

Institution: Edinburgh Napier University									
Unit of Assessment: Unit of Assessment 24 – Sport and Exercise Sciences, Leisure and Tourism									
1. Unit context and structure, research and impact strategy 1.1 Structure of the Unit Unit of Assessment 24 encompasses research from the Tourism, Hospitality, Festival and Events Research Group (THFERG) located in the Business School (TBS) and the Sport, Exercise and Health research group (SEHRG) embedded in the School of Applied Sciences (SAS). The numbers of submitting staff in the UoA are indicated in Figure 1.									
<table border="1"> <thead> <tr> <th>Research Group</th> <th>Staff submitted (2021)</th> <th>Staff submitted (2014*)</th> </tr> </thead> <tbody> <tr> <td>THFERG</td> <td>14</td> <td>3</td> </tr> <tr> <td>SEHRG</td> <td>13</td> <td>3</td> </tr> </tbody> </table>	Research Group	Staff submitted (2021)	Staff submitted (2014*)	THFERG	14	3	SEHRG	13	3
Research Group	Staff submitted (2021)	Staff submitted (2014*)							
THFERG	14	3							
SEHRG	13	3							
<p>Figure 1: Submitted Staff in Research Groups Compared to REF 2014</p> <p>*Submission was to other Units of Assessment.</p> <p>This is the first submission to UoA 24 by Edinburgh Napier University (ENU). In 2014 staff in THFERG were submitted in UoA 17, and members of SEHRG were submitted in UoA 3. The establishment of a UoA24 submission is evidence of the significant growth that both research groups have experienced since 2014.</p> <p>The submission arises from the University's commitment towards developing excellent interdisciplinary research, and a desire to bring together synergistic research groupings from across the university to better meet the needs of end users. UoA 24 is composed of two distinct groups, based within two different schools and sites. There is no intention of demonstrating integration where none exists, but the two groups have come together to prepare this statement and to develop a collaborative strategy going forward.</p> <p>1.2 Research Direction</p> <p>THFERG approaches research from a variety of perspectives; managerial, social scientific, socio-cultural, interdisciplinary, and critical. Research is conducted at individual visitor, tourism business and destination levels.</p> <p>SEHRG research focuses on sport performance, and the benefit of enhanced physical activity to public health and reducing lifestyle related diseases. The goal is to drive enhancements in sport performance and health.</p> <p>1.3 Research Groups Contributing to UoA24</p> <p>1.3.1 The Tourism, Hospitality, Festival and Events Research Group (THFERG)</p> <p>THFERG has been led by Professors Leask and Lynch (for part of the reporting period). The group has increased the proportion of staff publishing peer reviewed outputs through staff</p>									

development initiatives, pump priming funding, and external bid development. In addition, several staff have gained a doctoral qualification during the assessment period (**Waterston, Urie, Kerr, Robertson, Bakiewicz, Urquhart, Gordon**) creating a vibrant early career researcher (ECR) community. Research has taken place in the following research sub-groups:

- **Group 1: Tourism Destination Experience Design and Management** - Research themes include: visitor attraction management, generation profiles, and motivations and behaviours of attraction visitors (**Leask**); yoga tourist profiles (**Ali-Knight**); and place making (**Todd**); effective management of tourism businesses in relation to policy development, and product development (**Anastasiadou**); intangible cultural heritage (**McCleery**); mountain bike championships and development legacy in rural Scotland (**Robertson**); and service delivery (**Ali-Knight**); and understanding tourism in a broader socio-cultural context (**Todd, Stanley**). This research has been supported through AHRC funding (**Anastasiadou**); UKRI (**Todd**); Creative Scotland (**McCleery**); Association of Scottish Visitor Attractions and Interface (**Leask**).
- **Group 2: Critical Hospitality and Tourism** - Interdisciplinary research has focused on: hospitality, hotel, and lifestyle entrepreneurship (**Lynch**); narrative analyses of European genocide tourism and heritage (**Wight**); healthy eating and lifestyles (**Naughton**); community non-participation in homestay developments (**Lynch & Anastasiadou**); volunteer tourism and intercultural learning (**Stanley, Thompson**); backpacker tourism (**Stanley**) and the historical narratives of health and hospitality (**Thomson**); critical research and learning in event management (**Robertson**). Research in this area has received funding from the Carnegie Trust for the Universities of Scotland (**Naughton; Thompson**), and the Egyptian Education Bureau (**Hannam**).
- **Group 3: Festival and Events Experiences** - Related to its location in Edinburgh, the world's leading festival destination, research around festivals and event experiences spans several areas. These include governance, impacts and sustainability of Mega-sport events; (**Theodoraki**); value co-creation practices in festivals (**Rihova**); stakeholder analysis of events (**Todd**); festival leadership, sustainability, resilience and transformative development of community, and sustainability and social legacy of business events (**Robertson**); spiritual motivation at events (**Tinsley**); and visual methods and ethnography (**Rihova, Todd**). Funding for this cluster has been secured from the Qatar Research Foundation (**Theodoraki**).

1.3.2 The Sport, Exercise and Health Research Group (SERHG)

SEHRG is a vibrant community of researchers that has experienced exponential growth in research output and knowledge exchange activity in the reporting period. Led by Professor **Florida-James**, the growth of the group has been supported by key appointments (**Palmer, Leggate, Ross, Mair, Mascarenhas**) and opportunities for internally and externally funded studentships. This growth is reflected by the increased numbers of PhD studentship, higher degree completions and the quality and quantity of the outputs from the subject group.

Within the **SEHRG** staff align to one or more research themes:

- **Theme 1: Mountain Biking and Related Cycling Research (Florida-James, Campbell, Westbury, Ingram-Sills)** - A strategic development in the 2014 – 2021 period has been the Mountain Biking Centre for Scotland (MBCofS). The MBCofS is a joint initiative headed by Edinburgh Napier University and Developing Mountain Biking in Scotland, with project partner Scottish Enterprise.
- **Theme 2: Sports injury and Epidemiology Research (Palmer, Florida-James, Brown, Connaboy, Kiliarntas)** - **Palmer's** International Olympic Committee funded research concerns injury history, current health, and quality of life in Olympic level performers. She has also led a project funded by the UCI which examined injuries sustained by Enduro mountain bike riders. Research led by **Brown** and supported by doctoral students (**Dunlop and Johnson**) examined return-to-play (RTP) protocols in

professional football and hockey. Research on the forces and impacts which lead to injury in military contexts was led by **Connaboy** and supported by **Kaliarnatas**.

