

NOMAD Laboratory BRIC Laboratory pack

Version 1 28/10/25

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Advanced screening form

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Advanced screening Form: Balance and walking studies NOMAD Laboratory

Criteria	Tick if present
Recent fracture that has not healed fully (arms, legs or trunk)	
Plaster or tape allergy	
Open wound or fungal infection on foot	

If the participant has any of the above criteria they are not able to participate in a study

BRIC addendum Participant Information sheet

Version 1 28/10/25

BRIC addendum Participant Information sheet

To measure walking and balance people will be using a treadmill that has force plates under each belt that can record the forces going through the legs. Movement may be recorded using reflective markers that are placed on specific landmarks on the legs and trunk. To assess walking people usually need to be wearing a tight fitting shorts and t-shirt that we can supply. Please contact the lead investigator if you prefer not to wear shorts and we can explore other options. As people often use the treadmill when barefoot the treadmill is cleaned between participants with antibacterial solution.

Depending on the study you will be asked to walking or stand on the treadmill. In some cases we will test balance by moving the treadmill forwards and backwards quickly and unexpectedly. As we are looking at walking and balance there is a risk of over balancing and falling. The risk will vary depending on the tests and your underlying condition. There are handlebars either side to hold onto to prevent you over balancing and falls. Depending on the study we may also ask you to wear a safety harness that can prevent falls. The treadmill has safety features such as light gates that will stop the treadmill if you move too far forwards or backwards. If the treadmill is in a mode that it is able to move up and down and side to side there will also be light gates that prevent people from falling into the gaps between the floor and the treadmill.

If you want to stop the test at any time please tell the research team and they can stop immediately. The researcher may also stop the test if they think you are at a high risk of over-balancing or experiencing excessive fatigue.

Enhanced Participant consent Form

Version 1 28/10/25

Enhanced Participant consent Form

<Title of study>

Professor Jonathan Marsden

Please initial the below boxes if you agree with the statements given below:

<i>Statement:</i>	<i>Initials:</i>
I have read and understand the study Participant information sheet.	
I have had the opportunity to ask questions.	
I have had sufficient time to consider my participation ahead of providing consent.	
I understand that I am free to withdraw my participation and data from the study up until data collection has finished.	
My participation in this study is completely voluntary, and I may withdraw from the study without repercussion or impact on any future associations with the researchers or with the University of Plymouth.	
I understand that my data will be held in accordance with the University of Plymouth's 'Research Participant Privacy Notice' and 'Data Protection Policy' and GDPR (2018).	
I understand the risk associated with the assessment of walking or balance and that I can stop the test at any time	
I understand that my data will be held in confidence to those named in the research team (above) as well as the data asset owners, as per the University's 'Research Data Policy'.	
I understand that my data cannot be withdrawn after study completion and anonymisation.	
I understand that my data will be securely destroyed after 10 years of secure storage at the University of Plymouth in accordance with the 'Data Retention and Erasure Policy'.	
I understand that my anonymised data may be shared with other research groups for secondary analysis of data.	
I understand that my data may be published externally (in presentations, magazine or journal articles) and that in this instance my data would be anonymous and I would not be identifiable either directly or indirectly.	
I hereby give consent to participate.	

Participant name:

Witness name:

Participant signature:

Witness signature:

Date:


Date

University of Plymouth

Risk Assessment Form (RA1)

All staff undertaking risk assessments or checking risk assessments for student projects must be competent and have undertaken the University's Risk Assessment training.

Risk Assessment Form

Assessment Ref. No.		6572		Activity Assessed		Motor Control Laboratory and MRI suite				
Assessment Date		16/09/25		Faculty / Directorate		Health				
Assessor		J Marsden		School / Service		Health Professions				
Version No.		2		Additional individuals involved in developing the RA						
Signature of Assessor						Signature of Academic Supervisor / Approver				
Risk Score Matrix						Risk Score and Description				
		Severity					Risk Score	Risk Level	Category	Description
		Insignificant	Minor	Moderate	Major	Fatal				
Likelihood	Very Unlikely	1 Green	2 Green	3 Green	4 Green	5 Amber	1 – 4	Low	Acceptable	No further actions needed
	Unlikely	2 Green	4 Green	6 Amber	8 Amber	10 Red	5 – 9	Medium	Tolerable/Adequate	Should be reviewed to ensure that there is nothing else which could be done
	Possible	3 Green	6 Amber	9 Amber	12 Red	15 Red	10 – 15	High	Undesirable	Immediately review current control measures, and where appropriate decide on further actions
	Likely	4 Green	8 Amber	12 Red	16 Red	20 Red	16 - 25	Very High	Unacceptable	Stop activity and make immediate improvements
	Almost Certain	5 Amber	10 Red	15 Red	20 Red	25 Red	<i>Likelihood (L) x Severity (S) = Risk Score (RS)</i>			

