2020

PESS RESEARCH COMMITTEE ANNUAL REPORT

UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH
Department of Physical Education and Sport Sciences

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FOREWORD

It is my great pleasure to share with you the PESS 2020 Research Annual Report. It has been a notable year for PESS in relation to research achievements both in terms of the impressive number of research publications and funding awards emanating from the 4 research themes (Food & Health, Physical Activity for Health, Sport and Human Performance and Sport Pedagogy), which are highlighted throughout the Annual Report.

Achievement in the area of research forms a key element of the international rankings by discipline and our strong performance in research is reflected in the QS World University Ranking and Shanghai Global University Rankings for 2020 where PESS is ranked in the top 100 (51-100) for 'Sports-Related subjects' and 'Sports Science Departments' respectively. Furthermore, at a University level, when assessing key research metrics by Department, PESS despite its relative size, is ranked 4th in terms of research publications from 2015-2020 and 7th for research contract awards greater than €100, 000 between 2017-2020.

I would like to take this opportunity of thanking all the staff in PESS for their continued commitment and contribution to the research mission of the Department and in particular the members of the PESS Research Committee for driving the research agenda and implementing our research strategy.

Finally, it would be remiss of me not to thank the Chair of the PESS Research Committee Dr Brian Carson and also Rhoda Sohun who led the coordination and development of this Annual Report.

Prof. Giles Warrington PhD, FACSM

Head of Department,
Physical Education and Sport Sciences (PESS)

Chair's Welcome

Welcome to the inaugural 2020 Physical Education and Sport Sciences (PESS) annual research report. I am delighted to bring you this report to showcase the outstanding research achievements of my departmental colleagues over the past 12 months. As we remain in the era of the 'unprecedented' due to COVID-19 and we navigate the complexities of the situation, it is almost incredible to report that PESS researchers have managed to achieve unprecedented success in terms of research publication output. PESS researchers have also secured significant funding awards in 2020 which will sustain and augment research activity for the coming years. In fact, 2020 was our strongest showing in the last 5 years with PESS researchers securing over €2.4m in new funds. This maintains the high level of research activity and standards of recent years, and reflects the expansion of our research teams and the endeavours of our talented research staff and students. To achieve this during a global pandemic, with limited access to facilities and resources, and many facing additional caring responsibilities, is really quite remarkable. This demonstrates the commitment of our researchers to their craft as well as their adaptability to any situation.

What is apparent throughout the report is the real quality and impact of the department's research. This is reflected in our recent QS World University (51) and Shanghai (Top 100) rankings. Our researchers are engaged in diverse research activities with real impact on societal and economic issues. It is also clear that our researchers are displaying leadership in their respective disciplines, as evidenced by the outreach and research events hosted and attended by PESS researchers documented throughout the report.

I would like to thank my colleagues on the research committee, especially the research theme leads for their contributions throughout the year. I would also like to give a special mention to Rhoda Sohun for her dedicated work in the development and curation of this report. Her contribution here was invaluable.

We face many challenges in the year ahead, and indeed will encounter many new opportunities. For now, let us take the time to reflect on the past year and celebrate the achievements of our colleagues. It is my pleasure to present the inaugural 2020 PESS annual research report. I hope you will enjoy reading about the successes of our team.

Dr. Brian Carson

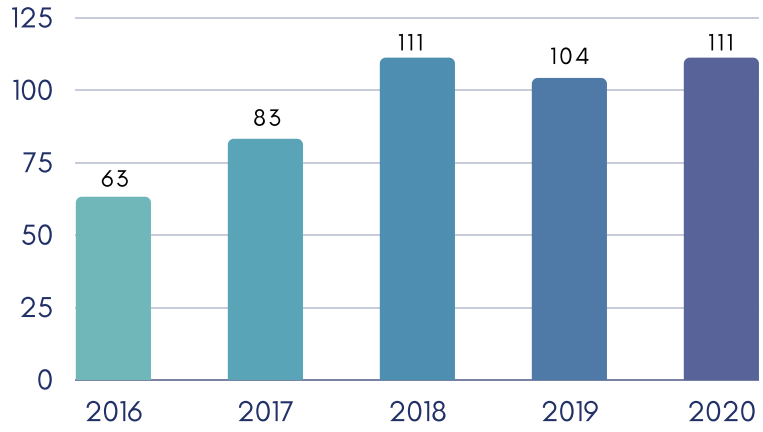
Chair Research Committee
Physical Education and Sport Sciences (PESS)

Research Performance

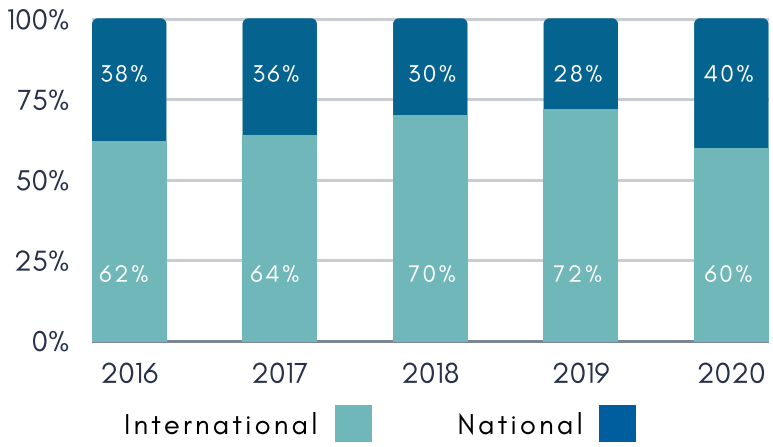
Publication Data

UL Research Performance Dashboard (Web of Science)

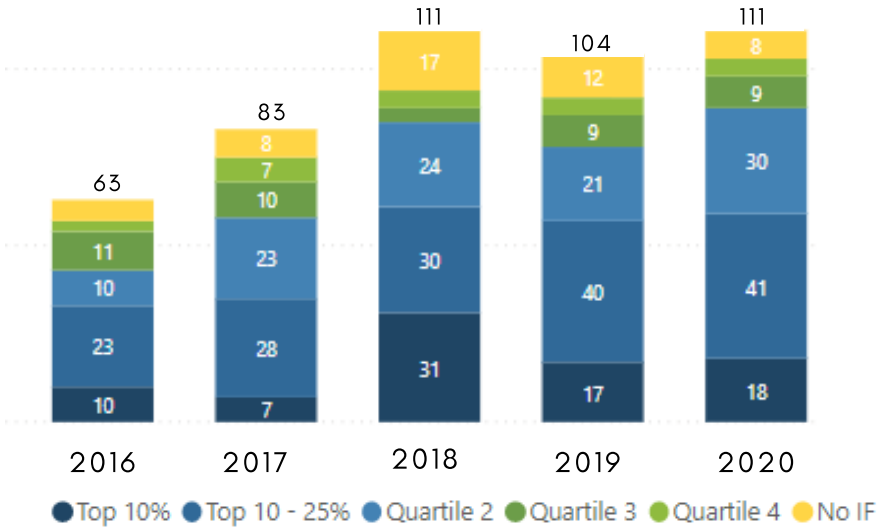
PESS Number of Publications



PESS % of Publications with International Co-authors



PESS Number of Publications by Journal Quartile



5 Year Comparison 2016 Vs 2020

76%
Increase in Number of Publications

80%
Increase in Top 10% Publications

72%
Increase in International Co-Author Publications

Comparison 2019 Vs 2020

7%
Increase in Number of Publications

6%
Increase in Top 10% Publications

UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

PESS External Research Awards

UL Research Office

€2,485,376
External Research Funding AY 2019/20

↑ 277%
External Funding from AY2018/2019

AY2019-20	€2,485,376
AY2018-19	€659,703
AY2017-18	€1,246,474
AY2016-17	€675,219

See Appendix 1 for full detail of External Research Grants Awarded to PESS

ENTERPRISE IRELAND

HORIZON 2020

IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

HRB Health Research Board

EUROPEAN UNION

- H2020
- Erasmus+

IRISH RESEARCH COUNCIL

- 1 Enterprise Partnership Scheme Postgraduate Scholarship
- 1 Government of Ireland Postdoctoral Fellowship
- 1 COALESCE Research Fund

HEALTH RESEARCH BOARD

- Conference & Event Sponsorship Scheme
- PPI Ignite Awards

INDUSTRY

- Marigot Ltd
- Carbery

PESS Research Themes

01 FOOD & HEALTH

02 SPORT & HUMAN PERFORMANCE

03 SPORT PEDAGOGY

04 PHYSICAL ACTIVITY & HEALTH

Food & Health

Theme Lead: Dr. Robert W. Davies

The Food & Health research theme is a cross-faculty grouping identified as an emerging interdisciplinary area within UL's strategic plan, producing high-quality, high-impact research in the area of Food & Health. The research cluster aligns with the 'Lifestyle & Health' theme of the HRI by aiming to design, develop and evaluate bioactive functional foods and/or nutrient supplements that enhance human experience, physiological and physical function, and encourage lifestyle changes that result in better health and wellbeing across the lifespan. To date, research has focused on exploring nutrient/physical activity-induced change in anthropometric phenotype identified by body composition analysis (www.ul.ie/bodycompositionstudy), tissue metabolism using *in vitro*, *ex vivo* and *in vivo* models and the effect of nutrient and physical activity interventions on sarcopenia, osteopenia, obesity and other clinical conditions.