- **Theme 3: Applied Exercise Science (Leggate, Mair, Crabtree, Ingram-Sills) and Psychology (Westbury)** – This theme relates physiology to sport, physical activity, and health. **Mair's** work specifically examines the role of technology in facilitating behavioural change towards the adoption of physical activity and health. She collaborated with **Campbell** and others to examine the role of diet in exercise. **Westbury's** work spans the mountain biking and exercise science groupings, focussing on the role of physical activity on psychological wellbeing and mental health.
- **Theme 4: Talent Development and its Application in Sport Performance and Officiating (Martindale, Mascarenhas, Fountain, Pitkethly, English, Westbury)**. **Martindale** developed the Talent Development Environment Questionnaire which is used globally to assess the quality of development environments and guide evidence-based practice. **Mascarenhas** is a newly appointed academic whose work aims to develop the decisional processes in sports officiating. This work, supported by Cricket Scotland, the Scottish Rugby Union and English Basketball has had a clear impact on the quality of officiating in those areas.

In this narrative, we have clearly indicated that the Unit is composed of two research groups. Hereafter, the submission will be discussed as a 'unit'.

1.4 Overview of Research Strategy

In 2014, the common objectives across the UoA were to be '*academically excellent*' and to '*create, exploit and transfer knowledge*'. To achieve these outcomes the unit committed to '*invest in and value research*' and to '*conduct research which makes an impact beyond the confines of academia*'. In both groups emphasis was placed on strategic staff appointments and researcher development to achieve these outcomes, and where appropriate, investment in research equipment and facilities.

There is evidence of the achievement of four REF aligned objectives:

1. **Enhance our research impact and reach by developing our researcher base.** Through appointment of research leaders and the allocation of time for existing staff to research and complete research degrees. There is clear evidence of enhanced research impact through the quality and volume of research outputs.
2. **Ensure our research remains cutting edge, impactful and novel.** In both groups there is a recognition of the importance of external collaboration.
3. **Support for researchers at every stage of their career.** The increased number of staff submitted evidences the achievement of this aim. As both groups are in their early stages of development, there has been a recognition of the importance of research leadership and management to ensure sustainable growth. This has been achieved through key appointments to lead research, focussed investment on time allocation, and the strategic allocation of internal funding to gain external future funding. There has also been growth in numbers of doctoral students focusing on key areas, and senior staff have collaborated with and mentored ECRs in all aspects of the research process.
4. **Value research activity.** Academics aligned to the research pathway have a minimum level of protected time (0.2FTE). This serves to create a motivational climate in which research is valued, and outputs can be accounted in response to KPIs (outputs, funding, grant applications submitted and successful). These managerial efforts to foster a realistic research space in individual workloads have created a healthy culture where research and teaching are balanced alongside staff members' wider work-life balance.

The success of these efforts is demonstrated by:

1. A fast-growing research community with strong and experienced leadership (7 Professors, 6 Associate Professors, 1 Senior Lecturer and 1 Reader).
2. Development of a high quality multi-disciplinary researcher base that aligns professional accreditation (BASES, BPS etc) to outputs.
3. An increased track record of funding from external funding bodies for both groups.
4. An increasing influence upon policy and collaboration with governing bodies of sport (e.g. Scottish Rugby Union, Cricket Scotland, Scottish Gymnastics, and the Scottish Football Association).
5. Publication of high-quality papers, and increased REF eligibility as compared to the previous REF2014 submission. We have exceeded our target of doubling staff eligible to be submitted.
6. A substantially increased number of research degrees awarded, 33 overall, across the unit.

1.5 2021-2026 – Strategy for the next REF Period

The schools and unit are committed to the University's overarching research strategy as outlined in REF5a. Informed by the institution's five-year focus on staff development, increasing innovation, and developing international research partnerships, future school strategies aim to feed into the broad strategic aims of the University and will be guided by the new University Themes.

The vision of the new Business School research strategy (2021-27) is for TBS to be known as a leader in the field for rigorous research that addresses important societal, economic, and business-related challenges. The strategy has set clear objectives as follows:

- To improve the quality and quantity of research outputs
- To broaden the research base by increasing the number of staff who are research active
- To increase the proportion of research outputs from interdisciplinary and collaborative projects
- To increase the visibility of research to both academic and non-academic audiences
- To increase the number of submitted and successful applications for external research income
- To increase the number and quality of PhD and DBA applications and research outputs by postgraduate research students in TBS.
- To increase the impact of research outside academia

This will be achieved through research-led recruiting; a consistent and inclusive framework for development and support for research; building connections with other researchers, including across Schools at ENU to build inter-disciplinary research, practitioners and research users; and by focusing activities and support around the core research themes.

The School of Applied Sciences (SAS) will transition from research groups to centres of interdisciplinary thematic research in 2021, to further cross-disciplinary opportunity and increase research visibility. Increased internal visibility will facilitate collaborative effort beyond the school through identification of unmet needs which to be filled internally by related disciplines (e.g., Computing and Engineering).

At the unit level, the submission has afforded an opportunity to reflect on the development of our research in the period and to consider the future strategy. We are confident that the principles of the strategy adopted in 2014 remain sound and we intend to build on these successes accordingly, whilst operating within the new strategic focuses of the Schools and University.

The anticipated opening of the Mountain Bike Innovation Centre in Innerleithen, funded by the UK and Scottish Governments as a part of the Borderlands initiative, provides a unique opportunity to collaborate in a wealth of areas relevant to this unit, and will be key to facilitating impactful research. For the next reporting period the unit will align to the University's three-tiered approach to research groupings outlined in the REF5a. This affords the opportunity for

collaborative groups to develop under the potential umbrella of a Mountain Biking Research Institute.

