ISRCTN10133544 https://doi.org/10.1186/ISRCTN10133544

The effect of listening to music on white blood cell function

Submission date	Recruitment status	[ ] Prospectively registered
26/07/2026	No longer recruiting	[ ] Protocol
Registration date	**Overall study status**	[ ] Statistical analysis plan
27/07/2026	Completed	[ ] Results
Last Edited	**Condition category**	[ ] Individual participant data
27/07/2026	Haematological Disorders	[X] Record updated in last year

Plain English summary of protocol
Participant Information Sheet
The Effects of Sound on Immune Cell Responsiveness

Why is this study being conducted?
Sound and music are widely used in everyday life and are known to influence how people feel, yet their immediate effects on immune cell function are not well understood. This research study is being conducted to explore whether brief exposure to sound produces measurable, short-term changes in immune cell responsiveness.

Purpose of the Study
This is a research study. It is not a diagnostic study, and nothing in this study is intended to diagnose disease, assess health status, or replace medical tests or clinical advice. The study examines whether brief exposure to sound produces immediate, short-term changes in immune cell responsiveness, as measured from a finger-prick blood sample using Leukocyte Coping Capacity (LCC).

The procedure involves taking finger-prick blood samples before and after listening to two distinct sound samples. A total of four fingertip blood samples will be taken during the session. Any chemicals used are added only to the isolated blood sample during analysis. No chemicals come into contact with your body. Samples are analysed immediately and are not stored.

This technique has been used extensively in peer-reviewed scientific publications and is regarded as a low-risk research procedure. Some sounds may be unfamiliar, unconventional, or structurally altered, and may not resemble music in the usual sense. Your experience of the sound, whatever it may be, is an important part of the research.

What Will Happen?
You will be asked to sit quietly and complete some questionnaires. Please do not use your mobile phone during the session. You will listen to two five-minute sound or music samples, or silence. The order of the sounds is randomised.

A fingertip blood sample will be taken at several points during the session, resulting in a total of four fingertip samples. All samples are analysed immediately and are not stored.

What Will I Gain From Taking Part?
Participants often find it interesting and engaging to reflect on how they respond to different sounds. If you choose to receive feedback, you may learn how your immune cells responded during the session.

Your participation contributes to research exploring the relationship between sound, human experience, and immune function.

Risks
You may experience brief discomfort during the finger-prick, similar to that used for checking blood glucose. The procedure is regarded as low risk. There is a very small possibility of infection. This risk is minimised through established procedures, including the use of alcohol wipes and single-use, sterile, disposable lancets. You may stop the study at any time if you feel uncomfortable.

Use of Results
The results from this study may be used in a scientific publication or presentation. You will not be identified individually in any publication or report. All results will be anonymised before analysis and collated at group level only. The results will be used to describe the findings of the study.

Voluntary Participation and Confidentiality
Participation is entirely voluntary. You may withdraw at any time without giving a reason. All information will be kept confidential. You will not be identifiable from any published material.

Chief Investigator
Dr Rubina Mian
Contact email: rubina@ozmian.com

Participant Details
Full Name: _____
Date of Birth (DD/MM/YYYY): _____

Employment or Study Status
(please complete one section)
If employed or self-employed
Job title / role: _____
Organisation (if applicable): _____
Main role / type of work: _____
If a student
Course / subject: _____
Year of study: _____
Institution: _____
If not currently employed or studying
(you may leave this section blank or add any detail you wish):

_____

General Health Questionnaire

1. Have you had any coughs, colds, or flu-like symptoms in the last two weeks?
Yes No
If yes, please specify: _____

2. Do you suffer from any allergies?
Yes No
If yes, please specify: _____

3. Do you have any long-term conditions that affect immune function

(for example autoimmune conditions, diabetes, or chronic inflammatory conditions)?
Yes No
If yes, please specify: _____

4. Are you currently taking any medication that may affect immune function
(for example steroids, immunosuppressants, or biologic therapies)?
Yes No
If yes, please specify: _____

5. Are you taking any blood-thinning or antiplatelet medication

(for example warfarin, apixaban, rivaroxaban, clopidogrel, or regular aspirin)?
Yes No
If yes, please specify: _____

6. Have you ever fainted or felt dizzy during blood tests or finger-prick sampling?
Yes No
If yes, please specify: _____

7. Do you currently have broken skin, infection, or wounds on your fingertips?
Yes No
8. Have you noticed any changes in your hearing or sensitivity to sound?
Yes No
If yes, please specify: _____

9. Do you have any diagnosed hearing conditions
(for example tinnitus, hearing loss, or hyperacusis)?
Yes No
If yes, please specify: _____

10. Have you experienced discomfort, distress, or strong unease in response to certain sounds or music in the past?
Yes No
If yes, please specify: _____

11. Have you consumed alcohol in the last 24 hours?
Yes No

12. Have you undertaken strenuous exercise in the last 24 hours
(for example running, gym training, or competitive sport)?
Yes No

Consent
I confirm that I have read and understood the information above and agree to take part in this research study.