The cluster brings together a multidisciplinary team of physiologists, dieticians/nutritionists, exercise scientists, strength and conditioning professionals. The group is led by Dr. Robert Davies, alongside three principal investigators (Dr. Brian Carson, Prof. Philip Jakeman and Dr. Catherine Norton) and eight research staff members (Dr. Ciaran Fealy, Dr. Marta Kozior, Dr. Miryam Amigo-Benavent, Dr. Tom Aird, Dr. Matthew Lees, Dr. Sile Griffin and Lisa Brennan). This year, under difficult circumstances, the cluster has made progress investigating bioactive properties of novel dairy, plant and marine protein sources, and their effects on muscle metabolism and health. This research has been supported by grant awards from the Marine Institute, Department of Agriculture Fisheries and the Marine, Enterprise Ireland and private partnerships with Carbery and Marigot Ltd. Despite the pandemic-related restrictions affecting primary research throughput and output, the cluster has completed two clinical trials, published 13 peer-reviewed papers, and presented at three international conferences.

In the immediate future, the cluster will continue to develop as a national hub for Food and Health research, aiming to attract further grant funding and collaboration with national/international partners, increase capacity, output and impact. For future research, a conscious effort is being made to consider and integrate broad global initiatives such as sustainability, food security and environmentalism.

Bioactive Functional Foods

Nutrient Supplements

Healthy Ageing

Performance Nutrition

Funding Awards

- Marine Institute
- Department of Agriculture Fisheries & the Marine
- Enterprise Ireland
- Carbery
- Marigot Ltd.

Sport and Human Performance

Theme Lead: Prof Drew Harrison

Sport and Human Performance is an established research theme within the PESS department Research Strategy and provides a vital research grouping to facilitate the research interests of researchers based in PESS Department, and with UL and external collaborators. Currently, the Sport and Human Performance Research theme seeks to establish a UL priority Centre in Sport and Human Performance Research (SHPRC).

The core mission of the proposed SHPRC is to advance interdisciplinary research in sport and human performance. It is closely aligned with the UL@50 Strategic Plan and will support the delivery of the "UL@50" Strategy, build on our existing reputation in Sport and Human Performance and seek to extend collaborative networks across UL, both nationally and internationally. Sport and Human Performance Research currently focuses on four key themes: Jockey Health, Irish Rugby Injury Surveillance (IRIS), eSports (ESRL) and Feasibility of Sprint Start Technologies (FASST).

Theme 1: Jockey Health

The Jockey Health research project involves a partnership with the Irish Horseracing Regulatory Board (IHRB), Horse Racing Ireland (HRI) and Waterford Institute of Technology to: enhance the health, safety, well-being of professional, trainee and apprentice jockeys in Ireland through multi-disciplinary research.

Theme 2: Irish Rugby Injury Surveillance (IRIS)

The Irish Rugby Injury Surveillance (IRIS) Project is actively working with the national governing body for Rugby (IRFU) to: enhance the health and welfare of Rugby Union players across the domestic game in Ireland by providing information on injury patterns that can impact on IRFU policy regarding injury prevention measures.

Theme 3: eSports

Deriving and evaluating key performance indicators in eSports is an industry collaboration project involving the development of IP to measure and ascertain skills and characteristics of expertise in gaming and eSports.

Theme 4: Feasibility Analysis of Sprint Start Technologies (FASST)

Despite the implementation of block sensor technologies to detect false starts in athletics competitions since 1985, the detection methods and determination of a minimum response time are based on limited evidence. The FASST project seeks to develop new technologies for the optimal determination of response times and improve the detection of false starts in competition.

The members of the proposed centre have obtained more than €7.02 m in research funding since 2018 and have been successful in recruiting >20 Government of Ireland Postgraduate Scholarships. The members of the proposed SHPRC have already established several industry, professional and community links nationally and internationally to support the research activities of the research theme and facilitate outreach and translational research activity.

L-R: Claire Walsh, Prof. Ann MacPhail, Dr. Elaine Murtagh, Dr. Daniel Tindall, Brigitte Moody, Ursula Freyne, Dr. Antonio Calderon, Yueying Gong, Dylan Scanlon, Lorraine Counihan

Sport Pedagogy

Theme Lead: Dr. Antonio Calderon

The Sport Pedagogy group has a long-standing reputation for demonstrating commitment to supporting educators and practitioners to carry out and utilise research findings in their practice. This work has intensified over the past five years given the pace of curriculum change for physical education (PE) in Ireland. The Sport Pedagogy group are central to the development, upskilling and research related to Irish school post-primary PE curriculum and practice. A former member of the group was responsible for the new senior cycle PE framework that is informed by her research. Prof Ann MacPhail is currently chairing the National Council for Curriculum and Assessment (NCCA) Development Group in junior cycle PE and a former member chaired the Leaving Certificate PE group. This year, Brigitte Moody also co-led the recent national survey of post-primary teachers' views of the junior cycle PE course.

Through the Physical Education Physical Activity and Youth Sport (PEPAYS) Ireland Research Centre, for which the Director is a Sport Pedagogy group member (Prof Ann MacPhail), members continue to secure NCCA and Department of Education and Science tenders that have included exploring physical literacy (Dr Elaine Murtagh), digital learning (Dr Antonio Calderón) and preparing teaching resources (Dr Daniel Tindall, Dylan Scanlon and Claire Walsh).

The Sport Pedagogy group therefore addresses the critical need for the NCCA to ensure they have established internationally informed and renowned PE curriculum that have been grounded by research- and practice-informed concepts to enable all young people in Irish post-primary schools to experience meaningful PE.

Indeed, the world-class expertise in Sport Pedagogy has been central to UL being named as the top outstanding university in the field of sport pedagogy, as determined by a 2017 study that reviewed approximately 3,000 sport pedagogy-related publications (Dong et al., 2017). This influence is also reflected in the research metrics of the group, with an average h-index of 26 among its top three senior researchers. One of the current challenges of the Sport Pedagogy group members, is to keep their renowned national and international reputation

Dong et al., (2017). Visualization analysis of researches made by PE teachers abroad. Journal of Wuhan Institute of Physical Education, 51, 80-87. (Link - No. 80)

Physical Activity and Health

Theme Lead: Dr. Matthew Herring

Though 2020 presented challenges to research, including paused school-based research, delayed health assessments for large-scale population-based studies (e.g., TILDA), and halted laboratory-based exercise studies, the Physical Activity & Health research theme continued to thrive in research funding, output, and impact. Theme members' research focuses on surveillance/measurement of activity behaviours, correlates and determinants of activity behaviours, physical activity intervention design, development, implementation, evaluation, and translation to policy, associations of activity behaviours and their interrelations with cardiometabolic and mental health outcomes, exercise, including green exercise, as medicine for physical and mental health, and the plausible biopsychosocial mechanisms which may underpin dynamic relationships of physical activity and exercise with physical and mental health.

In 2020, the PAH theme was primarily comprised of seven faculty: Dr. Matthew Herring, Prof Catherine Woods, Prof Alan Donnelly, Dr. Tadhg MacIntyre, Dr. Ciaran MacDonncha, Dr. Brian Carson and Dr. Elaine Murtagh.

Theme members generated more than €2mil in recent research funding, including large-scale EU funding for GOGREENROUTES (H2020) and DE-PASS (COST), along with significant funding for networking, postgraduate and postdoctoral training, and dissemination. The theme publication profile remained prolific with 55+ articles across the fields of exercise and sport sciences, medicine, psychology, psychiatry, and public health, illustrating both the diversity and influential breadth of theme research. Seven publications were top decile, and 55% were quartile one or two. Importantly, these publications included critical reviews of the prophylactic benefits of physical activity for depression and interventions to reduce sedentary behaviour, critically expanded knowledge on the cardiometabolic benefits of reallocating sedentary time to light-intensity physical activity and the anxiolytic benefits of resistance exercise training, and highlighted the importance of physical activity during the cancer journey and the COVID-19 pandemic.