1.6 Approach to Supporting Interdisciplinary Research

Research across both groups fits under the university interdisciplinary theme of well-being and the environment. All our research pillars foster collaboration, and as a result nearly a quarter of outputs in this submission are interdisciplinary. For example, research on body vibration and health (**Florida-James, Taylor**); exercise immunology (**Ingram-Sills, Malone**); physical activity and mental health (**Westbury, Snowdon**); intercultural exchanges in volunteer tourism and backpacker experiences (**Stanley, Thompson**); and promoting healthy eating and lifestyles (**Naughton**).

Since 2014 researchers have been collaborating with colleagues in Design, which has led to several outputs submitted in UoA24 and UoA32. **Anastasiadou's** work on 3D printed souvenirs with **Vettese** (UoA32) was funded by the AHRC and has led to two publications submitted in this REF submission. **Todd** and **Jamieson** (UoA32)'s work has explored the transgressive festival imagination. New interdisciplinary collaborations are forming with the colleagues in applied sciences on healthy ageing and dementia-friendly events (**Ali-Knight**).

1.7 Progress towards an Open Research Environment

In addition to open discussion, and Edinburgh Napier University's open access publication policy, we also believe that data, material, and information sharing enhances overall research outputs and democratises knowledge. To ensure compliance at a School level, School Directors of Research and the Research and Innovation Officer (RIO) regularly communicate with, and provide support to, staff via email and Worktribe training events.

Publication of the SAS Research newsletter, Discovery, also affords the School the opportunity to reconcile publications with those in the institutional Repository.

1.8 A Culture of Research Integrity

Research within UoA24 adheres to all relevant professional ethical requirements and standards. All research and commercial projects, prior to external funding application submission, must undergo 'in-house' peer ethical and governance review. Compliance is followed up post approval to ensure the highest standards of participant recruitment, researcher conduct, and data management are maintained. In addition to the internal checks and balances which are applied, researchers receive training on all aspects of legislation which apply to their work. For example, in the areas of health and safety and risk assessment, particularly pertinent in the time of the COVID-19 pandemic. GDPR training is mandatory.

THFERG is overseen by The Business School Research Ethics Committee. This is responsible for reviewing research applications from staff and students to ensure compliance with the University Code of Conduct on Research Integrity. **SEHRG** is overseen by the School of Applied Sciences Research Integrity Committee. The chairs of each Committee also sit on the University Research Integrity Committee to ensure consistency in the application of research integrity and ethics principles across all Schools in the University.

1.9 Approach to Enabling Impact

We focus on supporting three strategic approaches to research, which support high value impacts. Researchers are encouraged to identify problems which:

- 1) affect large numbers of people.
- 2) are severe in their implications (and thus potential benefit via solutions)
- 3) have the potential to add value to the university (e.g., aiding income generation, reputation, student learning/experience) and ensure the sustainability of our research.

Impact is encouraged by direct engagement with stakeholders in applied research and the dissemination of findings through industry-facing events, policy-facing journals and conferences,

which in turn informs the beneficiaries' strategic development.

In the assessment period researchers have engaged SMEs in the mountain biking sector in Scotland (e.g. Flair / Scottoiler); future tourism leaders through the Destination Leadership programme; Event Scotland (**Ali-Knight**) and industry associations such as the Edinburgh Tourism Action Group (ETAG) (**Robertson**); and the Association of Scottish Visitor Attractions (ASVA) (**Leask**). We also work closely with the University media team to enable the dissemination of research findings to the public through publications in The Conversation or the ENU IMPACT booklet.

The Mountain Biking (MTB) Innovation case study (**Florida-James**) covers how leading research has resulted in the establishment of the world's first open innovation centre for mountain biking. It has led to the world's first Government sponsored National Strategy for MTB Innovation and to 9 new MTB businesses being launched. The MTB Partnership has also secured £19million (July 2019) of the Borderlands Regional Growth Deal to create the world's first MTB Innovation Centre (£13M) and Trail Lab (£6M) in the Scottish Borders, to further support their knowledge transfer activities.

Research undertaken in direct collaboration with key stakeholder the Enduro World Series (EWS) informed **Palmer's** injury and illness surveillance impact case study. She collected data from cyclists competing in this global mountain biking event, and with colleagues at the EWS, used the findings to write recommendations and guidance for the safety of riders in future events. The EWS used this guidance directly to enhance its safety procedures and gain International Cycling Union recognition and has rolled out the findings and recommendations to all global races, benefiting thousands of EWS riders.

The case study on promoting sustainable Mega-sports event policies (**Theodoraki**), evidences how dissemination of research findings has informed government organisations across the globe. **Theodoraki's** work impacted public policy, benefiting sport ministries, organising committees of Mega-sport events, and policy makers in international sport federations. The research informed the direction of UNESCO's international Mega-sport event policy. Sport ministers agreed to advise organizing committees and host cities to use sport events to create legacies through infrastructure improvements and sustainable behavioural change campaigns. This work led to her appointment in London 2012 sustainability committee and invited UNESCO expert and receiving an award by the Qatar Olympic Academy.

2. People

2.1 Staffing Strategy

Of the 27 submitted staff in UoA24, 48% are lecturers, 37% are associate professors, 15% are professors. Seven staff are professors (**Ali-Knight, Florida-James, Hannam, Leask, Lynch, Martindale, and McCleery**). Eight staff are associate professors (**Mascarenhas, Palmer, Robertson, Stanley, Theodoraki, Todd, Westbury, and Wight**). There is one senior lecturer (**Brown**) and one reader (**Anastasiadou**). The remaining members of the group are lecturers on permanent contracts.

In each of the UoA24 groups a senior academic is designated as the research director. In **THEFRG** this is Professor Anna **Leask** and in the **SEHRG** this is Professor Geraint **Florida-James**. These research leaders are responsible for developing the research profile and coordinating the on-going strategic development of research. Their work is supported by school research support staff and theme leaders (**Leask, Barron, Ali-Knight- THFERG**) (**Palmer, Martindale, Mair- SEHRG**).

To support the achievement of strategic goals, since 2014 new appointments were recruited at professorial (**Hannam**) and associate professor levels (**Mascarenhas, Palmer, Stanley, Robertson, and Wight**). These were complemented through internal promotions for **Ali-Knight, Florida-James, Martindale, and Leask**, (professor), and **Westbury and Todd** (associate

professor) to strengthen areas of existing strength and expand on emerging area.

