

Risk assessment RA10

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

Faculty / Service Area:	Faculty of Health Sciences and Sport	Location:	Cottrell 2B145
Description of work task / equipment /area being assessed:			
Body composition analysis using a Dual energy x-ray absorptiometry scanner			
Head of division	Prof Jayne Donaldson	Safety officer	Dr Nidia Rodriguez Sanchez
Completed by:	Frank Kelly	Date:	01/10/2010
Reviewed by (Line Manager):	Chris Grigson	Date:	10/07/2023
		Date of next review:	01/08/2024
Equipment used	GE Medical Lunar iDXA Scanner		
Categories of people involved	Staff, UG, PG, Visitors		
Duration of activity	30 mins	Frequency of activity	Patients < 10 scans per year Individual staff conduct < 150 scans per year
Legal compliance to standards and regulations required	<p>The Ionising Radiations Regulations 2017 (IRR) https://www.legislation.gov.uk/ukSI/2017/1075/contents/made</p> <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>		

		<p>Provision of Work Equipment Regulations 1998 (PUWER) https://www.hse.gov.uk/work-equipment-machinery/puwer.htm</p> <p>The Control of Substances Hazardous to Health Regulations 2004 (COSHH) https://www.hse.gov.uk/coshh</p> <p>Personal Protective Equipment at Work (Amendment) Regulations 2022 https://www.legislation.gov.uk/uksi/2022/8/contents/made</p> <p>Data Protection Act 2018 https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted</p> <p>Access to Health Records Act 1990 https://www.legislation.gov.uk/ukpga/1990/23/contents</p>																																																																																																											
Change log		<table border="0"> <tr> <td>25/10/2016</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>03/08/2022</td> <td></td> <td></td> <td>Change of Safety officer</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>Change of Medical practitioner</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>New format</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>05/12/2022</td> <td>V1.0</td> <td></td> <td>Improve grammar</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>Add references</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>13/12/2022</td> <td>V1.1</td> <td></td> <td>Added data protection</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>Listed associated documents</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>Subjects are patients</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10/07/2023</td> <td>V1.2</td> <td></td> <td>Added hyperlinks</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>								25/10/2016										03/08/2022			Change of Safety officer										Change of Medical practitioner										New format							05/12/2022	V1.0		Improve grammar										Add references							13/12/2022	V1.1		Added data protection										Listed associated documents										Subjects are patients							10/07/2023	V1.2		Added hyperlinks						
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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																																																																																																				
DXA scanning (X-rays)	F4	All Exposure to ionising radiation	Radiation risk assessment: 221205_DXARadiationRA.docx	Medium	Operator training regularly refreshed																																																																																																								

			<p>DXA installed in dedicated room with suitable warning signs and access control.</p> <p>Local Rules displayed in supervised area: 220802_localRULESCottrell2B145</p> <p>All staff operating in the laboratory IR(MR)R Trained and Trained by the equipment manufacturer</p> <p>Standard operating procedure</p> <p>Monthly inspection</p> <p>Annual maintenance by manufacturer</p> <p>Operators have procedures to protect them from the dangers of ionising radiation (safe distance from DXA scanner marked out). No personal protective equipment required.</p> <p>Passing foot traffic controlled by warning signs placed on door of DXA room to prevent accidental exposure. Warning signs light to indicate a scan is in progress</p>						
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			(At 1 m dose rate is <math><10 \mu\text{Sv/h}</math> – information from supplier ^a)						
		Patients Uncontrolled exposure to ionising radiation	<p>Referral process used to assess the patient’s requirements for DXA scanning, if patient is not suitable or needs do not outweigh the risks then they are not scanned.</p> <p>Decision to screen lies with the medical practitioner (Dr Chris Kelly)</p> <p>Patients identity established beyond doubt by operator (see procedures) so as to ensure that the wrong person is never scanned.</p> <p>Informed consent forms used to inform Patients of risks. Withdrawal from scan if patient doesn’t consent.</p>	Medium					
		Female Patients Exposure to ionising radiation of pregnant women.	<p>Pregnancy is screened for, as exposure to ionising radiation can cause harm in the case of pregnancy existing. Patients are asked about possibility of them being pregnant, if possibility of</p>	Medium					

			<p>pregnancy exists then they will not be tested (until proven otherwise)</p> <p>All Patients of child bearing age to submit a urine sample to establish a negative pregnancy test before scan.</p>						
		<p>Patients</p> <p>Unnecessary exposure to ionising radiation</p>	<p>Operators work within the procedures to ensure scans are carried out correctly and do not need to be repeated, thus Patients do not undergo unnecessary scans.</p> <p>Quality control procedures are in place to ensure equipment is working properly and scans do not need to be repeating, thus Patients do not undergo unnecessary scans.</p>	Medium					
		<p>All</p> <p>Overexposure to ionising radiation (Routine use)</p>	<p>Operators have procedures to protect them from the dangers of ionising radiation (safe distance from DXA scanner is marked out). No personal protective equipment required.</p> <p>Radiation safety assessment carried out to determine safety of equipment and safe operating distances for operators and</p>	High					

			other personnel in the DXA room.						
	All	Overexposure to ionising radiation (Incident)	DXA fails to de-energise at end of scan. DXA serviced in accordance with manufacturer's recommendations.	High	Contingency plan in Local Rules				
	Operators	Muscular skeletal injury due to lifting and positioning phantoms	Phantom stored in special case, care taken by operators when moving it	Low					
	Patients	Muscular skeletal injury due to climbing on and off the scanner bed	Scanner arm should be moved via provided controls to suitable position to allow patient access. See SOP	Low					
	Patients	Injury caused by moving scanner arm or patient movement	Scanner arm moves over patient head, if patient were to sit up risk of injury may occur. Operators instruct all patients to remain still throughout scan and explain all the procedures to all patients prior to scans commencing. See SOP	Low					

<p>Unintended release or loss of patient health data^c</p>	<p>F4</p>	<p>Patients</p> <p>Patients can no longer access their data as required by the DPA and AHRA</p> <p>Patient data is made publically available leading to harm</p> <p>The University of Stirling</p> <p>The University is shown to have broken data protection law which results in prosecution and loss of reputation</p> <p>The University is subject to litigation through the civil courts</p>	<p>Operators store only anonymised results on secure platforms.</p> <p>All patient identification lists are kept separately on secure platforms.</p> <p>The safety officer is responsible for the safe archiving of historic data and patient identification lists. All researchers must securely pass their data to the safety officer at the end of their study</p> <p>Scan data is backed up to an encrypted hard drive once a month</p>	<p>Low</p>					
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References:

- a Lunar encore, Safety and Technical Specification Manual, GE Healthcare, rev 3, May 2009
<https://www.gehealthcare.com/-/media/20fc07d1369e4d15acae5732090559db.pdf>
- b Work with ionising radiation, Ionising Radiations Regulations 2017, Approved Code of Practice and guidance, Jan 2018
<https://www.hse.gov.uk/pubns/priced/l121.pdf>

- c Information Commissioner's Office, Guide to the UK General Data Protection Regulation (UK GDPR),
<https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr>