

SAFE RETURN PLAN FOR THE BIOMECHANICS LAB WORK/PROTOCOL

The objective of implementing a plan ensures the health and safety of personnel/and participant recruitment by reducing the potential for COVID-19 transmission at indoor spaces.

Disclaimer:

This summary has been made to report essential information to facilitate a safe return to research in the area of Human Movement Analysis. It is intended to offer a guidance regarding best practices in practical assessment procedures performed in the Lab, with the aim to minimize the risk of exposure of COVID-19 for participants and researchers involved. Furthermore, the information here reported has been retrieved from different international entities as The World Health Organization (WHO), The European Centre for Disease Prevention and Control (ECDC), The US Centers for Disease Control and Prevention (CDC), The Federation of European Heating, Ventilation and Air Conditioning Associations (REHVA), The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) based on the available scientific knowledge of COVID-19 available. And it has no intention to substitute any current policy imposed by your current Government and/or Institution.

Acknowledgment:

This plan was developed as a 3DAHM initiative in collaboration with the Interuniversity Centre of Bioengineering of the Human Neuromusculoskeletal System, in the person of Dr. Amaranta Orejel Bustos.

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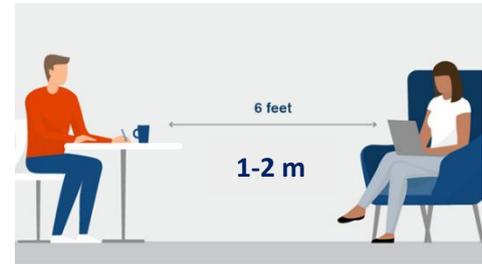
1. MAINTAIN SOCIAL AND PHYSICAL DISTANCING

All personnel must maintain a distance of at least 6 feet (1-2 m) between individuals.

Measures to prevent close contact

(including, not limited to)

- Separate workstations by at least 6 feet (1-2m).
- Allow only infrequent and intermittent passing within 1-2 metres.
- If possible, separate entry and exit pathways into building or work area.
- Alter break times.
- Avoid touching other people (e.g., handshakes).



Additional considerations for laboratories

- Minimize physical interactions during workplace activities; ensure minimum 6-foot (1-2 m) separation by physical barriers, if possible indicate distances on floors with tape. Limit the number of people in a space to allow for a 6-foot (1-2) separation.
- For close contact interactions (less than 6 feet (1-2m) lasting for more than 10 minutes) a surgical mask and eye coverings (goggles or face shield) should be worn. Research participants must wear face coverings during in-person interactions.

Workspace organization and occupancy

- Require one-at-a-time access at designated drop-off/pick-up points.
- Implement drop boxes or bins to collect and distribute shared equipment and other items that must be passed from one person to another.
- Small, narrow offices/facilities on the order of 100-150 square feet (9.30-13.94 m²) can likely accommodate only one person at a time.
- Square or rectangle work areas larger than 200 square feet (18.6 m²) can likely accommodate more people but keep the number to a minimum.

Work schedules

- Coordinate work schedules to minimize the number of people in a work area at the same time.
- Maintain a log of visitors to the worksite and keep the log for 30 days.
- Time spent in a laboratory should be spent performing necessary data collection/test analysis and other activities that require physical presence

Regarding building engineering controls

- Consider enhancing ventilation to facilitate clean air supply to work area.
 - Check REHVA Ventilation infographic COVID-19 guidance for School Buildings (<https://www.rehva.eu/activities/covid-19-guidance/rehva-covid-19-guidance>)

2. PRACTICE GOOD HYGIENE

An important reminder to reduce the risk of spreading COVID-19 by doing the following:

- Wash hands often with soap and water for at least 20 seconds. If water is not available, use hand sanitizer with at least 60% alcohol content.

- Avoid touching your eyes, nose or mouth with unwashed hands.
- Avoid contact with people who are sick.
- Stay home while sick and avoid close contact with others.
- Cover your mouth and nose with your elbow or a tissue when coughing or sneezing, and immediately dispose of the used tissue.
- Set up secondary handwashing or sanitizing stations with either hand sanitizer or wipes/towelettes.

3. CLEAN AND DISINFECT SURFACES

Clean and disinfect worksite surfaces and equipment regularly.

Research laboratory

- Keep a cleaning schedule to maintain general housekeeping to prevent build-up of dirt and disorder. Maintain a cleaning log that includes the date, time, and scope of cleaning.
- Make cleaning supplies (disposable gloves, wipes, gowns or a lab coat to protect contamination of clothing) available to do spot cleaning when necessary.
- Purchase single use disinfectant wipes for touch points within their workspaces.

How often should it be done?

The frequency of cleaning and disinfection should be determined based on occupancy and use conditions. Work areas should be clean and disinfected regularly, between uses, or when unclean.

Clean and disinfect frequently touched surfaces (e.g., doorknobs, tables, computer keyboards, handrails, exercise rooms).

- For surfaces touched by multiple workers, clean and disinfect on a frequent schedule, or between workers.
- For surfaces touched by one individual, clean and disinfect periodically, at least once per shift or when unclean, as a minimum.
- Clean shared equipment after each use.

