

**ALL-IRELAND  
CONFERENCE  
OF UNDERGRADUATE  
RESEARCH (AICUR)**



**UNIVERSITY OF  
LIMERICK**  
OLLSCOIL LUIMNIGH

**Centre for Transformative Learning**

Book of Abstracts 2020

<https://www.ul.ie/ctl/students/all-ireland-conference-undergraduate-research-aicur>



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## Welcome to the All-Ireland Conference for Undergraduate Research (AICUR)

Limerick, 2020

Welcome to the 7<sup>th</sup> All-Ireland Conference for Undergraduate Research (AICUR). The conference is hosted by the Centre for Transformative Learning in collaboration with a range of internal and external stakeholders.

### What is AICUR?

AICUR is the same as any other academic conference but what makes it special is that the research contributions are delivered by undergraduate students showcasing their research output as part of their studies.

The main aim of AICUR is to promote and applaud the fascinating and worthwhile research that is produced at undergraduate level. In multi-faceted ways, AICUR supports and recognises the development of UL's Graduate Attributes: articulate, proactive, responsible, collaborative, knowledgeable, and creative. The conference is designed to give undergraduate students (from first to final year) from Higher Education Institutions (HEIs) across Ireland the opportunity to present their research and discuss their creative accomplishments through posters, performances, demonstrations and oral presentations. The goal is to give undergraduate students from across the country the opportunity to present their research work at an academic conference. This year's participants are paving the way for all future AICUR events and should feel themselves pioneers, exploring the parameters of what undergraduate research in higher education can achieve.

The AICUR programme is structured to create interdisciplinary and cross disciplinary themes so that papers from different fields of study can come together allowing for, and encouraging students, and attendees alike, to interact with and learn from their peers across the academy. Apart from creating academic opportunities, we want to provide opportunities for a dynamic exchange of ideas as this is really at the core of AICUR. It is hoped that during the conference contributors, peers, attendees, and staff will be able to meet and talk to undergraduate researchers and faculty across many disciplines. This, in turn, will provide an insight into how other disciplines approach research problems.

'By heightening awareness and creating dialogue, it is hoped research can lead to better understanding of the way things appear to someone else and through this insight lead to improvements in practice.'

Barritt (1986: 20)

The AICUR Organising Committee



### A note from the AICUR Chair

The 7th AICUR conference was planned to take place in the University of Limerick at the beginning of April 2020. Due to the Covid-19 pandemic, the physical conference became untenable. It was important to the AICUR organising committee that students would be given the opportunity to showcase their undergraduate research in some way.

Students were given the option to participate in an 'Alternative AICUR 2020', one that could be supported by the online environment. They responded to this revision with an enthusiasm clearly reflected in this 'Book of Abstracts'. As a result of student commitment and resilience, there is now an impressive repository of conference contributions hosted on this year's AICUR [webpage](#).

'Student engagement' and 'student success' are terms used across the Higher Education sector, but how these broad terms apply to an individual student is multifaceted. The creation and annual hosting of AICUR provides a platform for students to share their undergraduate research and experience an academic conference. The feedback from students about the developmental opportunity AICUR affords them makes this conference continually worthwhile. Being a delegate of AICUR facilitates a feeling of success for each student who is dedicated and brave enough to put themselves forward. This sense of success is one all students should experience throughout their undergraduate programmes.

"Enabling student success is critical to our national ambitions at an economic, societal and sectoral level...it is fundamental to maximising the transformative impact of higher education for our students."

*(Understanding and Enabling Student Success in Irish Higher Education, National Forum, 2019, p.1)*

Many people make a conference happen, and to redirect to 'Alternative AICUR 2020' we needed the input of numerous colleagues. Special thanks to Dr Vicky Phelan who had kindly agreed to deliver the conference keynote address; the AICUR Organising Committee who contribute to the planning and recruiting for the conference; and the CTL administrative team, particularly Rosaleen Archbold.

The support provided by the variety of sponsors is so greatly appreciated. Without the support of our student and staff advocates within UL, and extended networks beyond UL, we wouldn't have such successful conferences.



Final recognition goes to all of the students who took the time, and made the effort, in unexpected circumstances to have their work displayed, a very well done to you all.

We hope to be back 'in-person' in 2021!

Sarah Gibbons, Centre for Transformative Learning

AICUR Chair, 2020



## AICUR Organising Committee

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Our values are innovation, collaboration, ambition, impartiality and inclusiveness. We believe in empowering students, helping them to recognise the potential their undergraduate work can have in making real change. We wish to connect the world's brightest students and graduates early in their career to give them the confidence to acknowledge and harness their talents to build a brighter future. Fundamentally, we celebrate the passion and excellence of undergraduate students in their chosen field, and help them to explore how that passion can be deployed in making the world a better place for all.

## AICUR Abstracts 2020

[Student Contributions](#) for 'Alternative AICUR 2020' are listed in alphabetical order by surname.

## Student Presentations

### 1. Risk and *Revolución*: An Analysis of Argentine Newspaper La Nación's Climate Change Discourse 2019

Claire Beardsley, Applied Languages (University of Limerick)

#### Abstract

The mass media play pivotal roles in the creation and circulation of discourses on climate change in Latin America, becoming key influencers of public perception of the issue. A better understanding of the way in which climate change is presented in a country's national news gives a crucial insight into the power relations at play behind media discourse. Given the topical role that Argentina has in the global political aspects of climate change, along with the already-felt environmental effects in the country, the study in question investigated the representation of climate change in four articles published between September-October 2019 in Argentina's second largest newspaper, La Nación. Using the framework of critical discourse analysis, this research focused on investigation of various discursive strategies in order to explore perspectives and narrative impulses within the discourse. Results showed a prevailing narrative of climate change as an urgent global risk, often using a metaphor of a battle taking place between the human race and climate change. Relevant social actors were represented in a way which propelled a narrative of heroes and antiheroes in the political sphere, and a dialogic use of lexis called upon the readers to fight against the global issue. A contradiction between the portrayal of the global and domestic aspect of causation was also found in the discourse, alluding to a possible deflection of the country's own responsibility towards climate change.

