

*Examining the effects of ballet training on postural stability in older adults*

January 3rd, 2019

IRB Protocol # 1809-742

**Skidmore College  
Institutional Review Board  
Research Proposal Template**

1. **Title of Proposal:** Examining the effects of ballet training on postural stability in older adults

2. **Principal Investigator (PI):**  
Hannah Weighart '19

3. **PI Department:** Dance

4. **PI Contact Information:**  
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[sdipasqu@skidmore.edu](mailto:sdipasqu@skidmore.edu)

6. **Other Investigators:**  
Dr. Mary Roberts (technical and data consultant)  
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University of Concordia, Montréal

Additional student data collectors TBD

7. **Date of this Submission:**  
Original Submission: September 7<sup>th</sup> 2018  
Amendment No. 1 Request: January 3rd, 2019

8. **Proposed Duration of the Project:**  
10/1/18-5/15/20

9. **Background Information and Research Questions/Hypotheses:**

Postural stability (balance) is an essential skill across many genres of dance in order to create and maintain specific positions and motions with proper technique. Maintaining balance over a period of time requires the brain to analyze sensory information provided by muscle spindles and Golgi tendon organs located within the muscle (1). Previously, it has been shown that dance interventions can lead to improvements in postural stability in elderly populations (2-6). However, there is limited research examining changes in balance following ballet dance class interventions for older adults.

Under Dr. DiPasquale's IRB protocol #1610-557, preliminary evidence has been found that dance may help to improve lower extremity strength, flexibility, and balance in individuals with developmental disabilities. Additionally, PI Hannah Weighart investigated changes in postural stability in novice collegiate dancers under IRB protocol #1712-683; although no significant differences were found between the dance group and controls, executing a similar procedure in a population more at risk of decreased postural stability may find significant results as further investigation into the use of ballet training to improve physical function in older adults appears to be warranted.

Postural stability declines with aging (2). Previous studies have shown that dance interventions in many genres have had positive effects on postural stability in older adults, including genres such as contemporary dance (2), Argentine tango (3), traditional Greek dance (4), Pilates (5), and Latin dance (5). Kattenstroth suggests that a special dance program designed for older adults may lead to improvements in postural stability following the intervention (6). Ferrufino et al compared the effectiveness of a contemporary dance intervention with that of a fall prevention program and found that the dance intervention was more successful in improving postural stability (2). Additionally, Zhang et al found that older adults who dance also tend to have better postural stability than non-dancers (7), while Dewhurst et al found that older dancers have a reduced amount of regulatory activity needed to maintain postural stability (8). While studies have been conducted to examine postural stability in professional ballet dancers (9,10), few have examined the effects of a beginning ballet class for older adults on postural stability.

While the use of force plates for balance research is the gold standard, the use of Wii balance board alongside specialized balance software is a more affordable option which has surprisingly high reliability and validity for use in scientific research (11-13). As the early data from the Bridges to Skidmore research (IRB #1610-557) has demonstrated positive changes in balance following participation in dance, the use of Wii balance boards to more deeply understand the changes in balance in older adults appears to be an appropriate progression for this work.

Thus, the purpose of this current study is to examine the changes in postural stability in older adults following exposure to a beginning ballet dance technique course. It is hypothesized that a significantly reduced body sway will be observed in participants following a ballet dance training course over a 10-week period.

## **10. Human Participants:**

### **A. Who are the participants?**

Participants will be people ages 55 and up who agree to participate in a 10-12-week beginning ballet class program. Participants must be independent with activities of daily living (ADLs), require no walking aides, and be free from cardiovascular or neurological disease (5, 14-15).

Exclusion criteria will be active participation in a physical therapy program with the goal of improving functional mobility, missing six or more of the ballet classes offered during the 10-week period, receiving dance training in the past, not being independent with ADLs, using a walking aide, or diagnosis of cardiovascular or neurological disease. However, participants will not be excluded if they have a pacemaker if they are also cleared by a physician as a 'no restrictions' status for physical activity as indicated by the required intake form. Additionally, we will recruit a control group of adults ages 55 and up that will not participate in the dance class. As with the experimental group, control group participants must be independent with ADLs, require no walking aides, and be free from cardiovascular or neurological disease. Exclusion criteria for the control group will be participation in a physical therapy program with the goal of improving functional mobility, receiving dance training in the past, not being independent with ADLs, using a walking aide, or diagnosis of cardiovascular or neurological disease. The control and treatment groups are determined by the individuals themselves based on their desire to participate in the ballet classes.