2.2 Staff Development:

Using the University's 'My Contribution' process, staff in the Unit have set their research goals and identified development opportunities in accordance with the Concordat to Support the Career Development of Researchers. All members of the research community have been through mandatory Diversity, Inclusion and Unconscious Bias training. The University adheres to the principles of the Athena Swan Bronze award. A particular note is made to the importance of supporting carers in the workplace.

Following the academic and promotions framework that was implemented across the University, the submitted staff align with the following pathways; 56% research, 4% enterprise, 14% professional practice, and 4% learning and teaching. 22% are listed as having no pathway.

To achieve the University ambition to increase the number of staff that hold doctorates, staff were supported in studying for a postgraduate qualification through adjustments to their workload. Tuition fees for such part-time study are covered by School budgets. **English, Ferrier, Graham and Robertson** have benefitted from this, with 2 PhD awards made and a third one pending. **Gordon** and **Waterston** received DBA awards in the same period.

An excellent example of the success of this initiative is **Ingram-Sills**, an early career researcher, who was previously employed at ENU as a research technician. Through registration for and completion of a PhD in exercise immunology, **Ingram-Sills** was involved in applied research supporting Mark Beaumont in his record-breaking cycling circumnavigation of the globe in 79 days. **Ingram-Sills** has now been appointed as lecturer and has assumed programme leadership responsibilities.

Staff are encouraged to engage in research, knowledge exchange and professional practice activities across the University and via external facing opportunities. Weekly writing workshops and one-day writing retreats facilitated by UoA members (initially **Lynch**, then **Anastasiadou**), are open to staff and PhD candidates. Monthly research related seminars (initially **Lynch**, then **Stanley**) bring together researchers from across the University to support the development of communities of practice, knowledge exchange and research dissemination. **Hannam** was instrumental in the establishment of the University-wide Migrations and Mobilities Research Network, and other staff have supported the activity through presentations during their annual conference (**Stanley**).

There is protected time through research modules, grant writing surgeries, writing retreats, and substantive methods training workshops which are open to researchers at any stage of their career.

2.3 Supporting Impact

To support professorial development and the generation of impact, **Leask, Lynch, McCleery and Leggate** were Directors of Study on five fully funded research studentships from the University's 50th Anniversary research studentships fund, all of whom graduated with their award. Three of the graduates have since joined as lecturers, a fourth having secured employment elsewhere. Other staff have been allocated doctoral research students through TBS and SAS direct allocation (**Lynch, Leask, Florida-James**) and competitive funding processes (**Anastasiadou**) to support growth in key research areas.

Funding was invested in the purchase of personal laptops to support ECRs and staff who were being submitted to REF2021 to support flexible working. Further support was given for part of the assessment period through the employment of a research assistant who supported the preparation of documentation for REF2021.

Colleagues were successful in the recruitment of Research Assistants through University-funded student researcher summer internships (**Anastasiadou**). The scheme encouraged experienced

researchers to consider the training and development needs of new researchers and develop their own research management, mentorship, and leadership skills.

We actively encourage staff to retain or establish external contacts at home and overseas. Support is provided through overseas visits, appointment of visiting professors, Erasmus exchanges and visiting researcher posts. Consequently, we have several staff who have benefitted from research collaborations externally or overseas. For example, **Pitkethly** (Hong Kong & China), **Mair** (USA), **Florida-James** (USA), **Leask** (USA), **Anastasiadou** (EU), **Robertson** (Australia), and **Todd** (Netherlands).

2.4 Early Career Researchers:

All early career researchers are provided with mentoring (working wherever possible within discipline areas) to develop sustainable research plans. Internal proposal reviewing and mentoring processes have assisted ECRs in securing internal and external funding. **Rihova** and **Todd** as ECRs ran internally funded workshops on visual research methods. **Todd** in collaboration with colleagues from TBS and supported through the University's Researcher Development fund, then led the creation of an interdisciplinary network of knowledge exchange seminars on visual methodology, that attracted researchers from several universities. Through focussed research groupings across the UoA we have fostered peer review at every stage of the research process. ECRs have also been supported by collaborating with more senior researchers in the development of funding bids. **Naughton** successfully bid to the University's annual internal research funding competition in 2018. **Thompson** is an ECR who was shortlisted to the final five in the UK for Scopus Early Career Researcher biannual award. He has been successful in producing publications from his PhD and in acknowledgement of his potential in research leadership, he became Research Lead for the Marketing Subject Group in the Business School, in October 2020.

2.5 Postgraduate Research Students (PGR):

Changes to the reporting structures for research degrees have had a positive impact on provision since 2016. This has been noted in the feedback from PRG students, the improved quality of supervision, and the experience and success of our PGR students. This is evidenced in the successful outcomes of the Postgraduate Research Experience Survey (PRES) (where we have an overall rating of 82% satisfaction), and in the numbers of successful completions of PGR students working within UoA24 (Figure 2).

Year	2014/2015	2015/2016	2016/2017	2018/2019	2019/2020
PhD	3	5	8	6	10
Research Based Professional Doctorates (DBA)	0	0	2	0	3

Figure 2: Doctoral completions in the Unit

It is notable that around 1/3 of doctoral awards have been made in the last 12-month period. This is an indicator of the growing momentum in the research groups.

Staff training courses for PGR supervision have ensured high quality PhD supervision. Staff are expected to undertake regular refresher training to continue to supervise doctoral students. Within the unit, research leaders have oversight of all aspects of the research degree process

and supervisors are responsible for activities that PGR students engage in, such as teaching and demonstrating.

UoA24 recognises the importance of facilitating a vibrant PGR research community and sense of team. At both our Sighthill and Craiglockhart campuses, PGR students have two large, shared offices, fully refurbished and equipped during this REF period, with individual desk spaces and computers. Teambuilding is further accomplished through activities such as allocating each new PhD student a mentor from the existing PhD community (outside their own research field) and offering PGR-specific off-campus activities (e.g., 'Discover Edinburgh').

Each PhD student receives internal funding to present at one international conference during their project lifetime. Prizes for different presentation categories, including the Principal's Award for Research Excellence, help the students to build esteem and curriculum.