Theme members also engaged in critical leadership within national and international physical activity and health initiatives and organizations, including Exercise is Medicine®, the Policy Evaluation Network, and the Irish Physical Activity Research Consortium. These leadership activities yielded a significant number of research-based webinars, workshops, conferences, and other key dissemination events.

€2 million Recent Funding

55+ Publications

Research Impact Highlights

GO GREEN ROUTES

Professor Alan Donnelly

PESS is a major partner in the European Commission funded €10.5 million Horizon 2020 project "GoGreenRoutes". The project is part of a European development which applies visionary and integrated solutions to improve the health of residents of cities.GoGreenRoutes is a 40-partner European project which will develop and test nature-based solutions to improve the health and well being of residents of cities across Europe (GGR | Home (gogreenroutes.eu).

The project is pairing participatory approaches and citizen science with Big Data analyses and digital innovation to co-create "Urban Well-being Labs" in six "Cultivating Cities": Burgas (Bulgaria), Lahti (Finland), Limerick (Ireland), Tallinn (Estonia), Umeå (Sweden) and Versailles (France). These pioneering cities are implementing "nature-based solutions" such as green corridors, linear parks, pocket parks and shared walkways to enhance the physical and mental health of their urban residents. By maximizing the available public space people can move around the city more actively, enjoy their free time and interact with others, whilst there is also room for restoring ecologically valuable spaces.

Professor Alan Donnelly is Principal Investigator of the Limerick component of the GoGreenRoutes project, worth €1 million to UL over the period 2020-2024. He was co-PI of the full application, working with the project Principal Investigator Dr Tadhg MacIntyre, now in Maynooth University. Prof Donnelly is supported in the project by his PESS colleague Prof Giles Warrington, and by UL colleagues Prof Norma Bargery, (statistical modelling), Dr Eibhlis O'Connor (nutrition and sustainability), Prof Stephen Kinsella (economics), Dr Conor Little (Governance) and Dr Elaine Gallagher (Citizen science). The Limerick team are contributing across the breadth of the GoGreenRoutes project, but the main focus in Limerick is on the Work Package "Move", lead by Prof Alan Donnelly, with Prof Warrington, Prof Bargery and Dr O'Connor.

The Move work package explores the health benefits and the usage of green urban spaces for physical activity, both for recreation and active transport.The research team is applying monitoring technology including under-path counters, Artificial Intelligence driven image analysis methods to identify cyclists, joggers and walkers, exercise Apps such as Strava, and worn sensors to monitor the usage of urban green spaces for activity in the cultivating cities.

Collaborators in Trinity College Dublin are simultaneously monitoring the environmental quality of routes used for physical activity in the cultivating cities, including air quality, allowing a full evaluation of both usage of green and grey spaces and environmental quality exposure.

While physical activity in green routes is likely of positive benefit to health, snacking behaviour linked to green route usage could be detrimental to both health and the environment. To address this, the UL team is working with technology partner Nutritics on the development of a phone App prototype to direct users of the Limerick green route towards sustainably produced, nutritious food retail outlets.

The "Move" work package includes a large-scale multi-city randomised controlled trial of the health benefits of exercise in urban green spaces compared to "grey" spaces including urban and suburban streets. The aim of this intervention is to quantify the potential benefits of green exercise on exercise participation levels and on indices of health.

European project funding for the UL based research is supporting three PhD students, a post-doctoral researcher and a research assistant who will collect data both in Limerick and the other cultivating cities for this project. The GoGreenRoutes project will have a positive impact on the residents of Limerick city, and will provide important data on the effectiveness of nature-based solutions on health.

Funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No. 869764

IRIS Irish Rugby Injury Surveillance

Dr Ian Kenny
Dr. Tom Comyns


Irish Rugby Injury Surveillance (IRIS) is the first long-term Rugby Union specific injury surveillance research project within amateur Rugby Union in Ireland. The research records the incidence, type, nature and severity of both match and training injuries occurring across the amateur and schools game in Ireland. This will aid in the development of future evidence-based injury prevention strategies in order to minimise injury risk and enhance player welfare. Dr. Ian Kenny and Dr. Tom Comyns are the co-principal investigators.

A total of 929 male,196 female and 446 schoolboy players were registered with the IRIS project for the 2019/20 season. Club season national report data were compiled across 388 matches (versus 644 for 2018/19 - approx. 120 fixtures affected by COVID-19) from 25 All-Ireland League and Women's All-Ireland League clubs. In the schools game, data from 125 matches at Senior Cup level and 64 Junior Cup level matches were recorded. The schools season was largely unaffected by COVID-19.

KEY FINDINGS

Injury Frequency:

- A male player would have to play **15** matches to sustain one injury
- A female player would have to play **21** matches to sustain one injury
- A School Senior Cup player would have to play **20** matches to sustain one injury
- A School Junior Cup player would have to play **34** matches to sustain one injury

Senior Club Injury Event:

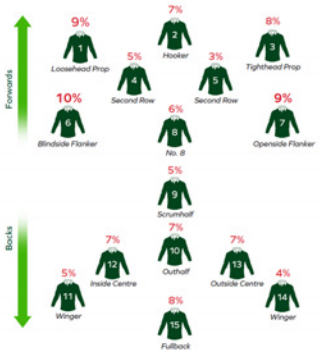
- 56% of match and training injuries a result of the tackle
- 47% of tackle related injuries sustained by the ball carrier
- 53% of tackle related injuries sustained by the tackler

Male Club Match Injury Occurrence:

7.1/1,000 player hours: concussion
4.5/1,000 player hours: ankle ligament sprain
2.9/1,000 player hours: hamstring strain

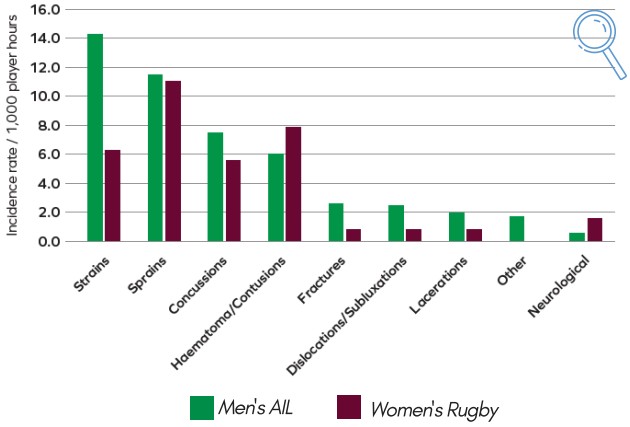
Female Club Match Injury Occurrence:

5.6/1,000 player hours: concussion
4.8/1,000 player hours: ankle sprains
4.0/1,000 player hours: knee sprains



%age of injuries occurring per playing position in the Men's AIL

%age of injuries occurring per playing position in Women's Rugby



Nature of Injury (IR/1,000 player hours)

School Senior Cup Match Injury Occurrence:

9.6/1,000 player hours: concussion
4.1/1,000 player hours: ankle sprain
3.2/1,000 player hours: ACJ sprain

School Junior Cup Match Injury Occurrence: (New Data)

6.3/1,000 player hours: concussion
2.7/1,000 player hours: sprains: ankle, knee, wrist, hip-groin, facial/forearm fracture

DOWNLOAD REPORTS

Club Rugby Report *Schools Rugby Report*

"Results from the IRIS project have led to the development of a nationwide programme to improve performance and enjoyment when playing the game."

Dr. Rod McLoughlin,
IRFU Medical Director

LifeAGE

Dr. Catherine Norton

LifeAGE is an Erasmus+ Sport project led by Dr Catherine Norton and supported by Dr Audrey Tierney and Prof Catherine Woods and a team of seventeen student reseacrhers at UL. The project aimed to improve the health and quality of life for older adults, through lifestyle interventions with a particular emphasis on active ageing. The overall objective of the project was to assess the health consequences of sub-optimal nutrition and physical inactivity in aging populations, but more importantly to promote lifestyle interventions as key tools for healthy and active ageing.

The LifeAge Project has fostered synergy with, and between, local, regional, national and international policies to promote appropriate nutrition, sport and physical activity participation, in close relationship with the Active Ageing policy as defined by the European Commission.

The project was structured around three phases over 36 months. The main objective of Phase 1 was to investigate the effects of sub-optimal nutrition and sedentary lifestyle on physiological, functional and psychological parameters in adults (over 50 years of age). This was achieved by means of questionnaires and interviews conducted across the five partnership consortia (Spain, Finland, Latvia, Italy and Ireland) to identify the habits of adults and their current health status.

The fieldwork involved comprehensive cognitive, physical, functional, anthropometric, dietary and sleep assessments, as well as quality of life measures. The findings from Phase 1 were recently published.

