PHYSICAL HEALTH AND PHYSICAL SELF-DESCRIPTION: A COMPARISON OF PHYSICAL ACTIVITY ELECTIVES AT THE MIDDLE SCHOOL LEVEL

By

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ABSTRACT

PHYSICAL HEALTH AND PHYSICAL SELF-DESCRIPTION: A COMPARISON OF PHYSICAL ACTIVITY ELECTIVES AT THE MIDDLE SCHOOL LEVEL

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Objective: The purpose of this study was to compare traditional physical education with Zumba to determine which method is the most appropriate and beneficial to the psychological development and well-being of children and adolescents, as well as the ability to increase the activity rates and levels in the United States.

Design: Survey/Questionnaire and Observation Experimental

Methods: Participants included a total of 53 students, currently enrolled in one of two PA elective courses, physical education or Zumba dance class. Participants included students in both the 7th and 8th grades, ages ranging from 11 to 14 years, at a rural middle school located in northern California. Methods included measurements of body composition, PA levels, as well as psychological well-being. Body composition was determined by pre- and post-body mass index measurement. Physical activity levels were measured with ActiGraph accelerometers, worn on four separate occasions, by all participants. Psychological well-being was measured pre-and post-using the Physical Self-Description Questionnaire - short form (PSDQ-S).

Seventh and eighth grades students, ages 11-14 years, were recruited from a rural middle school located in Northern California. The 55 students were enrolled in either an elective traditional physical education course or an elective Zumba physical education course.
Results: An independent t-test was conducted using the IBM SPSS program and showed no significance difference between the traditional physical education group and the Zumba group, on all variables measured, except in steps per minute and kcals expended. A significant difference was found in steps per minute and kcals, favoring the physical education group. A dependent t-test was also conducted, finding no significant difference of pre- to post-measurements of BMI and PSDQ-S questionnaire, within both sample groups.
Conclusion: Study findings support an equality among sample groups on measured variables with the exceptions of steps per minute and kcal expenditure, suggesting that alternative physical activity courses, such as Zumba, can be as beneficial as a traditional physical education course in levels of BMI, PA levels of MVPA and time spend in sedentary movement, and physical self-description scales of physical self-concept, esteem, and global esteem.

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INTRODUCTION

Physical activity (PA) is important to the development of children and adolescents in becoming healthy active adults (Center for Disease Control and Prevention, 2014). The importance of PA is profound and necessary to the physical and psychological health of children (CDC, 2014). Despite the known benefits of PA, the amount of time children participate in PA is inadequate. The World Health Organization (2017) reported that over "80% of the world's adolescent population is insufficiently physically active" (WHO, 2017, para 4), while within the United States alone, only 39% of 9-13-year-old participated in daily PA (Lee, Burgeson, Fulton, & Spain, 2007; SHIPPS 2007; USDHHS, 2009). Although current PA recommendations for children and adolescents are a minimum of 60 minutes per day of moderate to vigorous physical activity (MVPA) (USDHHS, 2008), the California Health Interview Survey (CHIS) reported only 15.2% of 12-17-year-old students are active for at least one hour a day in a typical week (CDPH, 2009). The Center for Disease Control and Prevention (2015) notes that, "People who are physically active for about 7 hours a week, have a 40 percent lower risk of dying early than those who are active for less than 30 minutes a week" (CDC, 2015, para 9). The amount of time children and adolescents are spending in MVPA is unacceptable and inadequate, ultimately leading to health risks that could have been avoided. Emphasis on positive behavioral changes, in the view of and participation in PA is necessary for developing healthy active adults (CDC, 2015).

Inactivity among children and adolescents has contributed to approximately 1 in 5 children, ages 6-19, being categorized as obese (CDC, 2017). In addition, 12% of children and adolescents 12-17 years of age are overweight or obese, and 16.7% are at risk of becoming overweight (CDPH, 2009). From 1980 to 2008, obesity rates among children and adolescents tripled from 5% to 17% (USDHHS, 2017). Overweight adolescents are said to have a 70% higher chance of becoming overweight or obese adults compared to their healthy weight counterparts (USDHHS, 2017). Overweight children who become overweight adults often suffer from immediate and long term physical health effects, including type II diabetes, cancer, cardiovascular disease, sleep apnea, and bone and joint problems (CDC, 2017; CDPH, 2012). Minimal PA in children can lead to negative health ramifications on not only a physical level, but a psychological level as well.

Physical inactivity, that has resulted in weight gain, can be detrimental to the psyche. Many overweight and obese children and adolescents suffer from psychological effects, including low self-esteem, anxiety, depression, and low self-concept (USDHHS, 2009). The negative effects of being physically inactive are profound, highlighting the importance of physical education within schools. The development of positive lifelong behaviors of healthy active adults is attainable through quality education, and PA (Graham, Holt/Hall & Parker, 2013). Schools are extremely influential in the development of children and adolescents' PA behaviors, with students spending approximately 6-7 hours of their day, 180 days a year, in the school setting (CDC, 2014). Hence, schools play a major role in curbing the rising obesity rates and physical inactivity levels among youth, as well as in positively impacting psychological development. However, only 7.9% of middle schools are providing the recommended 255 minutes a week of moderate to vigorous PA, and only 15.2% of those middle school students were provided with at least three days a week of PA (CDC, 2014; Lee et. al., 2007; SHIPPS, 2007). The inadequate amount of time children and adolescents are spending being physically active calls for an investigation of current PA and educational programs, and a push toward a change to increase PA participation.

The development and support of PA programs, and encouragement of children to be physically active, is beneficial in the development of active, healthy adults. Therefore, the investigation comparing the type of PA courses offered at the secondary school level, to determine which is more positively associated with the physical and psychological health of children and adolescence, is necessary. Answering the question of how educational institutions can best utilize time, space, and resources, to fulfill the need of all students to participate in enjoyable PA is the leading motivation of this study.

Therefore, the purpose of this study was to examine and determine if an alternative PA course, Zumba dance, at the middle school level is more beneficial to the psychological and physical health of adolescents ages 11 to 14, compared to a traditional physical education course. Specifically, to determine which course option had participants meeting PA levels of moderate to vigorous intensity, while developing positive physical self-description.

REVIEW OF LITERATURE

Physical Education

Quality physical education should be inclusive, enjoyable, and provide students with the knowledge and skills to live a physically active lifestyle that is appropriate for the skill and age of the child (USDHHS, 2009). The PA provided by a quality physical education class has been shown to improve academic performance by increasing a student's concentration, memory, and behavior (USDHHS, 2009). The recommended amount of PA for children aged 6-17, should include 60 minutes a day, of which 50% of the time students should be active in moderate to vigorous intensity aerobic activity, with a minimum of three days a week focusing on vigorous PA. The United States Department of Health and Human Services (USDHHS), also recommends incorporating three days a week of muscle and bone strengthening PA for youth (USDHHS, 2008).