2.2.5 Research student skills development:

Our support policies draw on but go beyond the current Vitae framework and the Concordat to Support the Career Development of Researchers. In addition to what is offered centrally, research students benefit from participating in The PGCert in Business and Management Research Methods programme, which was co-led by **Lynch and Naughton** for all the students in TBS. Formalising existing research training in the form of a recognised award enables students to demonstrate to potential future employers the achievement of advanced level postgraduate research skills. Nine PhD students have achieved this qualification since its commencement, with another 15 registered to attend the next iteration.

The unit has also developed a short course to give training in teaching for any students who may wish to gain experience and study towards associate fellowship of the HEA. All students who take up such opportunities (teaching, demonstrating or research additional to their project) are recompensed for their work at the appropriate pay grade.

Students in UoA24 are also actively encouraged to suggest and recruit seminar speakers or take the opportunity to deliver a seminar. PGR students present their research at a lunchtime meetings series to a multidisciplinary audience, providing them the opportunity to learn how to convey complex ideas. As a result of these approaches, PGR students have had demonstrable success in national competitions. For example, **Peddie** placed second in the SPARC conference poster competition in consecutive years and won a prize at the British Psychological Society Division of Sport and Exercise Psychology conference in December 2018.

2.3 Equality and Diversity:

In terms of gender balance, 48% of submitted staff identify as female and 52% as male, which is a more balanced ratio than ENU's institutional average. Among the senior researchers, there are one female and two male professors in **SEHRG**. In **THFERG**, there are three female professors to one male professor.

With regards to ethnicity, 96% of submitted staff identify as white and 4% as mixed. At present there is an under representation of BAME staff on the team in both groups, and ethnic diversity is lower in the UoA than the University average. This is an issue the UoA leaders will seek to address in future recruitment drives.

Staff are supported via the University's occupational health policy. 89% of submitted staff within the unit identified as having no known disability; 4% declared disability and 7% are listed as unknown. Where disability has been declared, detailed assessment of occupational health has taken place and necessary adjustments to the workspace have been made.

In terms of age profile, 11% of submitted staff are in the 25-34 age bracket; 30% in the 35-44 age bracket; 48% in the 45-54 age bracket; 7% in the 55-64 age bracket and 4% in the 65-74 age bracket. The Unit's age profile is older when compared against ENU institutional average. This is likely an outcome of the recruitment drive to attract experienced researchers to deliver on

strategy aims in the period. Recent recruitment has sought to rebalance this profile and increase the unit's long-term sustainability through the appointment of several early career researchers who are projected to form the main body of SRRs in the next assessment period.

The unit adopts the University's maternity and paternity leave policies. Staff returning from periods of maternity leave are supported through keep in touch days, staged return, and flexible working patterns. During the REF period, three of the four members of staff that took maternity leave returned as significantly responsible for research.

100% of eligible and submitted staff are on permanent contracts, which offers greater security to staff and ensures continuous access to institutional support mechanisms. 11% of the submitted staff are working on part-time basis, which evidences that there is flexibility in working patterns which does not preclude staff from being successful, impactful researchers.

Two members of the Unit are prominent members of the University Carer's Network. This network promotes all forms of caring responsibilities including maternity and paternity leave and flexible working arrangements. ENU also embraces its LGBT+ staff through a dedicated support network.

3. Income, infrastructure and facilities**3.1 Information on Income**

C24 - Sport and Exercise Sciences, Leisure and Tourism	2014 (£)	2015 (£)	2016 (£)	2017 (£)	2018 (£)	2019 (£)	2020 (£)	Grand Total (£)
BEIS Research Councils, The Royal Society, British Academy, and The Royal Society of Edinburgh				18,921	820	1,559	26,876	48,175
EU (excluding UK) other						7,386		7,386
EU government bodies	21,001	7						21,008
EU industry, commerce, and public corporations				6,667	8,007		1,940	16,614
Non-EU other	11,821	34,274	5,000	17,573	59,948	38,104	348	166,978
Tax credits			8,678					8,678
UK central government bodies/local authorities, health, and hospital authorities	35,755	115,902	58,792	71,075	100,742	94,107	71,461	547,834
UK industry, commerce, and public corporations	5,986			9,295	28,492	51,085	16,440	111,299
UK other sources					10,485		25,615	36,100
UK-based charities	39,987	2,343	2,047	52,831	69,521	69,482	19,315	255,527
Total	114,550	152,527	74,518	176,362	278,015	261,633	161,994	1,219,598

Figure 3: UoA 24 Income Generation 2014-2020

UoA24 achieved £1,219,598 since 2014. There is no baseline data from the previous REF period as this is the first submission, however it constitutes a significant growth from previous years. The breakdown of the funding is as follows: 4% from BEIS Research Councils, the Royal Society, British Academy, and the Royal Society of Edinburgh, 0.5% from EU (excluding UK) other, 2% from EU government bodies, 1% from EU industry, commerce and public

corporations, 14% from non-EU other, 0.5% tax credits, 45% from UK central government sources, 9% from UK industry, commerce, and public corporations, and 3% from UK other sources and 21% from UK charities.

Group	Unit Income
THEFRG	£124,602
SHERG	£1,094,996

Figure 4: Income to Unit by Group

Since 2014, exercise-related research has become more prominent in the unit. In the reporting period, income from mountain biking related research has approached £750,000. Between 2014-2016 The Scottish Funding Council (SFC) provided £220,000 for the Mountain Biking Centre for Scotland (**Florida-James**) as a global centre of excellence for mountain biking. This was extended further between 2016-2019 with an additional £249,984, and then £277,500 (SG to 2021).

Spinning out of this centre have been an array of smaller funded projects. **Palmer** collaborated with **Florida-James** on a project funded by the International Governing Body for Mountain Bike Enduro racing, which generated £23,563. Another study examined the impact of mountain biking on the psychological wellbeing of young participants. This study was funded by Scottish Cycling and generated £4,999 (**Westbury, Campbell, Fountain**). **Campbell** secured £30,740 as part of an Erasmus Plus Consortium working on Mountain Bike Trail Design, additionally employing a research assistant to work 0.2FTE on this project (**Kirkwood**). Innovation voucher work on MTB related projects has totalled £30,000 (**Florida-James, Ingram-Sills, Campbell**).

