149 segments (97.3% agreement), and the remaining four segment codes were reconciled to reach agreement.

Physical activity—Each participant was fitted with a waist-worn Actigraph GT3X accelerometer before the dance lesson. One dance lesson per child was measured with accelerometers. Accelerometers have been validated for objectively assessing physical activity in youth and have been used in numerous studies (Cain, Sallis, Conway, Van Dyck & Calhoun, 2012; Troiano, 2008; Welk, 2002). Accelerometer data were collected at 15-second epochs using the “normal” filter and scored using Freedson 3 MET age-specific cut points (Freedson, Pober & Janz, 2005). Sedentary behavior was defined as < 100 counts per minute (Evenson, Catellier, Gill, Ondrak & McMurray, 2008; Treuth et al., 2004). The time feature in MeterPlus version 4.3 (Santech Inc, San Diego, CA; www.meterplussoftware.com) paired with time logs kept by research staff allowed for scoring accelerometer data according to the start and end times of each class segment. Minutes of MVPA and sedentary time were derived for (a) the entire dance lesson and (b) each segment of the lesson. Additional variables were calculated to represent (a) the percent of the lesson spent in each segment and (b) the percent of each segment that was spent in MVPA or sedentary time (i.e., MVPA time during segment divided by total time in segment).

Statistical Analyses

Differences in participant, instructor, and class characteristics by dance type were assessed using ANOVA models with Bonferroni post hoc tests (for continuous variables) and chi-squared tests with Bonferroni p value adjustments (for proportion variables). Differences in lesson structure (i.e., time in each segment) by dance type were investigated using ANOVA

models with Bonferroni post hoc tests. Partial Eta Squared values were presented for the full models (i.e., omnibus) to represent effect sizes. The proportion of each segment spent in MVPA and sedentary time was estimated using mixed-effects regression (adjusted for nesting of participants within lessons) with the percent of the segment in MVPA (Model 1) and sedentary time (Model 2) regressed on segment type. Because the outcome was a proportion, it was logit transformed for fitting the model and the estimated means were back transformed so they could be interpreted in their original metric. Effect sizes representing the segment effect from these mixed effects models were calculated as the difference in percent of segment in MVPA between the segments, from the adjusted means. To identify the segment types that had the largest contributions to participants' MVPA during the entire lesson, another mixed effects linear regression model was fitted, with total MVPA minutes during the lesson regressed on minutes spent in each segment type. This model was additionally adjusted for dance type, and ballroom was set as the reference because it was approximately in the middle when ordering the dance types on the amount of MVPA they provided. All mixed effects models were adjusted for participant, instructor, and class characteristics. Continuous covariates were mean centered, female was used as the reference category for gender, and White non-Hispanic was used as the reference category for race/ethnicity. SPSS software (version 21.0; SPSS Inc, Chicago, Illinois) was used for all analyses.

Results

A total of 291 children and adolescents participated in the study. Table 1 presents the descriptive characteristics of participants and dance classes. The mean age was 10.4 (SD = 3.2), 91% of participants were girls, 69% were White non-Hispanic, and 17% were overweight or obese. A total of 58 dance classes were observed, with a mean of 8.4 (SD = 4.8) youth per class and a mean class length of 49.7 (SD = 9.9) minutes. Participant race/ethnicity and gender, and instructor experience differed across dance types.

The length of each segment (i.e., class structure) was fairly consistent across dance types, with the exception of ballet having more time in technique than private jazz/hip-hop and Latin –flamenco, and less time in routine/practice as compared to Latin salsa/ballet folklorico (see Table 2). There were no differences in class structure and segment length between community and private jazz/hip-hop classes.