Safe use of products

Follow the manufacturer's instructions for use of all cleaning and disinfecting products, and use personal protective equipment as required.

Options to disinfect hard, non-porous surfaces:

- An ECDC-registered disinfectant approved for use against SARS-CoV-2 (European Centre for Disease Prevention and Control. Disinfection of environments in healthcare and nonhealthcare settings potentially contaminated with SARS-CoV-2. ECDC: Stockholm; 2020) or
- An alcohol solution with at least 70% alcohol **or**
- A 10% bleach/water solution

Avoid putting disinfectant gels or liquids on electronics and other equipment, unless they have been indicated as safe to use on those devices.

	Healthcare setting	Non-healthcare setting	General settings
Surfaces	<ul style="list-style-type: none"> • Neutral detergent AND • Virucidal disinfectant OR • 0.05% sodium hypochlorite OR • 70% ethanol <p style="text-align: center;">[S]</p>	<ul style="list-style-type: none"> • Neutral detergent AND • Virucidal disinfectant OR • 0.05% sodium hypochlorite OR • 70% ethanol <p style="text-align: center;">[S]</p>	<ul style="list-style-type: none"> • Neutral detergent <p style="text-align: center;">[S]</p>
Toilets	<ul style="list-style-type: none"> • Virucidal disinfectant OR • 0.1% sodium hypochlorite <p style="text-align: center;">[S]</p>	<ul style="list-style-type: none"> • Virucidal disinfectant OR • 0.1% sodium hypochlorite <p style="text-align: center;">[S]</p>	<ul style="list-style-type: none"> • Virucidal disinfectant OR • 0.1% Sodium hypochlorite <p style="text-align: center;">[O]</p>
Textiles	<ul style="list-style-type: none"> • Hot-water cycle (90°C) AND • regular laundry detergent • alternative: lower temperature cycle + bleach or other laundry products <p style="text-align: center;">[S]</p>	<ul style="list-style-type: none"> • Hot-water cycle (90°C) AND • regular laundry detergent • alternative: lower temperature cycle + bleach or other laundry products <p style="text-align: center;">[S]</p>	n/a
Cleaning equipment	<ul style="list-style-type: none"> • Single-use disposable OR • Non-disposable disinfected with: <ul style="list-style-type: none"> • Virucidal disinfectant OR • 0.1% sodium hypochlorite <p style="text-align: center;">[S]</p>	<ul style="list-style-type: none"> • Single-use disposable OR • Non-disposable disinfected with: <ul style="list-style-type: none"> • Virucidal disinfectant OR • 0.1% sodium hypochlorite <p style="text-align: center;">[O]</p>	<ul style="list-style-type: none"> • Single-use disposable OR • Non-disposable cleaned at the end of cleaning session <p style="text-align: center;">[S]</p>
PPE for cleaning staff	<ul style="list-style-type: none"> • Surgical mask • Disposable long-sleeved water-resistant gown • Gloves • FFP2 or 3 when cleaning facilities where AGP have been performed <p style="text-align: center;">[S]</p>	<ul style="list-style-type: none"> • Surgical mask • Uniform and plastic apron • Gloves <p style="text-align: center;">[S]</p>	<ul style="list-style-type: none"> • Uniform • Gloves <p style="text-align: center;">[S]</p>
Waste management	<ul style="list-style-type: none"> • Infectious clinical waste category B (UN3291) <p style="text-align: center;">[S]</p>	<ul style="list-style-type: none"> • In a separate bag in the unsorted garbage <p style="text-align: center;">[S]</p>	<ul style="list-style-type: none"> • Unsorted garbage <p style="text-align: center;">[S]</p>

Note: the table provides several cleaning options for different scenarios. *S: Suggested, O: Optional.* From “Disinfection of environments in healthcare and nonhealthcare settings potentially contaminated with SARS-CoV-2”, by European Centre for Disease Prevention and Control, p.4 (https://www.ecdc.europa.eu/sites/default/files/documents/Environmental-persistence-of-SARS_CoV_2-virus-Options-for-cleaning2020-03-26_0.pdf). Copyright 2020 by ECDC.

Other resource to safely use disinfectants to prevent the spread of COVID-19:

- https://www.cdc.gov/coronavirus/2019-ncov/community/colleges-universities/considerations.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fcommunity%2Fguidance-ihe-response.html

Available manufactures disinfection guidance resources for specific lab instruments

The following table provides information with specific recommendations on how to sanitize the instruments by different manufactures involved in the field of Analysis of Human Movement.