Research on sports injury, surveillance, epidemiology, and rehabilitation studies has also received significant funding. **Palmer** was funded £92,120 by the International Olympic Committee, and £58,894 by Scottish Rugby to research performance and injury. **Kaliartas** and **Brown** were funded £118,664 from Medical Research Scotland and Point One Clinic Ltd to study the clinical application of biomechanics to of treatment and rehabilitation. **Brown** was funded £24,000 by Arsenal FC & PUMA sports international to examine the effects of technological medical enhancement products on the physical performance of professional football players.

Developing the theme of physical activity and public health, **Ross and Florida-James** received £58,079 of philanthropic funding to investigate the effect of exercise on breast cancer and leukaemia patients. Supported by Carnegie Trust for Scotland, **Ross**'s funded project (£4,995) examined pollution exposure on Edinburgh main roads and greener routes. **Naughton** examined the influence of hegemonic masculinity on dietary preferences for meat.

Around the themes of physical activity and mental health and psychological well-being, **Westbury** led a team (**Brown, Fleming, Snowden & Peddie**) funded by the Scottish Association for Mental Health (SAMH) to evaluate the effectiveness of the Active Living Becomes Achievable (ALBA) programme. This work generated £60,000 and two publications submitted in the assessment period.

Crabtree and **Pitkethly** were funded £19,885 by the Paths for All Partnership to assess the efficacy of physical activity interventions alongside the use of an activity tracking device and platform in cancer patients in Edinburgh and Aberdeen. **Martindale and Fountain** were funded £7,804 by SportScotland to examine experiences of parents with children on a performance pathway. **Martindale and Pitkethly** collaborated on a project funded £8,250 by Heart of Midlothian FC to understand the role of self-regulated learning in the academy experience. **Martindale** was funded £1,200 by the British Exploring Society to develop a database of evidence relating to Mental toughness, leadership, coping and GRIT.

The applied nature of the tourism, hospitality and events means that opportunities to achieve funding through BEIS research council schemes are limited. However, there are some notable examples, such as **Todd's** lead role in the University's UK Research and Innovation (UKRI) funding (£26,865) to enhance place-based partnerships for the Wester Hailes area of Edinburgh, and **Theodoraki's** funding from the Qatar Research Foundation (£51,095) to examine the promotion of healthy living lifestyles through the hosting of the 2022 World Cup.

In the period we purposefully targeted income from charities and businesses in the tourism and cultural heritage areas to inform public policy. **McCleery** was funded £3,238 by Museums Galleries Scotland, and £33,865 by Creative Scotland for research on Intangible Heritage in Scotland. The findings of this work informed the co-ordination of activity and heritage policy in Scotland. **Hannam** was funded £11,455 by the Egyptian Education Bureau to investigate the role of the tour guide in Egypt to achieve intercultural rapprochement between Egyptian and Spanish culture. **Thomson's** research on the historic evolution of water hotels in Scotland received £1,000 funding through the Carnegie Trust.

Researchers also targeted research funding from industry sources to support business development in the visitor attraction sector. **Leask** was funded £9,497 through Interface to carry out a multiparty project on Senior Visitors to Visitor Attractions. Recommendations were given to industry on how to develop specific event experiences for this market segment. **Leask** was also funded £9,981 by the Association of Scottish Visitor Attractions (ASVA) to research multi-generational employee recruitment and retention in Scottish visitor attractions.

In the next funding period, the **THEFRG** will seek to build on this experience and knowledge of successful funding bids to increase the volume of funded research achieve and further diversify the targeted funding sources.

3.2 Infrastructure

The main laboratory spaces supporting work in the **SHERG** are based in SAS at the Sighthill Campus, within a building housing the main University sport and fitness facilities. There are four main laboratory spaces (around 2000m²), two focused on physiological data collection, one related to sports injury research, and a biomechanics laboratory comprising a state-of-the art 12 camera 3D motion capture system.

The biomechanics laboratory holds force plates and an extended sprint track. Each of the physiology laboratories are equipped to allow for high-standard assessments of cardiac, respiratory, and metabolic assessments of physical fitness. One of the physiological laboratories is dedicated to postgraduate and staff research and equipment such as Doppler ultrasound, and Dual X-ray Absorptiometry (DEXA) Laboratory is available. The close interdisciplinary relations between the unit and biomedical sciences facilitates cell counting and biomarker work using techniques such as flow cytometry. The suite of laboratory spaces included 20m² Environmental Chamber capable of simulating environmental challenges of temperature, humidity, and hypoxia.

Researchers use sport hall facilities as laboratories for real-life sport/motor tasks (e.g., cycling, golf putting), and have access to real life facilities such as a cricket bowling machine to examine eye tracking in real time.

On campus there is space for observational studies, a focus group room, and individual testing and consultation rooms. The equipment housed within these spaces has been acquired through University equipment grant funding. We have mechanisms to ensure maximum benefit and optimal use of this extensive range of facilities including online booking, facility sharing and dedicated workshop/technical staff who can build bespoke equipment.

These laboratory facilities are integral to the delivery of high-quality student experiences and research. There is a yearly review of the budget to support these facilities and the spend has been maintained despite pressures. Research in the laboratories is supported by trained and experienced technical support. Their support is invaluable and is acknowledged here.

The Mountain Bike Centre of Scotland was launched by Laurence Howells (CEO of the SFC) with a permanent base at the Glentress Trail Centre in the Scottish Borders. The proximity of the Centre to the MTB trail network and the funding mentioned previously has allowed the group to cement their position as the leading academic institution in MTB research in the World. The centre has a remit to further develop business to academia links both nationally and internationally, and its location and easy access to trails has meant that numerous projects have been facilitated from it. The success of this facility has been critical to the securing of £19million from Borderlands Growth Deal to set up an MTB Innovation Centre and Trail Lab due to open in early 2023.

4. Collaboration and contribution to the research base, economy and society

4.1 Collaboration Networks and Partnerships

To increase quality outputs and numbers of successful research bids, researchers in UoA24 have actively collaborated with other universities. As well as building on existing collaborations, new partnerships were set up during the funding period that led to successful research funding applications.