### 2. Investigating the influence of acutely ingested Taurine and Montmorency Tart Cherry juice on Repeated Sprint Performance

Laoise Bennis, Bsc. Human Nutrition with Matthew Doyle and Keith Fanning  
(University of Limerick)

Principle Investigator – Dr. Brian Carson

#### Abstract

Many field-based sports include bouts of maximal or sub-maximal sprinting with short recovery periods. Repeated Sprint Ability (RSA) is an important characteristic of performance in numerous intermittent sports such as soccer, rugby, tennis, GAA. Any nutrient that has the ability to improve RSA in athletes is of potential benefit in competition. Recent literature searches suggest that amino acids (AA) and fruit juices, such as taurine and tart cherry juice, have a positive effect on sprint performance. However, the impact of these bioactives on RSA are largely unknown. This study aims to empirically determine the effect of taurine and tart cherry juice supplementation on RSA.

Young, healthy, recreationally active males and females aged between 18 and 35 were recruited and undertook a familiarisation session and three timed RSA trials using a 40 m maximum shuttle run test, incorporating ten 40m sprints with 30 s recovery between each sprint in a crossover design. Heart rate was recorded throughout. Each participant completed trials with pre supplementation of either cherry-juice (MC; Montmorency tart cherry juice concentrate; 60ml), taurine (TA; 5mg/kg BW) or placebo (PLA; non-caloric). Trials were conducted in a randomised double-blind manner.

Results: Data is still being collected and analysed. Results will focus on fatigue index and sprint time decrement (Sdec) across ten sprints for each nutrient condition. Analysis will be conducted using SPSS to compare mean heart rate and fatigue index OR Sdec across conditions using repeated measures ANOVA and paired t-tests.

### 3. Home is Where Fulfilment is: The Effects of Multiple Homes on the Protagonist's Identity in *Purple Hibiscus* and *Nervous Conditions* Gareth Brinn, Arts- Joint Honours (University of Limerick)

#### Abstract

This project looks at the use and influence of multiple locations as home in *Purple Hibiscus* by Chimamanda Ngozi Adichie and *Nervous Conditions* by Tsitsi Dangarembga. This project sparks interest because of the comparative element. This allows readers to view negative and positive aspects of multiple locations as home and the influential elements such as wealth, education and religion which shape the domestic space. This work discusses how Adichie's use of multiple homes compared to Dangarembga's use of multiple homes and the influence of each home on the protagonist's self-fulfilment. This work takes the theme of family, which is often central to postcolonial African literature and shows that family is not always blood. Family can be both the breaker and the enabler of self-fulfilment because the use of multiple homes introduces the protagonist to different views of life. It is hoped that this project will encourage further investigation into the outlying

elements which influence the home rather than looking at the home as independent from the public sphere.

#### **4. An exploration of the impact electronic dance music (EDM) can have on the well-being of students**

AnnMarie Carew, BA Voice and Dance (University of Limerick)

##### **Abstract**

This research project explores the impact EDM can have on the well-being of students. It pays particular attention to the unique perspective of the students of Co. Limerick. This research uses an ethnographic approach to explore these perspectives on a more personal level. The data for this project has been collected from semi-structured interviews and a short focus group. The interviews were conducted with three DJs/Music Producers. The focus group was conducted with students who attend EDM events. I believe that these groups of people hold unique perspectives of the same experience. I purpose that the popularity of this music is not entirely based on the music itself, but on the community of people who welcome diversity, colourful costumes and shared moments of human connection. The strong sense of community is often what initially draws students to this genre, (aside from the anticipation of the “drop” and the euphoria felt when the bass is dropped successfully). This community can create strong friendships and connections with strangers, making a student more welcoming, friendly and happy. This in turn can make a student better equipped for the stress of student life.

#### **5. Understanding the representation of foxes and fox characteristics in the language of the 15th century fables of Robert Henryson and Ben Johnson**

Conor Courtney, B.A. English Studies (Trinity College Dublin)

##### **Abstract**

The choice of animal species is an intrinsic aspect in the construction of a fable. Each animal denotes a particular collection of characteristics and attributes, and in creating a role around an individual animal, the author is equally imparting these recognisable traits onto their character.

This discussion will focus on the animal depictions chosen in both Robert Henryson’s *The Fox and the Wolf*, and Ben Johnson’s *Volpone*. This essay will assess the reasons why animal breeds are chosen, highlighting the characteristics which these choices denote, focusing on their personality signifiers, as well as their physical aspects. In particular, this essay with

discuss the religious undertones associated with particular animals, as well as the biblical connections their presence connotes.

In discussing Johnson and Henryson, there is one animal species which intersects both of these authors' literary works; the fox. In *Volpone*, it is the fox that ultimately becomes the central character in the play, as it is, crucially, the eponymous species. Through *Volpone*, we see the depiction of the mental faculties of the cunning fox character, rather than the more physical attributes which it possesses. In *Volpone*, we are exposed to wit, to deceit, and to trickery. In the *Henryson Fables*, there is a similar preoccupation with foxes, as well as with more sinister apex predators, such as wolves and lions.