What is/are the hazard(s) involved with the activity being undertaken?	Who might be harmed and how?	What are you already doing to control the risk?	Risk Score with current controls in place			What further action is necessary? (Add these actions to the action plan below).	Target Risk Score Likelihood x Severity = Risk Score		
			L	S	RS		L	S	RS
Wearing EMG electrodes and reflective markers	Skin reaction to the participant	<p><i>Participants are asked whether they have had plaster reactions in the past. If they have serious skin reactions they are advised to not participate. The skin is checked after removal of the hypoallergenic EMG pads</i></p> <p><i>People are excluded if they have open wounds on the scalp or legs where electrodes or used for recordings are attached</i></p>	1 - Very Unlikely	3 - Moderate	3 - Low Risk	Monitoring for electrode reactions will occur during the study and electrodes are removed if there are any signs (e.g. redness) or symptoms (e.g. itching)	1 - Very Unlikely	2 - Minor	2 - Low Risk
Stepping or walking Task or unexpected perturbations	Falls and trips during the stepping task or visual perturbation to the participant	<p><i>The participant will have handrails either side to save themselves.</i></p> <p><i>When unexpected perturbations are given the person will always need to wear a harness. A harness can be worn in other conditions if there is deemed to be a significant risk of falls (e.g. assessment in patient groups ; elderly)</i></p>	2 - Unlikely	2 - Minor	3 - Low Risk	If people become imbalanced they can wear a harness that would prevent falls. This is not routinely used as it can obscure markers on the body and healthy participants do not require it with simple stepping tasks or walking.	1 - Very Unlikely	2 - Minor	3 - Low Risk

Refer to scoring matrix on page ¾

Action Plan and Monitoring

This section should be completed by the Risk Assessor and discussed with Manager / Academic Supervisor		This section should be completed by the Manager / Academic Supervisor for monitor and review		
Hazard	Action required	Action assigned to	Target date	Date Completed
Wearing EMG electrodes and reflective markers	Monitoring for electrode reactions will occur during the study and electrodes are removed if there are any signs (e.g. redness) or symptoms (e.g. itching)	J Marsden	05/01/26	
Stepping Task	If people become imbalanced they can wear a harness that would prevent falls. This is not routinely used as it can obscure markers on the body and healthy participants do not required it as the stepping task is quite simple to undertake.	J Marsden	05/01/26	

Review

When reviewing this risk assessment remember to move completed actions into the ‘what are you already doing.’ column, as these actions should be in place by the time you review the risk assessment. You should review your risk assessment if you think it might no longer be valid (e.g. following an incident in the workplace or if there are any significant changes to hazards, such as new work equipment, work activities, personnel etc.)

Severity Table

Severity of injury	Examples	Score
Insignificant	None or very insignificant injuries, health effects, damage or disruption to work. Short-term and/or localised environmental harm.	1
Minor	Cuts bruises, mild skin irritations, mild headaches and pains requiring minor first aid treatment. Minor property damage or disruption to work. Notable contributor to environmental harm.	2

Likelihood Table

Severity of injury	Examples	Score
Very unlikely	Good control measures are in place. Controls do not rely on a person using them (i.e. personal compliance with safety rules). Controls are very unlikely to break down. People are very rarely in this area or very rarely engage in this activity.	1
Unlikely	Reasonable control measures are in place but they do rely on a person using them (some room for human error). Controls unlikely to breakdown. People are not often in this area / do not often engage in this activity.	2

Moderate	More serious injuries or ill-health requiring time off work or a hospital visit for example burns sprains, strains, short term musculoskeletal disorders, cut requiring stitches, back injuries, fractures to fingers and toes. Short term absence relating to physical or mental health issues. More serious property damage or disruption. A significant contributor to environmental harm.	3
Major	Broken limbs, amputations, long-term health problems or longer absence. Acute illness requiring medical treatment. Loss of consciousness, serious electric shock, loss of sight. Major property damage, major disruption to work. A major contributor to significant environmental harm.	4
Fatal	Injury or ill-health which leads to death either at the time, soon after the incident, or eventually, as in the case of certain occupational diseases, such as asbestos-related cancers. Catastrophic business losses. The major contributor to significant environmental harm.	5

Possible	Inadequate controls are in place, or likely to breakdown if not maintained. Controls rely on personal compliance. People are sometimes in this area or sometimes engage in this activity and situations sometimes arise from this activity.	3
Likely	Poor controls in place. Heavy reliance on personal compliance (lots of room for human error). People are often in this area / engage in this activity on a regular basis / situation often arise from this activity.	4
Almost certain	No controls in place where there should be, exposure to the hazard is expected to occur in most circumstances. The activity is considered such high risk that it will `certainly lead to injuries.	5

Induction checklist

Version 1 28/10/2025

Induction Checklist: NOMAD Laboratory Brain Research Imaging Centre

Date:

Name of students / Staff		
Task	Relevant SOP	Initial if completed?
Access to SOPs provided on HMFL site?	SOP overview.docx	
Data storage demonstrated	SOP overview.docx	
Costs of consumables discussed	SOP overview.docx	
Risk assessment form discussed	SOP overview.docx	
Safety procedure for whole treadmill perturbations demonstrated	SOP overview.docx	
Access to NOMAD lab and BRIC provided E mail K Callicott	SOP overview.docx	
Clinical use of BRIC and DDRC discussed	SOP overview.docx	
Lab induction with written instructions	SOP turn on MGAIT.docx	
Given and independent use checked		
Analysis SOP and programs demonstrated	Processing Data BRIC.docx	
Ethics approval checked		

Outcome

Use laboratory with supervision	Use laboratory independently

Signed by qualified member of staff

Name

Signature

SOP Overview Version 1 28/10/25

General Information NOMAD / Motor Control Lab

The NOMAD lab is designed to assess whole body sensorimotor control in healthy participants and patient populations. The main components consist of :