Theodoraki and **Ali-Knight** worked with researchers at Stenden University Qatar and received funding from the Qatar Research Foundation to promote a sustainable and positive legacy for Qatar's FIFA World Cup 2022 event. The key beneficiaries from this work were event organisers, public health experts, physical educators, city planners, and environmental agencies in Qatar.

The unit provides a strong link with the commercial life of the nation through a range of collaborations in teaching, research, and applied consultancy work. Since 2015, there has been a partnership arrangement with the Scottish Rugby to provide postgraduate level educational support for high performance coaches. Professional rugby coaches (**Smith, Scott, Murray**) have subsequently presented research work at professional body conferences, and published in peer reviewed journals (**Hall, Fisher**). This collaboration also resulted in a professional coach being supported to progress research to doctoral level (**Hall**).

In 2017, the collaboration was extended to Scottish Gymnastics, and in 2019, a similar collaboration was announced with the Scotland Football Association. These links with the sporting economy are a very strong endorsement of the role that the research group has in Scottish sport. **Mascarenhas's** research has focused on developing decision making under pressure and game management in match officials. He has provided psychological support to the Rugby Football Union Elite Referee Unit and has worked with a wide variety of match officials including the Rugby Football League Match Officials, New Zealand Netball, SRU High Performance Referees, Scottish Basketball, and the ECB Association of Cricket Officials. **Brown** has developed extensive coach education partnerships with the Scottish Rugby Union and the Scottish Football Association, with a view to embed educational opportunities and CPD ensuring the on-going development and engagement with cutting edge research.

The University supported a mountain biking centre based at Glentress in the Scottish Borders. The Centre has been developed through a partnership between Scottish Cycling, Scottish Enterprise and ENU. An endorsement of the role mountain biking plays in the rural economy was reported in April 2020 (<https://www.mbr.co.uk/news/how-mountain-biking-saved-innerleithen-396588>). The Mountain Bike Centre for Scotland is a key player in the redevelopment of an old textile mill in Innerleithen supported by the Borderlands Inclusive Growth scheme. Supported by £394.5m from the UK and Scottish Governments, £19m has been earmarked specifically for the Innerleithen project. Researchers from the unit will be a key presence in the new facility, offering teaching, research, product development and testing and service delivery opportunities in a rural community setting, with partnerships to the local college and National Manufacturing Institute of Scotland.

In addition to commercial testing, the centre extends its work and impact into local primary

schools and each year hosts a competition to design a mountain bike related product. Local entrepreneurs also use the resources located in the centre to develop and test products, and the cycling community are invited to attend regular talks and seminars on a range of sport, health, and exercise topics, ranging from training and racing, through to nutrition and mental health.

Impact beyond Scotland is generated through **Campbell's** participation on a European consortium supported by Erasmus+ to address skills mismatches (the discrepancy between workers' skills and labour market needs) in mountain biking. **Campbell** is also supported by Erasmus+ in his work on AtLETyC (Athletes Learning Entrepreneurship), a partnership between European higher education institutes and sport governing bodies to provide tailored entrepreneurship training to athletes.

The profile of the research group is high, and this is reflected in work with high-profile cyclists. For example, **Ingram-Sills's** work in support of Mark Beaumont's '*Round the World in 80 days*' established a platform for her expertise to be recognised and sought by many other riders. It was also recognised in her contribution to the University's Chancellor's Lecture, which over 250 members of the public attended. **Palmer** was a member of the International Olympic Association medical research team, which recorded all instances of injuries and illness among the competitors at the Summer Olympics in 2016 in Rio de Janeiro. More recent work from **Palmer** on the Enduro World Series (EWS) was the first epidemiological study in the sport and led to major changes in injury and return to riding protocols.

4.2 Key Research Users, Beneficiaries or Audiences and Public Engagement

Impact is sustained in UoA24 through interaction with a range of different stakeholders, via and involvement in a range of public engagement activities. A strong theme running through all the research work is the engagement with non-academic and commercial partners.

The Mountain Bike Centre of Scotland was established to facilitate this exchange, and is now an integral partner in important political, economic, and social developments related to the Borderlands Project, which supported by five cross-border councils and the Scottish and UK governments by up to £350m.

Sport and sport performance are of major societal importance. **Martindale's** applied research into the talent development environment has led to appointments as a team psychologist (triathlon) through the Commonwealth Games 2002, London Olympics 2012, and Rio Olympics 2016 cycles, which has enabled him to apply evidence-based talent development environment principles. The research impacts not only performers but also sport officials and coaches.

Theodoraki has undertaken research concerning Leveraging the 2022 Qatar World Football Cup for the promotion of green and active living. Her work has influenced policy design and planning for leveraging the event for behaviour change. **Theodoraki** also offered professional development to senior event managers from Municipality of Chengdu, China in 2019. **Stanley** offered five guest lectures for Tokyo Board of Education (2016 and 2017), hosted by the University of New South Wales in Australia, on engaging across cultures, building capacity for interculturality, and capacity building for the 2020 Tokyo Olympics.

On an individual level, our researchers contribute to public engagement activity through television and radio appearances (**Pitkethly, Westbury**), coach education lectures (**Florida-James, Westbury, Palmer, Ingram-Sills**), and through events such as the Cabaret of Dangerous Ideas (**Pitkethly**).

Todd's work on the stakeholders and the festival city led to the organisation of specialist session during the Edinburgh International Science Festival (2019), and the Edinburgh Fringe (Sceptics on the Fringe). In July 2020 **Todd** exhibited 13 original artworks as part of the group exhibition *Chroma13a* at the Torrance Gallery in Edinburgh that were based on research on the visual culture of Edinburgh's festival city tourist gaze, produced through observing visitors to festivals in 2018 and 2019.

Stemming from her work on autoethnographic writing and narrative enquiry, **Stanley** contributed a stand-up comedy set entitled *Intercultural Research: Going Dutch*, at The Stand Comedy Club, Edinburgh to an audience of counsellors and therapists. Her stand up session, *A Trouble walks into a Bar* explored the power of storytelling and stand-up comedy to re-story and restore our lives.

