

Original article

Salsa dance and Zumba fitness: Acute responses during community-based classes

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Abstract

Background: Research interest in both partnered Latin dance and non-partnered Latin-themed aerobic dance has increased in recent years, likely a result of the gaining popularity of these types of instructor-led group classes among the mainstream dance and fitness audiences; however, the efficacy of these activities for the purposes of health promotion currently remains unclear. The purpose of this study was to simultaneously assess the physiological responses and psychological experiences during salsa dance and Zumba fitness in a community sample of physically inactive women.

Methods: Twenty-four participants, aged 22–56 years, visited the laboratory to perform a graded exercise test for determination of maximal oxygen uptake and maximal heart rate. The participants then attended 2 partnered salsa dance and 2 non-partnered Zumba fitness classes each in a counterbalanced order over a 2-week period. The 1-h classes were taught by certified instructors in established venues in the Royal Borough of Kingston and the surrounding communities of London, UK. Physiological data were collected using a wrist-worn ActiGraph wGT3X+ accelerometer with accompanying heart rate monitor and were processed using previously validated dance-specific techniques. Psychological experiences were measured via the Subjective Exercise Experiences Scale.

Results: There was a significantly higher ($p < 0.001$) total time spent in moderate-to-vigorous physical activity (51.2 ± 3.1 vs. 32.6 ± 5.9 min), total energy expenditure (411 ± 66 vs. 210 ± 46 kcal), and total step count (6773 ± 556 vs. 4108 ± 781 steps) during Zumba fitness when compared to salsa dance. Significant pre- to post-class improvements in positive well-being ($p < 0.01$, partial $\eta^2 = 0.41$) and psychological distress ($p < 0.001$, partial $\eta^2 = 0.72$) were simultaneously observed for both salsa dance and Zumba fitness.

Conclusion: The acute responses to classes of partnered Latin dance and non-partnered Latin-themed aerobic dance suggest that in physically inactive women participation is indeed efficacious in terms of community-based physical activity and psychosocial health promotion.

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Keywords: Accelerometry; Aerobics; Cultural dance; Exercise; Physical activity

1. Introduction

Physical inactivity has a prevalence in high-income nations of 48% and 41% for women and men, respectively.¹ Adults who decrease sedentary time while increasing moderate-to-vigorous physical activity (MVPA) reap the rewards of a reduced likelihood for chronic non-communicable disease.² Furthermore, physical activity (PA), especially leisure pursuits undertaken in socially rich environments, can benefit mental health in adults³ as engagement has been shown to be inversely associated with

depressive^{4,5} and anxiety-related symptoms.⁶ PA has also been posited to be an efficacious strategy for the enhancement of psychological well-being, in part, due to the relationship between PA and positive affect.⁷

With respect to physical and psychosocial health promotion, one particular activity, Latin dance, has been examined for its potential as a community-based health-enhancing PA for adults.^{8–10} It has been suggested that this genre of dance could play a viable role in the engagement of individuals in physically active pursuits that are not necessarily thought of as traditional exercise *per se*.¹¹ Research interest in both partnered Latin dance (i.e., salsa)¹² and non-partnered Latin-themed aerobic dance (i.e., Zumba fitness)¹³ has increased in recent years, likely a result of the gaining popularity of these types of instructor-led

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group classes among the mainstream dance and fitness audiences.^{11,14} However, despite these activities being seemingly divergent, in many countries around the world both salsa dance and Zumba fitness are popular leisure pursuits engaged in by members of both the Latin and non-Latin communities. Moreover, organizations in the health and arts sectors continue to promote dance as a potentially practical and sustainable way of enhancing health in adults through non-traditional modalities of PA engagement.¹⁵

We recently undertook 2 investigations using objective measurement techniques to assess the physiological parameters of Latin dance in novice to advanced non-professional Latin dancers.^{12,16} It was found that performance in a real environment involves being engaged in dance for only two-thirds of the total time spent during social dancing.¹² Thus, the time effectiveness of this activity could be called into question if investigating this particular genre of dance in the context of PA promotion. Furthermore, it is imperative to evaluate the responses to dance in a community sample of physically inactive adults, as these individuals are targeted most often in PA campaigns. PA type is also an important consideration in the selection of a health-oriented leisure pursuit as adherence is likely maintained only when participation is perceived to be enjoyable,¹⁷ offers opportunity for skill mastery, fosters a self-regulated experience, and provides a sense of connectedness with others.¹⁸ Both Latin dance and Latin-themed aerobic dance, arguably, address each of these elements of the self-determination theory¹⁸ well.

