The Effects of Ballroom Dance on Blood Pressure, Heart Rate, Weight, Waist Circumference, and Body Mass Index among Filipino Americans: A Feasibility Study

Alona Angosta, PhD, APRN, NP-C
University of Nevada, Las Vegas
School of Nursing
Disclosures

Author Name:
- Alona D. Angosta

Acknowledgement:
- This project was supported by grants from the National Center for Research Resources (5P20RR016464-11) and the National Institute of General Medical Sciences (8 P20 GM103440-11)

Conflict of Interests:
- None

Learning Objectives:
- Discuss the population statistics of Asian Americans based on the 2010 United States (US) census
- Describe the immigration history and cardiac health of Filipino Americans
- Discuss the effects of ballroom dance on hemodynamic and anthropometric measures
Filipino migration to US occurred in 3 waves:

- Elite scholars to secure higher education and those who came to Hawaii and California as farm workers and laborers
  
  1800’s - early 1900’s

- U.S. Military recruits, health care employment (nurses, physicians)
  
  1950’s - mid 1960’s

- Employment & family reunification
  
  1960’s –

Source: Dela Cruz et al., 2002
Distribution of Asian American Population Selected Groups in the United States

Source: US Census, 2010
Filipino Americans

- Filipino American population in the US increased by 38.9%, from 2000-2010
  - Total Filipinos in US: 2,649,973

- Nevada has the highest growth of Filipinos nationwide, an increase of 142% within 10 years
  - Highest concentration of Filipinos: southern Nevada

- Relocation to Nevada due to economic opportunities

Health issues

Cardiovascular disease: Leading cause of death

Risk factors prevalent among Filipino Americans

- Hypertension
- Diabetes
- Dyslipidemia
- Physical inactivity/lack of regular exercise
- Obesity (central adiposity)
- Smoking

Source: Araneta & Barrett-Connor, 2005; Araneta, Araneta et al., 2006; Dalusung-Angosta, 2010; dela Cruz and Galang, 2008; Gentilucci et al., 2008; Health Forum, 2000; Kim et al., 2008; Langenberg et al., 2007; Ursua et al. 2013; Ye et al., 2009.
Purpose

Evaluate the effects of ballroom dance on resting blood pressure, heart rate, weight, waist circumference, and body mass index of 41 Filipino Americans between the ages of 35-65 years old.
Theoretical Framework

- Neuman Systems Model

- Major concepts
  - Stressors
  - Reaction to stressors

- Major constructs
  - Lines of defenses
  - Level of prevention (as nursing interventions)

- Physical activity supports the lines of defenses (J. Fawcett, personal communication, May 6, 2014)
Methodology
Design & Sample

- Pre & post experimental design without a control arm

- Power analysis for medium effect size: 36 was necessary to achieve a power of 80% with alpha .05

- 41 Filipino Americans between 35-65 years old met the study criteria

- Sample criteria
Setting

- Study was held at a ballroom dance studio southern Nevada
- Dances were taught by professional dance instructors
- Types of dance: Salsa, Cha-Cha, & Rumba
- Type of music: Latin
Outcome Measures

- **Weight:** Each participant was measured at baseline and at 12 weeks using the same Omron digital weighing scale.

- **Waist circumference (WC):** WC was measured using a non-stretchable measuring tape (Gulick II Tape Measure). The WC was measured to the nearest centimeter between the lower margin of the participant’s last palpable rib and at the top of the iliac crest. Two measurements were taken, the average score was used.

Outcome Measures

- **Body mass index (BMI)**: Height and weight were used to measure BMI using the NHLBI BMI calculator mobile app.

- **Blood pressure (BP)**: BP was measured using a manual blood pressure monitor. Two BP measurements were taken and the average score was used.

- **Heart rate (HR)**: Resting heart rate (apical pulse) was measured using a stethoscope.
Procedures

• IRB approval

• Recruitment techniques (flyer, media)

• Eligibility
  – Health screening
  – Physical Activity Readiness questionnaire

Timeline and Progress
48 individuals responded to printed flyers and media
41 met study criteria
Week 1
Orientation, baseline measurement of resting blood pressure, heart rate, waist, weight circumference, introduction to dance steps
Weeks 2 through 12 Dance sessions (attendance recorded for each dance session)
Week 12
Measurement of resting blood pressure, heart rate, waist, weight circumference

Note: 4 withdrew from the study due to illness, family obligation, or work schedule conflict
37 Participants completed the study
Analysis

- Paired $t$-tests
- Pearson's $r$
Results
<table>
<thead>
<tr>
<th>Outcome</th>
<th>Week 1</th>
<th>Week 12</th>
<th></th>
<th>Mean Diff. (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Mean (SD)</em></td>
<td><em>Mean (SD)</em></td>
<td>*r</td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td>126.6 (8.3)</td>
<td>124.5 (11.6)</td>
<td>.54**</td>
<td>-2.14 (1.64)</td>
</tr>
<tr>
<td>Diastolic blood pressure</td>
<td>81.0 (7.7)</td>
<td>78.9 (6.9)</td>
<td>.48**</td>
<td>-2.05 (1.22)</td>
</tr>
<tr>
<td>Heart rate</td>
<td>72.2 (8.2)</td>
<td>73.7 (8.6)</td>
<td>.58**</td>
<td>1.54 (1.27)</td>
</tr>
<tr>
<td>Weight in lbs</td>
<td>149.5 (21.4)</td>
<td>148.7 (21.0)</td>
<td>.99**</td>
<td>-.77 (.58)</td>
</tr>
<tr>
<td>Waist circumference in cm</td>
<td>89.6 (9.6)</td>
<td>90.5 (7.7)</td>
<td>.61**</td>
<td>.93 (1.29)</td>
</tr>
<tr>
<td>Body mass index</td>
<td>26.1 (3.3)</td>
<td>26.0 (3.3)</td>
<td>.98**</td>
<td>-.13 (.10)</td>
</tr>
</tbody>
</table>

Note: * p < .05; ** p < .01
Limitations & Recommendations

- Small sample
- Selection bias
- Limited setting
- Self reported height
- First-generation Filipinos

Further research:
- Groups comparison (1\textsuperscript{st} & 2\textsuperscript{nd} generations)
- Large samples in more than one setting
- Extend to other ethnic groups
- Include serum markers
Conclusion

- This study indicates that ballroom dance improves blood pressure and weight among Filipino Americans.

- Ballroom dance is a culturally appropriate physical activity intervention.

- May be considered as an alternative exercise among first-generation Filipino Americans.

- Looking through the lens of the Neuman Systems Model, ballroom dance will strengthen the lines of defenses, decrease stressor and reaction stressor; thus reducing the risk of cardiovascular disease and improving the overall wellness of Filipino Americans.
Acknowledgements

This project was supported by grants from the National Center for Research Resources (5P20RR016464-11) and the National Institute of General Medical Sciences (8 P20 GM103440-11)


References


References


References