- Instrumented, split belt programmable treadmill
- 12 camera vicon system
- Visual and sound feedback
- Surface Electromyography (Cometa)
- 1401 AD converter as well as the vicon lock box AD converter

It can integrate:

- Mobile EEG
- Constant current stimulation (peripheral nerve or galvanic stimulation)
- Startle responses
- Transcutaneous vagal nerve stimulation
- Electrogoniometer and accelerometry.
- Muscle vibration.
- Strain gauges

Standard operating procedures

Standard operating procedures are stored on the HMFL sharepoint site and the BRIC website [BRIC motor control lab](#)

Data storage

Data can be stored in a few locations:

- On the D Flow computer
- On the Motion capture (vicon) computer
- On the lab laptops

Currently data is moved via dedicated USB sticks that are located in the lab safe (code 710). Do not use your own memory sticks to transfer data. Data should be transferred to the relevant secure university site. For School of Health Professions students this will be a dedicated folder on the HMFL sharepoint site. You will be given access to this site at / after induction.

At the end of the study data should be transferred for long term storage according to UOP ethics and integrity committee regulations. Consumables

You should not store your data on your personal computer

Costs

Below are some indicative costs of consumables. It costs about £7-10 in consumables per participant. Please use consumables carefully. Do not take any ape outside of the lab environment.

Consumable	Site	Cost
Small EMG electrodes	https://www.unimed-electrodes.co.uk/15x20mm-Disposable-solid-gel-electrode-Snap-Connector--Box-of-400/78	£135.20 for box of 400
Large electrodes	White Sensor ECG Electrode for Monitoring x 50 – Medisave UK	£5.99 for box of 50
Blenderm 25mmx4.5 m	Unimed 3M Blenderm Surgical Tape 25mm x 4.5m Roll. Box of 12	£26.72 12/box
Blenderm 50mmx4.5m	Blenderm Surgical Tape 5cm - Box of 6 – Medisave UK	£35.99 box of 6
Adhesive Rings	Unimed Adhesive Rings 20mm x 8mm. Box 500	£39.20 / box of 500
Alcohol Wipes	Medipal Chlorhexidine Skin wipes - Pack of 200 – Medisave UK	£4-50 box of 200

Risk Assessment

Past risk assessment forms are stored on the HMFL and BRIC sites ([risk assessment](#)).

Each project will need to determine risks for their study. Common risks include

- Risk of electrical shock- food and drink is not allowed in the laboratory. Do not have any fluids in the vicinity of the treadmill as spillage could cause damage to electric parts under the raised floor.
- Risk of falls – consider the use of the overhead harness
- Manual handling risks

There are several safety features with the Motek treadmill that you would need to be aware of depending on the type of project. These are:

Light gates: At the end of the treadmill there are light gates that when broken will immediately stop the treadmill.

V Gait Mode- The treadmill can move in a medio-lateral translation and a pitch movement (incline). To active this mode to need to:

- Undo the stabilisers at the top left and bottom right corners. These normally stabilise the treadmill when it is not in V gait mode to improve the Centre of pressure recordings

- Surrounding flaps - all flaps except for the ones in line with the treadmill must be moved up. The flaps rest on switches and the treadmill will not work if any flap is down.
- Upright light gate. With the flaps up there is a risk of operators falling into the space created. The upright light gate must be aligned so the sensors are green. Breaking this beam will stop the v gait.

If a light switch is broken the system will show "System suspended". The SOFTWARE suspend button must be clicked to re-enable the system.

In the event of an emergency there are two emergency stop buttons (one on the operator desk and one on the Dflow hardware cupboard) that must be firmly pushed down. This will stop the treadmill motion. Following an emergency stop the system must be re-set.

Nurse call button –

Mode	Assistance	Action
1	Assistance please- Nursing staff	Press big ORANGE button
2	Urgent assistance- Duty doctor and nursing staff	Press big ORANGE button then the ALARM button
3	EMERGENCY immediate assistance- All available trained staff	The ORANGE button again

Fire risk

Open doors- do NOT at any time wedge the door open. The doors are fire doors.

Do not daisy chain extension leads together.

Do not use electrical equipment if there is any sign of damage- contact your supervisor and make sure it is switched off.

Room Booking and Access

Room booking will be done via the lab calendar that can be accessed via Useful Links:



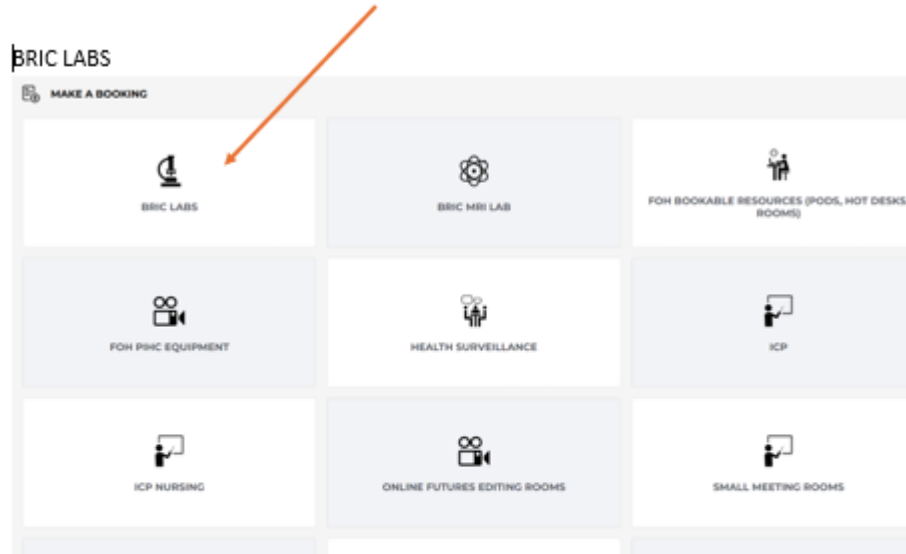
Corporate self service and information



Room Booking

Corporate self-service and information





NOMAD lab Room 90.27

Supervisors will need to book the lab for MSc students. Access to the booking system for supervisors can be obtained from Kathryn Callicott (Senior Research Administrator) kathryn.callicott@plymouth.ac.uk

Kathryn Callicott can also arrange a BRIC pass that provides access. This should be obtained via your supervisor.

Access is from 8 am -5 pm. You would need to provide a passport photo. A temporary pass (e.g for a visiting lecturer) can be obtained via the DDRC front desk. It is better to arrange this in advance.

Clinical Use and Professionalism

The BRIC is used for clinical MRI scans during the week. The motor control laboratory is used for clinical gait assessment on the first and second Wednesday of each month. Please be aware that this is a clinical area and behave with professionalism at all times.

Suspension

Failure to comply with the SOP can result in suspension from the laboratory. This may affect your studies.

SOP Turn on M Gait Version 1 28/10/25

Introduction


This booklet provides instructions on turning equipment on; setting up nexus and dflow for a recording session; calibrating a participant. A summary of Dflow programs is given in appendix 1.



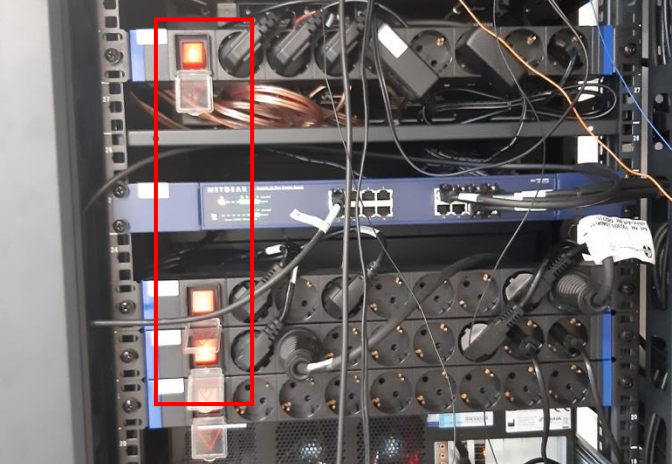

You should not use the equipment without supervision unless you have been training to do so by a qualified researcher.

No programs should be altered without prior consent of Prof J Marsden

If developing new programs copy an old program and paste it into a project >application folder

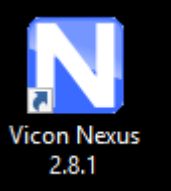
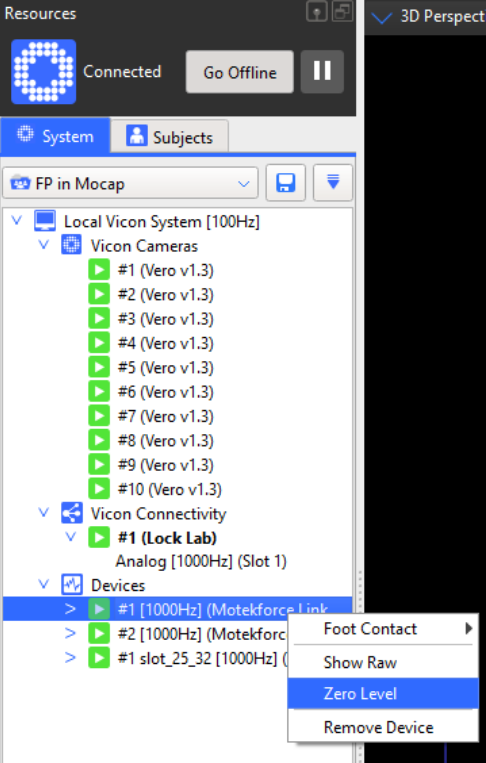
1. Turn on Equipment

Instruction	Illustration
a. Far right power transformer	 A photograph showing a piece of equipment. On the left, there is a blue power switch with a white handle and a red 'STOP' button. Below it is a black chair. To the right, there is a white vented panel. Below the vent, there are three indicator lights: 'POWER' (lit), 'ENABLE OUTPUT' (unlit), and 'OUTPUT ACTIVE' (lit). A CE mark is visible on the equipment's casing.