Physical education curriculum should follow the National Association of Sport and Physical Education (NASPE), standards that include "Standard 1: competence in a variety of motor skills and movement patterns. Standard 2: apply knowledge related to movement and performance. Standard 3: demonstrate knowledge and skills to maintain a healthy and active lifestyle. Standard 4: exhibit behavior that respects others and themselves, and Standard 5: recognizing the value in being physically active, the challenge, self-expression, and social interaction" (SHAPE, 2013, para 1). Standards of appropriate and quality based physical education should also have children participating in games and activities that promote learning in all three domains; psychomotor, cognitive, and effective (Graham, Holt/Hall & Parker, 2013). Games and activities should emphasize enjoyable participation, include plenty of time for practice, and be developmentally and instructionally appropriate. In conjunction, games and activities should be conducted in an environment that is safe, inviting and free of humiliation (Colvin & Johnson, 1998; Graham, Holt/Hall & Parker, 2013). For children to become physically active, healthy adults for a lifetime, they must be able to gain the skills, knowledge and confidence through appropriate physical education (Graham, Holt/Hall & Parker, 2013).

After establishing a classroom environment that encompasses appropriate qualities of physical education, an instructor may consider thinking outside the norm and move away from the traditional physical education curriculum. A curriculum that sports and performance characteristics, and that moves into a newer more enhanced approach. An approach that increases PA, class length and course option, as well as meeting the PA needs of all students, all while making it fun and unique for the students (USDHHS, 2008). A great way to enhance a physical education class is to incorporate a bit of pop-culture into the curriculum.

Pop-culture is described as trends or cultural activities that are in the interest or desire of a mass of people (Collins, 2012). Incorporating pop-culture within a physical education class may help to motivate and encourage participation, as well as allow students to feel more connected to the class and themselves (Ludwig, 2012). Zumba, an example of pop-culture, is a dance fitness workout, one that could easily replace or infuse a physical education class.

Zumba

Zumba is a Latin-inspired dance workout that combines cardio, muscle conditioning, flexibility, and balance, by mixing low-intensity and high-intensity dance movements into a fun dance party (Luettgen, et al., 2012; Zumba ®, 2016). Zumba was developed in Colombia during the 1990's by fitness trainer Alberto "Beto" Perez, and is now found in 180 countries, with 15 million people participating at 200,000 locations (Luettgen et al., 2012; Neves et. al., 2015; Zumba ®, 2016). Alberto's motto was "ditch the workout, join the party", emphasizing that there is no wrong way to Zumba. Participants are simply encouraged to move to the beat, creating a less formal approach and environment than other dance forms (Luettgen et. al., 2012; Neves et. al., 2015). Zumba, in Spanish translates to "buzz like a bee", combing a fusion of salsa, merengue, and flamenco, into a workout designed as a dance party (Running & Fitness News, 2013).

Zumba is designed to be an all-inclusive exercise program, if children are moving, they are participating. The non-judgmental atmosphere of Zumba, allows children to focus on their own movements and steps within the dance, leaving little time to be inactive or distracted by others, and decreasing feelings of inadequacy of one's skills, and "buzz like a bee" (Marquis & Gurvitch, 2015). Zumba also incorporates childhood development skills, including leadership, social interactions, team work, coordination, confidence, stress reduction, and cultural awareness (Cone & Cone, 2017; Zumba ®, 2016).

The use of activities and games that encourage all students to participate in PA is essential in the development of active adults (Graham, Holt/Hall & Parker, 2013). Utilization of activities that increase participation of all students allows those students whom may be shy or insecure, to focus upon themselves, removing the spotlight; the students are simply too busy to criticize another's performance (Williams, 1992). Thus, Zumba has the potential to appropriately involve all children inclusively, ultimately promoting and developing healthy habits for a lifetime, increasing fitness levels, as well as the increase of self-esteem and self-worth of the student.

Zumba's popularity has inspired researchers to examine its health benefits as a physical fitness program in adults. Researched aimed at understanding the aerobic challenge of Zumba found that the workout is comparable to running or cycling (Sternlicht, Frisch, and Sumida, 2013). These results may explain why, Krishnan and associates (2015), documented significantly improved aerobic capacity, flexibility, and muscular endurance, as well as an increase in intrinsic motivation and positive attitudes towards exercise following a 16-week Zumba intervention in overweight and obese participants.

Outside of the traditional, in-person Zumba class, the Xbox 360 interactive, virtual reality video game Zumba® Fitness Core® was assessed using 18, first time users for possible health benefits (Martin, Ameluxen-Coleman, & Heinrichs, 2015; Neves et al., 2015). Neves and colleagues (2015) documented that after a 22-minute sequence of five choreographed dance movements, the healthy adult participants significantly increased all cardiovascular parameters, including systolic blood pressure, diastolic blood pressure, and heart rate (Neves et. al., 2015).

Physical Self-Concept

Self-concept is defined as an individual's perception or evaluation of one's self-worth or value (Binkley, Fry, & Brown, 2009; Garn, McCaughtry, Martin, Shen, Fahlman, 2012; Calgar, 2009; Liu, Wu, & Ming, 2015). Self-concept is multidimensional, and hierarchical, with many subscales and varying levels of self-perception, which can be categorized as academic and non-academic (Buckworth, Dishman, O'Connor, & Tomporowski, 2013). Non-academic includes social, emotional, and physical self-concept (Buckworth et al., 2013; Lox, et al., 2014). The physical self-concept can be determined by the self-evaluation of one's physical domains, including physical ability, strength, endurance, and physical appearance (Calgar, 2009; Lox et al., 2014). Marsh et al., (2010) defined physical self-concept as "feeling positive about one's physical self".

General self-concept has been shown to improve with exercise, and that individuals with significant improvements in physical fitness reported a significant increase in self-concept in comparison to their counterparts (Lox et al., 2014). More specifically, physical self-concept has been shown to be reciprocally linked to PA, meaning that one's physical self-concept influences exercise participation and in turn, exercise participation influences physical self-concept (Lox et al., 2014; Marsh, Papaioannou, & Theodorakis, 2006). Several studies have examined the relationship of physical self-concept to physical health levels, activity, and education.