### **B. How many participants do you plan to have in your study?**

Each semester, we aim to recruit a convenience sample of up to 20 people for the control group and 20 people for the experimental group. We will cap the class at 20 each semester to assure a safe and appropriate ratio of students in the classroom. We aim to have one Skidmore dance student act as the lead teacher and be present at every ballet class, at least 1-2 additional Skidmore students assistant-teaching each class, and up to 20 individuals participating in the dance classes. Participants will be

responsible for finding transportation to campus and will be greeted by at least one participating Skidmore students at Dance Center entrance.

Participants may opt to leave the ballet classes and the study at any time. Participants who opt to withdraw from the study will not be asked to participate in the postural stability post-testing procedures.

Participants in the experimental group may choose to enroll in the beginning ballet class for more than one semester, though they are not required to. If they do, their participation number will remain constant throughout every semester of their participation in order to track changes in postural stability over longer periods of time. Every semester that a participant enrolls in the study, their postural stability will be assessed at the beginning and end of the semester just as for first-time experimental group participants. Additionally, control group participants may decide to join the experimental group at the beginning of a semester. However, experimental group participants may never participate in the control group in a later semester as they would meet exclusion criteria of prior dance training for that group.

### **C. How will the participants be contacted or recruited?**

The PI will contact activities directors at senior centers and independent living communities in Saratoga Springs to inquire about having the ballet classes listed as activities with the PI's contact information so that interested parties may register for the class and receive more information about the corresponding research procedures. If granted permission, posters will also be put at these senior centers and independent living communities. Additionally, posters will be hung around Skidmore's campus to encourage participation, again with the PI's contact information so interested parties may register for the class and receive more information.

The control group will consist of people ages 55 and up who are not interested in taking a dance class but are willing to participate in the outcome measures of this study. As with the experimental group, the control group will be invited to participate by activities directors at senior centers and independent living communities and through self-nomination in response to posters hung in various locations. To participate, individuals will contact PI Hannah Weighart via email to get more information and to register for the class. Any emails from the researchers to individuals encouraging them to participate, and prior to pre-and post-testing sessions, will include the following:

*"Your decision to join this program or not join this program will not affect your relationship with Skidmore College in any way. If you decide that you do want to join the program, you can stop at any time. You can also choose not to participate at all or you can choose not to answer certain questions or do certain activities that we ask you to do. Also, you can stop participating in the program at any time without penalty or being in trouble in any way."*

### **D. Will the participants be compensated for participating? If so, describe:**

Participants will not be compensated for their participation.

## **11. Procedures:**

### **11.1 Beginning Ballet Class Information**

One-hour ballet classes will be held twice per week in one of the two dance studios or in the dance theater at Skidmore College. Elizabeth Usack '20 will serve as the lead teacher for each dance class from February 4<sup>th</sup>-April 26<sup>th</sup>. Other Skidmore students may serve as lead teacher in future semesters as determined by the PI and/or Dr. Sarah DiPasquale. Each week the participants will partake in 120 minutes of ballet dance training, starting with warm-up exercises at the barre and then working towards learning combinations in the center. Participants may take short breaks to get a drink or use the bathroom as they need. Chairs will be set up in the dance studio or dance theater so individuals can rest

or take a break if they wish. They will learn the basic positions and combinations used in ballet, including: Plié, Tendu, Degagé, Rond de Jambe, Frappé, Chassé, Sauté, Pas de Bourrée, Glissade, and Révérence. Additional ballet movements and patterns may be employed as well. If a participant chooses not to dance for the full duration of a given class period, an assistant teacher may assist them out of the studio to wait comfortably in the lobby of the dance center, dance gym or sports center until the class ends and their transportation arrives if needed. They may also rejoin the class at any time, should they choose. Attendance will be taken at the start of each class to ensure that participants do not miss six or more classes in line with our exclusion criteria. Attendance will be documented in a password-protected electronic file through the participants' number IDs alongside the initials of their first and last name to maintain anonymity of the attendance document. Only Hannah Weighart, Sarah DiPasquale, and the lead teacher will have access to the attendance roster each semester.

Prior to any participation in the ballet classes and to pre-testing, an intake form will be completed by each participant (please see intake form below). Additionally, participants will complete a quality of life (QOL) survey at pre- and post-testing to gather quantitative data regarding their quality of life using the 36-item Short-Form Health Survey (SF-36; see attached), which is a widely-used tool for assessing QOL in elderly people (16). The experimental group will also complete an exit survey at post-testing that will specifically ask about their reactions to the ballet class intervention both quantitatively with 1-5 scales and qualitatively (see attached).

The only people who will have full access to the completed intake, SF-36, and exit survey forms will be Hannah Weighart and Dr. Sarah DiPasquale PT, DPT. The names of the participants will be removed from the documents and replaced with the participant ID numbers prior to any data analysis to ensure confidentiality. These files will be kept in a locked filing cabinet in office 228 of the Williamson Sports Center at all times and will not be removed from the office.

Skidmore students acting as assistant teachers for the ballet classes will receive training packets with all necessary information about the logistics of the class and suggestions on how to be assist during the classes. The packet will discuss appropriate interactions and confidentiality during the class. Additionally, lead teacher will work closely with Dr. Sarah DiPasquale PT, DPT to address teaching strategies and to create lesson plans modeled after Dr. DiPasquale's course DA101: The Dance Experience. Dr. DiPasquale will also be consulting with the lead teacher throughout the process and assisting in modifying lesson plans as appropriate for older adults. The lead teacher may choose to complete an independent study to receive academic credit for their work teaching the beginning ballet classes as determined by the student and Dr. DiPasquale.

\*Please note: Student teachers and assistant teachers are not assisting with data collection and analysis and will not have access to any data collected for the purposes of research.

### ***11.2 Data Collection***

Data collection will take place at the dance conference room (Williamson Sports Center), the Human Performance Teaching Lab (Sports 101, Williamson Sports Center), multipurpose room (Williamson Sports Center), the intramural gym (Williamson Sports Center), or at the Prestwick Chase facility or the Saratoga Senior Center (if requested by an activities director) prior to the start of the ballet classes each semester with post-testing to be completed the week of, or following, the final ballet class of the semester. Tests of postural stability will be verbally explained/instructed to create clear expectations for the test and to help decrease any fear or anxiety surrounding the process.

Data collection will be conducted by Hannah Weighart '19 with help from Dr. Sarah DiPasquale as needed. Following the Spring 2019 semester, Dr. Sarah DiPasquale will lead data collection and/or find another Skidmore student to help with data collection who is trained with this protocol. Dr. Mary

Roberts will be contacted as needed to ensure the proper functioning of the data collection system/protocol. Hannah Weighart has already received training in the data collection procedure from Dr. Roberts and Dr. DiPasquale from a prior research investigation examining postural stability in novice collegiate dancers (IRB 1712-683). Once calibrated, the use of balance boards to collect data on postural stability requires very little technical skill, and therefore it is appropriate for a trained student researcher to lead this process. Any additional student data collectors present will only be there to assist and guard the participants from falling. Student data collectors will be trained in all procedures and techniques directly by the PI or supervising faculty members prior to any data collection and must be able to demonstrate competency in testing prior to administering any tests on participants.

Both the pre and post data collection will take approximately 15 minutes per participant at each testing session. Participants will receive instructions prior to each trial of 30 seconds with at least one research assistant spotting the participant should they lose their balance. Participants will be asked to stay in a static standing position for 3 trials of 30 seconds while standing on a Wii board in four of the following conditions : 1) bilateral stance with eyes open, 2) bilateral stance with eyes closed, 3) unilateral stance on the right limb 4) unilateral stance on the left limb. Participants will be given a 15 seconds rest period between each trial and will be told they may stop and rest at any moment during the testing process.