"Promoting the shift sedentary Lifestyle towards active Ageing – LifeAge" Project No 603121-EPP-1-2018-1-ES-SPO-SCP

Informed by these results, Phase 2 included the development of several strategies to teach older adults about the benefits of appropriate nutrition and physical activity, in order to facilitate not only adding years to life, but also adding life to years. Among these innovative strategies were smart phone applications with exercise prescription guides; educational comic and books for children and young people on healthy, active ageing; an online educational platform; and promotional videos.

LifeAGE International Collaborators

LifeAGE UL Student Researchers

The final phase of the research focused on dissemination activities transversally implemented throughout the project. This phase included mass media, press conferences and social network activity as well as educational events held in each partner country.

https://life-age.eu/

Optipep4Power: New Bioactive Ingredient Development

RESEARCH NEWS

Dr Tom Aird – Postdoctoral Researcher
Dr. Brian Carson – PI, Senior Lecturer
Industry Partner – Carbery Food Ingredients Ltd.

A new nutritional ingredient to support adaptation to exercise training developed with and evaluated by researchers at PESS was launched to market in October 2020. Optipep4power® was developed and tested over the last 4 years in collaboration with industry partner Carbery Food Ingredients Ltd. Carbery sponsored the doctoral programme of Dr Tom Aird who conducted the product evaluation study under the supervision of Dr Brian Carson. The purpose of the project was to develop and test a novel whey protein hydrolysate with functional bioactivity to enhance muscle mitochondrial adaptation to High Intensity Interval Training (HIIT) to ultimately improve performance. The researchers designed and conducted a study that demonstrated Optipep4power® supported important metabolic adaptations that resulted in a 4.3% greater training-induced increase in mean power output and a 6.1% reduction in fatigue during sprint cycling, when compared with the industry standard whey protein concentrate.

This indicates a greater capacity for power generation over the length of the sprint and a greater capacity for sustaining high-intensity exercise performance. As a result of the COVID-19 pandemic, the product was launched virtually to Carbery's business partners and customers, generating excellent early interest. This product challenges conventional behaviour patterns with protein consumed prior to rather than after exercise, and early feedback from the marketplace has been positive to date.

"This collaboration between our company and the team in PESS, UL has been a very positive experience, from the planning, design, execution and follow through with technical support into the market place. Our Optipep, hydrolysed whey protein performed significantly better that the control which provides us with substantiated clinical evidence to promote and deliver new innovation to our customers in the Sports Nutrition Market and would highly recommend the benefits of such collaborations."

Aine Hallihan, Director of R&D,
Carbery Food Ingredients

Having Impact 5000 Miles Away

Professional Learning Needs of Chinese Teacher Educators

Yueying Gong: PhD Student

Supervisors: Prof. Ann MacPhail (PESS)
Dr. Ann-Marie Young (SoE)

There has been a growing interest in teacher educators' professional learning and development (PLD) needs. My PhD study aims to examine the PLD needs of Chinese university-based physical education teacher educators (PETEds) and their views about effective ways to address them. This is significant given the limited research exploring this group. The data collection of my first two PhD studies included: (1) A European-wide survey being translated and distributed in China (251 responses of Chinese university-based PETEds from 28 provinces); (2) Exploring what research-related activities Chinese higher education-based PETEds prioritised, (interviews with 15 Chinese PETEds).

The key results convey that the majority of Chinese PETEds had a strong desire to undertake further PLD in three areas: (i) subject knowledge and didactics, with particular emphasis on professional training in specific types of sports, (ii) research related academic activities and (iii) institutional activities (e.g. peer coaching, training activities within their institution). They preferred formal learning programmes and international learning activities to address these needs. The cost of the activities was the most significant factor influencing their engagement. Future research needs to pay closer attention to the PLD needs of specific subject area groups of teacher educators (Gong et al. 2021a). In terms of research-related professional learning activities, the majority of Chinese PETEds prioritised peer-review publication.

The motives for PETEds to be involved in research tended to be extrinsic to the individual and included pressures aligned to the evaluation of their academic position and institute requirements. PETEds who entered teacher education with a PhD were expected, and supported, to do research. While it was easier for PETEds to undertake collaborative research with a research group within their faculty/department, there was a lack of collaborative research external to the faculty/department as well as a lack of international collaboration (Gong et al. 2021b).

References:

Gong,Y., MacPhail, A & Guberman, A. (2021 a) Professional learning and development needs of Chinese university-based physical education teacher educators, European Journal of Teacher Education, DOI: 10.1080/02619768.2021.1892638

Gong, Y., MacPhail, A & Young, A.M. (2021 b) Chinese higher education-based physical education teacher educators' professional learning needs for involvement in research activities, Professional Development in Education, DOI: 10.1080/19415257.2021.1895286

Enhancing Sustainability of the Fishing Industry

Dr Matthew Lees, Dr Brian Carson

The processing of material from the fishing industry generates substantial unexploited waste products, many of which possess high biological value. As the world looks to more sustainable food sources, we recently undertook a study investigating the use of waste by-products of the fishing industry as a source of high quality protein. Fish-derived proteins, particularly fish protein hydrolysates (FPH), offer potential as high-quality sources of dietary protein whilst enhancing economic and environmental sustainability. Ageing is associated with the loss of skeletal muscle mass and function.

Thus, there appears to be a potential application for FPH in older persons as a high-quality protein source that may also confer additional health benefits. In this study funded by the Marine Institute, we worked with industry partners Bio-Marine Ingredients Ireland to evaluate a Blue-Whiting Protein Hydrolysate (BWPH) for the ability to increase circulating essential amino acids in older adults and to stimulate muscle protein synthesis (MPS) *in vitro*.

In the study we demonstrated that BWPH induces robust essential aminoacidaemia in older adults, albeit not to the same extent as the industry benchmark Whey Protein Isolate (WPI) due to the divergent amino acid profiles of the respective starting samples. This means that the BWPH is not as high quality as WPI. However, this can potentially be overcome by providing a greater amount of protein, which is viable as these products are comparatively cheap.

Using our cell-based experimental model, we also provided preliminary evidence of the effects of BWPH on MPS and myotube growth *in vitro*. Based on current evidence, this BWPH may offer potential as an alternative source of readily bioavailable protein to support skeletal muscle health and anabolism in older people. This has potential commercial and economic impact for our industry partner and Ireland Inc., respectively.

Research News

DE-PASS
DEterminants of Physical ActivitieS in Settings

Dr Ciaran MacDonncha

DEterminants of Physical ActivitieS in Settings (DE-PASS) is a network of dedicated researchers and policy makers who have a unique focus on understanding, identifying and measuring the factors which impact physical activity behaviours (PABs). Funding (approx. €550,000) to support capacity building and research coordination objectives was gained from COST (European Cooperation in Science and Technology) in April 2020. DE-PASS formally commenced in November 2020 and will be funded until October 2024.

The grant holder for DE-PASS is the University of Limerick. Dr. Ciaran MacDonncha is Co-Chair of the Action, along with Prof Laura Capranica, University of Rome Foro Italico. DE-PASS comprises of in excess of 200 "Action Participants", 100 institutions and organisations, and 38 European and International partner nations. DE-PASS includes 10 Action participants from PESS, with various roles in committees and Working Groups.

DE-PASS will examine the factors which impact PABs using a setting (e.g. home, school, family) and life span approach. In this context DE-PASS will enact a multi-disciplinary, Pan-European, international network of established, young and Early Career Investigators (ECIs) and policymakers and thus exploit, consolidate and further integrate existing relevant expertise, evidence, resources and influence. DE-PASS will prepare new Best Evidence statements and relevant conceptual frameworks.

A Knowledge Transfer Platform (KTP) is integrated within DE-PASS where outputs are translated and shared in a fashion which is tailored for policy makers and practitioners. Best evidence statements regarding PABs and their determinants will be prepared. A new online European platform which will facilitate standardised, effective and valid measurement of key factors which impact PABs will be developed - the initial focus here will be on the home, school and family setting. DE-PASS will establish a new, high functioning, open access European database of the determinants of PABs, this will evolve to include a cohort extension.

cost EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

Funded by the Horizon 2020 Framework Programme of the European Union

The SATLE Project

Dr Antonio Calderon

The SATLE project: Learning to be a teacher in a fully online environment. This is the short title of the project that was funded with +€30K as part of the Strategic Alignment of Teaching and Learning Enhancement Funding in Higher Education 2020, led by the National Forum for the Enhancement of Teaching and Learning in Higher Education and the Higher Education Institution. The research team is led by Dr Antonio Calderón and supported by Dr Mary Masterson (Course Director of the PME Languages).