Research conducted by Crocker and colleagues (2006) found that physical self-concept was significantly related to PA participation in 500 adolescent girls during a 24-month period. Results confirmed that individuals with higher scores of physical self-concept reported more PA participation than those who had lower scores of physical self-concept (Crocker, Sabiston, Kowalski, McDonough, & Kowalski, 2006). Dolenc (2016), measured physical self-concept of 213 Slovenian female adolescents, ages 13-18 years, using the Physical Self-Description Questionnaire, as related to body mass index (BMI) levels. Results found that compared to their non-overweight counterparts, the overweight females reported lower activity levels, perceived themselves as less physically strong, viewed themselves as less coordinated, flexible and physically less attractive, had greater body dissatisfaction, and had lower self-esteem. In a research study of 192 male and female college students, Binkley et al., (2009) found that participants who perceived themselves at a normal weight status, reported significantly higher physical self-concept, compared to women who perceived themselves as obese or overweight. Similar evidence was shown, linking the positive benefits of PA in relation to physical self-concept, global self-esteem, self-concept, and self-worth of participants.

Garn and colleagues (2012) examined 1022 male and female students from 14 high-schools who participated in a 55-minute physical education class, meeting three times a week. Physical activity significantly lead to an increase in physical self-concept and global self-esteem (Garn, et. al., 2012). Compared to 715 high-school students, 1125 university students had significantly lower Physical Self-Description Questionnaire (PSDQ) scores on almost all subscales (Calgar, 2009). This study documented a decline in physical self-concept from late adolescence to early adulthood (Calgar, 2009)

Although Calgar (2009) does not involve early adolescent participants, the study demonstrates the importance of developing a physically active lifestyle at an early age. Further effects of PA on physical self-concept, was found in a meta-analysis and meta-regression of 38 studies that included 2991 participants between 3-20 years of age (Calgar, et. al, 2009). Findings suggest that an intervention of PA can improve self-concept and self-worth in juveniles. As well, studies with participants in school based and gymnasium based interventions had stronger effects associated with self-concept than compared to other settings (Liu, et. al., 2015).

Evidence to date has shown that the emphasis of PA in youth is essential to the development of positive self-concept, particularly physical self-concept, therefore the purpose of this study was to determine which type of physical education, Zumba Dance or Traditional Physical Education, is the most appropriate and beneficial to the psychological health, and physical health of adolescents. We hypothesized that students enrolled in the Zumba PA class will have healthier body compositions post measurements than those enrolled in the traditional physical education course. We additionally hypothesize that those students enrolled in the Zumba PA class will have higher physical self-concept, esteem and global self-esteem levels than their counterparts. We also hypothesize that those participating in the Zumba activity class will have higher kilocalories (kcals) per hour, as well as lower percentage of time spent in sedentary position, and higher activity percentage in moderate to vigorous activity levels, and steps per minute, than those participating in the traditional physical education class.

METHODS

Participants

Participants included 53 male and female students from a singular rural middle school in Humboldt County, California. Students were in the seventh or eighth grade, ranging in age from 11-14. Participating students were limited to those enrolled in one of two PA electives offered, Zumba (n=24) or Physical Education class (n=29). Both groups were co-ed and included seventh and eighth grade students combined (Table 1). Informed consent and permission was sought and secured from school administrators, Institutional Review Board, parents of participating students, and the students. Exclusion criteria were limited to students without parental consent, and those students who are unable to participate in PA due to serious injury or disability.

Measures

<u>Body mass index (BMI).</u>

Body mass index is a measurement of physical health, calculated by taking an individual's weight in kilograms divided by the square root of the individual's height in meters (CDC, 2016). When measuring weight, participants were asked to remove shoes, excess clothing, and any items stored in pockets, to ensure an accurate weighing. The Health o meter® Professional digital scale, model 320KL, designed, manufactured and owned by Pelstar LLC, was used to weigh participants in kilograms, and was then recorded by identification number. Height was measured in centimeters using a Seca standiometer, a product of Seca medical measurement systems and scales (CDC, 2016). When measuring height, participants were asked to remove shoes, stand with feet together flat footed and back against the standiometer, arms at sides, shoulders back, head up, and without the hair being part of the height measurement (CDC, 2016; Nihiser, Lee, Wechsler, McKenna, Odom, Reinold, & Grummer-Strawn, 2007). Participants were asked to look straight ahead while measurement was taken and accurately record to the nearest 1/8th inch or 0.1 centimeter (CDC, 2016).

Physical Activity Levels.

Accelerometers were appropriate for this study in measuring intensity, duration, and estimates of percentage of time spent in moderate to vigorous PA of participants (Gába, Dygrýn, Mitáš, Jakubec, & Frömel, 2016; Kim, Beets, & Welk, 2012). The ActiGraph accelerometer model wGT3X-BT, a product of ActiGraph Corporation (ActiGraph LLC, Pensacola, Fl.) was used to provide measurement of participants' activity on 3 axes: vertical, horizontal and perpendicular. Participants wore accelerometer on four separate occasions, during 35 of the 40-minute class sessions, dispersed throughout the eight-week study. The ActiGraph accelerometers allowed for the recording raw data at an epoch rate of five seconds, allowing the analyzation and interpretation energy expenditure in kcals per hour, percentage of time spent in sedentary and moderate to vigorous PA, as well as steps per minute. Calibration of cut-points and counts per minute (CPM) of vertical axis movement were quantified using the ActiLife software for the ActiGraph accelerometer. Scoring of cut-points was determined using the Freedson for Children equation, accounting for children ages 6 to 18 years. The Freedson equation sets cut-points at sedentary 0-149 CPM, light 150-499 CPM, moderate 500-3999 CPM, vigorous 4000-7599 CPM and very vigorous at 7600-∞ CPM (Freedson, Pober, & Janz, 2005).

Physical self-concept, esteem, and global esteem.

Physical self-concept, esteem, and global esteem was measured using the Physical Self-Description Questionnaire-Short Form (PSDQ-S). The PSDQ-S questionnaire assesses an individual's level of self-concept with 40 questions, which address 11 components of physical self-concept (Marsh et. al., 2010). These components/subscales include an individual's perceptions of appearance, strength, endurance, flexibility, health, coordination, body fat, activity, sports competence, global physical concept, and global esteem (Marsh et al, 2010; Peart, Marsh, & Richards, 2005; Tenenbaum, & Eklund, 2012). Marsh and colleagues (2010) developed the PSDQ-S specifically for high school aged adolescents, ages 12 to 18, and was found to have strong reliability and stability for test and re-test over the short-term, as well as convergent and discriminant validity (Dolenc, 2016; Maïano, Morin, & Mascret, 2015; Marsh, et. al., 2010). Individuals who score higher on the PSDQ-S have higher perceived self-concepts than those with lower scores (Dolenc, 2016). The PSDQ-S questionnaire was administered in a quiet and private space to participants, pre and post study. Instructions and explanation of the questionnaire was explained to participants, and ample time was available to complete questionnaire. Research team was present to answer any questions, and collect questionnaires after completion.