Participants' MVPA and sedentary time during each of the class segments is presented in Table 3. The proportion of the segment spent in MVPA (i.e., MVPA time during segment divided by total segment time) was highest for cool-down (60.5%) and fun and games (53.5%). However, only 12.7% of classes had cool-down and 12.4% had fun and games. The proportion of the segment spent in MVPA was lowest for break (28.8%), warm-up (37.2%) and technique (34.7%). A large majority of the classes included technique and routine/practice, and participants had proportionally more MVPA in routine/practice (44.2%) vs. technique (34.7%). Age was the only covariate that was statistically associated with the proportion of the segment spent in MVPA ($B = 1.9\%$ more MVPA for a 1-year increase in age). Segment type accounted for 17% of the variance in the proportion of the segment spent in MVPA, over and above student and teacher characteristics and dance type.

The associations between time in each segment and *total* MVPA during the lesson are presented in Table 4. When adjusting for length of each segment, youth spent an average of 15.8 minutes engaged in MVPA during the average 50-minute lesson. Youth obtained 0.23 more minutes of MVPA for every 1-minute increase in routine/practice. Although the coefficient suggests youth obtained 3.12 fewer minutes of MVPA for every 1-minute increase in cool-down, this coefficient is likely unreliable because of the large confidence interval and because only 12.7% of classes had cool-down.

Discussion

The main finding of the present study was that youth's physical activity during dance classes differed by class structure over and above dance type. Of the six segment types assessed, technique and routine/practice comprised a majority of dance classes and routine/practice had a higher proportion of MVPA than technique. A previous substudy of this sample compared activity across the dance types and found that youth were most active in jazz/hip-hop and least active in Latin-flamenco, with MVPA during the lesson ranging from approximately five to 25 minutes across the dance types (Cain et al., 2013). Based on findings that physical activity varies by dance type, it appears that both dance type and class structure are important to understanding youth's physical activity.

Physical activity was proportionally higher in routine/practice than technique, and routine/practice had the lowest proportion of sedentary time. These findings are not surprising because, based on observations of dance classes, technique involved instructor demonstration with limited student activity, whereas during routine/practice students carried out the demonstrated moves with constant repetitions and little time to pause between dance movements. Break and warm-up had the second and third highest proportion of sedentary time. This finding is not surprising given that warm-up mostly included stretching exercises and break included resting periods.

The finding that physical activity differed by segment type was similar to that of Guagliano et al. (2012), who found that lesson context was associated with physical activity levels in girls' sports. Evidence from the present study suggests that increasing time in routine/practice and/or making technique segments more active could increase youth's physical activity during dance classes. However, O'Neill et al. (2012) did not find an association between the amount of choreography (similar to the segment we named routine/practice) and MVPA, so further studies are needed to determine whether the present findings are replicable.

The finding that ballet classes had more time in technique and less time in routine/practice than private jazz/hip-hop and Latin-flamenco could explain some of the variation in physical activity across dance types. Consistent with a previous study, youth had more physical activity during jazz/hip-hop than ballet classes (O'Neill et al., 2012). However, in the present study youth had more physical activity in ballet as compared to Latin-flamenco (Cain et al., 2013), so dance structure cannot completely explain the variation in physical activity across dance types.

Study strengths included use of accelerometry to objectively measure MVPA and sedentary behavior and the high reliability of coding dance segments from observer logs. Another strength was the careful recording of dance class segments that allowed matching of accelerometer data to dance class segments. Including a variety of dance styles and dance class segments from 21 dance studios improved the generalizability of findings. A limitation was the potential lack of precision in defining class segments given that dance activities (e.g., stretching) were categorized into segments from logs rather than pre-determined categories during in-person observations. The waist-worn accelerometers may not have accurately assessed physical activity in flamenco because flamenco consists largely of hand clapping, upper body and arm movements, with little trunk movement. The 15-second epoch used has been recommended over the typical 30- to 60- second epoch used in adults, but it is possible that a 1- to 5- second epoch would have better assessed physical activity in this sample. (McClain, Abraham, Brusseau & Tudor-Locke, 2008) Results regarding cool-down segments were less reliable because only 13% of classes included cool-down. Future studies should assess multiple dance classes per individual to increase measurement precision. The present study took place in one metropolitan area and the majority of the participants were girls and beginning dancers, limiting generalizability. Future studies should further investigate associations between skill level and physical activity.