### ***11.3 Data Analysis***

Five measures of postural stability were examined in this study: the area the CoP traveled through during each 30-second trial, the CoP displacement in the x- and y-planes during each trial, and the absolute value of the average speed of the CoP in the x- and y-planes through each trial. Non-parametric Wilcoxon signed ranks tests were used to compare these values at baseline and post-testing within each group, while non-parametric Mann Whitney U tests were used to compare the delta (post minus pre) values between groups for EO and EC trials.

### **12. Consent:**

Participants will sign an Informed Consent must prior to beginning of any testing. Please see attached informed consent for details.

### **13. Risks and Debriefing:**

The postural stability data collection offers minimal risk to participants. Fatigue and falls have been shown to be minimal in prior research (see background information on postural stability references) in older adults. To ensure no risk to participants, participants will repeatedly be reminded they may rest or stop at any moment, without penalty of any kind. As well, one ‘spotter’ will be present during all data collection trials to assist participants should they lose their balance.

The dance movements performed in the intervention sessions carry a minimal risk of injury. Ballet movements presented in the class will likely be outside of typical movement patterns and therefore hold some inherent risk, including slips, falls and muscle strains and sprains. To combat the likelihood of injury during the class, participants will be thoroughly instructed on the movement, technique, and expectations for each combination. The ballet class will be gentle with little to no aerobic activities, making this appropriate for all participants meeting our inclusion criteria. Additionally, while the class will be primarily instructed by the lead teacher, additional Skidmore students will be present to help decrease the risk of injury during the dance class. This way, each participant has additional support throughout the class time as needed.

If a serious injury occurs, the Skidmore Campus Safety will be called and/or 911 depending on the severity of the injury. If an injury occurs during testing off-campus, 911 will be called to appropriately treat the participant for any injury sustained.

Participants will not be formally debriefed following the study as no deception is being used in our methods. All aspects of the study and its intentions will be disclosed to the participants prior to their involvement through the informed consent form. Participants will not be told their individual scores on each test as not to bias the data.

There are minimal psychological risks of participating in this study. Participants may feel frustrated at times during the dance class if they are not able to perform the movement as directed by the instructor and may feel discouraged if they are unable to perform a test during data collection. There is also a risk of low self-esteem if the participant is comparing their dance abilities to others in the class. The instructors and/or researchers will make all efforts to encourage participants throughout this experience to enjoy the process regardless of their outcomes; to do their best and focus on their own personal artistic exploration throughout their time in the class. Furthermore, all assistant teachers and researchers will receive information from PI Hannah Weighart and Dr. DiPasquale discussing pedagogical practice and motivation in the dance studio. All movement combinations given to the participants in the dance studio will be created and/or screened by the lead teacher or PI Hannah Weighart or Dr. DiPasquale based on Dr. DiPasquale's work to assure that the movement structure is appropriate for the participants' physical abilities. Dr. DiPasquale has over 20 years of experience teaching dance to students of all ages/abilities in addition to her doctorate in Physical Therapy with work in the acute care, inpatient and outpatient rehabilitation fields.

#### **14. Privacy and Storage of Data:**

The records of this study will be kept private. In any sort of report that is published or presentation that is given, we will not include any information that will make it possible to identify any of the participants involved.

Any data that was initially collected in hard copy (consent forms, intake forms, SF-36 forms, exit surveys) will be kept in a locked filing cabinet in office 228 of the Williamson Sports Center. Dr. DiPasquale will possess the key to the filing cabinet, and only Hannah Weighart and Dr. DiPasquale will be able to view these documents. Data collected during balance testing will be automatically recorded in a password-protected Microsoft Excel spreadsheet accessible to both Dr. DiPasquale and Hannah Weighart.

Each participant will be given a numeric tag and the data will be pooled into a password protected electronic database. A master linking list, linking the participants' names and identification numbers, will be created and stored in a separate password protected file on the PI's computer. The only people with access to the linking list will be Dr. DiPasquale and PI Hannah Weighart. Once data has been de-identified, the database will be shared with Dr. Roberts via email for statistical analysis if needed. Following the Spring 2019 semester, future de-identified databases may be shared with other Skidmore students for statistical analysis. They will never have access to identifiable participant information.

The hard copies of files will be kept for 5 years following the conclusion of the study, at which time they will be shredded and destroyed. The digital database itself will be kept indefinitely.

#### **15. References cited in this proposal:**

1. Morrin N, Redding E. Acute effects of warm-up stretch protocols on balance, vertical jump height, and range of motion in dancers. *J Dance Med Sci.* 2013;17(1):34-40.
2. Ferrufino L, Bril B, Dietrich G, Nonaka T, Coubard O. Practice of contemporary dance promotes stochastic postural control in aging. *Front Hum Neurosci.* 2011;5:1-9.
3. McKinley P, Jacobson A, Leroux A, Bednarczyk V, Rossignol M, Fung J. Effect of a community-based Argentine tango dance program on functional balance and confidence in older adults. *J Aging Phys Activ,* 2008;16:435-453.

4. Sofianidis G, Hatzitaki V, Douka S, Grouios G. Effect of a 10-week traditional dance program on static and dynamic balance control in elderly adults. *J Aging Phys Activ.* 2009;17:167-180.
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7. Zhang J, Ishikawa-Takata K, Yamazaki H, Morita T, Ohta T. Postural stability and physical performance in social dancers. *Gait Posture.* 2008;27:697-701.
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9. Costa de Mello M, de Sá Ferreira A, Ramiro Felicio L. Postural control during different unipodal positions in professional ballet dancers. *J Dance Med Sci.* 2017;21(4):151-155.
10. Simmons R. Sensory organization determinants of postural stability in trained ballet dancers. *Intern J Neuroscience.* 2005;115:87-97.
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12. Weaver T, Ma C, Laing A. Use of the Nintendo Wii Balance Board for studying standing static balance control: Technical considerations, force-plate congruency, and the effect of battery life. *J Appl Biomech.* 2017;33:48-55.
13. Zakeri L, Jamebozorgi A, Kahlaee A. Correlation between center of pressure measures driven from Wii Balance Board and force platform. *Asian J Sports Med.* 2017;8(3):1-8.
14. Cepeda C, Lodovico A, Fowler N, Rodacki A. Effect of an eight-week ballroom dancing program on muscle architecture in older adult females. *J Aging Phys Activ.* 2015;23:607-612.
15. Hamacher D, Hamacher D, Rehfeld K, Hökelmann A, Schega L. The effect of a six-month dancing program on motor-cognitive dual-task performance in older adults. *J Aging Phys Activ.* 2015;23:647-652.
16. De Souza LNN, De Carvalho PHB, Ferreira MEC. Quality of life and subjective well-being of physically active elderly people: a systematic review. *J Phys Ed Sport.* 2018;18(3): 1615-1623.



## **Participant Intake Form:**

Name: \_\_\_\_\_

Age: \_\_\_\_\_

Sex: \_\_\_\_\_

Height: \_\_\_\_\_

Weight: \_\_\_\_\_

### **Emergency Contact Information:**

Name \_\_\_\_\_

Phone # \_\_\_\_\_

Have you been cleared by a physician as a 'no restrictions' status for physical activity?

Yes

No

Please list any previous injuries that I should be aware of in your medical history:

Injury

Date

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Are you currently participating in Physical Therapy treatment to improve your physical function?

Yes

No

Do you use any adaptive equipment for mobility? If yes, please describe:

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How often are you physically active for 30 minutes or more?

Never                      Rarely                      1–3 times per month                      Once a week

Two or more times per week                      Daily

What type of physical activities do you participate in?

<u>Activity</u>	<u>Typical # of minutes spent each week</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Have you ever participated in a dance class before?                      Yes                      No

If yes, where and when? \_\_\_\_\_

Have you had a fall within the last 12 months?                      Yes                      No

If yes, please describe.

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Can you complete activities of daily living independently (i.e. dressing, bathing, personal hygiene and grooming, feeding, getting out of bed)?

Yes                      No

Have you been diagnosed with any cardiovascular or neurological disease?

Yes                      No

If yes, please describe.

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Is there anything else I should know?

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**Post – Testing Amendments**  
(to be completed at the end of the semester)

Has the above information changed since the form was completed (injuries, etc.)?

YES

NO

If yes, please describe below:

**Participant change**

**Date of this change**

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ID#: \_\_\_\_\_

### **Exit Survey**

Please circle the number that best describes your response on a scale of 1 (strongly disagree) to 5 (strongly agree).

1. I looked forward to coming to dance class.

[Strongly Disagree]      1      2      3      4      5      [Strongly Agree]

2. I felt my mood improved following dance class.

[Strongly Disagree]      1      2      3      4      5      [Strongly Agree]

3. I felt a sense of community in dance class.

[Strongly Disagree]      1      2      3      4      5      [Strongly Agree]

4. I feel stronger physically now compared to before I started dancing.

[Strongly Disagree]      1      2      3      4      5      [Strongly Agree]

5. Below, please include any additional feedback you have about your experience in the dance class.

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SKIDMORE  
C O L L E G E  
INSTITUTIONAL REVIEW BOARD  
INFORMED CONSENT FORM

## 1. INTRODUCTION

You are invited to be a participant in a research study entitled *Examining the effects of ballet training on postural stability in older adults* which is a study to look at the changes that may occur as a result of participating in a ballet class. We are looking for individuals of at least 55 years of age who are not currently participating in a physical therapy program with the goal of improving functional mobility, have not received dance training from other facilities, do not require help with activities of daily living, do not use a walking aide, and are free from cardiovascular and neurological disease. We ask that you read this document and ask any questions you may have before agreeing to be in the study. The study is being conducted by Hannah Weighart, Class of 2019 and advised by Dr. Sarah DiPasquale PT, DPT in the Dance Department at Skidmore College.

## 2. BACKGROUND

The purpose of this study is to examine the changes in balance in older adults who are exposed to dance.

Previous research in this area has found that different forms of dance can improve postural stability (balance) in older adults, though few studies have examined this following a ballet intervention.

In this study, you will participate in an Introduction Ballet course taught in the Skidmore College Dance Center. We hope that by dancing with us each week, you will see improvements in your balance. We will also test the balance of a group of people who do not participate in the dance class to compare the changes in balance in people who dance vs. people who do not.

## 3. DURATION

The length of time you will be involved with this study is for two class periods per week lasting 1 hour each, for 10-12 weeks, though you may discontinue your involvement at any point without penalty. You will also be asked to participate in measurements to assess your balance before and after the 10-12 weeks of ballet classes. These measurements will take approximately 30 minutes of your time (15 minutes per data collection session).

## 4. PROCEDURES

If you agree to be in this study, we will ask you to participate in ballet classes at Skidmore College two times per week for 1 hour each time. The class will be led by a Skidmore dance student, and multiple other Skidmore dancers will be present to help you learn to dance. The lesson plans are developed by the lead teacher along with Dr. DiPasquale.

Before you participate in the dance class, we will ask you to fill out an intake form and a quality of life survey called the SF-36. These forms will give us some information about your medical history to assure that it is safe for you to dance and will allow us to see how participating in a dance class may affect your quality of life and mood. Please see attached Intake Form and SF-36 for details. After the 10-12 weeks of dance classes, we will test your balance and have you complete these forms again in addition to an exit survey that will allow you to express your thoughts about the ballet classes.

You will also be asked to participate in measurements to assess your balance before the 10-12 weeks of ballet classes start and after the 10-12 weeks are done. These measurements will take place at the Williamson Sports Center at Skidmore College, the Prestwick Chase facility, or the Saratoga Senior Center. Before each measurement, someone will demonstrate the activity and also explain it to you verbally.

The measures we are collecting will include a balance test where we will ask to you stand in various positions for 30 seconds while a computer records how well you can balance. You will have 15 seconds to rest in between each test. We will ask you to stand with your eyes open on two feet, on each foot individually, and with your eyes closed on two feet.

## **RISKS/BENEFITS**

The risks of participation are:

- Slips, falls, or injury due to dancing in class
- Muscle soreness, tired muscles or discomfort after dancing in class
- Risk of falling and/or slipping during the balance tests

We will have at least one person standing next to you at all times in case you lose your balance during the balance testing procedures. There will also be people to help you as needed throughout each dance class.

The benefits of participation are that you may have improvements in balance after participating in the dance class. Through this research, we hope to learn more about how dance can improve physical function. We hope that this work may help others to create similar dance programs in their own communities!

