

Risk assessment RA21 Electrical stimulation

<https://sportsciencesafety.stir.ac.uk>

Faculty / Service Area	Faculty of Health Sciences and Sport	Location	Sport Science laboratories, other
Description of work task / equipment /area being assessed			
<p>Percutaneous Electrical nerve stimulation using Digitimer DA7 AH; Percutaneous Muscle stimulation using Digitimer DA7 AH, TENS therapy unit Dyno Pulse; TMG stimulator.</p> <p>Electrodes are placed over target nerve or muscle and short duration electrical pulses are delivered to elicit involuntary muscle twitches.</p>			
Change log	<p>Version 1.1 29 Aug 2022 Expanded this section</p> <p>Version 1.2 11 July 2023 Referenced regulations and SOPs</p>		
Head of faculty	Prof Jayne Donaldson	Safety officer	Dr Nidia Rodriguez Sanchez
Completed by	Thomas Di Virgilio	Date	7 Jul 2020
Reviewed by	Dr Nidia Rodriguez Sanchez	Date	11 July 2023
	Chris Grigson	Date of next review	August 2024
Equipment used	Digitimer DA7 AH, TENS therapy unit Dyno Pulse, TMG S1 stimulator		
Categories of people involved	Staff, UG, PG, Visitors		
Duration of activity	<3hrs	Frequency of activity	Daily
Legal compliance to standards and regulations required	<p>Health and Safety at Work act 1974 (HASAWA) https://www.hse.gov.uk/legislation/hswa.htm</p> <p>Management of Health and Safety at Work Regulations 1999 (MHSWR) https://www.legislation.gov.uk/uksi/1999/3242/contents/made</p>		

		Provision of Work Equipment Regulations 1998 (PUWER) https://www.hse.gov.uk/work-equipment-machinery/puwer.htm							
What are the hazards?	Hazard category	Who might be harmed and how?	What are you already doing to control the risks?	*Risk rating	What additional controls (if any) are required to reduce the risks?	*Risk rating	Action by who?	Action by when?	Date of completion
Electrical discharge across the heart	F4	Participants If electrodes are positioned to create an electrical path across the heart (e.g. on left and right arm) Arrythmia Cardiac arrest	The danger of this occurring will be repeatedly stressed to the researcher during training Equipment only to be used by trained researchers with understanding of the safety features intended to prevent accidental discharge. Stimulation only undertaken according to a written procedure Safety features regularly tested	Moderate	N/a	Moderate			
Mild discomfort due to electrical stimulation	F4	Participants May feel a brief stinging sensation	Participants will be thoroughly briefed and familiarised to avoid surprise and	Low					

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			reduce involuntary movements						
Collision of body parts with hard sharp objects	F4	Participants as a result of involuntary movements	<p>Participants will be thoroughly briefed and familiarised to avoid surprise and reduce involuntary movements</p> <p>Stimulation only undertaken according to a written procedure</p> <p>Subject must be supported in a stable position with no risk of falling</p> <p>All objects removed from the full range of motion of limbs to prevent collision</p> <p>Where appropriate subject should be suitably restrained or strapped into test</p>	Low					

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			equipment to control involuntary movement						
Accidental discharge of the stimulator	F4	Participants; Researcher Participants may be subjected to an unexpected stimulation resulting in discomfort, pain Staff members may accidentally receive an electric shock if careless with cables	Researcher will be trained extensively on the safe use of stimulators	Low					

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Use of stimulator on subjects with pre existing health conditions	F4	Participants Heart problems, pacemakers, epilepsy etc. may result in an injury associated with condition or death	Participants will be screened* with appropriate questionnaires for pre existing conditions prior to undergoing the procedure	Low					
Mains electricity	F4	All Electric shock from exposed wires or earth fault.	Regular PAT testing Pre use visual inspection	Low					
References and Further reading	<p>* Preparticipation medical evaluation for elite athletes https://bmjopensem.bmj.com/content/bmjosem/7/4/e001178.full.pdf</p> <p>Activity Risk Assessments Standard Operating Procedures RA16 Dynamometers KinCom Biodex</p>								

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	Laboratory Risk Assessments RA80_TeachingLab_L19 RA81_ResistanceLab_3B140 RA82_PhysiologyLab_3B142 RA83_NeuromuscularLab_3B142D RA84_MultipurposeLab_3A72								