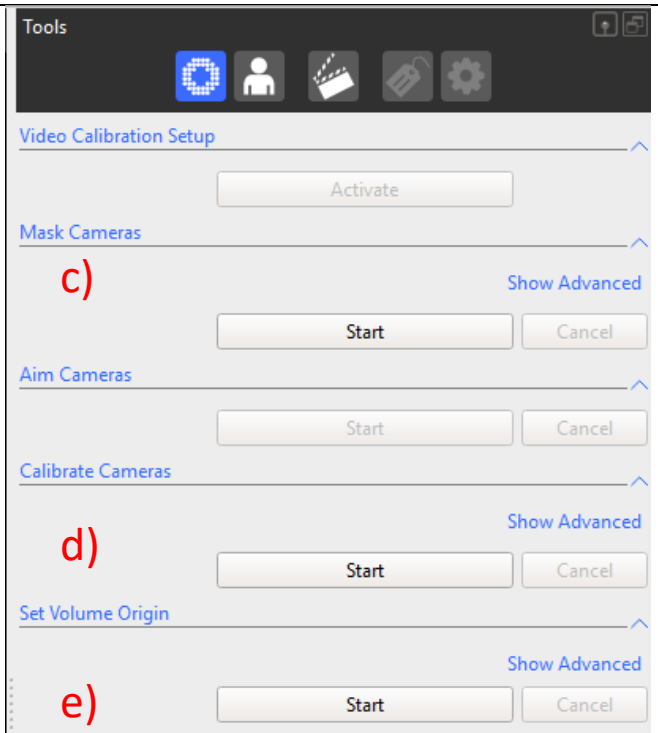
<p>b. MIC far right wait for emergency light to switch on and then press the button</p>	 <p>Emergency Light</p> <p>The image shows a control panel with a 'POWER' indicator light, an 'EMERGENCY' red button, and a 'MAIN SWITCH' handle. Below these is a 'RESET EMERGENCY' button, which is highlighted with a red box.</p>
<p>c. 3 Phase powers far left- TURN CLOCKWISE</p>	 <p>The image shows four 'Bals' brand three-phase power switches labeled D86/4.2, D86/3.1, D86/2.3, and D86/1.3. Each switch has a blue handle and a blue cable connector.</p>
<p>d. Units in rack via switches at back (x3)</p>	 <p>The image shows a server rack with several units. Three red indicator lights on the back of the units are highlighted with a red box.</p>
<p>e. Turn on audio in the rack</p>	 <p>The image shows a Yamaha audio unit in a rack. A red box highlights a small button on the left side of the unit.</p>
<p>f. Switch on projectors</p>	<p>Use remote controls on main desk</p>
<p>g. Computer log in</p>	<p>Password for both = operator</p>

2. Nexus – set up vicon system

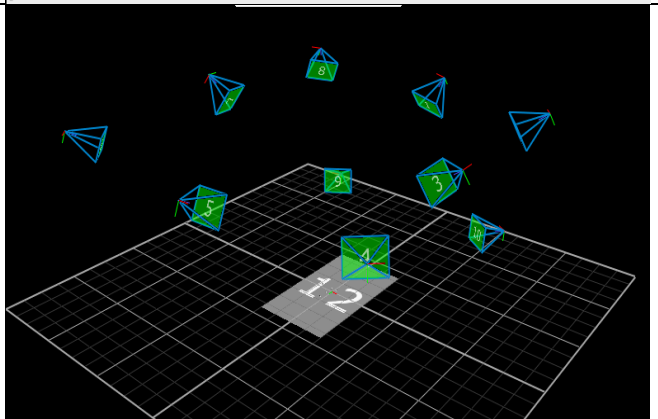
1) Tool

Instruction	Illustration
<p>a. On the MOCAP computer (left screen) open NEXUS from the desktop.</p>	
<p>b. Resources >Go Live>Devices> (Check force plates are clear) Zero level (right mouse click) for both force plates and check analogue is live (by green arrow status)</p>	
<p>c. Tools>Mask camera >start>stop when complete (make sure pause is not on-when all white lights in the figures are blue, masking is complete and can stop)</p>	
<p>d. Tools>Calibrate cameras – use wand (on strobe setting) until cameras are green from purple and not flashing. Check on screen green feedback.</p>	

e. Tools> Set volume origin
– use the metal guide placed in the treadmill (move it between the treadmill belts until you feel a metal stop and then move the guide over the stop). Place the wand on the metal guide using strobe setting (ensure spirit level bubble positioning central).

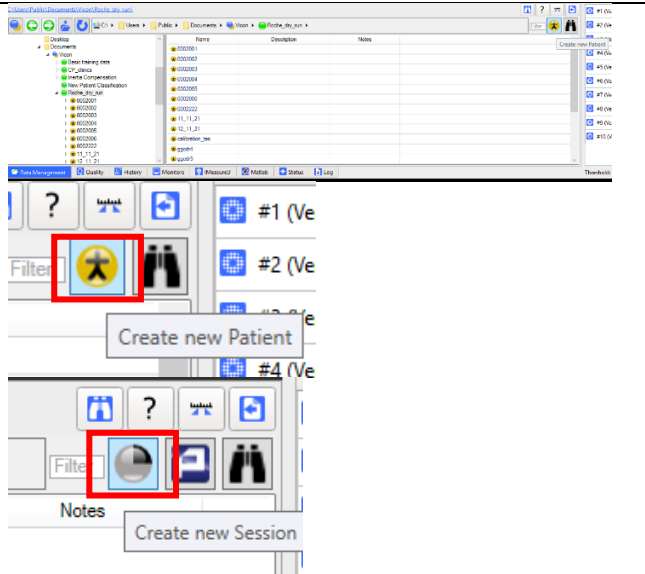
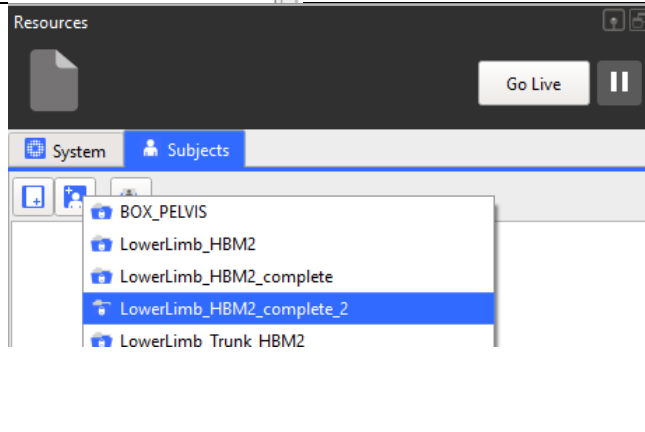