My conclusions followed academic discourse. The attributes of the fox impact both the characters in the fable, as well as their perception by the audience. The cunning and disregard for religious morals were clearly elements of the fox's nature which were used to add a sense of depth and inevitably to the fables, and an understanding of these characteristics is crucial to a fully rounded interpretation of these 15th century works.

## 6. Investigating the experiences of singer/songwriters in Ireland with Crowdfunding

Shauna Duffy, BA Voice and Dance (University of Limerick)

### Abstract

Crowdfunding has become a popular method of support for musicians to engage when making work. Examples of some crowdfunding platforms include Patreon, Kickstarter and Indiegogo. Online funding platforms permit the pre-purchase of music, along with other rewards which enable the musician to create new music. This paper presents findings from recent qualitative research that investigated the experiences of singer/songwriters in Ireland with Crowdfunding methods and compared user experiences of various online funding platforms.

Wider literature on crowdfunding in different parts of Europe and the US contextualised this study (Atkins, M. 2018, Lahr, J. 2016, Wilson, L. 2019). Beyond the completion of successful crowdfunding projects, analysis of artist interviews revealed the broader impact of such mediums for audience development, connectivity and creative freedom.

## 7. Microplastics in Dragonflies

Ciara Duggan, Bachelor of Science degree (Zoology) (NUI Galway)

### Abstract

Plastic particles have colonised every corner of the Earth. Their properties and ability to degrade have assisted their transport across a multitude of media, including biological tissues. This ability to integrate and influence ecological cycles has caused both physical and biochemical alterations within organisms of all habitats. Very few studies have been carried out on plastic pollution in freshwater habitats compared to marine habitats.

Top predators can be useful indicators of the trophic transfer of materials within an ecosystem and provide an insight into its ecological structure. This study focuses on the presence of plastic particles within the digestive tract of a top freshwater predator, larval *Anisoptera* (dragonflies). *Anisoptera* sampling took place in both a rural (Ross Lake, Galway) and urban (Eglinton Canal, Galway city) freshwater habitat. Enzymatic hydrolysis was used to isolate any non-biological materials present within the digestive system of the specimens. The remaining material was stained using the fluorescent dye Nile Red. Images of each sample slide were captured. The plastic particles present were then quantified using ImageJ.

Results obtained showed that while *Anisoptera* specimens sampled in both habitats had MPs present within their digestive tissues, the quantity of MPs present was not significantly different between the two locations. This suggests that similar plastic pollution rates exist in both the rural and urban habitat sampled. This presence of MPs in the digestive tract of a top freshwater predator, which preys on many vertebrates, has the potential to negatively impact the trophic structure of freshwater ecosystems and cause a trophic cascade. Freshwater systems are the vital links which connect the plastic-producing anthropogenic terrestrial areas to the vast marine environment. An integrative approach is needed to fully understand this transfer between habitats.

## 8. Towards more radical welfare reform – exploring the potential for a Universal Basic Income in Ireland

Melina Feldkamp, History, Politics, Sociology and Social Studies (University of Limerick)

### Abstract

Universal Basic Income has been discussed in Ireland for many years and despite the publication of a Green Paper in 2002, it does not appear to have advanced in the policy cycle. This research aims to identify the reasons why a Universal Basic Income has not been considered as a potential policy for social welfare reform in Ireland. It poses the question whether this is a result of political or administrative inertia or ideological opposition. In order to answer this question, this project employs a qualitative research methodology Five semi-

structured interviews were conducted with key informants from civil society and the political sphere who have expert knowledge in the area of basic income advocacy in Ireland. The findings show that basic income has struggled to gain traction as it exhibits a cyclical character towards the policy cycle. Interest in the idea surges in times of economic recession where the capacity for radical welfare reform is low and disappears when the economy is in a boom. Further, advocates for basic income in Ireland tend to be from non-governmental organisations which yield little political power. There is also evidence of ideological resistance against basic income in the administration. Opportunities for further research include examining attitudes towards UBI in the administration and amongst the general public.

## 9. Carbon nanotube hybrid electrodes for high performance Li-ion batteries

William Hayes, Pharmaceutical and Industrial Chemistry (University of Limerick)

### Abstract

Lithium ion batteries (LIBs) are the most common and advanced batteries to date. They were developed throughout the 1980s and 1990s by British and American scientist and later commercialised by Sony in 1991 and massed produced. They use an electrolytic cell to cycle Li ions back and forth between the anode and cathode known as intercalation and deintercalation. The energy given off during cycling powers the device. In recent years effort has been made to make the electrodes of the batteries free-standing in order to produce portable and flexible electronics and cut down on the batteries' mass.

This project was designed for the cathode of the battery. The active material ( $\text{LiCoO}_2$ ) used was formed into a slurry with different binders and conductive agents then spread on an Al sheet in order to make the cell. This was done to optimise the cathode configuration before it was made free-standing. Etching of the Al sheet using  $\text{FeCl}_3$  was used to make free-standing cathodes using the optimised ratios of  $\text{LiCoO}_2$ , conductive agent and binder of varying thickness to find the cell which performed the best.

It was found that using CNTs as conductive agents, PVdF as binder and NMP as the solvent performed the best. It was theorised that the elimination of water from the cell contributed to the enhanced performance as previously Na CMC binder was used along with a water solvent. It was also found that when making a thicker free-standing electrode, drying first on a copper sheet gave a much greater capacity over the same slurry dried on an Al sheet. For thinner cathodes Al is more suitable.

## **10. The effects of unilateral strength training on bilateral strength asymmetries**

Jack Heavey, Patrick Garvey, Sport and Exercise Sciences, (University of Limerick)

### **Abstract**

Bilateral strength asymmetries can be defined as a difference in strength from one limb/side of the body to the other. Bilateral strength asymmetries have been used to predict injuries and also monitor athletes' progress as they complete a rehabilitation program. Links have also been made between a lower bilateral strength asymmetry and improved performance measures. The proposed study looks at the effects of unilateral strength training on bilateral strength asymmetries.

