PARTICIPANT INFORMATION SHEET

The Effect of Tai Chi, Zumba Gold, and social meeting group on Oxidative Stress and Inflammation in an Ageing Population

Dear participants,

Thank you for showing interest in our research project. Here is some information regarding our research and how you can be involved. Please take your time to read it, and our research team will be ready to explain the study to you if you have any questions.

**Background and rationale for the project**

Physical activity or exercise is known to have beneficial effects on health of all ages. It is recommended that everyone undertake physical activity to maintain good health and to prevent cardiovascular disease. According to the American College of Sports Medicine (ACSM), older adults are recommended to undertake at least 150 minutes (3 ½ hours) of moderate intensity aerobic activity per week. The best kind of activity will include all physical elements of endurance, strength, balance and flexibility. Physical activity is beneficial to an older aged population as it can minimize biological changes that occur with normal ageing, especially those related to cardiovascular health and physical fitness. However, not all exercise is perceived by older adults as suitable for an elderly population. In this research, we would like to investigate the effectiveness of moderate intensity exercise (Tai Chi) vs high intensity exercise (aerobic dance) on biological factors that usually change with age such as oxidative stress, inflammation and vascular function in older adults. In this study, participants will be assigned randomly into a Tai Chi, Aerobic Dance or social meeting group for 12 weeks. Participants will be invited to meet regularly and to exercise, and will be assessed for markers of health, before, half way through, and at the end of the intervention.
**Inclusion Criteria,**

We are looking for individuals that fulfil the following criteria:

- Male or female, aged 65 to 75 years old
- Are not undertaking regular exercise but who are living independently, including bathing, other personal hygiene, and need no assistance when walking.
- Have clear comprehension, adequate vision and hearing
- Not suffering from chronic pulmonary and cardiovascular disease.
- Not smoking

The selection of participants will be based on physical fitness and a health-screening questionnaire.

We would like our potential participants to seek advice from their GP if:

(a) they are not used to exercise regularly

(b) we find anything irregular in the health-screening or in the blood results
1ST LABORATORY VISIT
Briefing, collection of participation information sheet, consent form, questionnaire 1

2ND LABORATORY VISIT
Questionnaire 2
Physical fitness
Accelerometer (7 days)
Sleep tracking device (7 days)

3RD LABORATORY VISIT
Basic health measurement BP, HR,
Withdraw blood, vascular function test, collection of sleep device & accelerometer

INTERVENTION
12 weeks

4TH LABORATORY VISIT
After 6 weeks of intervention
Undergoes the same procedure as 3rd laboratory visit + questionnaire 3

5TH LABORATORY VISIT
Basic health measurement BP HR
Withdraw blood
Vascular function test

6TH LABORATORY VISIT
QoL questionnaire
Physical fitness

Self-collection of sleep tracking device and accelerometer by the researcher

One week of wearing sleep tracking device and accelerometer
Detail on each part is outlined below:

A. First Laboratory Visit

Volunteers, male and female, aged 65 to 75 will be recruited for the study. You will be invited to an introductory meeting with the researchers at the School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham. Prior meeting, we will send you this Participant Information Sheet, and we will ask you to read it before attending the first visit. During the first laboratory visit, we will explain briefly on the overall project, objectives, aims and procedures, and will assist you on any questions related to this project. Then, we will be providing you with consent form and inviting you to answer a health-screening questionnaire. In this questionnaire, you will be asked on your general health, independent living, and daily activities to determine your health and fitness status.

Once we have selected our participants, we will then inform you on your eligibility to participate in this study via phone call and letter.

B. Second Laboratory Visit

The second laboratory visit will assess your physical fitness using 30 seconds chair stand, 6 minutes walk, chair sit and reach, back scratch test, and timed up and go. You will be also be invited to answer a quality of life questionnaire. The questionnaire consists of 8 items which includes the health survey, anxiety and depression scale, pain, vitality, fatigue, sleep habits, loneliness, and mood state. The purpose of this questionnaire is to measure the quality of life among participant before and after the exercise intervention.

We will also invite you to undertake a short walking test on a treadmill in our laboratory. We will ask you to wear a heart rate monitor during the test. During this visit we will give you a tri axial accelerometer (Acti Graph) and sleep tracking device to take home with you and ask you to wear them for 7 days in the same week, to monitor your individual physical activity and sleep quality.

C. Third Laboratory Visit

One week after the second laboratory visit, we will invite you back to the lab to take some basic health measurements of heart rate (HR), blood pressure (BP) and vascular function. We will collect a blood sample from you and ask you to return the accelerometer and sleep tracking device during this visit.
D. Experimental Intervention

You will then be randomly assigned into 1 of 3 groups: (a) social meeting group (non-exercise) (b) Tai Chi and (c) Aerobic dance. All groups will have regular meetings 3 times per week for 1 hour, for 12 weeks, and you will undertake the exercise regime according to your respective group. The non-exercise group will meet to mimic the social interaction gained by the 2 exercising groups. We will ask you to attend 80% of the sessions throughout the intervention for your results to be included in the final study.

D. Fourth Laboratory Visit

After 6 weeks of intervention, so half way through the exercise study, we will invite you to the fourth laboratory visit. This visit will be exactly the same as the last visit to the lab which includes measurement of heart rate, blood pressure, vascular function, as well as blood withdrawal. We will ask you to fill in a questionnaire 3 on behavioural regulation and self-efficacy for exercise. There are 2 items on this questionnaire which will identify the reason underlying people decision to engage in current physical activity and their confident in doing that.

E. Fifth Laboratory Visit

After completing the 12 weeks intervention, so at the end of the study, we will perform our final measurements. We will ask you to return to the lab once again and we assess the same measures that we first assessed at the laboratory visit 3. We will also ask you to wear the tri axial accelerometer (Acti Graph) and sleeping tracking device for 1 week, and we will self-collect the device after a week.

F. Sixth Laboratory Visit

Two days after the fifth laboratory visit, we will invite you to the final laboratory visit, and invite you to answer the Quality of Life questionnaire and perform a physical function test (30 seconds chair stand, 6 minutes walk, chair sit and reach, back scratch test, and timed up and go).

Risk

The risk involved in participating is minimal. Participants may experience a small amount of discomfort associated with a needle stick during the process of blood collection. However, the procedure will be conducted by trained phlebotomist whom
is experienced in taking blood. Some participants may develop a small bruise after blood withdrawal, but applying pressure to the arm once needle has been removed can prevent this.

All procedures have been approved by the ethical committee from University of Birmingham, UK.

Confidentiality

The investigators will code the participant data and sample with new unique ID, which will remain confidential between the investigators. All information and data collected during intervention or laboratory measurements will be also treated as anonymous in data analysis and journal publication. In line with the University Of Birmingham Code Of Conduct for Research, Section 2.1(b), research data will be retained intact for a period of ten years from the date of any publication which is based upon it.

Participants may withdraw at any time of the study with or without explanation.

Reimbursement

We will provide you with your basic health data measurement of blood pressure, heart rate, and physical fitness after the laboratory assessments have been completed. We also will reimburse the travel cost to training centre and School of Sport, Exercise and Rehabilitation Sciences Laboratory.

Study Withdrawal

If you wish to withdraw from the study, at any time, you may do so with or without providing an explanation. We will exclude your data from the study if you choose to withdraw, unless you tell us to do otherwise.

Contact the investigator

If you have any questions, concern or complains about the study at any stage, you may contact:

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