f. With 3D perspective (from 'camera' showing in main screen press set volume origin>start>set origin. You should see the cameras align correctly (9 and 10 are the front)



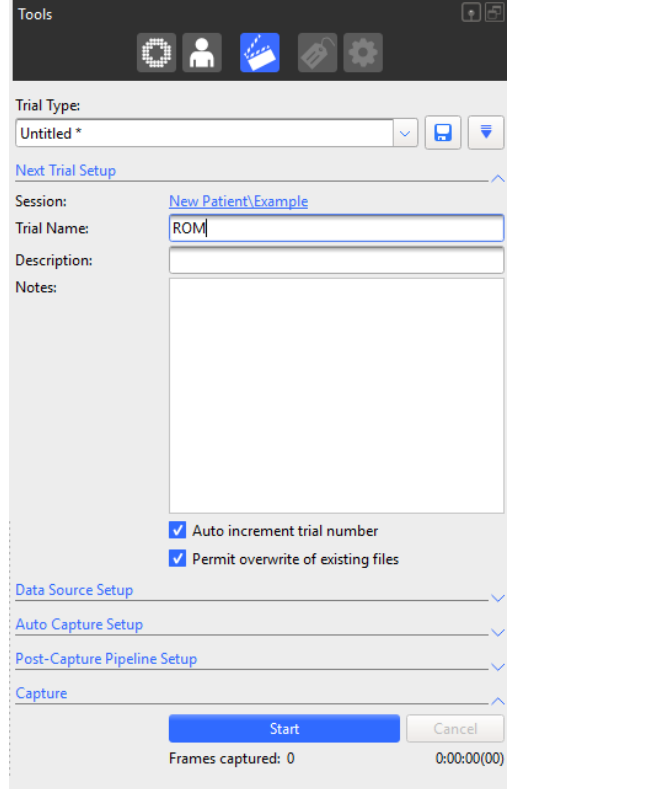
3. Vicon Nexus Set Up patient

For each study you will need a new subfolder. For MSc projects we have created a subject for each project with a session indicating the subject / test

Instruction	Illustration
<p>Data Management (bottom tab)</p> <ul style="list-style-type: none"> ➤ Create the subfolder under Vicon ➤ create new Patient (use SubjectID) ➤ add session(vicon)>double click on the new session 	
<p>Under resources Subjects>”create a new subject from a labelling skeleton” Add template</p> <p>Common templates: LowerLimb_HBM2 LOWERLIMB_Trunk_HMB2</p>	

a. Tools > clapperboard
> Trial name
i. For calibration use **ROM** This is the calibration T-pose)

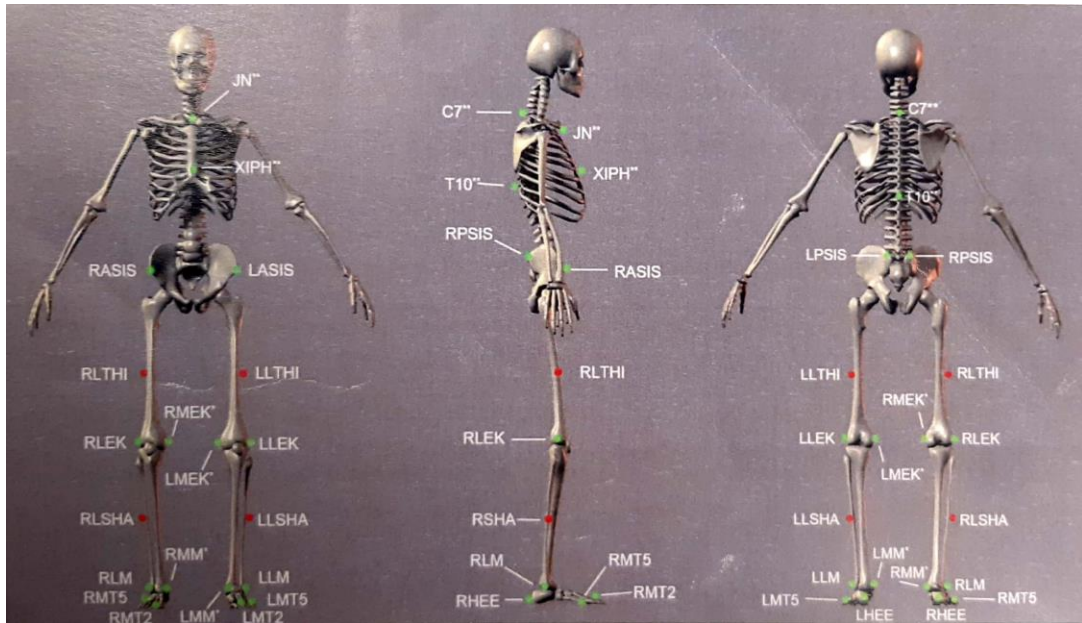
****see instructions on PATIENT SET UP SECTION****