There are implications from present results for increasing physical activity in dance classes. Dance instructors could find ways to increase the frequency or intensity of movement in all dance class segments, particularly routine/practice and technique because both comprise large proportions of class time. For example, instructors could support students to engage in a simple but physically active activity such as walking in place while teaching a new technique. In warm-up, exercises such as jumping jacks, push-ups and sit-ups could be included. Instructors could motivate students to put their maximum efforts during routine/practice by explaining the importance of physical activity at the beginning of dance classes and during routine/practice.

Maximizing physical activity in organized settings has been successful in physical education (McKenzie et al., 2004; Pate et al., 2005). Modifying lesson structure has been acceptable to instructors in physical education and could be acceptable to dance instructors, although several steps should be taken to maximize acceptability. For example, formative evaluation should be conducted to assess attitudes of dance instructors to inform intervention strategies. A community-based participatory research model should be used to allow instructors to have input into intervention strategies, and a menu of implementation strategies should be provided so instructors can choose methods that will work best with their students. The structure of youth dance classes was related to MVPA and sedentary time during class, so changing the structure of dance classes could be an effective intervention. Future research should examine the feasibility of an intervention specifically designed to increase MVPA in youth during dance classes. Youth spent a larger proportion of class in routine/practice (44%) compared to technique (35%). Spending more time in practice during dance classes, motivating students to maximize their effort during routine/practice, and enhancing activity levels during other segments are strategies for increasing MPVA in dance classes that could contribute to more youth obtaining the recommended 60 minutes per day of MVPA.

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What Does This Article Add?

This article fills a gap in the literature by investigating youth’s physical activity and sedentary time during dance classes. Understanding physical activity during organized activities is important for gauging the impact of these common programs on public health. The present findings indicated that the structure of dance classes impacted youth’s physical activity. Specific strategies for instructors to increase overall physical activity in dance classes are highlighted. These findings can be applied to other organized youth activities and sports to maximize physical activity and public health benefits.

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Table 1

Descriptive characteristics of participants and dance classes (N = 291 participants from 58 dance classes)

	All classes							Partial Eta Squared (omnibus)	
	By dance type								
	1. Ballet	2. Partnered dance	3. Community jazz/hip-hop	4. Private jazz/hip-hop	5. Latin-flamenco	6. Latin-salsa ballet/folklorico	7. Tap	Differences (p < .05) ^a	
Participant characteristics									
Number of participants	291	50	30	54	49	28	28	52	-
Percent girls	90.7	100	63.3	88.7	93.9	100	89.3	92.5	2vAll others
Mean (SD) age (years)	10.4 (3.2)	11.3 (3.7)	10.4 (3.1)	9.7 (2.9)	11.3 (3.1)	9.9 (2.4)	9.2 (2.4)	10.7 (3.3)	none
Percent White non-Hispanic	69.4	66.0	73.3	73.6	85.4	33.3	51.9	79.2	1v5;2v5;3v5;4v6;5v7;4v5
Mean (SD) BMI (kg/m ²)	18.0 (3.7)	18.2 (3.0)	17.6 (2.9)	17.5 (2.8)	19.1 (3.4)	18.7 (6.6)	18.4 (4.2)	17.1 (3.5)	none
Mean (SD) BMI percentile	53.2 (32.7)	49.5 (33.0)	51.4 (29.7)	54.0 (33.2)	61.9 (30.2)	57.7 (30.7)	62.8 (32.5)	41.0 (33.9)	4v7
Percent overweight or obese	16.9	9.8	17.9	15.2	22.0	26.1	19.0	14.6	none
Class/lesson characteristics									
Number of classes	58	12	5	7	14	6	4	10	-
Mean (SD) number of participants per class	5.0 (2.5)	4.2 (2.1)	6.0 (2.3)	7.7 (2.0)	3.5 (1.6)	4.7 (2.3)	7.0 (2.2)	5.1 (2.7)	1v3;3v4
Mean (SD) class size (including non-participants)	8.1 (4.8)	6.8 (3.5)	9.6 (7.1)	12.6 (3.3)	6.6 (4.4)	7.3 (4.0)	8.50 (3.4)	8.0 (5.9)	none
Mean (SD) class length (minutes)	49.7 (9.9)	53.7 (9.5)	58.2 (17.2)	43.9 (6.8)	47.8 (9.8)	46.8 (5.9)	55.5 (6.5)	46.8 (7.4)	6v3
Mean (SD) instructor age	32.9 (12.5)	32.4 (10.7)	31.4 (4.7)	31.1 (5.2)	24.1 (4.8)	49.8 (18.1)	42.2 (9.5)	34.1 (15.0)	1v5;4v5
Percent of instructors women	88.2	91.7	60	100	78.6	100	100	90	none
Percent of instructors White non-Hispanic	62.5	58.3	80	85.7	66.7	33.3	100	80	none
Mean (SD) instructor years of experience	13.7 (12.2)	12.8 (9.3)	16.0 (2.2)	8.7 (3.9)	7.0 (5.6)	24.0 (20.4)	28.5 (10.1)	14.7 (15.8)	none