Study Design/Procedures

The two PA courses examined included a Zumba dance class and the traditional physical education class. Classes ran for 12 weeks, meeting 4 days a week, for 40 minute sessions. Measurements of height and weight, were taken and PSDQ-S questionnaire in both sample groups during the first week and final week of the 8-week session. Measures were collected by research team during the 40 minutes of the regularly schedule PA elective class time; any remaining time was designated to free play time for the students. Completion of pre- and post-measurements, including the PSDQ-S questionnaire, followed by anthropometric measurements (height and weight), were conducted in both the classroom and cafeteria/gymnasium settings. Measures were deliberately ordered, beginning with students completing the PSDQ-S questionnaire, and then proceeding to designated stations for body composition measurements. The decision to take body composition measurements after completion of the PSDQ-S questionnaire was to reduce negative influence upon knowing weight and height.

Upon arrival to the classroom or the gymnasium/cafeteria, students were given pre-constructed packets. Packets were printed on color paper to designate sample groups. Packets included the PSDQ-S questionnaire with randomized identification number, sex, and grade of the student. In addition, packets included two index cards (one each for height, and weight), each card included participant identification number, measurement to be taken, and space for measurement data. Once participants received packets and were seated comfortably, procedures and instructions were clearly explained. Participants were informed of the purpose and intent of the study, as well as the detailed requirements of participation. Students were also clearly informed that they may withdrawal from participation at any moment for any reason, and that all responses, measurements, and personal identity would be kept confidential and secure.

The PSDQ-S questionnaire was administered and completed under quiet conditions, with the supervision of school faculty and researchers at designated tables, with adequate separation of students to allow for privacy. Participants were asked to complete the PSDQ-S questionnaire quietly and with no discussion about questions or answers allowed. The PSDQ-S questionnaire took approximately 10-20 minutes to complete. Once the PSDQ-S questionnaire was complete, each student proceeded to various stations to have height and weight measurements taken.

Stations for height and weight measurements were set up a across the room from each other, and pre- and post-test measurements were conducted by the same individuals to ensure accuracy, privacy and comfort of the student. Upon arrival at each station (height and weight) participants were explained the procedure, asked to take off shoes and any heavy jackets or coats, measurements were then taken, the index card for that specific station was collected, and data were then recorded. After completion of all measurements, under the supervision of a school faculty member, students proceeded to the outside quad area for free activity time.

Post-measurements were conducted in the exact same fashion as pre-measurements; instructions and the purpose of the study were explained, and the right to exclude themselves from participation at any time was restated.

ActiGraph accelerometers were worn during the regularly scheduled class time. Each participant wore the accelerometers on 4 separate occasions, during 35 of the 40-minute class session, spanning the 8-week program session. Accelerometers were securely attached to adjustable elastic clip belts, which were worn tightly as comfortable around the mid-waist of participants, as suggested by manufacture' for children 12 and under.

Data Analysis

The data were analyzed using descriptive statistics, as well as independent and dependent *t*-tests, using the IBM SPSS Statistics for Windows. Analyses determined differences between and within both sample groups. Descriptive statistics included sample size, mean, standard deviation, and standard error mean that were calculated for all variables. Multiple independent t-tests were conducted to determine any significant ($p < .05$) mean differences between measurements of BMI and PSDQ-S scales, as well as accelerometer trials between sample groups. Mean difference, confidence intervals, t-statistics, degrees of freedom and standard errors were reported for all dependent variables between groups. Additionally, a paired-samples t-test was conducted to determine significant mean differences ($p < .05$) between pre- and post-measurements, for all dependent variables within the same group, again reporting for the mean difference and confidence intervals, the t-statistic, the degrees of freedom and the standard error (Field, 2013).

TABLES

Table 1Descriptive Statistics of Sample Group

	N			Grade		Sex	
Groups	**Pre**	**Post**	**Mean Age**	**Eighth**	**Seventh**	**Male**	**Female**
Physical Education	29	27	12.55	16	13	16	13
Zumba	24	20	12.08	8	16	2	22

Table 2 Group Statistics Independent T-Test; BMI and PSDQ-S Pre-to Post

		Body Mass Index Statistics			
Groups	Variable	N	Mean	Std. deviation	Std. Error Mean
Physical Education	Pre-BMI	29	21.78	4.221	0.784
	Post BMI	27	21.73	3.605	0.694
Zumba	Pre-BMI	24	20.51	2.799	0.571
	Post BMI	20	20.08	3.059	0.684

		PSDQ-S Statistics			
Groups	Variable	N	Mean	Std. deviation	Std. Error Mean
Physical Education	Pre-Physical Self-Concept	29	4.44	1.467	0.272
	Post Physical Self-Concept	27	4.85	1.156	0.222
	Pre-Esteem	29	5.15	0.703	0.131
	Post Esteem	27	5.23	0.651	0.125
	Pre-Global Esteem	29	5.07	0.932	0.173
	Post Global Esteem	27	5.21	0.793	0.153
Zumba	Pre-Physical Self-Concept	24	4.35	1.486	0.303
	Post Physical Self-Concept	20	4.4	1.349	0.302
	Pre-Esteem	24	4.99	1.021	0.208
	Post Esteem	20	5.02	1.009	0.226
	Pre-Global Esteem	24	5	1.142	0.233
	Post Global Esteem	20	4.73	1.442	0.322

Table 3 Independent T-Test; Pre-to Post BMI and PSDQ-S for both Sample Groups

	t-test for Equality of Means									
	t		Df		P < .05		Mean Difference		Std. Error Difference	
Variable	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
BMI	1.25	1.64	51	45	0.215	0.10	1.26	1.64	1.000	0.99
PSC	0.23	1.23	51	45	0.816	0.22	0.09	0.45	0.40	0.36
Esteem	0.66	0.84	51	45	0.51	0.4	0.15	0.20	0.24	0.24
GE	0.24	1.64	51	45	0.81	0.10	0.06	0.54	0.28	0.32

Note: BMI (body mass index), PSC (physical self-concept), GE (global esteem).

Table 4 Descriptive Statistics Independent T-Test; Accelerometer

		Accelerometer Trial Statistics			
Groups	Variable	N	Mean	Std. deviation	Std. Error Mean
Physical Education	Kcals	26	39.56	15.448	3.03
	Sedentary	26	9.53	4.387	0.86
	MVPA	26	22.72	4.214	0.827
	Steps	26	51.24	8.042	1.577
Zumba	Kcals	24	29.2	13.767	2.81
	Sedentary	24	8.63	2.98	0.608
	MVPA	24	21.67	4.353	0.889
	Steps	24	44.76	12.863	2.626

Note: Sendentary, MVPA, and Steps were calculated per minute.