## **5. CONFIDENTIALITY**

The records of this study will be kept private. In any sort of report that is published or presentation that is given, we will not give out any information that will allow people to identify you. Papers with your name, such as the consent form and intake form, will be kept in a locked filing cabinet. The only people with full access to these files will be Dr. Sarah DiPasquale and Hannah Weighart; Dr. DiPasquale will possess the key to the filing cabinet. The files will be kept for five years and then shredded and destroyed. Once data has been collected, your name will be replaced with a number and put into a locked file on a computer. Other researchers will have some access to these files, only for the purpose of analyzing the information and putting it into the computer but will not have access to identifiable data or information.

## **6. COMPENSATION**

You will not receive any compensation for participating in this study.

## **7. VOLUNTARY NATURE OF THE STUDY**

Your decision whether or not to participate is entirely up to you. You may refuse to participate before the study begins, stop at any time, or skip any questions and/or procedures that make you feel uncomfortable, with no penalty to you, and no effect on your current or future relationship with Skidmore College.

## **8. IF YOU ARE INJURED BY THIS RESEARCH**

If you get injured in dance class or during testing, treatment will be available, including first aid, emergency treatment, and follow-up care as needed. Care for such injuries will be billed in the usual way, to you or your insurance company.

## 9. CONTACTS AND QUESTIONS

The main researcher conducting this study is Hannah Weighart, Class of 2019. Dr. Sarah DiPasquale PT, DPT, an Assistant Professor in the Dance Department at Skidmore College will be advising the project as well. Please ask any questions you have now. If you have questions later, you may contact Hannah Weighart at [hweighar@skidmore.edu](mailto:hweighar@skidmore.edu) or Dr. DiPasquale at 518-580-8422 or [sdipasqu@skidmore.edu](mailto:sdipasqu@skidmore.edu).

If you have questions or concerns about this study and would like to speak with someone other than the researchers, you may contact Mary Hoehn, Institutional Review Board Chair, Skidmore College, at (518) 580-8052 or [mhoehn@skidmore.edu](mailto:mhoehn@skidmore.edu), or Debra Fernandez, Dance Department Chair, Skidmore College, at 518-580-5377 or [dfernand@skidmore.edu](mailto:dfernand@skidmore.edu).

## 10. STATEMENT OF CONSENT

You will be given a copy of this form to keep for your records.

The procedures of this study have been explained to me and my questions have been answered. The information that I give is confidential and will be used for research purposes only. I understand that my participation is voluntary and that I may stop participating at any time without penalty. If I have any concerns about my experience in this study (e.g., that I was treated unfairly or felt threatened), I may contact the Chair of the Institutional Review Board or the Chair of the sponsoring department of this research about my concerns.

**Participant Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Participant Name (printed)** \_\_\_\_\_

**Signature of Person Obtaining Consent** \_\_\_\_\_ **Date** \_\_\_\_\_

**Name of Person Obtaining Consent (printed)** \_\_\_\_\_

**INFORMED CONSENT FORM**  
(Control Group)

**1. INTRODUCTION**

You are invited to be a participant in a research study entitled *Examining the effects of ballet training on postural stability in older adults* which is a study to look at the changes that may occur as a result of participating in a dance class. We are looking for individuals of at least 55 years of age who are not currently participating in a physical therapy program with the goal of improving functional mobility, have not received dance training, do not require help with activities of daily living, do not use a walking aide, and are free from cardiovascular and neurological disease. We ask that you read this document and ask any questions you may have before agreeing to be in the study. The study is being conducted by Hannah Weighart, Class of 2019 and advised by Dr. Sarah DiPasquale PT, DPT in the Dance Department at Skidmore College.

**2. BACKGROUND**

The purpose of this study is to examine the changes in balance in older adults who are exposed to dance.

Previous research in this area has found that different forms of dance can improve postural stability (balance) in older adults, though few studies have examined this following a ballet intervention.

In this study, we are asking other people to participate in a dance class each week in the Skidmore College Dance Department and for you to serve in a non-dance comparison group. We are hoping to see if there are improvements in balance after taking a dance class. We need to compare the measurements of the dancers in this class to other people who are not dancing in the class. This is why we are asking you to participate in this study.