Manufacturers	Product	Sanitization-Guidance Link / Recommendations
Vicon	Vicon Passive Retro-reflective Skin Markers and Suits	https://www.vicon.com/resources/blog/guidance-on-the-disinfection-of-vicon-passive-retro-reflective-skin-markers-and-suits-during-the-covid-19-pandemic/
Delsys	Trigno Sensor Cleaning	https://delsys.com/covid-19/ https://delsys.com/downloads/USERSGUIDE/trigno/sensor-cleaning-application.pdf
MOTEK	C-Mill RYSEN™ GRAIL / M-Gait CAREN	https://www.motekmedical.com/landing-page/hygiene-and-disinfection-motek/
Velamed/ Noraxon	Noraxon EMG IMU Sensors myoMOTION straps	https://www.noraxon.com/sanitization-guidelines/
XSENS	Sensors T-shirts and suits Straps and gloves	https://base.xsens.com/hc/en-us/articles/360014638639-Contamination-reduction-cleaning-and-sanitation-of-Xsens-Hardware https://base.xsens.com/hc/en-us/articles/360015020400-Contamination-reduction-cleaning-and-sanitation-of-Xsens-Hardware-Link-System
Summit Medical and Scientific (Partner with MOTEK & Cometa)	EMG Force plates, amplifiers etc	<p>Cometa EMG: recommends using alcohol to clean the sensors between each patient. Keep in mind that if used properly (using disposable stickers and disposable electrodes) the sensors never actually touch the patient.</p> <p>Video Tutorial-Cometa Systems: https://www.youtube.com/watch?v=0LZ7AT-l-oA&feature=youtu.be</p> <p>Force plates, amplifiers: can be alcohol wiped but it is important to avoid connectors.</p>
Shimmer	Does not specify	https://www.shimmersensing.com/images/uploads/docs/Sanitization_Infographic.png https://www.shimmersensing.com/about/news/shimmer-response-to-novel-coronavirus-covid-19

RSScan Lab Ltd	Footscan plate Insole sensor	<p>Care of the Measurement Surface: to ensure client safety, clean and, if applicable, disinfect the measurement surface of the footscan plate or insole sensor between subsequent clients.</p> <p>The measurement surface can be cleaned and disinfected with a suitable disinfectant (for an easy and quick clean they advise 'Dettol Wipes'), or a mild detergent. https://www.dettol.co.uk/products/see-all-products/dettol-surface-cleanser-wipes-126s/</p> <ul style="list-style-type: none"> - Do not pour or spray the cleaning or disinfectant product directly on the footscan plate, use a damp cloth to clean and remove contamination. - Make sure the measurement surface of the footscan plate is completely dry before use. - Do not use aggressive cleaning or disinfectant products that are harmful to PVC, polycarbonate plastic, rubber or aluminium. - Do not use solvent based, flammable or abrasive cleaning or disinfectant products. - Do not submerge any part of the footscan system into water or other liquids. - Do not sterilize the footscan plate or any of its components.
Twente Medical Systems International B.V.	Amplifiers EEG head caps Cables, electrodes & sensors Disposable grids	<p>https://www.tmsi.com/blog/covid-19-how-to-clean-your-systems-and-accessories/</p>
Biometrics Ltd	Does not specify	<p>IMPORTANT - When cleaning or disinfecting the system, the units must be switched off and disconnected from any computer.</p> <p>DO NOT IMMERSE ANY OF THE ELECTRONIC INSTRUMENTS</p> <ul style="list-style-type: none"> - No solvents, acidic or strong alkaline materials should be used to clean the unit or damage may result. - Cleaning may be carried out by wiping the unit with a damp cloth, or a cloth moistened with soapy water. - Disinfection of the unit should be carried out as for cleaning, though the disinfectant should be employed in lieu of soapy water. Wipe with water

		<p>based disinfectant dampened cloth or cleaning wipe (PAL International Disinfectant Wipes, product code W66230 or similar) ensuring that the equipment is fully clean and dry before re-use.</p> <p>When the above cleaning and disinfection guidelines are followed, the system can withstand unlimited cleaning and disinfection throughout the normal product lifetime.</p>
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4. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Face coverings are required indoors in common areas and where other people are present.

It is important to select the **type of facial covering** (face mask, surgical mask, disposable medical face shield) to wear in accordance to the type of activity and in-person interaction needs.

In situations where research procedures require exceptions to research subjects wearing masks, additional safety measures (i.e., physical barrier between researcher(s) and subjects) must be implemented as feasible.

To prevent cross contamination, it is important take into consideration the order of [removal of PPE \(doffing\)](#).

Additional resources retrieved from the Environmental Health and Safety department by the University of Washington provide detailed guidance on the selection and use of PPE:

- [Workplace COVID-19 Risk Level and Selection of Personal Protective Equipment \(PPE\) guide](#)
- The [Guidelines for Personal Protective Equipment](#)

5. IMPORTANT RECOMMENDATIONS WHEN CONDUCTING FACE-TO-FACE RESEARCH

Before starting with in-person research assessments, it is important to consider an activity risk analysis, that identifies the hazards and control strategies to minimize the risk of exposure to researchers and participants.

The way in which you can break-through your activity risk analysis is by specifying the following points:

- Select the activity to be analysed.
- Break the activity down into a series of tasks.
- Identify potential hazards and consequences in each task.
- Determine preventive measures to overcome these hazards.
- Take photos as needed to help describe the activity tasks.

A useful way to identify potential hazards for each activity, is by taking into consideration the following questions:

- What can go wrong?
- What are the consequences?
- How could it happen?
- What are other contributing factors?
- How likely is it that the hazard will occur?