Acceleromter trials were conducted for 35 of the 40 minute class session

Table 5 Independent T-Test; Accelerometer Trials

Variable	Mean Difference	Std. Error Difference	t	df	P < .05
Kcals	10.359	4.152	2.495	48	0.016
Sedentary	0.892	1.054	0.846	44.23	0.402
MVPA	1.055	1.212	0.871	48	0.388
Steps	6.475	3.063	2.114	38.036	.041

Note. Accelerometer data is shown as per minute, of a 35-minute session

Table 6 Descriptive Statistics Dependent T-Test; BMI and PSDQ-S pre-to Post

	Body Mass Index Statistics				
Groups	Variable	N	Mean	Std. deviation	Std. Error Mean
Physical Education	Pre-BMI	27	21.49	3.971	0.764
	Post BMI	27	21.73	3.605	0.694
Zumba	Pre-BMI	20	20.24	2.929	0.655
	Post BMI	20	20.08	3.059	0.684

	PDSQ-S Statistics				
Groups	Variable	N	Mean	Std. deviation	Std. Error Mean
Physical Education	Pre-Physical Self-Concept	27	4.61	1.367	0.263
	Post Physical Self-Concept	27	4.85	1.156	0.222
	Pre-Esteem	27	5.16	0.726	0.14
	Post Esteem	27	5.23	0.651	0.125
	Pre-Global Esteem	27	5.12	0.939	0.181
	Post Global Esteem	27	5.27	0.793	0.153
Zumba	Pre-Physical Self-Concept	20	4.23	1.522	0.34
	Post Physical Self-Concept	20	4.4	1.349	0.302
	Pre-Esteem	20	4.97	1.088	0.243
	Post Esteem	20	5.02	1.009	0.266
	Pre-Global Esteem	20	4.93	1.241	0.277
	Post Global Esteem	20	4.73	1.442	0.322

Table 7 Dependent T-Test; Pre to Post BMI and PSDQ-S for both Sample Groups

Group	Variable	Mean	Std. Deviation	Std. Error Mean	t	df	P < .05
Physical Education	BMI	-0.236	1.107	0.213	-1.09	26	0.277
	PSC	-0.241	0.814	0.157	-1.536	26	0.137
	Esteem	-0.065	0.538	0.104	-0.632	26	0.533
	GE	-0.142	1.071	0.206	-0.689	26	0.497
Zumba	BMI	0.162	0.419	0.094	1.73	19	0.1
	PSC	-0.167	0.688	0.154	-1.083	19	0.292
	Esteem	-0.05	0.658	0.147	-0.34	19	0.738
	GE	0.208	0.682	0.152	1.367	19	0.188

Note. BMI (body mass index), PSC (physical self-concept), GE (global esteem).

RESULTS

Between Groups

An independent *t*-test was conducted on all measured variables, body mass index, PA levels, and PSDQ-S questionnaire, to determine any significant differences between sampled groups. Descriptive statistics for sample size, mean, standard deviation, and standard error mean can be found in Table 2.

Between sample groups no significant difference was shown on all measured variables, apart from steps per minute and kcal expenditure. The following are the statistical outputs for each variable. Independent *t*-test results for BMI measurement (Table 3) measurement showed no significant difference between sample groups, t (pre-51, post-45) = pre-1.255 and post-1.649, with a pre-BMI p = 0.22, and a post-BMI p = .106 (Table 3). Physical activity level differences between sample groups were compared, and review of energy expenditures by kcals per hour, and percentage of time spent in sedentary and moderate to vigorous PA, as well as steps per minute were analyzed. On the measure of kcals, results from the independent *t*-test indicated that participants within the physical education sample showed a significantly higher rate of kcal loss per hour compared to the Zumba sample with a t (48) = 2.495, p = .016. The same indication was found on the measure of steps per minute, with those participating in the physical education group performing more steps per minute than those in the Zumba sample, equal variance not assumed, t (38.036) = 2.114, p = .041 (Tables 5). On the measures of time spent in sedentary movement and MVPA, there was no significant differences found between groups. Time spent in sedentary movement, with equal variances not assumed, showed no significance, *t* (44.230) = .846, *p* =.402. On the measure of MVPA, again no significance was found between groups, *t* (48) = .871, *p* = .388 (Table 5).

Data from the physical self-description questionnaires were analyzed on the scales of physical self-concept, esteem, and global esteem. No significant difference was found between sample groups on any of the three scales analyzed (Table 3). The scale of physical self-concept showed no significant difference between groups, *t* (pre-51, post-45) = pre-0.234 and post-1.234, *p* = pre-0.82, and post-0.224. No significant difference was shown on the scale of esteem, between sample groups, *t* (pre-51, post-45) = pre-0.664 and post-0.849, *p* = pre-0.51 and a post-0.4. Finally, no significant differences were found on the global esteem scale between groups, *t* (pre-51, post-45) = pre 0.242 and post 1.644, *p* = pre 0.81 and post of 0.107 (Table 3).

Within Groups

A dependent *t*-test was conducted within groups, for variables of body mass index and PSDQ-S questionnaire on the scales of physical self-concept, esteem, and global esteem. Descriptive statistics can be found for both sample groups in Table 6. The following are the results of the dependent *t*-test within sample groups (Table 7).

Physical Education Sample Group.

No significant difference was shown within the physical education sample pre-to post on all measured variables, statistical results are as follows. Body mass index results showed no significant difference from pre-to post-testing, t (26) = -1.09, p = 0.277 (Table 7). PSDQ-S results showed no significant difference from pre- to post-testing on all scales measured. Physical self-concept results showed no significant differences pre- to post, t (26) = -1.536, p = 0.137. Results showed no significant difference on the scale of esteem pre- to post-measurement, t (26) = -0.632, p = 0.533. Lastly, results on the scale of global esteem, showed no significant differences found pre- to post-measurement, t (26) = -0.689, p = 0.497 (Table 7).

Zumba Sample Group.

No significant difference was shown within the Zumba sample pre-to post on all measured variables, statistical results are as follows. Body mass index results showed no significant difference, t (19) = 1.73, p = 0.10 (Table 7). PSDQ-S Questionnaire results showed no significant difference from pre- to post-testing on all scales analyzed. Physical self-concept results showed no significant difference pre- to post, t (19) = -1.083, p = 0.292. On the scale of esteem, results showed no significant difference, t (19) = -0.34, p = 0.738. Lastly, results from the scale of global esteem, showed no significant differences, t (19) = 1.367, p = 0.188 (Table 7).

DISCUSSION

The purpose of this study sought out to examine, compare, and determine which of two sample groups participating in different PA courses were most beneficial in the physical and psychological health of adolescence ages 11 to 14. Upon completion of data analyses, results showed no significant differences between and within sample groups, on all measured physical and psychological variables, with exception of physical activity measures in steps per minutes and kcals recorded. Steps per minute and kcals were shown to be significant between groups, favoring participants of the physical education sample. Several factors may have contributed and influenced the significant difference and non-significance between and within sample groups on variables of BMI, PA levels, and physical self-description measured.

The first variable measured, was BMI. BMI percentages were shown to have no significance between and within sample groups. These results may have been influenced by age and length of study. Participants ranged in age from 11 to 14, a time of pubertal development and growth spurts (Rogol, Roemmich, & Clark, 2002). Pubertal development is the period in which the most linear growth occurs, due to growth hormone (GH), and thyroid hormonal release, hormones that are essential to the growth of bones and cartilage. Additionally, Rogol and colleagues (2002) noted that “Linear growth is greater in the spring than in the fall, but weight is greater in the fall months” (Rogol et al., 2002). The relevance of this information is noteworthy to this study in that data was collected during the fall period, September to November. Pubertal development is also a time of significant weight gain, “50% of adult’s body weight is gained during adolescence” (Rogol et al., 2002, p.195). Body mass index pre-to post- measurement may have shown a significant difference if this was not a period in which there is an increase of 1.14 kg/year body fat among pubertal females, and a time of decrease in body fat percentage by 1.15 kg/year for males (Rogol et al., 2002). Additionally, it should be noted that pubertal females develop more total body fat, while males develop more total lean muscle mass, giving further clarification of the insignificance between groups, with a disproportion of females to males within and between groups (Staiano & Katzmerzyk, 2012). Beyond pubertal development, the length of data collection may have contributed greatly to the insignificant difference in BMI.

Additionally, length of study may have also contributed to the insignificant differences in pre-and post-measurements within groups. Study length was restricted due to holiday break, to an eight-week period of the 12-week term, which may not have been an enough duration of time, at the level of intensity and session length recorded, to reduce BMI. Increasing time spent in PA would be beneficial in decreasing body mass.

The second variable measured was PA. Physical activity levels and intensities were recorded in kcals, time spent in sedentary movement, MVPA and steps per minute intensity and levels, and were shown to have no significant between groups on time spent in sedentary movement and MVPA. Significance difference, however, was shown between groups, with the physical education participants having higher levels of steps per minute and kcals recorded. Measurements were collected on four separate wear times for each participant, for 35 of the 40-minute session, throughout the eight-week period of data collection. Due to the number of ActiGraph accelerometers available for study use, 18 in total, not all participants within each sample group were able to complete trials on the same date. Therefore, not all participants within the trials were recorded doing the same PA, physical activities varied for the physical education sample, and multiple dance routines were performed for the Zumba sample. The Hawthorne effect should also be considered when reviewing study results. The Hawthorne effect is the modification of an individual's behavior as an awareness response to being observed (McCambridge, Witton, & Elbourne, 2014). Post hoc analysis of data, with removal of the first accelerometer trial for each participant, may be useful in eliminating the Hawthorne effect. Other influential factors that may have contributed to the results of accelerometer include, educator qualifications and experience, curriculum and class structure, amount of time spent in PA, participant age, equational use in data analysis, manipulation of devices, and measurement error.

When examining data from the physical education sample group, PA level results may have been influenced by instructor qualifications, as well as curriculum and class structure. The physical education instructor's qualifications included a credential in physical education and health, with a work experience of nine years at the middle school level. The physical education and health credentials of the instructor, would seem to be ideal for any physical education course, however despite instructor ability, there was an apparent lack of an educational component within curriculum, and choice of activities were not inclusive or skill based. Observationally, the physical education group curriculum appeared to be unplanned, unorganized, and was absent of appropriate activities for students. Although the physical education sample group participated in typical and traditional sports influenced activities, such as basketball, kickball, and dodgeball, motor skill and movement development was unrecognizable. Although, class began with a typical warm up of stretching, jumping jacks, and the jogging/running of gym or field space, participation was limited, chaotic, and unencouraged by teachers. The specific curriculum choice of dodgeball as a group activity was inappropriate, due to the exclusion of participation that dodgeball ensues. Games such as dodgeball, tag, red rover, and Simon says, are all examples of inappropriate activities for physical education (Williams, 1992; 1994). These types of games are inappropriate, with focus on elimination and exclusion of the less physical skilled, thus allowing those students who are physically dominant to participate. These games do not give the opportunity to those who are in need of developing strength and physical skills the time to practice (Williams, 1992; 1994). Participant inclusion or intensity did not appear to be a priority, and oftentimes the course lesson included nothing more than sports equipment being dumped out onto the gym floor, such as basketballs, and kick balls. Participation in any activity seemed to be determined solely by the student. Ultimately, the physical education course appeared to be more of a free class time to be active if the student chose to participate. The class structure was similar to what we would call a “recess” rather than a structured physical education course. This “recess” like class time did not include educational components and did not appear to incorporate the five physical education standards set by the NASPE. These standards have been set to develop competence in motor skills and movement, to gain knowledge of skills and value in being physically active, and to maintain a healthy active life, all while respecting themselves and others (Marquis & Gurvitch, 2015). Despite the lack of physical education curriculum standards being followed, this “recess” like class time, may have be a significant factor of the differences between groups, especially supporting the physical education sample showing higher recorded levels of steps per minute, and kcals. Research has shown that PA during the recess period has been reported to account for up to 40% of daily PA (Pawlowski, Andersen, Troelsen, & Schipperijn, 2016). Comparably, the Zumba course was much more structured and participants spent more time at the beginning of class time, lined up and ready to receive instruction, rather than the unstructured chaos of free play. The “free play” time that seemed to be the core structure of the physical education sample, may have been the contributing factor of the physical education sample having higher PA levels of steps per minute and kcals than the Zumba sample.

The curriculum and class structure of the Zumba sample group was observationally opposite of the physical education course. Instructure’s qualifications and experience included a credential in multiple subjects (k-12), language arts and social studies, and has been teaching Zumba in the community for over six years, and four at the middle school level. Despite qualifications and experience of the instructor, inclusion of NASPE physical education curriculum standards were not observationally present. Although the Zumba sample group had participants performing all-inclusive varied dance routines, and maintaining continuous movement during each session, a variation of intensity levels was observationally lacking within each session, and was always conducted within the same confined space. The Zumba dance class was held in a small cafeteria space with 40 participants, limiting students to a smaller range of horizontal movement than possibly needed to show an effect. This limited space, and the ability for participants to expand dance steps to a wider range, may have had a direct influence on the number of steps per minute in comparison to the physical education sample that utilized spaces of the gym, field, and basketball courts. Class locations have been shown to influence on PA levels. Pawloski and colleagues (2016), in a study of 4-6 grade school children, found that PA levels were associated with location in the school environment. The study examined PA levels in three recess locations, field, schoolyard and classroom, documenting higher levels of PA for those who spent time outdoors, and particularly for boys who dominated the field space (Pawloski et al., 2016). Although the Zumba dance class structure was inclusive and observationally appeared to be extremely enjoyable to students by expression of smiling and laughing, the course could be re-structured to increase benefits. Increasing intensity of movement, possibly adding light hand weights, and increasing space for movement, or perhaps moving to outdoor spaces or a larger room, may have allowed for a significant difference between and within sample group on all variables.

Along with curriculum structure and scheduling, PA levels and intensities may have been influenced by participant age. Research has documented a decline in activity as age increases; particularly as females' age, PA decreases, while male PA participation increases, with males becoming more active than females throughout their lifespan (Belton, O'Brien, Issartel, McGrane, & Powell, 2016; CDPH, 2009). Belton and colleagues (2016) examined 413 participants, ages 12 to 14 years, wearing accelerometers over a nine-day period, in the efforts to determine PA patterns across weekday/weekend, sex and activity level. They found that male adolescents were significantly more active than females (Belton et al., 2016). Additionally, the California Health Interview Survey (2009) reported that of teens ages 12-17 years, only 8.4% of females participated in daily PA during a typical week, compared to males at a 21.6% participation rate (CDPH, 2009). Sex of participants may have played a critical role in the amount of time spent in moderate to vigorous PA between groups, particularly with the imbalance of male Zumba participants to male physical education participants, with the Zumba sample consisting of 22 females to 2 males, while the physical education sample consisted of 13 female and 16 male participants.

Aside from participant age, PA level and intensity set by count per minute (CPM) cut-points, may have instrumentally affected the results. Current published literature has yet to establish set standards or cut-points determined by counts per minute that directly correlate to energy expenditure at a moderate to vigorous PA level for children and adolescents. As well, there is a lack of standardized or consensus of set cut-points for children and adolescents to qualify as participating in MVPA, leaving research data analysis of MVPA by individual research teams (Gába et al., 2016). Kim and colleagues (2012) examined currently developed cut-points for children and youth. They tested the calibration of ActiGraph accelerometers in the quantification of MVPA, with a base metabolic rate of 3 METs. Results showed that among participants 18 and younger, three of 11 calibrations "reported that no cut-points accurately identified MVPA across all ranges of PA intensity levels in comparison to criterion measure" (Kim et al., 2012, p.311). Guinhouya and colleagues (2006) determined MVPA to be roughly 1000 CPM, a minimum of three MET's, following the age specific range of 6-18 by the Freedson equation (Freedson, Melanson, & Sirard, 1998). Other equations rate MVPA at a CPM of 3200, a 2200 CPM difference, leaving a large range of MVPA CPM standards (Guinhouya et al., 2006). The variety of formulated cut-points in the calibration methods of establishing MVPA results in a large variance of what would be deemed as MVPA. Guinhouya and colleagues (2006) stated, "It can be argued that MVPA favored the inclusion of a large number of children and reduced the gap between the most active and the less active" (Guinhouya et al., 2006, p. 776). The obvious need for standardized cut-points for MVPA, is essential to the future research of children and adolescent energy expenditure levels.

Apart from calibration of MVPA, measurement errors may have influenced study findings. Measurement error, included the manipulation of accelerometer data while in movement, proper placement and security around waist, and removal of devices before class completion, all of which may have contributed to the amount of recorded time spent in sedentary and moderate to vigorous PA, reported kcals per hour, and steps per minute.

The occurrence of manipulation of accelerometer measurement was seen among some of the male traditional physical education participants. Male participants were viewed manually shaking accelerometers in competition with fellow classmates, which may directly influence and account for the significant differences between groups in steps per minutes and kcals expended, with physical education course having higher levels of each. In addition, consideration of measurement error may be contributed to improper placement and tightness of belt around participants' waists. Although, participants were explained and helped with positioning of belts around the waist, and adjustments in position and tightness, students would be seen adjusting belts for comfort and placement throughout the session. Upon any observation of accelerometer manipulation or misplacement of belt position, the research team immediately stopped the action, requested participants to not manipulate movement of accelerometers, and helped the participant with adjustments to belt position and tightness if necessary.

Lastly, results of physical self-description, using the PSDQ-S questionnaire, designed specifically for children and adolescents, found no significant difference between or within groups. A few valid explanations for the results may include, again, curriculum structure, and measurement error.

Regarding curriculum structure, lessons for both sample groups were solely structured around PA, and was absent of any recognizable health or psychological education component. Upon observing several lessons, over the 8-week period of study, at no time were the benefits of being physically active part of the lesson plan. Although, the PSDQ-S was designed and validated for children and adolescents, lessons within the sample groups were not observed to have any course lesson on the value of physical self-perception and descriptions of physical fitness terms, such as "coordination", may have made it difficult for some students to answer with confidence.

Although no significant difference between or within groups were shown, of the variables measured, with exception of steps per minute and kcals expended, this study highlighted the beneficial use of alternative PA electives offered, like Zumba. The beneficial equality of both sample groups with comparison to BMI, PA levels of time spent in sedentary and MVPA, and physical self-description, justifies the inclusion of alternative PA options for adolescence, at the middle school level.

LIMITATIONS

The multiple limitations of the study may have influenced the insignificant differences between and within groups on all variables tested. Limitations of this study included sample size, sample demographics, distribution of sex and grade levels among participants, as well as length of term, class length, sessions per week, or curriculum structure and activity design.

Sample size was determined by volunteer participation and enrollment of an activity course elective. Students were not required to participate in the study, and were not compensated for participation or punished for lack of participation. Thus, sample size was restricted to those participants and parents who voluntarily signed and returned informed consent to participate. The lack of incentives being offered to students and the trust and responsibility of students to return consent forms limited the sample group to a small portion of the course populations. The physical education sample group accounted for only 40 percent of the physical education course population, while the Zumba sample group accounted for only 60 percent of the course population. An extension of the sample groups to other secondary schools within this rural community may increase any future findings of significance.