Recreationally strength trained males (n=15) completed a pre-test that consisted of and Isometric squat test (90 and 120° knee angle) positioned over two AMTI force plates. They also carried out a 1 repetition maximum back squat as a measure of performance. Subjects then completed 6 weeks of periodized unilateral strength training 2 days per week with 72 hours between sessions. After the 6-week intervention, the subjects returned to the lab for a post-test under the same conditions. BSA will be calculated using data from the two AMTI force plates.

Results will consist of measures of Peak isometric force, bilateral strength asymmetry and 1 rep max back squat. Analysis of these measures will be conducted on SPSS in order to compute statistical results.

## **11. Physical activity beliefs and behaviours of phase IV community-based cardiac rehabilitation programme 'HeartSmart' participants – a cross sectional study**

Alannah Hickey, BSc Physiotherapy (University of Limerick)

Co-authors: Dr. Ray O'Connor GEMS, UL, Prof. Catherine Woods, PESS, UL, Sinead Kelly, UL Sport, Dr. Louise Larkin

Project Supervisor: Dr Louise Larkin, BSc, MSc, PhD

### **Abstract**

Introduction: MedEx UL (University of Limerick) HeartSmart programme is a phase IV cardiac rehabilitation (CR) programme. CR is an important component in the continuum of care for individuals with cardiovascular disease, providing education and exercise to improve morbidity and mortality risk.

Aim: The aim of the study was to establish participant's sociodemographic information, physical activity (PA) beliefs, self-reported PA levels and identify factors which influence PA.

**Methods:** This was a cross-sectional. Participants from the MedEx UL programme provided informed consent before participating in the study. Participants completed the Move for Life Questionnaire, consisting of 105 questions, within five key sections. Descriptive statistics and frequencies were used to analyse the data.

**Results:** Fifteen participants (11 men, 4 women; age  $69.33 \pm 5.64$  years) completed the questionnaire. Most participants agreed that PA was enjoyable (N=14, 93.3%), good for them (N=15, 100%) and important for them (N=14, 93.3%). Participants reported that exercising regularly made them feel healthier (N=12, 80.0%). 53.3% (N=8) reported achieving the recommended weekly amount of 150 minutes PA.

**Conclusion:** A greater insight into participant PA beliefs and characteristics should be established in order to identify the high risk participants for poorer outcomes. This information should be applied to tailor the exercised-based CR programme to participant needs. Phase IV community-based CR participants are currently not reaching PA recommendations –strategies should be implemented to promote PA in this population

## 12. Prevention of stress and burnout in post-primary school teachers: a review of the literature

Niamh Hickey, Bachelors of Science with concurrent teaching (University of Limerick)

### Abstract

Teacher stress encapsulates the negative emotions experienced by teachers due to an undesirable aspect of their work (Kyriacou, 2001). If left unaddressed, the stress experienced by teachers can lead to burnout, a physiological condition that results from a combination of emotional exhaustion, depersonalisation and reduced teacher accomplishment (Maslach et al. 1986). Stress and burnout are contributing factors to the alarming rate of attrition from the teaching profession (Reiser and McCarthy, 2018, Fernández-Aguayo et al., 2017, Prilleltensky et al., 2016, Richards et al., 2016, McCarthy et al., 2010).

This research involved a systematic review of literature on teacher stress and burnout. A key finding of this review is the identification of the pervasiveness of strategies that afford teachers with the resources needed to cope with the stress and burnout they experience. Less research however has considered the ways in which the development of stress and burnout may be prevented, particularly amongst post-primary teachers.

This talk will deliberate on the intrinsic and extrinsic factors identified by this review which can be viable mechanisms to prevent stress and burnout experienced by post-primary teachers. Intrinsic factors include the teachers' perceptions of stress and burnout, their resilience, self-efficacy and the support they receive from their peers. Extrinsic factors include the influences of principals, initial teacher education and mindfulness-based programs. Directions for future research will also be noted.

### **13. Alienating Assessment: The Effects of a Label of SEN and Vicarious Contact on Writing Assessment**

Cora Howe, Bachelor of Education in Education and Psychology (Mary Immaculate College)

#### **Abstract**

Assessment literacy emerged in recent decades in response to the growing discourse regarding assessment for accountability (Klenowski & Wyatt-Smith, 2014). Drawing on a sociocultural theory of learning, assessment literacy involves critically reflecting on assessment practices to promote equity in education (Willis, Adie & Klenowski, 2013). Using Pastore and Andrade's (2019) model of assessment literacy, the present study sought to examine the effect of a label of Special Educational Needs (SEN) on teacher judgement during assessment. The current study also investigated if a vicarious contact intervention with people with SEN would reduce bias in assessment. An experimental between-subjects design was employed. Participants comprised of 100 pre-service and in-service primary school teachers from Ireland. The experimental group were exposed to vicarious contact videos over the course of four weeks while the control group watched distractor videos. All participants then assessed a writing sample, as completed by a fictitious student with or without a label of SEN. The results found that a label of SEN alone did not result in reduced assessment scores. However, there was more variance in assessment scores for writing with a label of SEN, with the vicarious contact group scoring the writing lower than the control ( $p = .019$ ). There was also a significant difference in assessment with a label of SEN based on teacher level ( $p = .011$ ). Considering these results, practical considerations of classroom assessment practices are discussed. Future directions for developing teacher assessment literacy are also outlined.

### **14. Glitch in the feedback loop; Onscreen process praise bolsters Irish children's post-failure performance but it increases behavioural self-handicapping**

Triona Kenny, Bachelor of Education in Education and Psychology (Mary Immaculate College)

#### **Abstract**

Research pertaining to feedback seeks to examine how best to maximise learners' motivation and minimise maladaptive post-failure responses. Poor post-failure responses stem from learners' attempts to protect self-worth by sacrificing learning opportunities (De Castella, Byrne & Covington, 2013). In light of methodological flaws identified in earlier research, particularly related to the omission of a control group, the lack of research examining onscreen feedback and the need for culturally specific research, this paper sought to examine the effect of ability praise, process praise and OIF on 85 fifth and sixth class pupils in Irish primary schools ( $M = 11.44$  years,  $SD = 0.57$  years). This study employed an

independent measures experimental design. Data were collected through online surveys incorporating reasoning matrices, onscreen feedback and Likert-scale questions. This paper found that children who received process praise demonstrated the greatest performance improvement following failure. Children who received ability praise illustrated the highest levels of task persistence and enjoyment. However, these children were also most likely to attribute their failure to a lack of intelligence, thus putting them at risk of employing behavioural self-handicapping to protect their self-worth. Although this paper found behavioural self-handicapping to be most prevalent amongst children who received process praise. This paper indicates that OIF is not as beneficial as international research suggests. Results are discussed in light of previous research, with implications for research and practice identified.

**Keywords:** feedback, process praise, ability praise, self-worth, behavioural self-handicapping.

## **15. An observational study exploring self-assessed physical activity and health in the Irish farming population**

Ruth Kingston, BSc Physiotherapy (University of Limerick)

### **Abstract**

**Introduction:** Although traditionally seen as a healthy and physically active profession, farmers have become the unhealthiest occupational sector of the Irish population. Farmers suffer from the highest levels of non-communicable disease (NCD) related mortality in Ireland. Physical inactivity is a proven risk factor for the development of NCD. Limited research has been conducted into the link between physical activity and NCD levels.

**Aims:** This research aims to determine the prevalence of NCD, explore GP attendance, investigate health beliefs, and determine baseline physical activity levels in the farming population.

**Methods:** This observational cross-sectional study explored the health and physical activity of farmers using a self-reported questionnaire. Data was analysed using the Jamovi statistical software using descriptive analysis and ANOVAs. Data was compared to Irish health research.

**Results:** Farmers reported lower levels of NCD than the general population. They also report an awareness surrounding the importance of physical activity, sleep and diet for health. Farmers are a highly motivated population to make healthy lifestyle changes. Farmers are a highly active population, with all farmers achieving minimum physical activity recommendations. This population also report high levels of physical and mental health. GP attendance however is poorer than that of the general population. A significant relationship

is present between hypertension and atrial fibrillation with the number of METS a farmer achieves per week.

Conclusion: Farmers are a highly active population. Future research should examine firstly the seasonal variation in physical activity and secondly any long-term link between the development of NCD and physical activity.

### 16. *In-vitro* Analysis of Curcumin Nanoparticles in Hydrogel Encapsulation

Michael Mackey, Megan Carmody, Laura Dowling, John O' Driscoll, Bioscience (University of Limerick)

#### Abstract

The need for anti-inflammatory medicine post anterior cruciate ligament (ACL) reconstructive surgery is more prevalent than ever. Recovery following ACL reconstructive surgery can have several problems such as early onset arthritis, poor bone growth in the femoral and tibial bone tunnels, and the formation of bone spurs which are all associated with post-operative inflammation.

Curcumin has demonstrated anti-inflammatory properties, as well as showing an ability to increase bone growth and slow osteoarthritis progression. In this study the anti-inflammatory properties of curcumin in its nano formulation are examined with a focus on determining suitable delivery vehicles to ensure bioavailability and efficacy of curcumin *in-vitro*.

The response of THP-1, monocytic cell line to hydrogel formulations and curcumins potential to modulate inflammatory response *in-vitro* are discussed.

## 17. Supervised exercise for cardiovascular

James Maxwell, Molly Brannock, Haley Power, Patrick Purtill, Ruth Mullen, Kimberly Bourdon, Una Brennan and Sarah Keys. Graduate Entry Medicine (University of Limerick)

### Abstract

We were very interested in the paper by Gezer et al. (IJMS (2019) which concluded that incorporation of aerobic exercises into conventional rehabilitation programmes of early stroke patients may provide positive contributions, particularly to mood and aerobic capacity. We wish to describe a similar aerobic exercise programme, which has been developed for patients with cardiovascular disease (CVD). CVD is the most common cause of death and disability worldwide. In Ireland, it accounts for 30.1% of all deaths. Exercise-based cardiac rehabilitation programmes are widely recommended as an integral part of the management of those with heart failure and CVD.

The high quality of evidence supporting the use of physical activity for primary and secondary prevention of several chronic conditions including ischemic heart disease has led to the establishment of the Irish National Exercise Referral Framework (NERF). However, such programmes are not widely available. To date in Ireland, there are only 4 such centres. One of these is in the University of Limerick (UL) and is called “MedExUL”. “MedExUL” is a community-based chronic illness rehabilitation programme established in UL in 2017, in line with the NERF policy. It offers medically supervised exercise classes and educational workshops on nutrition as well as peer support through social activities after class. Currently, programmes are provided mainly for patients with CVD. Referrals are accepted from hospitals and general practitioners (GPs). There are currently over 80 patient visits per week. With public and private patients experiencing different levels of health service delivery, medical exercise programmes, where they are available, are accessible for all social status groups at a modest cost. There is also weekly access to peer group support, which is being increasingly recognised as an important measure in developing and maintaining good health behaviours. Further, by providing individuals with CVD the opportunity to engage with people of similar circumstances, MedExUL offers a remarkable psychological advantage; such psychological advantage is well known to aid with patient rehabilitation and encourage longterm recovery.

Being based in the university means that patients are available to educate students in a multidisciplinary setting. Thus, students from disciplines of medicine, physiotherapy and sports science attend exercise classes and jointly consult with patients who present with specific difficulties on any particular day. In this way, students get to speak with the patients and assess them under “real-world” conditions and with the supervision of experienced qualified clinicians and exercise scientists. This “real-world” multidisciplinary experience of the assessment of patient’s presenting complaints is at the cutting edge of multidisciplinary medical education. It is also extremely useful from a patient’s perspective.

Having students available to stay with a patient who may have special physical or medical needs during an exercise class means that such patients can participate in the exercise programme to the best of their ability, thus improving their physical ability. This qualitative aspect of medical exercise programmes is an area that is ripe for research.

## **18. Reactions to Dialects and Accents in UL: An Analysis of the Perception and Awareness of Regional Accents and Dialects amongst UL Students**

Aisling McGrane, Applied Languages (University of Limerick)

### **Abstract**

With Ireland's diverse landscape of regional accents, the way a person speaks can give the listener plenty of information about themselves, such as where they are from, their level of education and the social class they belong to. This allows the listener to develop positive, negative and neutral attitudes towards these accent/dialects. Studies have shown that people often change the way they speak in a bid to fit in, improve communication and reduce/change the attitudes of their listeners.

Using both surveys and interviews, this study examines third level Irish students at the University of Limerick with an aim to identify their level of awareness of different regional accents and the perceptions they associate with them. It also aims to identify whether students have changed the way they speak since the beginning of their studies, in reaction to the attitudes they have received.

Results showed good overall awareness of different accent/dialects; however, certain groups of students showed more awareness than others did, such as those who spent time with non-native speakers and those from outside the southwest of Ireland. Students from outside the southwest, particularly students from the East were more likely to receive negative reactions to their accent and were more likely to change the way they speak. Reasons for these changes were to counteract negative reactions and to fit in with the majority. The results from this study allow for an improved understanding of the ways in which Irish students settle into life away from home.

**19. Framing the McCann's: An investigation into the media representations of Kate and Gerry McCann during three different time frames following the disappearance of their daughter**

Miriam Moroney, Arts Joint Honours (University of Limerick)

**Abstract**

The disappearance of Madeleine McCann is one of the most heavily reported missing persons cases of all time (Greer and McLaughlin 2017). The mysterious circumstances she went missing under, the safe area she went missing in, and the fact that no hard-core evidence indicating what happened to her has ever been presented, has led to a mass media interest which still stands today. This high-profile case has left a lingering effect on humanity and has become a cultural reference when one speaks about strange disappearances. One could argue that there are very few people in Europe over the age of twenty who have not heard about this case. Although many people following the case for the past 12 years are sympathetic and broken hearted for the little girl, this sympathy and woefulness has not been always been directed towards her parents – Kate and Gerry McCann. The focus of this project will not be on Madeleine McCann's disappearance, but instead will be an inquiry into how Kate and Gerry McCann have been portrayed by the media since Madeleine disappeared.

This project consists of eight chapters, throughout which I will examine previous literature published on my topic of study, explain the theoretical and methodological approaches I will be using, present the findings of my analysis, and finally will discuss the arguments and debates that have been detected in my findings. As you can see from the title, I will be examining how the media depicted Kate and Gerry McCann during three different time frames to determine if and why there may be a change in their representation.

**20. Frame Analysis of Irish Media Reports on Veganism and Vegetarianism vis-à-vis the Irish Cultural Context 2019: Veganuary and the Publication of the IPCC Report**

Sinead Murphy, BA New Media and English (University of Limerick)

**Abstract**

The purpose of this research paper is to analyse how Irish media frame reports on veganism and vegetarianism vis-à-vis the Irish cultural context. A literature review is conducted to discern trends in Irish media framing and to understand how veganism and vegetarianism have been framed on an international scale. Robert M. Entman's definition of media framing is explored in detail as it guides the course of this frame analysis. The methods applied to this research are discussed in full, as well as the timeframes this analysis will be conducted on: (1) the 31-days of Veganuary (2019) and (2) the 31-days following the

publication of the IPCC report (August 2019). Consideration is given to the Irish cultural context's impact on Irish media framing strategies. Resulting from the frame analysis, it is argued that Ireland's vested interests in agricultural industries heavily influence Irish media framing of veganism and vegetarianism, especially with regard to pressing climate change concerns. The frames that emerged described veganism and vegetarianism as a threat to Irish agricultural industries, a health risk and/or healthy, and undesirable as a means of promoting speciesism. These results leave room for further exploration in areas related to this topic. In particular, a study centred around Irish public opinion of veganism and vegetarianism could be of use to gauge the impact of these frames.

## 21. Efficacy of supervised maintenance exercise in peer support groups following pulmonary rehabilitation: A quasi-experimental study

Brian Murphy, BSc Physiotherapy (University of Limerick)

### Abstract

**Introduction:** Although the short-term benefits of pulmonary rehabilitation (PR) are well established, the long-term benefits are unclear as outcomes often return to baseline in the months following the programme.

**Aim:** To determine if supervised, community-based exercise in a peer support group can maintain exercise capacity and health status better than usual care 12 months following PR.

**Methods:** Following completion of an 8-week PR programme, patients with moderate to severe chronic obstructive pulmonary disease (COPD) elected to take part in either a community-based peer support group (SG) involving weekly exercise and bimonthly healthcare education or usual care (UC) for 12 months. Outcome measurements at pre-PR, baseline (post-PR) and 12-months included the incremental shuttle walk test (ISWT), COPD assessment test (CAT) and secondary measures of anxiety, depression, lower limb functional capacity and gait speed. Programme adherence and the benefits and barriers to participation were assessed with a self-reported questionnaire.

**Results:** 19 patients attended for 12-month follow-up. No adverse events were reported. Participants endorsed the benefits of the SG. Barriers to participation included accessibility, transport availability and timing of sessions. Mean changes at one-year showed significant and clinically relevant between-group differences in favour of the SG for exercise capacity, gait speed and anxiety (all  $p < 0.05$ ). No statistically significant differences were found for health status, depression or lower limb functional capacity. However, post-hoc analysis revealed the study was unfortunately underpowered to detect a significant change in the CAT.

## 22. Mapping the story of DIY LK: Documenting the progression and impact of a local music community

Kayleigh O'Brien, BA in Voice and Dance (University of Limerick)

### Abstract

Using a local case study, I examine the effects of a vibrant “DIY” music scene on a local music community. I consider the etymology of the term “DIY” in relation to independent music with reference to existing academic commentary and use a local music collective “DIY LK” as my case study in conducting this research project. As an independent musician who has recently become active in a local “DIY” scene I am interested to assess this from an academic perspective and communicate these findings through the research of this project. My research is ethnographic research, engaging in individual interviews and focus groups. These interviews are with local musicians who will be named in my research to further my understanding of “DIY” culture and its effects. In an attempt to document events hosted by ‘DIY LK’ I collect band biographies, photographs of the events, footage of the musicians I interview performing at the events, and some audio recordings. In order to examine the progression and impact of this community I then reflect on this research in light of existing academic commentary. This research reveals a variety of perspectives among local musicians on the impact of such a collective. I include the views of those directly involved with the collective since its origins, as well as those who became involved later. This archival process documents the collective’s overall progression and its impact on the careers of local musicians.

## 23. Synthesis and Characterization of Multicomponent Co-Crystals

Jack O’Callaghan, Engineering in Chemical and Biochemical Engineering (University of Limerick)

### Abstract

A critical issue within the pharmaceutical industry concerns the resolution of poor physicochemical characteristics associated with a drug or pharmaceutical compound. Many new high-value drug candidates are constrained by low aqueous solubility and chemical instability, correlating with a reduced oral bioavailability. The recurrence of sub-optimal molecular properties has been a key driver in the emergence of supramolecular chemistry and crystal engineering in industry. Physicochemical modulation techniques (such as co-crystallization) have been viewed as viable and effective methods of optimizing the molecular characteristics of formulated active pharmaceutical ingredients. Beyond the immediately realisable benefits of co-crystal formulations, multicomponent co-crystals of active pharmaceutical ingredients have shown incredible promise in the development of medicines for combination therapy. Multicomponent drug-drug co-crystals of various APIs

have reported synergistic drug effects, with exciting applications across healthcare and medicine.

This project investigates the synthesis and characterization of multicomponent drug-drug co-crystals. Binary and multicomponent co-crystals of acetazolamide, theophylline anhydrous and microcrystalline cellulose were synthesized mechanochemically using liquid assisted grinding. Microscopy, spectroscopy and X-ray diffraction techniques provided a basis for quantitative analysis. The stoichiometric ratio of the individual components was varied, and found to profoundly influence the morphology of the resulting co-crystal. A comparison of binary and multicomponent co-crystal solubility in methanol yielded exciting results. Multicomponent co-crystals were found to have a methanol solubility between 2 and 10 times higher than their binary counterparts.

It is anticipated that advancements in the area of co-crystallization will have a profound impact on drug development, and ultimately facilitate the design and commercialization of new therapeutics. Further research is conjectured to yield formulations that both optimize the physicochemical characteristics of novel APIs, and provide a greater insight into the underlying supramolecular architecture of multicomponent co-crystals.

## **24. The experiences of individuals with an intellectual disability when self-managing diabetes**

Yousef O'Donnell, BSc Nursing, Intellectual Disability (University of Limerick)

### **Abstract**

The research project that I undertook focused on the experiences that an adult with an intellectual disability (ID) may face when self-managing their diabetes. This was a very interesting topic to research and study as every individual with an ID is unique and may have a difficulty self-managing their diabetes.

The three main findings from the research project can all be interlinked together. Education on how to self-manage is vital as the individual must be well educated and informed on how to manage the self-care of their diabetes as it allots them a possibility at mastering self-treatment through the tools used, strategies to use in relation to care and the knowledge and understanding needed to do so.

Support and training for staff is also a necessity as adequate support and training provided can be of benefit to the service user, with the support of the carer being imperative in some cases. Finally, the importance in autonomy between staff and service user can help promote a sense independence and empowerment through self-management and can be achieved through education and support from the nurse or key worker.

There is a need for constant and ongoing support, training and education in this topic in order for the individual with an ID to be able to learn more about treating and managing their condition so that they may have positive and successful experiences when self-managing their diabetes. My findings showed that Ireland is not as up to date with their methods for enabling the self-management of diabetes as other developed countries but the potential is there to reach that level through better training and support systems for both staff and service user, proper education on diabetes and how to manage it and the staff and individual working together to combat the condition collectively.