An integrated blended learning approach for physical education teacher education programmes: teacher educators' and pre-service teachers' experiences

Antonio Calderón, Dylan Scanlon, Ann MacPhail and Brigitte Moody

Department of Physical Education and Sport Sciences, University of Limerick, Limerick, Ireland

Calderón, Scanlon, MacPhail and Moody (2020) is an output example from this project and there are a few more coming out shortly. These are all timely and relevant research projects aiming to increase the understanding of the realities of digital teaching and learning in higher education from different perspectives, both nationally and internationally.

It is an 18-month project aiming to explore the effect that online pedagogies ('pandemic pedagogies') might have had on student teachers' content and pedagogical content knowledge but also to explore the 'quality' of their teaching while they are on school placement. The findings of this mixed-methods study can shape policy in both the immediate planning and support of initial teacher education programmes and online teaching and learning strategies, but also in terms of broader policies and practices that can act as 'drivers' of improvement.

This is another timely research project that builds on the theme: 'effective teaching and learning' of the Sport Pedagogy research group, together for example, with the blended learning project, which is ongoing and aims to explore an effective supportive structure that will allow higher education faculty to introduce blended learning into their teaching practices.

+30K

Funding from Strategic Alignment of Teaching and Learning Enhancement Funding in Higher Education 2020

Investigating attitudes to bilateral skill symmetry in elite Gaelic Football and the factors affecting bilateral development

Karol Dillon: MSc Sports Performance Student

What is bilateral skill symmetry?

In essence, it is the ability to perform skills using both sides of the body. Gaelic football is an ideal sport to study this question, because so many skills can be performed with the dominant or non-dominant side.

What did your study find out?

Interviews with fourteen players and five coaches and managers with experience of Division One at inter-county level generated three key themes. Firstly, being bilaterally skilled was integral to both individual and team play. Secondly, players and coaches described a number of challenges to developing bilateral skills, such as the increased emphasis on strength and conditioning resulting in a metaphorical tug of war between skills development and physical preparation.

Finally, advice on how to best overcome these challenges and develop bilateral skill was collated. Although a range of specific guidance was identified, applicable at all levels from youth to inter-county, consistency in coaching was seen as paramount in developing the non-dominant side.

Your research was well-received in regional and national media. What's your next step?

It has generated a lot of interest from coaches, and has been picked up by a range of outlets including the Irish Examiner newspaper, The Kerryman newspaper, The Cork Echo and Radio Kerry, which has in turn generated further conversations. In terms of next steps, I hope to pursue further study to PhD level. Initially, that will involve additional video analysis of inter-county games to establish typical levels of bilateral skill symmetry. Subsequently, I would visit and observe development squads and interview coaches to gain a greater understanding of how bilateral skill symmetry is developed. Finally, I would like to use what I have learned in the first two phases to develop and evaluate a bilateral skills intervention programme.

The Development of Youth Track and Field Athletes Project

Dr. Phil Kearney

What is the Developing Youth Track & Field Athletes Project?

The Development of Youth Track & Field Athletes Project is a multi-phase investigation of aspects of young athletes' developmental experiences within track and field. Our aim in conducting this research is to gather information which can be used to advise coaches and coach educators about the messages that they communicate to athletes, coaches and parents to enhance children's experience in youth sport.

Progress in 2020

The Developing Youth Track and Field Athletes project began as a collaboration between Dr. Phil Kearney (University of Limerick) and Dr. Phil Hayes (Northumbria University). 2020 saw a new collaborator, Dr Tom Comyns, University of Limerick, join the team working on the project, and two new publications.

Coach and Parent Perceptions

The initial publications from the project uncovered the reality of youth athlete development in track and field athletics. Our first publication of 2020 compared this objective reality to coach and parent perceptions. Coaches and parents were found to hold contrasting perceptions of optimal youth development activities. Educational initiatives for both groups should focus on the relationship between youth and adult success, the role of relative development in youth success and communicating the rationale underpinning healthy youth sport practices. However, research should also focus on developing a more detailed understanding of healthy youth sport practices.

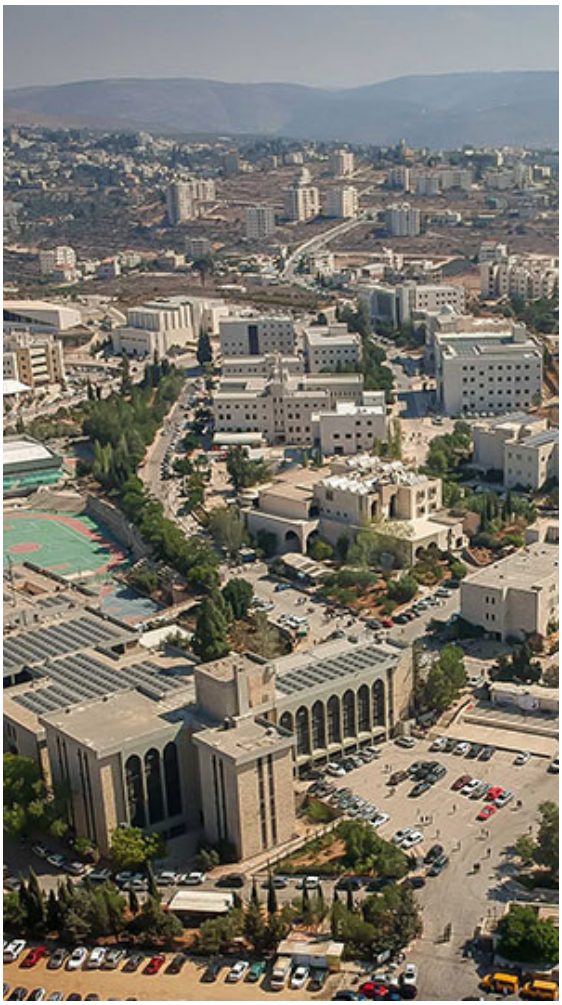
Multi-Event Participation

Athletics coaches and administrators often encourage young adolescents to compete across the full range of athletic disciplines: sprinting, jumping, throwing and endurance running. Our study found that while specialisation within a single event group was rare for young adolescent athletes, less than 35% of participants followed the recommendations and competed across all four disciplines. The extent to which an athlete competed across multiple disciplines as a young adolescent had no relationship with their retention in the sport in later years. No clear pattern emerged regarding the relationship between multi-event participation at youth level and later performance. While researchers need to consider more nuanced investigations of multi-event participation, coaches, parents and administrators should consider an athlete's diet of activity across sports as well as within sports.

Aims for 2021

In 2021 we are continuing to explore the relationship between various aspects of a youth athlete's practice and both athlete progression and retention. In particular, we are focused on expanding our work on multi-event participation, and on exploring the relationship between season-length and athlete development, particularly in relation to endurance running.

Latest publications and updates on the Development of Youth Track and Field Athletics project here.



Learning in Motion: embedding gender-responsive, play-based pedagogies in teacher education in Palestine

Dr Elaine Murtagh

In August 2020 Dr Elaine Murtagh embarked on a new research project entitled Learning in Motion: embedding gender-responsive, play-based pedagogies in teacher education in Palestine. The project is funded by the Irish Research Council and the Department of Foreign Affairs & Trade through Strand 2b of the COALESCE research fund. This strand seeks to cultivate high-quality research capacity both in Ireland and eligible partner countries in response to key societal challenges. The Co-PI is Dr Ahmad Aljanazrah, Dean of Education at Birzeit University, Palestine.

Learning in Motion examines how gender-responsive, play-based pedagogies can be embedded in teacher education programmes in Palestine. Ongoing conflict and political unrest in Palestine has had a detrimental impact on education. While working in a challenging political and economic context, teachers are presented with social challenges of prevailing gender norms and often lack the capacity to create supportive learning environments and respond to the needs of their students.

During this three-year project, the Co-PIs, with the support of a postdoctoral researcher and research assistant, will carry out formative research to explore teacher educators' perceptions of gender-responsive and play-based approaches. This will inform the development of a professional development programme for teacher educators, to support them to incorporate novel pedagogical approaches into teacher education practice at four Palestinian universities. The programme will be delivered in collaboration with an established community-based partner, 'Right To Play'. This project will allow roles, responsibilities, rights and needs of all genders to be taken into account in teaching and learning processes, in order to contribute to greater gender equality in learning environments that are socially and emotionally safe. The work is supported by an international Advisory Committee who advise on the future research plan and bring attention to the priorities of all stakeholders to enhance the educational experience of children in Palestine.

IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

جامعة بيرزيت
BIRZEIT UNIVERSITY

ESPORTS SCIENCE LAB

R-L: Dr Adam Toth, Dr. Mark Campbell, Niall Ramsbottom

Dr Mark Campbell, Director
Dr Adam Toth, Programme Manager

2020 marked a significant milestone for the Esports Science Lab (ESRL). The Lab was officially launched in its new state of the art facilities at Lero, The Science Foundation Ireland Centre for Software Research. Work from the lab, currently comprised of a multi-disciplinary team of 8 with expertise in psychology, neuroscience, biomechanics, computer science, software development and data analytics, has garnered national and International media attention featuring on television and in newspapers, magazines, and podcast media (examples include Drivetime on RTE, Pat Kenny on Newstalk, Newsweek, and the Hindustan Times, one of the most widely circulated newspapers in Asia).

Other significant achievements of the lab included the appointment of Dr. Mark Campbell and Dr. Adam Toth to the editorial board of the International Journal of Esports Research, the first academic journal tailored to research in esports and video gaming.

Additionally, the ESRL was invited to deliver a keynote panel at the prestigious Esports Science Conference, hosted by University California, Irvine. For 2020 the lab produced 14 high impact ISI journal publications with Drs Campbell and Toth editing a specialist topic in Frontiers in Psychology Cognition. Finally, among the several industry partnerships the lab has developed, it has been successful in selling a several hundred thousand euro IP license for bespoke software designed and developed in house to Logitech. Logitech have since launched this product (playmaster.gg) and the lab is very proud to have contributed such work over the past 5 years on this unique project co-funded by Logitech and Science Foundation Ireland (SFI). Finally, the lab has also recently secured additional funding from Logitech and SFI to fund the research activities of the ESRL and grow the team for a further 3 years (2024) bringing the working collaboration to 8 years.

ESRL

14 ISI Publiations

8 Research Team

BRAnd Value Alignment through Dual Career

Dr. Ciaran MacDonncha

In April 2020, UL secured Erasmus + Sport funding for the BRAVA-DC project. The project is coordinated by Dr. Ciaran Mac Donncha & Dr. Giles Warrington.

The project is funded up to €399,925 for 3 years and involves 8 European partners. The primary focus of BRAVA-DC (BRAnd Value Alignment through Dual Career) is on enhancing the European workplace environment so the circumstances and challenges of dual career (DC) athletes and coaches can be recognised and effectively accommodated. The ethos of the corporate sector and how the brand and values they promote benefit from and align with DC is integral. BRAVA-DC will benefit all European DC employees. The project aims are:

1. To structure an evidence and eminence knowledge base on DC employee athletes
2. To define and enable (i.e. feasible to implement) new European guidelines which support DC in the workplace and which facilitate appropriate brand alignment strategies and Corporate Social Responsibility (CSR) policies which value DC.

Accordingly, the project will operationalise further the EU Guidelines on Dual Careers of Athletes (European Commission, 2012) which recognise the challenges of a concomitant education or employment commitment.

Accessible, enabled, evidence and stakeholder informed DC workplace guidelines do not currently exist. The project aims will be achieved through a collaboration of multi-disciplinary academic, DC, and corporate sector experts. Evidence and eminence based knowledge synthesis techniques and technologies will be used and the input of key stakeholders (employee-athletes and coaches and their employers) will be integral to the provision of relevant and enabled outcomes.

BRAVA-DC will produce the following new and impactful outcomes: SLR on working experiences, perceptions, opinions and needs of DC employee-athletes and coaches and brand alignment strategies/CSR policies in DC; a European conceptual framework illustrating relevant DC workplace factors and factor structures; European DC workplace guidelines for DC support, brand alignment strategies and CSR policies; a scientific manuscript providing project summary, impact analysis and conclusions.

PhD Graduations & Vivas

2020 was a prolific year for the graduation of our research students, with 17 graduating with doctoral awards. It was also a busy year for PhD *viva voce* defences. These students had the additional challenge of conducting their defence remotely and quite often isolated from any supports. I am glad to report that all candidates successfully defended their PhD theses. Well done and congratulations to all our doctoral graduates and their supervisory teams on their success, which is the culmination of many years work. We wish you the best with your future endeavours in academia or industry.

Dr Caithriona Yeomans: "Injuries in Amateur Male and Female Rugby Union" Supervisors: Dr Tom Comyns, Dr Ian Kenny, Dr Roisin Conway (SAH).

Dr Caoimhe Tiernan: "Investigation of the Relationship between Training Load, Monitoring Markers of Recovery, Injury, and Illness in Elite Team Sports". Supervisors: Dr Tom Comyns, Prof Giles Warrington, Dr Mark Lyons.

Dr Jennifer Higgins: "An assessment of fracture prevalence, bone mineral density and habitual bone metabolism in female distance runners" today. Supervisors: Prof Phil Jakeman and Dr Brian Carson.

Dr Marta Kozior: "Peri-exercise nutrition: An innovative approach to dietary assessment in trained populations". Supervisors: Prof Phil Jakeman and Dr Catherine Norton.

Dr Brett Gordon: "The Effects of Resistance Exercise Training on Anxiety". Supervisors: Dr Matt Herring and Dr Mark Lyons.

Dr Tom Aird: "Nutritional regulation of skeletal muscle metabolic and performance adaptations to sprint interval training in healthy males". Dr Brian Carson.

Dr Jessica Mangione: "Physical Education External Provision in Irish Primary Schools". Supervisors: Dr Missy Parker and Prof. Mary O'Sullivan.

Dr Cathal Og O'Sullivan "The Exploration of Student Voice in the Development of Fundamental Movement Skills with Post-Primary Students and Teachers" Supervisors: Dr Tom Comyns and Dr Missy Parker.

Dr Brendan O'Keeffe "The development and evaluation of a fitness test battery and web-based platform for monitoring key indicators of adolescent health in school settings". Supervisors: Prof. Alan Donnelly and Dr. Ciaran MacDonncha.

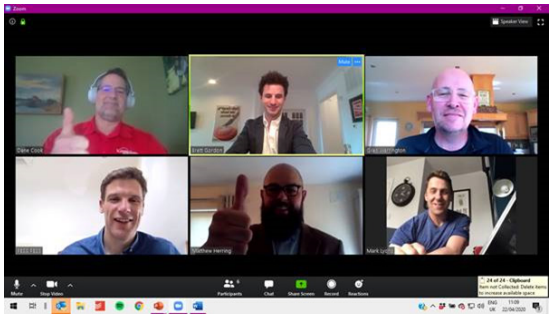
Dr Arthur Lynch "The use of an isometric squat test as a measure of lower body maximal strength" Supervisors: Dr Brian Carson, Dr Rob Davies and Dr Joanna Allardyce (SAH).

Dr Paul Kinnerk – "Coaching Pedagogy in Inter-County Gaelic Football". Supervisors: Dr Mark Lyons, Dr Phil Kearney and Dr Stephen Harvey (Ohio University).

PESS PhD Graduates, January 2020, UL: Dr Chris Bryan, Dr. Linda Davern, Dr. Hannah McCormack Dr. Eoin Everard and Dr Claire Brady

Dr Caithriona Yeomans & Supervisors after PhD Viva

Dr Caoimhe Tiernan, Supervisors & PhD Viva Examiners



Dr Brett Gordon, Supervisors and PhD Viva Examiners

Dr Cathal Og O'Sullivan, Supervisors & PhD Viva Examiners

Research Events

Physical Activity for Health Webinar Series

PAfH
Physical Activity *for* Health
HRI Research Cluster
University of Limerick

The Physical Activity for Health (PAfH) research cluster comprising nine founding members, including six PESS researchers aims to build an international hub of excellence in the area of physical activity and health research. The cluster focuses on three key areas; 1) Research Excellence and Impact; 2) Collaboration and Networking; and 3) Capacity Building and Training. In order to build the international recognition of PAfH to help advance in these areas, a critical feature of the cluster's activities in 2020 was the launch and delivery of a series of online webinars.

The webinar series commenced in May 2020 with a key focus of our first two sessions on COVID-19, including the role of exercise in maintaining immune function, the impact of COVID-19 on physical activity and mental health and strategies to maintain physical activity including the delivery of interventions through teleconferencing during the pandemic. In collaboration with partners in the Policy Evaluation Network (PEN) and ISBNPA we explored the learnings from international studies on physical activity and food policy monitoring and evaluation. We also ran two webinars discussing the role of physical activity in the prevention and treatment of chronic diseases including sarcopenia and cancer.

Finally, we finished with a session on the benefits of dance for social, physical and mental wellbeing. The series was very successful in achieving our goal, as each session was attended by up to 300 people.

May 19th – Prof David Nieman (Appalachian State University), Dr Jacob Meyer (Iowa State University) and Prof Susan Coote (University of Limerick) – "COVID-19 and Physical Activity".

July 3rd – Dr Fiona Bull (World Health Orginisation), Prof Catherine Woods (University of Limerick), Dr Una May (Sport Ireland) and Prof Mark J Nieuwenhuijsen (IS Global) – "Strategies to Maintain Physical Activity Behaviour and Research Beyond COVID-19".

September 22nd – Dr Janas Harrington (University College, Cork), Prof Boyd Swinburn (University of Auckland & Deakin), Mr Sven Messing (University of Erlangen – Nuremberg), Ms Tracy Nau (University of Sydney) and Prof Bill Bellew (University of Sydney) – "Measuring policy actions for healthy and sustainable food and physical activity environments; A SIG Policies and Environment Webinar"

October 22nd – Dr Brendan Egan (Professor of Sport and Exercise Physiology, School of Health and Human Performance, Dublin City University.) – "Muscling in on Healthy Ageing"

November 12th – Prof Anna Campbell (Edinburgh Napier University) and Dr Ciaran Fairman (University of South California) – Physical Activity and Cancer

November 30th – Emily Jenkins (International Association of Dance Medicine and Science) – "Introduction to Dance for Health: presenting evidence surrounding the physical, mental, emotional and social benefits of participation".

LEADERSHIP RESERVES: AGENTS OF TRANSFORMATION IN TEACHER EDUCATION

Leadership Reserves: Agents of transformation in teacher education - Alumot" was an outstanding event that took place in January 2020, thanks to the coordination of two Irish HEAs, UL (leading) and NUIG, and two Israeli institutions, the Ministry of Education and MOFET Institute. Within UL, the leading team consisted of members from the Department of Physical Education and Sport Sciences (Dr Antonio Calderón) and the School of Education (Dr Orla McCormack and Dr Joanne O'Flaherty).

This working relationship among the Irish third level institutions and MOFET is a consequence of an ongoing and mature relationship that resulted in many other outstanding events either at UL or at MOFET Institute, involving current and retired academics from PESS. Alumot is a joint project of the Ministry of Education and MOFET Institute aimed at consolidating senior leadership reserves in the teacher-education system in Israel.

Attendees at the Leadership Reserves: Alumot Event at the University of Limerick, January 2020

The program was established to promote a mutual language for discussing key challenges in teacher education, to build trust amongst senior actors in different power positions, and to establish a network of leaders who, collectively, foster significant transformations. The project aims to train and promote professional leaders who operate in the eco-system of teacher education in Israel: Practitioners, theorists, and policy makers from academia, the field, and the Third Sector to become senior management.

This time, Alumot considered UL (and NUIG) as an international leader in teacher education, to develop their ongoing professional learning. The four day event was a success, and the feedback from the more than 25 attendants (senior leaders in education) was extremely positive and rewarding.

IRISH PHYSICAL ACTIVITY RESEARCH COLLABORATION

I-PARC

Fostering insight, intelligence and innovation to enable more people in Ireland to be more active, more often

Established in 2018, the I-PARC team involves multiple stakeholders, across policy, practice and research, who work together to apply insight, intelligence, and innovation to the challenge of getting more people to become more active, more often in Ireland. The challenge of how to increase the physical activity levels of the population of Ireland needs a whole of systems approach, one that brings together researchers, policy makers and practitioners from the world of Physical Activity both in Ireland and internationally. I-PARCs vision and work packages were to inspire the best use of evidence, effective delivery and supportive environments for improving activity levels in Ireland.

I-PARC is led by Prof. Catherine Woods (PAfH) and Dr. Fiona Mansergh (Department of Health). UL Research staff include Dr. Enrique Garcia (EHS Research Fellow) and Ms Caera Grady.

I-PARC Hosted Two Events in 2020

A 2-day workshop 28th and 29th January 2020: "Systems Based Approaches: What is it and why is it relevant to physical activity promotion?" Invited speakers included Prof. Adrian Bauman (University of Sydney), Dr. Andrew Milat (NSW Ministry of Health), Ms. Flora Jackson (NHS Scotland) and Dr. Nick Cavill (Cavill Institutes).

I-PARC symposium on the 30th January 2020: 'Implementing PA initiative in Ireland'. The symposium saw speakers from five interventions run around Ireland (Y-PATH PE 4 Me, ExWell Medical, 20x20, GAA healthy clubs, staying fit for the future).

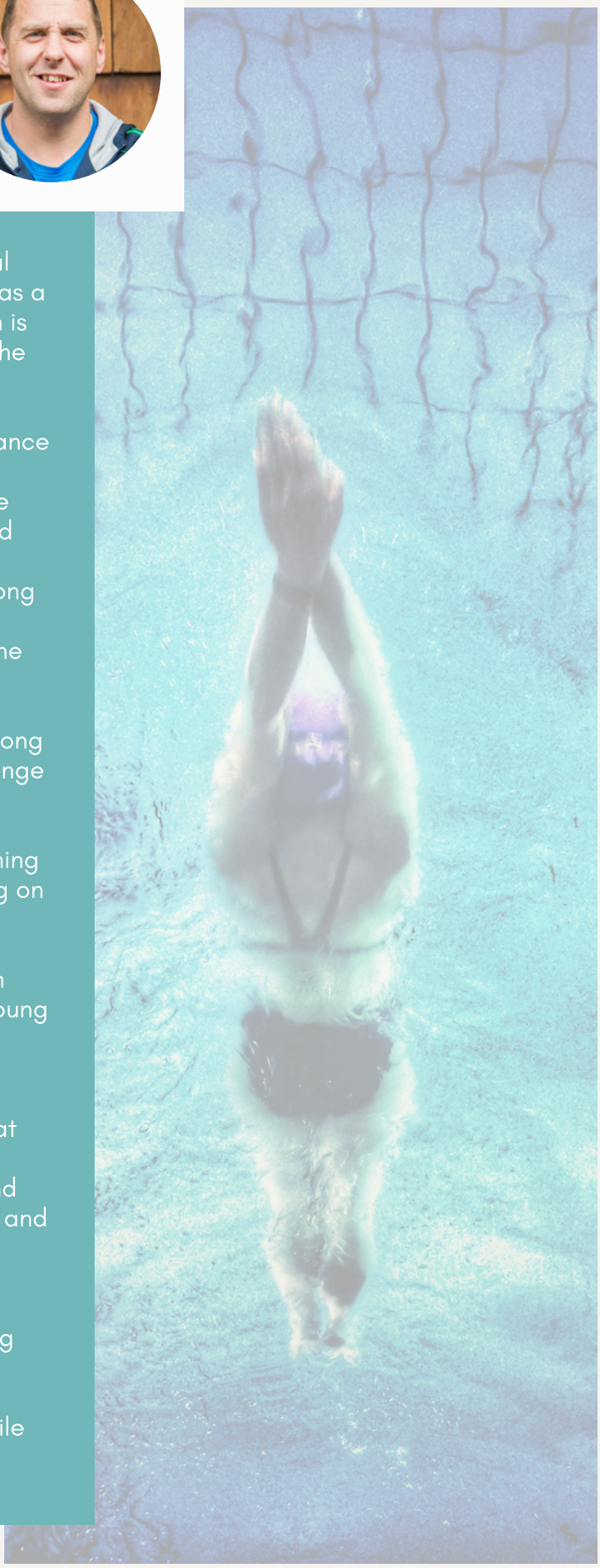
The I-PARC project was funded through the HRB applied partnership award, HSE and Healthy Ireland for a period of 2.5 years. Recently, the I-PARC knowledge users (Department of Health, Department of Tourism Culture Arts Ghaeltacht Sport and Media, Health Service Executive and Sport Ireland) have collaborated to fund an I-PARC project manager (at post-doctoral level) for a further two years beginning May 2021. This is a significant achievement for this HRB funded Applied Partnership Award. The project team are currently working out the deliverables for this period but envisage the roll-out and dissemination of three toolkits: 1) Systems Approach Toolkit, 2) Evaluation Toolkit and 3) Implementation Toolkit.

I-PARC started by bringing together 3 Government Departments, 5 State Agencies and 6 research institutions. This has provided an infrastructure to support the growth, research activity and dissemination of research outputs of the collaboration.

Researchers in Spotlight

Dr Mark Lyons

Snr Lecturer in Strength & Conditioning



Having spent 13 years in the UK, I joined the Physical Education and Sport Sciences Department in 2011 as a Lecturer in Strength and Conditioning. My research is applied and field-based in the main focussing on the screening, training and monitoring of athletes.

Related to screening, I am interested in the importance of screening in terms of strength and conditioning programming. This work focusses specifically on the merits of both the Functional Movement Screen and the Landing Error Scoring System. This research examines gender and age-related differences among young athletic populations exploring common movement deficiencies, asymmetries of note and the programming implications of both.

With respect to the training of athletes, I have a strong interest in the effects of resistance training on a range of performance parameters in both individual and team sports. An emerging area of interest is collaborative work with Dr Matthew Herring examining the acute and chronic effects of resistance training on young adults with and without generalized anxiety disorder. This work has highlighted the large meaningful differences that resistance training can have on reducing worry and anxiety symptoms in young people.

Finally, related to the monitoring of athletes, I am currently supervising two IRC scholarship students at the University of Limerick exploring the relationship between training load and injury in Rugby Union and Swimming. This work explores current training load and injury monitoring practices among coaches and support teams. This research is informing the development of new systems of monitoring training load and injuries with the ultimate aim of enhancing athlete or player welfare.

More on Mark's research on his ResearchGate profile

Professor Ann MacPhail

Professor Physical Education & Teacher Education

My main research interests and outputs align with (physical education) teacher education, physical education pedagogy, curriculum and assessment, and the professional learning needs of teacher educators. Two current research projects include exploring the professional learning needs of school-based teacher educators and preparing pre-service teachers as practitioner researchers. Peer-reviewed publication outputs for my research are primarily in the areas of sport pedagogy, teacher education, professional development and curriculum.

My research is reliant on qualitative methodologies and frequently includes an element of 'self-study' which encourages me to frequently write about my experiences as a teacher educator and/or researcher, focusing on my practices, what I have learned from such practices and how I advocate for future changes. My most recent co-authored book 'School Physical Education and Teacher Education: Collaborative Redesign for the 21st Century' (MacPhail & Lawson, 2020) captures one of the main threads that I advocate throughout my research endeavours. That is, given the significant gap between recommended practices and policies and what happens in the day-to-day realities of delivering such, we need to stop working in isolation and work with, and learn from, each other, while remaining mindful of systematic differences visible nationally and internationally.

My role as Assistant Dean Research in the Faculty of Education and Health Sciences has provided opportunities to work with stakeholders in formally capturing and evidencing early career academics' and PhD candidates' realities with respect to research-related activity. The growing interest in the internationalization of research activities in higher education institutions has recently encouraged me to interrogate the way in which I strive toward contributing to the internationalization of research activities in kinesiology, suggesting that 'solidarity' might direct colleagues to consider internationalization as the promotion of cooperation among nations and, in turn, improving the quality and relevance of research (MacPhail & Luguetti, 2021).

More on Ann's research on her ResearchGate profile

Dylan Scanlon

PhD Researcher
Physical Education

Dylan Scanlon is a PhD Researcher in the Department of Physical Education and Sport Sciences (PESS). Dylan's PhD explores the construction and enactment of curriculum policy in Irish school curriculum reform through a case study of Leaving Certificate Physical Education (LCPE). Extending his PhD research, Dylan is currently working with Prof. Ann MacPhail and two practicing teachers on a LCPE curriculum resource project funded by John Coolahan Research Support Framework (The Teaching Council). Along with colleagues from the physical education teacher education community, Dylan has worked with Claire Walsh in producing LCPE resource templates for the National Council for Curriculum and Assessment. With the intention of impacting the work of teachers through our research, Dylan and his supervisors organised workshops for LCPE teachers and teacher educators to design learning experiences for the LCPE learning outcomes. In addition to this, Dylan organised a Leaving Certificate Physical Education Workshop Day in PESS for 8 post-primary teachers and their students whereby PESS staff and post-graduates ran seven simultaneous workshops which addressed learning outcomes from the LCPE specification. More information on this can be found here.

Dylan is also interested in teaching and learning at higher education and has published work on blended learning with colleagues from PESS and on student engagement and partnerships with the National Student Engagement Programme (NStEP). Dylan works as a Student Trainer with NStEP and as a Student Associate on the National Forum Student Assembly employed by the National Forum for the Enhancement of Teaching and Learning in Higher Education.

More on Dylan's research on his ResearchGate profile

Dr Marta Kozior

Postdoctoral Researcher
Sport & Exercise Nutrition

I am a registered dietitian (HCPC) and currently, I work as a postdoctoral researcher in sport and exercise nutrition in PESS (UL). I have been engaged in research investigating the effect of plant- and animal-derived protein on muscle protein synthesis and performance recovery in recreationally active and trained populations.

I graduated from the MSc course in Dietetics at the Poznan University of Life Sciences (PULS). I have continued my professional development by pursuing the International Olympic Committee Diploma in Sports Nutrition and PhD in Sport and Exercise Nutrition at UL. My PhD research project offered peri-exercise nutrition advancements to dietary assessment for trained populations. This work was recognised by the European Sport Nutrition Society for which I received the Young Investigator Award at the International Sport Forum in 2019. I have had an opportunity to further develop my interests during collaborations with research teams at the Australian Institute of Sport, University of Stirling and University of Porto.

Before joining the Food for Health Ireland Healthy Ageing and Performance Nutrition research programme at UL in 2016, I was a research dietitian in the Bioactive Food project investigating the effect of foods with the pre-programmed health-promoting qualities in populations with lifestyle diseases at PULS.

My research interest comprises nutrition support in optimising training adaptation and athletic performance. I am also interested in optimising dietary intake patterns among the non-athletic population, including the quality of consumed protein.

More on Mara's research on her ResearchGate profile

Appendix 1

External Research Awards 2020

External Research Awards

Source: UL Research Office

External Research Awards for PESS based on Cost Centres opened at December 2020

	AY2016-17	AY2017-18	AY2018-19	AY2019-2020	Total
Enterprise Ireland	232,980	19,721	12,804	233,068	498,573
Environment Protection Age	3,000		2,885		5,885
European Union	121,168	109,523	63,590	1,699,213	1,993,494
Health Research Board		237,694	282,677	6,100	526,471
Industry	222,413			164,543	386,956
Irish Research Council	94,650	120,000	240,000	324,888	779,538
Other	1,008	759,536	57,747	57,564	875,855
Grand Total	**675,219**	**1,246,474**	**659,703**	**2,485,376**	**5,066,772**

Note AY2019-20 is 3 Months (October to December 2020)

External Research Awards for PESS AY2019-2020 based on Cost Centres opened at December 2020

Funding Body	Programme	Project Leader	Award
Other	Other	Philip Kearney	57,564
Enterprise Ireland	EI - Innovation Partnership	Phil Jakeman	221,605
Industry	EI - Innovation Partnership	Phil Jakeman	48,445
Industry	Industry Funded Research	Phil Jakeman	49,098
Enterprise Ireland	EI - H2020 Co ordinator Support	Tadhg Macintyre	11,463
Health Research Board	HRB - Conference & Event Sponsorship Scheme	Catherine Woods	4,800
European Union	EU - H2020 - SC5	Tadhg Macintyre	1,647,263
Irish Research Council	IRC - COALESCE	Elaine Murtagh	136,918
European Union	EU - Erasmus+	Tadhg Macintyre	51,950
Health Research Board	HRB - PPI Ignite Awards	Blathin Casey	1,300
Irish Research Council	IRC - Enterprise Partnership Scheme PG Scholarships	Brian Carson	96,000
Industry	Industry Funded Research	Brian Carson	67,000
Irish Research Council	IRC - GOI Postdoctoral Fellowship	Ian Kenny	91,970

Total: 2,485,376

Appendix 2

PESS Publications 2020 (Web of Science)

PESS Publications 2020 (Web of Science)

- Alahmad, T.A., Kearney, P. and Cahalan, R., 2020. Injury in elite women's soccer: a systematic review. *The Physician and Sports Medicine*, *48*(3), pp.259-265.
- Alexandru, M.A., Jürgen, B., Arash, M., Guillaume, M. and Lorand, B., 2020. Influence of Organized vs Non Organized Physical Activity on School Adaptation Behavior. *Frontiers in Psychology*, *11*, p.3144.
- Amaral-da-Cunha, M., Graça, A., Batista, P. and MacPhail, A., 2020. Giving birth to a supervisory identity built upon pedagogical perspectives on teaching: The case of a novice physical education cooperating teacher. *European Physical Education Review*, *26*(2), pp.353-374.
- Amigo-Benavent, M., Power-Grant, O., FitzGerald, R.J. and Jakeman, P., 2020. The insulinotropic and incretin response to feeding a milk based protein matrix in healthy young women. *Journal of Functional Foods*, *72*, p.104056.
- Belton, S., Britton, Ú., Murtagh, E., Meegan, S., Duff, C. and McGann, J., 2020. Ten Years of 'Flying the Flag': An Overview and Retrospective Consideration of the Active School Flag Physical Activity Initiative for Children—Design, Development & Evaluation. *Children*, *7*(12), p.300.
- Bowles, R. and O'Sullivan, M., 2020. Opportunity knocks: the intersection between schools, their teachers and external providers of physical education and school sport. *Discourse: Studies in the Cultural Politics of Education*, *41*(2), pp.251-267.
- Brady, C.J., Harrison, A.J. and Comyns, T.M., 2018. A review of the reliability of biomechanical variables produced during the isometric mid-thigh pull and isometric squat and the reporting of normative data. *Sports biomechanics*.
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