**3. DURATION**

You will be asked to participate in measurements to assess your balance two times about 10-14 weeks apart. These measurements will take approximately 30 minutes of your time (15 minutes at each data collection session).

**4. PROCEDURES**

If you agree to be in this study, we will ask you to participate in measurements to assess your balance. These measurements will take place at the Williamson Sport Center at Skidmore College, the Prestwick Chase facility, or the Saratoga Senior Center. Before each measurement, someone will demonstrate the activity with their body and also explain it to you verbally.

Before participating in the testing, we will ask one of you to fill out an intake form and a quality of life survey called the SF-36. These forms will give us some information about your medical history to make sure it is safe for you to participate and will allow us to see if your quality of life changes over the course of the study. Please see attached Intake Form and SF-36 for details.



The measures we are collecting will include a balance test where we will ask you to stand in various positions for 30 seconds while a computer records how well you can balance. You will have 15 seconds to rest in between each test. We will ask you to stand on with your eyes open on two feet, on each foot individually, and with your eyes closed on two feet.

## **5. RISKS/BENEFITS**

The risk of participation is falling and/or slipping during the balance tests. We will have at least one person standing next to you at all times in case you lose your balance.

Through this research, we hope to learn more about how dance can improve balance and physical function in older adults. We hope that this work may help others to create similar dance programs in their own communities!

## **6. CONFIDENTIALITY**

The records of this study will be kept private. In any sort of report that is published or presentation that is given, we will not give out any information that will allow people to identify you. Papers with your name, such as the consent form and intake form, will be kept in a locked filing cabinet. The only people with full access to these files will be Dr. Sarah DiPasquale and Hannah Weighart; Dr. DiPasquale will possess the key to the filing cabinet. The files will be kept for five years and then shredded and destroyed. Once data has been collected, your name will be replaced with a number and put into a locked computer file. Other researchers will have some access to these files, only for the purpose of analyzing the information and putting it into the computer but will not have access to identifiable data or information.

## **7. COMPENSATION**

You will not receive any compensation for participating in this study.

## **8. VOLUNTARY NATURE OF THE STUDY**

Your decision whether or not to participate is entirely up to you. You may refuse to participate before the study begins, stop at any time, or skip any questions and/or procedures that make you feel uncomfortable, with no penalty to you, and no effect on your current or future relationship with Skidmore College.

## **9. IF YOU ARE INJURED BY THIS RESEARCH**

If you get injured during testing, treatment will be available, including first aid, emergency treatment, and follow-up care as needed. Care for such injuries will be billed in the usual way, to you or your insurance company.

## **10. CONTACTS AND QUESTIONS**

The main researcher conducting this study is Hannah Weighart, Class of 2019. Dr. Sarah DiPasquale PT, DPT, an Assistant Professor in the Dance Department at Skidmore College will be advising the project as well. Please ask any questions you have now. If you have questions later, you may contact Hannah Weighart at [hweighar@skidmore.edu](mailto:hweighar@skidmore.edu) or Dr. DiPasquale at 518-580-8422 or [sdipasqu@skidmore.edu](mailto:sdipasqu@skidmore.edu).

If you have questions or concerns about this study and would like to speak with someone other than the researcher, you may contact Mary Hoehn, Institutional Review Board Chair, Skidmore College, at (518) 580-8052 or [mhoehn@skidmore.edu](mailto:mhoehn@skidmore.edu), or Debra Fernandez, Dance Department Chair, Skidmore College, at 518-580-5377 or [dfernand@skidmore.edu](mailto:dfernand@skidmore.edu).

## 11. STATEMENT OF CONSENT

You will be given a copy of this form to keep for your records.

The procedures of this study have been explained to me and my questions have been answered. The information that I give is confidential and will be used for research purposes only. I understand that my participation is voluntary and that I may stop participating at any time without penalty. If I have any concerns about my experience in this study (e.g., that I was treated unfairly or felt threatened), I may contact the Chair of the Institutional Review Board or the Chair of the sponsoring department of this research about my concerns.

**Participant Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Participant Name (printed)** \_\_\_\_\_

**Signature of Person Obtaining Consent** \_\_\_\_\_ **Date** \_\_\_\_\_

**Name of Person Obtaining Consent (printed)** \_\_\_\_\_