Abbreviations: CC = community center; P = private

^aFrom ANOVA models with Bonferroni post hoc tests (for the minutes outcomes), or chi-squared tests with Bonferroni corrections (for percent outcomes); ; e.g., 1v5 means that the participant characteristic differed significantly between Ballet and Latin-flamenco

Table 2

Minutes and percent of lesson time in each segment by dance type (N = 58 classes)

	All classes							Differences ($p < .05$) ^a	Partial Eta Squared (omnibus)		
	By dance type										
	1. Ballet	2. Partnered dance	3. Community jazz/hip-hop	4. Private jazz/hip-hop	5. Latin- flamenco	6. Latin- salsa/ballet folklorico	7. Tap				
Warm-up	Mean (SD) minutes	7.72(6.20)	9.33 (7.90)	5.40(4.39)	9.57(2.70)	8.07(6.11)	6.33(4.41)	5.25(3.30)	7.00(8.47)	none	-
	Mean (SD) % of class time	18.06(13.79)	20.90(18.20)	10.59(5.67)	25.92(6.58)	19.09(13.32)	16.36(9.23)	8.71(3.52)	16.19(17.68)	-	-
Technique	Mean (SD) minutes	12.05(10.16)	21.08 (13.42)	15.00 (14.44)	7.71(5.38)	8.43(5.24)	3.50(3.02)	12.25(1.50)	12.90(8.80)	1v4;1v5	.33
	Mean (SD) % of class time	26.73(19.49)	42.01(24.30)	27.56(23.57)	20.88(14.87)	20.47(11.73)	10.58(8.46)	22.07(4.92)	32.37(20.65)	-	-
Routine/practice	Mean (SD) minutes	21.67(10.86)	17.17(14.35)	25.80(10.40)	17.71(4.61)	22.50 (9.71)	25.33(11.50)	36.00(7.70)	18.70(6.60)	1v6	.26
	Mean (SD) % of class time	49.38(19.35)	33.86(22.08)	54.62(20.69)	48.06(10.23)	53.21(18.59)	64.61(16.18)	63.18(6.09)	46.30(15.78)	-	-
Cool-down	Mean (SD) minutes	0.28(0.81)	0.42(1.17)	0.40(0.89)	.00(0.00)	0.21(0.80)	.00(0.00)	0.50 (1.00)	0.40 (0.84)	none	-
	Mean (SD) % of class time	0.63(1.87)	0.98(2.76)	1.00(2.24)	.00(0.00)	0.47(1.74)	.00(0.00)	0.94(1.89)	0.93(1.99)	-	-
Fun and games	Mean (SD) minutes	0.69(1.93)	0.17(0.58)	1.20(2.17)	.00(0.00)	1.36(2.90)	.00(0.00)	1.25(2.50)	0.80(2.20)	none	-
	Mean (SD) % of class time	1.49(4.11)	0.46(1.61)	2.44(4.53)	.00(0.00)	2.98(5.83)	.00(0.00)	1.62(3.25)	2.04(5.79)	-	-
Break	Mean (SD) minutes	1.47(2.10)	0.75(1.22)	1.80(1.79)	2.00(3.83)	1.50(1.70)	2.67(2.16)	2.00(2.45)	0.80(1.87)	none	-
	Mean (SD) % of class time	3.72(5.68)	1.79(2.98)	3.80(4.18)	5.13(9.39)	3.78(4.19)	8.46(8.76)	3.48(4.72)	2.18(5.20)	-	-