Despite awareness of the likely physical and mental health-promoting properties of dance, no investigations have yet explored the simultaneous physiological responses and psychological experiences during community-based classes of salsa dance and Zumba fitness using validated dance- and exercise-specific instruments. Moreover, potential relationships between physical and mental health-related outcomes, which may indeed exist in both salsa dance and Zumba fitness and be relevant for a holistic understanding of these activities, remain largely unexplored. Hence, the purpose of this study was to simultaneously assess the physiological responses and psychological experiences during instructor-led group classes of Latin dance and Latin-themed aerobic dance in a community sample of physically inactive women. We sought to determine differences between classes of salsa dance (partnered and attended primarily for the development of dance technique) and Zumba fitness (non-partnered and attended primarily for exercise purposes) in order to establish the efficacy of these activities for the purposes of community-based PA and psychosocial health promotion.

2. Methods

2.1. Participants

Recruitment was undertaken using poster advertisements placed in the Royal Borough of Kingston and the surrounding communities of London, UK. Twenty-four women (age 36 ± 11 years, body mass 62.2 ± 8.7 kg, body fat $28.1\% \pm 5.5\%$, body mass index 23.1 ± 2.8 kg/m², maximal oxygen uptake 30.5 ± 4.7 mL/kg/min) volunteered to participate in this study, which had been approved by the Faculty Ethics Committee at

Kingston University and was conducted in accordance with the Declaration of Helsinki. All participants were novice to intermediate non-professional performers of Latin dance and/or Latin-themed aerobic dance. The participants gave their informed consent in writing before the commencement of the study and after the experimental procedures, risks, and benefits of participation had been explained. Inclusion criteria stated that the participants must be female, aged 18–64 years, physically inactive (≤ 1 day/week of MVPA engagement for no more than 30 min), free from musculoskeletal injury, and able to adhere to the study protocol safely. Although a total of 26 women consented to enroll in the study, 2 were not able to complete the research due to unavoidable work commitments and were therefore excluded from the data analysis.

2.2. Laboratory procedure

Instructions were given to the participants to arrive at the laboratory euhydrated and at least 2 h postprandial. Following 15 min of seated rest, resting heart rate (HR) was measured using an automated monitor (Elite 7300IT; Omron Healthcare Inc., Lake Forest, CA, USA). Stature was determined with a stadiometer (213; Seca Ltd., Birmingham, UK), and body mass and percent body fat were assessed using a multifrequency bioelectrical impedance analyzer (MC 180MA; Tanita Europe BV, Amsterdam, the Netherlands). The participants performed a graded exercise test, as described previously,¹² for determination of maximal oxygen uptake and maximal HR. The participants were then familiarized with the instruments for the study and instructed on their proper usage.

2.3. Instruments

A triaxial accelerometer (wGT3X+ 2.2; ActiGraph LLC, Pensacola, FL, USA) worn on the right wrist¹⁶ was initialized using the manufacturer's software (Actilife 6.5; ActiGraph LLC) for data recording on the vertical, anteroposterior, and mediolateral axes at a sampling frequency of 100 Hz. Additionally, the manufacturer's accompanying chest strap monitor, worn at the level of the xiphoid process of the sternum, was utilized for recording of HR. The monitor permits measurement of HR and telemetry of data via the ANT+ protocol to the accelerometer for recording. Downloading of the HR and vector magnitude (VM) acceleration data was undertaken using the manufacturer's software with 1-s epochs selected and the low frequency extension enabled. The utility of this equipment for dance has been described in detail elsewhere.¹²

Psychological experiences were measured via the 3-factor Subjective Exercise Experiences Scale (SEES)¹⁹ immediately before commencement and after completion of each class. The questionnaire uses a Likert-type scoring system ranging from 1 (*not at all*) to 7 (*very much so*) with a midpoint anchor at 4 (*moderately*). Internal consistency has been reported to be high, with Cronbach coefficient α values of 0.86 and 0.85 for positive well-being (PWB; great, positive, strong, terrific; a preponderance of positive affect and high life satisfaction, or flourishing^{20,21}) and psychological distress (PD; awful, crummy, discouraged, miserable), respectively. Items pertaining to

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