The sample size, ultimately, limited and affected the demographics of the study. Physical activity elective assignment for the 12-week term was requested by students based on individual interest, reviewed, and finalized by the school’s administration. The inability to assign participants to sample groups resulted in demographics of sample groups to be disproportionate between sex and grade levels. The imbalance of sex, between and within the sample groups, was very distinct, especially among the Zumba sample. There was an obvious favoring of female to male participants within the Zumba sample group that consisted of 22 females and only two male participants. The physical education class was more evenly dispersed within the sample group having 13 females and 16 male participants. As mentioned previously, the disproportion of sexes within sample groups was uncontrollable with the favorable interest, among female students to participate in Zumba as their PA elective, then their male counterparts. Additionally, adolescent girls are often less active than boys (WHO, 2017), which should be considered with such an unbalance of sexes between groups.

Another limitation to consider which may have affected results, was the number of times, the course met weekly, length of session, scheduling of events, and weather. Class length, sessions per week, and term length were controlled and pre-determined by school administration. Class sessions were held only four times a week, for a minimal 40 minutes, 160 hours a week, for a 12-week term. After completion of the 12-week course, students were reassigned to PA electives, limiting the study to one term of data collection. Due to term length and the research study being conducted at the beginning of the new school term, the first four weeks of the term was dedicated to coordinating with school staff and administration, as well as waiting for the return of required signed informed consent forms, resulting in data collection covering an eight-week course start to finish. Differences between and within group's pre-and post-measurements, may have been significantly achievable, if student participation in PA daily and weekly was increased. The total minutes of PA participation among samples groups was recorded at 160 minutes each school week, this amount is less than the recommended amount of PA suggested by the U.S. Department of Services recommendation of 255 minutes a week, and that of the California State Board of Education Policy #99-03, that requires physical education minutes set at the secondary school level, grades 7-12 at a minimum of 400 minutes each ten days, 200 for any given five day school week (education code 51222), (California Board of Education, 1999; USDHHS, 2017). The estimated time students participated in PA courses was often subject to the cancellation and excused attendance from PA. Excused attendance and cancellation of activity courses was often due to scheduled field trips, musical concerts, and those in the physical education sample the lack of indoor activity space due to weather conditions. On several observed occasions, students were excused from PA participation for activities off campus, institutionally testing, behavioral issues, and the inability of instructors in creating and developing curriculum that utilized limited spaces when weather was restrictive, diminished the time spent in PA.

Future researchers should increase PA sessions per week from four to five, an extend class session length from 40 to 60 minutes, and allow for higher levels of MVPA to be accomplished and less time spent in sedentary behavior.

The limitations and absence of control in the sample size of groups, disproportion of sexes and grade levels, course length, session time, and term length, as well as, curriculum structure, activity choices, and measurement error, all contributed to the insignificant differences between and within groups, pre-and post-measurements. Future research should attempt to control restrictions and confines of these limitations, giving possibility of significant differences to be proven.

CONCLUSION

Study findings point to the need for future examination of physical education programs offered at the middle school level. Future research would benefit by focusing on the improvement of physical education course in regard to self-perceptions and attitudes towards PA, time spent in MVPA, development of curriculum structure, and an increase of PA options to include all student participation.

The encouragement of a variety PA options should be available for students, at all grade levels. Providing physical education and activity curriculum that builds positive, healthy views of PA, that is exciting, inventive, motivating, all inclusive, and that appeals to all student interests, may be the key to positively increasing PA and psychological health.

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APPENDICES

PSDQ-S Questionnaire

ID #_______________

Gender ______________

Birthdate__________________________ Age __________

Grade Level _______________

Please read the following instructions first. This is not a test. There are no wrong or right answers. This is a chance for you to look at yourself. Everyone will have different answers. Be sure that your answers show how you feel about yourself. Please do not talk about your answers with anyone else. We will keep your answers private and not show them to anyone.

PSDQ-S Instrument	1 False	2 Mostly False	3 More false than true	4 More true than false	5 Mostly true	6 True
1. I feel confident when doing coordinated movements.	1	2	3	4	5	6
2. I am a physically strong person.	1	2	3	4	5	6
3. I am quite good at bending, twisting, and turning my body.	1	2	3	4	5	6
4. I can run a long way without stopping.	1	2	3	4	5	6
5. Overall, most things I do turn out well.	1	2	3	4	5	6
6. I usually catch whatever illness (flu, virus, cold) is going around.	1	2	3	4	5	6
7. Controlling my body movements comes easily to me.	1	2	3	4	5	6
8. I often do exercises or activities that make me breathe hard.	1	2	3	4	5	6
9. My waist is too large.	1	2	3	4	5	6
10. I am good at most sports.	1	2	3	4	5	6

11. Physically, I am happy with myself.	1	2	3	4	5	6
12. I have a nice-looking face.	1	2	3	4	5	6
13. I have a lot of power in my body.	1	2	3	4	5	6
14. My body is flexible.	1	2	3	4	5	6
15. I am sick so often that I cannot do all things I want to.	1	2	3	4	5	6
16. I am good at coordinated movements.	1	2	3	4	5	6
17. I have too much fat on my body.	1	2	3	4	5	6
18. I am better looking than most of my friends.	1	2	3	4	5	6
19. I can perform movements smoothly in most physical activities.	1	2	3	4	5	6
20. I do physically active things (e.g. jog, dance, bicycle, exercise at gym, swim) at least three times a week.	1	2	3	4	5	6
21. I am overweight.	1	2	3	4	5	6
22. I have good sport skills.	1	2	3	4	5	6
23. Physically, I feel good about myself.	1	2	3	4	5	6
24. Overall, I am no good.	1	2	3	4	5	6
25. I get sick a lot.	1	2	3	4	5	6
26. I find my body handles coordinated movements with ease.	1	2	3	4	5	6
27. I do lots of sports, dance, work out, or other physical activities.	1	2	3	4	5	6
28. I am good looking.	1	2	3	4	5	6
29. I could do well in a test of strength.	1	2	3	4	5	6
30. I can be physically active for a long period without getting tired.	1	2	3	4	5	6
31. Most things I do I do well.	1	2	3	4	5	6
32. When I get sick, it takes me a long time to get better.	1	2	3	4	5	6
33. I do sports, exercise, dance, or other physical activities almost every day.	1	2	3	4	5	6
34. I play sports well.	1	2	3	4	5	6

35. I feel good about who I am physically.	1	2	3	4	5	6
36. I think I would perform well on a test measuring flexibility.	1	2	3	4	5	6
37. I am good at endurance activities like distance running, aerobics, bicycling, swimming, or cross-country skiing.	1	2	3	4	5	6
38. Overall, I have a lot to be proud of.	1	2	3	4	5	6
39. I have to go to the doctor because of illness more than most people my age do.	1	2	3	4	5	6
40. Nothing I ever do seems to turn out right.	1	2	3	4	5	6