Participant Signature: _____ Date: _____
I confirm that the participant has had the opportunity to ask questions, that eligibility has been assessed, and that informed consent has been obtained prior to the start of the study.

Chief Investigator Signature: _____ Date: _____

Feedback Preference
I do not wish to receive feedback
I would like to receive feedback on how my immune cells responded
I would like to receive a summary of the pooled, anonymised study results
Email (if feedback requested): _____

Contact information

Type(s)
Public, Scientific, Principal investigator

Contact name
Dr Rubina Mian

Contact details
OzMian Ltd,
C/O Langard Lifford Hall
Lifford Lane
Kings Norton
Birmingham
United Kingdom
B30 3JN
+44 7710619790
rubina@ozmian.com

Additional identifiers

Study information

Scientific Title
Effect of listening to music compared with no audio on leukocyte coping capacity in adults: an exploratory randomised two-period crossover study

Study objectives

To determine whether brief exposure to a defined music recording is associated with a greater within-participant change in leukocyte coping capacity (LCC) than a time-matched no-audio condition.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 05/05/2025, The Independent Ethics Committee (OzMian Ltd C/O Langard Lifford OzMian Limited Lifford Hall, Lifford Lane Kings Norton, Birmingham, B30 3JN, United Kingdom; +44 7710619790; info@ozmian.com), ref: Music OzMian Ref April 2025-1M

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Open (masking not used)

Control
Placebo

Assignment
Crossover

Purpose
Basic science

Study type(s)

Health condition(s) or problem(s) studied
Leukocyte function in healthy adults

Interventions
Participants completed both conditions during a single study session in a randomised two-period crossover design.

During the music condition, participants listened to music or no audio. They were unaware of the music or length of the 5-minute 28-second studio recording of Peter Gabriel’s “In Your Eyes” from the 2012 remastered edition of So. The uncompressed WAV recording was played from an iPad Pro through a PreSonus HP4 headphone amplifier and Beyerdynamic DT 700 PRO X headphones at approximately 73 dB.

During the time-matched no-audio control condition, participants wore the same headphones for the same duration with no audio playing. A 15-minute washout and settling interval separated the two conditions.

Capillary fingertip blood samples were collected immediately before and after each condition to measure leukocyte coping capacity (LCC).

Immediately before the participants entered the room, a session-level binary random number was generated in Microsoft Excel using RANDBETWEEN(0,1), assigning either music followed by no audio or no audio followed by music. Participants attended in sessions of one or three, and participants within the same session followed the same assigned sequence. There was no subsequent follow-up.

Intervention Type
Behavioural

Primary outcome(s)
1. Leukocyte coping capacity (LCC) measured using capillary fingertip blood using the LCC chemiluminescence assay and reported in relative light units (RLU) at pre- and post-condition

Key secondary outcome(s)

Completion date
16/07/2026

Eligibility

Key inclusion criteria
1. Adults aged 18 years or older
2. Able to understand the study information and provide informed consent
3. Willing to undergo capillary fingertip blood sampling and complete both the music and no-audio listening conditions

Healthy volunteers allowed
Yes

Age group
Mixed

Lower age limit
18 Years

Upper age limit
120 Years

Sex
All

Total final enrolment
28

Key exclusion criteria
1. Known medical condition causing immunosuppression
2. Current use of immunosuppressive medication

Date of first enrolment
06/02/2026

Date of final enrolment
16/07/2026

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Hyatt Centric Cambridge
37 Eddington Avenue
Cambridge
England
CB3 1SE

Study participating centre
Methodist Church
Castle Street Methodist Church
Castle Street
Cambridge
England
CB3 0AH

Sponsor information

Organisation
OzMian Ltd

Funder(s)

Funder type

Funder Name
OzMian Ltd

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan
Anonymised individual participant data relevant to the reported findings, including leukocyte coping capacity measurements and selected experiential responses, may be included in the peer-reviewed results publication and/or its supplementary materials. All participants provided written consent for the publication and sharing of anonymised individual-level and group-level data. Names, contact details and other direct identifiers will not be published. Free-text responses will be paraphrased or generalised where necessary to minimise the risk of indirect identification. No identifiable data will be shared, and all reporting will remain within the scope of the participant consent and ethics approval.

IPD sharing plan summary
Published as a supplement to the results publication