Abbreviations: CC = community center; P = private

^aFrom ANOVA models with Bonferroni post hoc tests; e.g., 1v4 means that segment time differed significantly between Ballet and Private jazz/hip-hop

Table 3

Participants' MVPA and sedentary time during each segment (N = 291 participants)

Segment type	Number (%) of participants with segment				Percent of segment in MVPA				Percent of segment sedentary			
	Observed Mean (SD)	Adjusted Mean (CI) ^a	Differences (p < .01) ^a	Effect size range ^b	Observed Mean (SD)	Adjusted Mean (CI) ^a	Differences (p < .01) ^a	Effect size range ^b	Observed Mean (SD)	Adjusted Mean (CI) ^a	Differences (p < .01) ^a	Effect size range ^b
a. Warm-up	224 (77.0%)	37.2 (21.9)	22.7 (17.1, 29.4)	c,d,f	9.5–47.6	38.0 (24.9)	34.4 (29.4, 40.1)	b,c,d,e	5.5–18.3			
b. Technique	257 (88.3%)	34.7 (23.2)	27.8 (21.3, 34.9)	c,d,f	13–42.5	32.3 (18.5)	28.9 (24.3, 34.2)	a,c,e,f	5.5–23.8			
c. Routine/practice	282 (96.9%)	44.2 (21.0)	40.8 (33.1, 49.1)	a,b,d,f	13–29.5	22.8 (13.1)	19.4 (15.9, 23.4)	a,b,e,f	9.5–33.3			
d. Cool-down	37 (12.7%)	60.5 (29.9)	70.3 (58.7, 79.8)	a,b,c,e,f	29.5–57.1	31.0 (20.6)	20.8 (12.4, 30.6)	a,e,f	13.6–31.9			
e. Fun and games	36 (12.4%)	53.5 (30.4)	32.6 (22.7, 44.3)	d,f	19.4–37.7	47.7 (28.7)	52.7 (42.0, 63.1)	a,b,c,d	18.3–33.3			
f. Break	97 (33.3%)	28.8 (19.4)	13.2 (9.2, 18.5)	a,b,c,d,e	9.5–57.1	45.1 (23.8)	41.3 (34.7, 48.3)	b,c,d	12.4–21.9			

Abbreviations: CI = confidence interval; MVPA = moderate to vigorous physical activity

^aFrom mixed-effects regression models adjusted for child age, gender, and race/ethnicity, dance type, instructor experience, class size, and nesting of participants within classes; e.g., “c” means that percent of MVPA during the segment different significantly from the percent of MVPA during Routine/practice

^bCalculated as the difference in percent of segment in MVPA between the segments, from the adjusted means

Table 4

Associations between time in each segment and participants' total MVPA during dance classes^a (N = 291 participants)

	Minutes of total MVPA during lesson		
	B	95% CI	p
Minutes in each segment			
Intercept (overall mean)	15.8	10.3, 21.2	-
Warm-up	-0.06	-0.36, 0.25	.712
Technique	-0.09	-0.32, 0.13	.404
Routine/practice	0.23	0.05, 0.41	.012
Cool-down	-3.12	-5.33, -0.90	.007
Fun and games	0.56	-0.34, 1.46	.217
Break	-0.28	-1.10, 0.54	.494

Abbreviations: B = unstandardized regression coefficient; CI = confidence interval; MVPA = moderate to vigorous physical activity

^aFrom mixed effects regression models adjusted for dance type (reference ballroom), child age, gender, and race/ethnicity, instructor experience, class size, and nesting of participants within classes

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