# Risk Assessment

*In the table, please list all risks associated with your research related activity. You should detail the risk, who could be affected (researcher, participant etc.) and how you will mitigate it. Finally using the* [*guidance*](#_Risk_Assessment_Guidance:) *please provide a risk score.*

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| **Name: Alexz Farrall** | **Email: af874@bath.ac.uk** | ***To be completed by the Psychology Risk Review Group*** |
| **Role:** UG/PGT/**PGR**/Staff/ Other (please provide details) | | ***Approval Date: 24/1/2023*** |
| **Names of other Researchers involved: Professor Jason Alexander, Dr Pamela Jacobsen** | | ***Approved By: Dr Susanna Martin*** |
| **Overview of activity / location / equipment / conditions being assessed:**  The activity involves individuals holding a pneumatic sphere which inflates and deflates in relation to a user's breath-based biofeedback. The lab 0.13C/D Biopac lab in which the system is housed consist of a Laptop, an Air Compressor, a solenoid Circuit (to release air in and out of the system), the Biopac system, and an inflatable object.  The user will always be seated and be holding the object during the operation. | | ***Risk Number: RA-50-2023A*** |

| **#** | **Hazard(s) identified** | **Persons affected** | **Methods of mitigating risk** | **A** | **B** | **A x B** |
| --- | --- | --- | --- | --- | --- | --- |
| **1** | Electrical  Accidental contact with live conductors.  Electrocution by unsafe equipment. Fire. | **Students, academic and technical staff, porters, estates** | * Electrical equipment should be used for its designed purpose and checked before use. If equipment appears to be damaged or is not working properly then it should not be used and reported to the Research hub support team and the PI/supervisor. * Keep water away from mains sockets. * Ensure no electrical equipment is in front of the compressor valve before venting – Ensure the compressor itself is not moved while pressurised.   **Standard power sockets (no high V/A exposed devices)** | **5** | **1** | **5** |
| **2** | Slips, trips and falls  Tripping over cables, slipping on spilled liquids, falling over due to items being left on the floor. | **Students, academic and technical staff, porters, estates** | * Walkways are to be kept clear of obstructions. Good housekeeping to ensure area is tidy. * Any spilled liquid (water, oil etc.) or other slip hazard is cleaned up immediately and thoroughly. * There should be no loose electrical cables on the floor. Shortest cabling routes (not on the floor) should be used where possible. Where necessary, electrical cables to be routed in elevated positions by preference. If not possible, cable covers will be installed to protect both equipment and persons affected.   **All Equipment will adhere to SOP and ensure Pneumatic and Electrical Wires, be routed away from the user side of the display, preventing any risk of slips, trips or falls** | **3** | **2** | **6** |
| **3** | **Experiments running unattended**  Malfunction of experiment while unattended. | **Students, academic and technical staff, porters, estates** | * Equipment must be powered down when an organizer needs to leave the room. The equipment must not be left running and unattended. * All testing equipment will be stored safely when not being used. * The air in the compressor will be vented out at the end of the study with the participant, mitigating the risks of leaving the equipment unattended. As stated within the SOP, appropriate ventilation instructions will be given to ensure safe release of air for producing safe sound levels under 100 dB. | **3** | **1** | **3** |
| **4** | **Inexperienced users**  Increased risk due to lack of awareness/ experience | **User Study Participants** | * An Experienced user will always accompany a participant and operate the testing equipment. * An Inexperienced user (i.e., new researcher) will always interact with the prototype after completing an introduction and training from the Experienced and SOP before using the equipment.   New users will not be able to interact with any of the other testing equipment | **4** | **1** | **4** |
| **6** | Manual Handling  Injuries due to lifting, pulling, pushing or carrying a load such as strains, sprains, crushed fingers/toes. | Study Organisers & Participants | * Manual handling should be avoided wherever possible. * Suitable, well maintained assistive equipment should be used, e.g. trolley, sack truck, fork lift truck, wheeled cages, etc. where items need to be moved. * Frequently used items should be at an easily accessible height. * Loads should be packed carefully to keep to a manageable size and prevent movement of the contents in the package. * Keep the load as close to the body as possible. Avoid twisting - move feet instead. * User Study Participants are not allowed to lift heavy objects. * The Compressor will only be moved when depressurized and with the use of assistive equipment where necessary. | **4** | **2** | **8** |
| **7** | Air Compressor unit | Study Organisers & Participants | * Compressor must only be operated by trained users * Compressor must not be over-pressurized (Safety valve will prevent this) * Regulator must not be tampered with or set **higher than 7 bar of pressure** * Gas tubing should not be tampered with while compressor is being used * Compressor should not be stored while pressurized. Pressure must be released when not in use * Compressed air must never be directed at people or sensitive equipment * Compressor must not be left unattended while on to prevent overpressurization * Compressor must remain on the anti-vibration matt next to the desk while in use * Pneumatics Equipment will be Depressurized, Unplugged and stored safely outside of testing hours. | **4** | **2** | **8** |
| **8** | Bespoke Hardware  Physical Artefact for Well-being Support | Study Organisers & Participants | * The User study will involve the use of bespoke hardware in the form of a “Physical Artefact for Well-being Support”. * The object consists of two layer balloon (with cotton exterior) which are pneumatically pressurised to a low pressure (0 -> 15KPa). This pressure is similar to that of a party Balloon. When pressed the object feels soft or stiff, depending on the pressure. * If the Device was over-pressurised, it could bulge, rip or tear causing air to leak out. Though this poses very low risk to the user due to the low pressure. * The risk of over-pressurising has also been minimised though the use of off the shelf commercial pressure regulators, and the system design. * In accordance with SOP a “System Test” should be completed every calendar day before use.   An emergency pressure release button and pressure valve are located next to the researcher so pressure can be cut if required. | **2** | **3** | **6** |
| **9** | **Covid**  Close proximity | Study Organisers & Participants | * The Organiser will be located in the adjacent room during the operation of the device. * Cleaning and disinfecting in accordance with the department cleaning guidelines (<https://wiki.bath.ac.uk/display/EO/Cleaning+in+the+labs>) with additional guidance from the Uk Government: COVID-19: cleaning in non-healthcare settings outside the home. * Frequently touched surfaces including device, doors, and chair are regularly cleaned. This will entail frequently washing the cotton exterior. * Alcohol based hand sanitiser is provided | **2** | **3** | **6** |
| **10** | **BioPac sensor placement** | Participants | * Participants will be required to place a chest band on themselves to record their breathing (this is then what influences the pressure in the balloon). * To minimize contact, participants will place the chest band on themselves, they can do this while the researcher is in the adjacent room, meaning the participant can place the chest strap under clothing if required. * Visual aids will be provided to show the participant how to apply the chest strap. * The chest strap will be wiped with 70% alcohol solution between users to minimize health risks. | **2** | **1** | **2** |
| Working ‘out of hours’ and ‘lone working’ on University premises | | | | | | |
| 10 | Reduced access to emergency assistance because dept first aiders are not available. | Study Organisers | * Ensure organisers has access to phone and is able to contact Security via emergency number (666 by internal phone; 01225 383999 by external phone or mobile) * Safe Zone – university security app will be downloaded. * Inform research team of lone working potential at the start and end of a session via an online message. * Inform a personal trusted colleague or friend beyond the research team at the start and end of a session via an online message. | 1 | 4 | 4 |
| 11 | Inadvertent lone working in academic buildings out of standard working hours | Study Organisers | * Operate logging in/out book. * Sign into book if they are in the building after 19.00hrs and to sign out when they leave. | 1 | 2 | 3 |
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# Risk Assessment Guidance:

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| To help guide you filling in this form please think about the below:   * Where is it taking place (how will you get there, who else is around?) * What equipment are you using (does it have any risks, do you need to screen participants?) * What are the risks to the participant? * What are the risks to the researcher and research team? * Are there any additional COVID risks which you need to consider? | *If you would like to review any of the standard operating procedures or guidance materials, they can be found on the wiki:* [*https://wiki.bath.ac.uk/display/EO/Research+Hub+Safety*](https://wiki.bath.ac.uk/display/EO/Research+Hub+Safety) |

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| **Hazard Severity (a)***the potential impact the risk would have if it were to occur.***Trivial** (eg discomfort, slight bruising, self-help recovery)  1. **Minor** (eg small cut, abrasion, basic first aid need) 2. **Moderate** (eg strain, sprain, incapacitation > 3 days) 3. **Serious** (eg fracture, hospitalisation >24 hrs, incapacitation >4 weeks) 4. **Fatal**(single or multiple) | **Likelihood of Occurrence (b)***likelihood for the risk to occur* ***after*** *you have undertaken precautionary measures.*  1. **Remote** (almost never) 2. **Unlikely** (occurs rarely) 3. **Possible** (could occur, but uncommon) 4. **Likely** (recurrent but not frequent) 5. **Very likely** (occurs frequently) |
| |  |  |  | | --- | --- | --- | | **Rating Bands (a x b)**  *Risk ratings of above 9 will require further review to establish the safety of the event/research.* | | | | **LOW RISK**  **(1 – 8)** |  | Continue, but review periodically to ensure controls remain effective | | **MEDIUM RISK**  **(9-12)** |  | Continue, but implement additional reasonably practicable controls where possible and monitor regularly | | **HIGH RISK**  **(15 - 25)** |  | -STOP THE ACTIVITY-  Identify new controls. Activity must not proceed until risks are reduced to a low or medium level | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **Trivial** | **Minor** | **Moderate** | **Serious** | **Fatal** | | **Remote** | **1** | **2** | **3** | **4** | **5** | | **Unlikely** | **2** | **4** | **6** | **8** | **10** | | **Possible** | **3** | **6** | **9** | **12** | **15** | | **Likely** | **4** | **8** | **12** | **16** | **20** | | **Very Likely** | **5** | **10** | **15** | **20** | **25** | |

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