Following the introduction of Scottish legislation in 2019 for communities to introduce place plans, and **Todd**'s continued interest in stakeholder research in the festival city, she engaged with other Public Engagement officers to lead a project that would engage with community partners on a micro-level. This activity secured £40,000 of UK Research and Innovation (UKRI) funding to enhance place-based partnerships for the Wester Hailes area of Edinburgh, and facilitate the development of the area's place plan. The project brings together the Health Agency Wester Hailes, WHALE Arts, the Scottish Government and other community partners.

Organisation of industry engagement events, such as **Anastasiadou** hosting '20 Years of Scottish Devolution past and future – what will be driving and shaping tourism in Scotland next' (2019) and 'Destination Organisations: Fit for Purpose and Ready for What the Future Holds?' (2016) with Tourism Society Scotland, communicated research findings and established future research agendas. **Leask** acted as a host for Interface Collaboration Day entitled 'Tourism Innovations for an Ageing Population' (2017), with participants from tourism sector, key organisations and academics involved in ageing research. We also engaged with the academy to promote tourism and hospitality development by hosting the Association of Tourism and Hospitality Educators (ATHE) conference in 2014.

During the COVID-19 pandemic our researchers have utilised their research expertise to promote commercial and community resilience. **Ross** was invited to join an international taskforce examining the impact of Covid-19 on cardiovascular healthcare called *The Coronavirus Literature Review Taskforce*. The researchers are reviewing and collating information about ARS-CoV-2 and Covid-19 to try to identify drug targets and other therapies to provide clinicians with the most up-to-date information.

Researchers have launched initiatives to support the recovery of tourism businesses and have worked with government agencies such as VisitScotland, and Interface. **Wight** advised on the Scottish Maritime Museum digital marketing strategy, and **Leask** supported the Devil's Porridge Museum in Dumfries and Galloway. Colleagues also took advisory roles based on their research expertise: **Leask** was a Member of the Scottish Government Tourism Recovery Taskforce May-Sept 2020, and **Ali-Knight** was a member of Events Advisory Group run by EventScotland as a response to COVID. **Ali-Knight** also initiated the DLP Assemble set up from DLP Alumni to support the industry with weekly zoom calls with businesses across Scotland. Supported by DLP LinkedIn page, the initiative led to the development of four Furlough Projects to aid tourism industry recovery. **Leask** acted as mentor for the DLP Assemble Speyside Tourism Recovery Team project.

4.3 Economy and Society, and the Sustainability of the Discipline

Researchers in the Unit support the academy in a variety of ways. As grant reviewers and panel members for UK and international funders: **Theodoraki** is a peer reviewer for AHRC, ESRC & British Academy, **Rihova** is a peer reviewer for ESRC, **Leask** and **Lynch** peer review for the Carnegie Trust for Universities for Scotland, **Anastasiadou** is a Scientific Expert for Innovation fund Denmark. Many colleagues also have or held visiting professor or researcher positions: **Ali-Knight** (Curtin University), **Robertson** (Victoria University, Melbourne), **Todd** (Breda University of Applied Sciences), **Lynch** (Auckland University of Technology), **Leask** (Wakayama University, Japan), and **Theodoraki** (Lumsa University, Italy).

The group has played a key role in developing interdisciplinary research via collaborative research bids. For example: **Anastasiadou** working on 3D printed souvenirs in collaboration with Vettese (Uoa32) of Design and Historic Environment Scotland; **Ali-Knight** working on the

Edinburgh Jazz and Blues Festival project; **Lynch**, co-founder, and co-editorship of *Hospitality & Society* with colleagues in USA and New Zealand as well as the UK; and **Leask** with the Senior Visitors project with Psychology at Heriot Watt University. In addition, members of the group have organised inter-disciplinary conferences relating to visual methods (**Todd**), and the first Critical Hospitality Studies Symposium (**Lynch**). Both these latter events attracted scholars and practitioners from a wide range of disciplines and industry sectors.

Several staff are board members or provide journal editorial support. **Leask** is an Associate Editor for the Journal of Destination Marketing and Management and Journal of Hospitality and Tourism Management. She is also an Editorial Board Member for Journal of Heritage Tourism and the International Journal Tourism Research. **Lynch** is the Editor for Hospitality & Society. **Hannam** is the Editor for Mobilities. **Robertson** is the UK Editor of Event Management and a board member for International Journal of Event and Festival Management. **Todd** is a board Member Event Management. **Stanley** is a board member of Ethnographic Edge. **Florida-James** has been Associate Editor of the Journal of Science and Cycling, and lead guest editor Oxidative Medicine and Cellular Longevity: 2016 and the International Journal of Environmental Research and Public Health. **Palmer** has a place on the editorial board for the British Journal of Sports Medicine injury prevention and health protection (IPHP) IOC special editions. **Ross** was guest Editor for Current Cardiology reviews special edition, and **Mascarenhas** sits on the editorial board of the Welsh Journal of Psychology.

From January 2016 to October 2017, **McCleery** was seconded as Director of the Scottish Graduate School of Social Science (SGSSS), which incorporates the Economic and Social Research Council's (ESRC) Doctoral Training Centre for Scotland. She was also the Executive Chair of the Research and Enterprise Network of (UK) Universities until 2019 and chaired the Universities Scotland Research Training Sub-Committee for several years during which time the network won the Times Higher Award for Early Career Researcher Development. **McCleery** also served on the Scottish Funding Council's Research and Enterprise Committee during the reporting period for six years, and currently serves as a member in the Board of the UK Council for Graduate Education.

We also ensure representation on key industry bodies. For example: leading the Tourism Society Scotland chapter (**Tinsley**); Board Membership of the British Arts and Festivals Association, and vice-chairing of Women in Tourism (**Ali-Knight**); Membership of the Edinburgh Tourism Action Group (**Robertson**); representation on the Assembly Rooms Heritage Advisory Board (**Leask**).

Externally, we have close links with industry organisations through our appointment of 12 Edinburgh Festival Directors, who give public lectures, facilitate and act in an advisory capacity on research bids, and support the Destination Leadership Programme (DLP). **Leask** is an invited participant for development of Edinburgh 2030 Tourism Strategy (2019) and an invited member of Tourism Skills Scotland Committee (2018-present).