4. Patient and participant set up

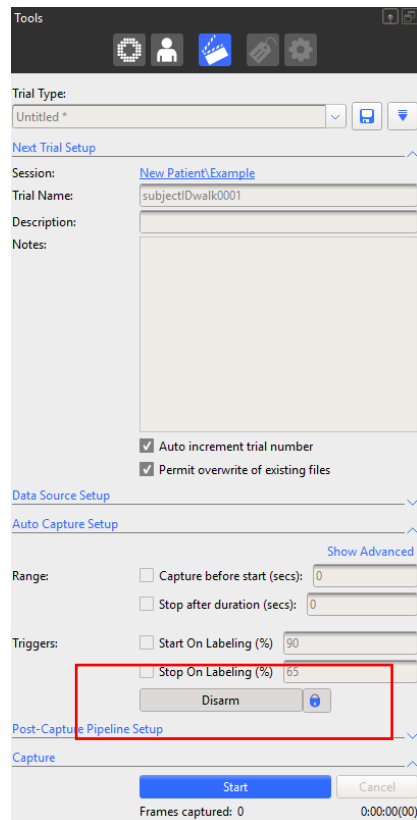
Before any patient / participant preparation people need to be informed of the process and a written informed consent obtained.

- 1) Change into T shirt and shorts keep trainers and provide socks if required that allow the malleoli to be visible. Provide trainers if required.
- 2) Add markers according to the template being used. The set up for LowerLimb_Trunk_HMB2:



- 3) Ask participant to stand on the treadmill in T pose (when ready to start).
 - a. Start recording ROM recording in nexus
 - b. Ask participant to walk 2 steps forwards
 - c. Run pipeline HBM<_RECONSTRUCTION
 - d. Ask participant to sit down / inform them it will take 1 minute to calibrate.
 - e. Run the pipeline and check the stick figure.
 - i. If problems then re-run the ROM else....

- f. alter trial name to walk0001Under tools >clapper> autocapture setup click “arm” and lock sign (ready for automatic data collection)



5. DFLOW set up

- a) Open D-Flow 3.36.2
 - a. Click yes to allow “app to make changes to your device”
- b) File>open D:>CARENResourews>Projects>xxxxx>Projects
 - a. There are different projects for different types of experimental set up. Common ones see appendix 1 for a selection and brief description
 - b. Password if using high performance mode = 1969
- c) Once project is open
 - a. Press F2 to see the parameter box
 - b. Add subject ID (make sure you press return so this has a white (not purple) background)
 - c. Add gender
- d) Once subject is calibrated using a T Pose in Vicon
 - a. Make sure vicon is LIVE
 - b. Dflow Hardware:
 - i. Press connect for
 1. NMexus VDS
 2. Videoserver
 3. Treadmill
 4. Interface kit (if present)

- c. If using a whole body model then calibrate DFLOW. Stand participant with either foot on a treadmill belt. Press Calibrate Subject.> Acknowledge
- d. If it does not calibrate then the system is not “seeing” the labelled markers
- e. Press Green arrow so the application is “live”
- f. Move the windows folder (Data-shortcut) from the desktop so you see the data being recorded.

6. Appendix 1 Common Applications

Project	Application name Under Applications	General Description
Posturography_jm	Posturography_DDRC_v2.1_N6	<p>SWAY</p> <p>Runs x6 30 s trials with an auditory cue start / STOP</p> <p>Condition labels FAEO FAEC FTEO FTEC TANDEMEO TANDEMEC</p> <p>Facility to trigger vicon data</p> <p>Can run with 1 unlabelled marker on C7 and label marker during off line processing</p>
Posturography_jm	Perturb_tes_10_-8_23_script	<p>PERTURBATION AND STEPPING</p> <p>Uses high performance mode</p> <p>Expects lowerlimb_Trunk_HMB2 template</p> <p>With fixed sequence ticked runs x12 fixed sequence of forward and backward perturbations. 0.5 (BACKWARD) IS REPEATED X6</p> <p>Left target / right target brings on a visual target to step onto from a fixed foot position.</p> <p>Vicon is triggered with a 0.5 s baseline period.</p>
MSc	Walking_LOWER_LIMB_HBM2	<p>WALKING WITH TRIGGER FOR FSCAN</p> <p>Runs walking trial expecting lowerlimb_HMB2 template</p>

		<p>No scenery</p> <p>Treadmill count down present</p> <p>Facility to trigger vicon data</p> <p>Trigger pulse out can be used to trigger 1401 and thus synchronise other equipment (eg In shoe FScan)</p>
MSc	Record_Mox_Manual	<p>Allow you to record a Mox file from a Vicon file. This is used to re-sample data post vicon processing. Note the start of the recording is manual (ie button press).</p> <p>Data has to be change in the MoCap module****</p>
Clinical_gait Assessment	Gait-Feedback-flatscreen_treadmill_t riggervicon	<p>WALKING WITH EMG + SELF PACED</p> <p>runs walking trial expecting lowerlimb_Trunk_HMB2 template</p> <p>Scenery</p> <p>Treadmill count down present</p> <p>Self paced possible</p> <p>Facility to trigger vicon data</p> <p>Graphs available for feedback</p> <p>EMG analogue set up for data collection</p>

Insurance/ Indemnity statement Version 1 28/10/25

BRIC standard wording applies

Data management plan version 1 28/10/25

Plan Overview

A Data Management Plan created using DMPonline

Title: NOMAD Lab General Data management plan

Creator: jon Marsden

Project Administrator: jonathan Marsden

Affiliation: University of Plymouth

Template: DCC Template

Project abstract:

This is a general data management plan for the NOMAD laboratory Brain Research Imaging centre.

Data on movements

ID: 189429

Start date: 28-10-2025

End date: 28-10-2027

Last modified: 28-10-2025

NOMAD Lab General Data management plan

Data Collection

The following data can be routinely collected:

3D motion analysis (including kinematics and kinetics)- this can be as simple as 1 marker moving in space.
Motion analysis data is calculated by using the GOAT toolkit.

Ground reaction forces

Surface Electromyography

Additional data can be recorded such as mobile Electroencephalography.

Data is collected via

- Vicon 3D motion analysis
- Motek treadmill incorporating two force plates
- Cometa surface Electromyography

- 1401 AD converter as well as the vicon lock box AD converter to record additional analogue signals

It can integrate:

- • Mobile EEG
- • Constant current stimulation (peripheral nerve or galvanic stimulation)
- • Startle responses
- • Transcutaneous vagal nerve stimulation
- • Electrogoniometer and accelerometry.
- • Muscle vibration.
- • Strain gauges

Data collection can only occur following training by trained staff currently (J Marsden, S Hall, H Gunn). An induction checklist will be completed and people will be assigned the ability to collect data with or without supervision depending on their experience.

Documentation and Metadata

The collection of the data is covered in standard operating procedures (SOP)

- Overview (version 1 28/10/25)
- Turning on the MGait (version 1 28/10/25). This contains information about collecting 3D, force plate and EMG data and a list of common programmes used in MATLAB to analyse data.

Ethics and Legal Compliance

All projects must have appropriate ethical approval prior to starting. In all cases University of Plymouth ethical approval is required. If patients are being recruited via the NHS then additional IRAS/HRA approval is required. Approval letters must be seen by the induction team prior to starting any project.

Ethical issues to consider are:

Risk of falls and trips leading to musculoskeletal injury. Handle bars and harnesses are available to prevent falls. Infection and injury. If walking barefoot on the treadmill people cannot have any open wounds or fungal infections on the foot.

Skin reactions associated with taping (markers and EMG electrodes). People with plaster reactions and open wounds over the area of intended taping should not participate.

All IPR issues should be discussed with the IPR officer at the University of Plymouth prior to commencing a study.

Storage and Backup

Data is initially stored on two computers (Vicon and motek). These are dedicated non-university computers. There are dedicated usb sticks that can transfer the data from these computer to a university laptop. Do not use any other usb sticks and do not transfer data onto non -university computers. Data is stored in a dedicated sharepoint site. For MSc projects for the school of health professions this is the HMFL site and students will be provided with access to this site by the project supervisor.

Data security and access is managed by Profs S Hall and J Marsden.

Selection and Preservation

All data should be stored. Anonymised data will be stored for a period of 10 years. Consent forms will be stored in locked filling cabinets or via on line forms. Hard copy forms will be scanned after project completion for digital storage. All personal information should be deleted upon study completion (this can include a period of data analysis prior to sending out lay summaries to participants if indicated).

Data should never be stored on non university computers. Data stored on personal one drive folders for the purposes of data analysis should be transferred to the appropriate sharepoint site at the end of the study.

Data will be store electronically for a period of 10 years on dedicated sharepoint sites.

Data Sharing

Data sharing can occur. There should be a clear data sharing plan that will include the chief investigator / supervisor. Students are not allowed to share data with other parties without written permission chief investigator / supervisor and a data sharing plan.

Data sharing plans can vary from project to project and may come with specific restrictions.

Responsibilities and Resources

Profs S Hall and J Marsden are responsible for data management in the NOMAD laboratory. They may delegate this function to appropriately trained project supervisors.

Programs to support data analysis are store on the vicon computer.

An additional vicon licence allows analysis of data on a separate computer that will be set up in the computational suite. Once on sharepoint university computers with matlab installed will be able to analyse data.

Quality Assurance Version 1 28/10/25

These are undertaken by laboratory supervisors

Weekly checks

- Condition Codes- these are generated via phigit switches. The wires can come loose and therefore need a weekly check.

Open condition code program in DFLOW and press condition code 1 and 2 buttons. Check the signals appear in nexus /vicon

- EMG charge cometa EMG sensors. Check that all are activated on the cometa unit and EMG signals are available in nexus.
- Force plates- place standardized weight onto each force plate and check correct weight registered. Check that COP is in the right location
- Vicon – check reflective markers are not chipped and if so move to secondary box. Check camera positions and move if required.
- On starting up and undertaking a calibration check that all cameras are within limits (green on calibration).

Once a month check

- Calibrate the video using the video calibration tool.

Yearly Maintenance

Yearly maintenance is undertaken by the Motek team. This occurs in February and payment for maintenance (currently £15,800) is required for October with payment best in Sept so that it can be processed in time.