## **25. Disclosing the Truth: The impact of disclaimers in digitally altered advertisements on consumers visual attention and attitudes towards the advertised product**

Anne-Marie O'Donovan, Education and Psychology (Mary Immaculate College)

### **Abstract**

In an effort to become more transparent, policy makers have called for advertisers to include disclaimers when models have been digitally altered in advertisements. The current study was designed to determine whether the inclusion of a disclaimer in advertisements which have been retouched or unretouched will have an impact the way consumers perceive that advertisement. This study employed eye-tracking technology to investigate experimentally how such disclaimers impact female consumer's visual attention to fashion magazine advertisements. The study incorporated a within-subject design, whereby fifty-five female undergraduate university students viewed four advertisements, which were either unretouched with a disclaimer, unretouched without a disclaimer, retouched with a disclaimer, or retouched without a disclaimer. It was confirmed that participants did attend to the disclaimers, however, the presence of the disclaimer did not have an impact on consumers visual attention to the advertisement. Participants completed questionnaires to measure their believability, attitudes towards the advertisement, manufacturer trust and buyers' intention to buy and use the product following each advertisement. A number of one-way repeated ANOVAs were conducted to show there were significant differences across the conditions. Firstly, it was confirmed that participants did perceive advertisements differently when they disclosed whether or not the model was digitally enhanced or not. In fact, female consumers reported more favourable reactions towards advertisements in the unretouched with a disclaimer condition. The findings from this study have strong implications across a range of domains, including theoretical frameworks, policy makers, and market researchers.

## 26. An investigation of Gaelic Irish *mentalité* in mid eighteenth century Limerick

Keith Ó Riain, Liberal Arts, History and An Ghaeile (Mary Immaculate College)

### Abstract

This paper examines Gaelic Irish *mentalité* in mid-eighteenth-century Limerick. Drawing on Irish language sources, namely the vernacular poetry of Filí na Máighe (The Maigue poets), it provides a unique insight into the thoughts, attitudes and beliefs of the Gaelic Irish community in mid eighteenth-century Limerick. This study draws on the insights of historians like Louis Cullen, Seán Connolly, Vincent Morley and Éamonn Ó Ciardha as well as literary scholars like Breandán Ó Buachalla, Úna Nic Éinrí, Máire Comer Bruen and Dáithí Ó hÓgáin but provides an original case study rooted in a specific corpus of poetry. This study examines the collective outlook and popular mind of the Maigue-side district of County Limerick in the period *c.* 1730-1770. This examination first considers the community's more prominent political views and traces the popularity of Jacobitism and its related ideologies throughout the middle of the century. Secondly, attitudes to the penal laws, along with the community's associated views of local Protestants and Catholic clergy are assessed as notable social and religious insights. Finally, more local and personal aspects of *mentalité* that tend to be overlooked, such as alcohol, community, intellectual activity, women and superstitions are all examined in order to achieve a more rounded sense of the subject. This study finds that while the *mentalité* of Gaelic-speaking Limerick was political and religious, there were definite exceptions to the traditional loyalties and complex relationships between Protestant and Catholics. Moreover, it reveals that the community's social attitudes were far more nuanced and questions whether it was these personal concerns or the meta-issues of politics and religion that were the dominant feature of their *mentalité*.

## 27. To assess the predictive validity of the Clinical Frailty Scale in the Emergency Department in an Irish setting: A statistical analysis

Aisling Scanlon, BSc in Physiotherapy (University of Limerick)

### Abstract

**Introduction:** There is an increase in the number of older adults attending emergency departments (EDs) in Ireland. Frailty can be identified using simple screening tools and is related to the occurrence of adverse outcomes.

**Aim:** This study aims to determine differences in baseline characteristics and outcomes at 30 days between those who are and are not frail who attend EDs in Ireland along with determining the predictive validity of the Clinical Frailty Scale (CFS).

**Method:** This is a prospective cohort study based in the ED in an acute hospital in the mid-west of Ireland including older adults aged  $\geq 65$  years ( $n=176$ ). The CFS was recorded by a member of the medical team at the ED. Outcomes at 30 days were obtained and the risk ratio along with sensitivity and specificity was calculated for each outcome.

**Results:** Those who were considered frail and not frail using the CFS were different regarding baseline characteristics and outcomes experienced at 30 days. The CFS showed excellent predictive accuracy for nursing home (NH) admission (Risk Ratio (RR)=4.71, 95%CI 2.22-10) and mortality (RR=3.56, 95%CI .33-38.44) and very good predictive validity for functional decline (RR=1.93, 95%CI 1.26-2.97), return to the ED (RR=2.03, 95%CI 1.09-3.79) and hospitalisation (RR=2.45, 95%CI 1.2-5).

**Conclusion:** Identifying frail older adults at increased risk of adverse outcomes in the ED can aid clinicians to target interventions, care services and long-term care strategies. There is need for better integration of care between acute hospital settings and community care to improve patient outcomes and satisfaction.

**Keywords:** Frailty, Older adults, Clinical Frailty Scale, Emergency Department, Adverse Outcomes.

## **28. The question of narrative history: an analysis of the Derry Siege historiography**

Ciara Sheehan, BA Arts Joint Honours, German Advanced with History (University of Limerick)

### **Abstract**

The Siege of Derry 1688-89 is often considered to be one of the key events in determining relations between the various religious and political groupings in Northern Ireland. Not alone did it solidify faith divisions, its importance intensified after the event; becoming a political symbol for loyalists and unionism. As a result, the siege has been a contentious issue that widened the gap between the different factions that would later destabilise Northern Ireland for several decades.

The key reason for this is largely due to the differing accounts contemporaneous to the Siege. These descriptions were, more often than not, informed by which side of 'An Cogadh Dá Rí' they supported; the armies of James II or William of Orange. Objectivity, in this instance, is difficult without considering the people who wrote about the siege, what reasons they had for doing so, and how do we measure the way in which this information is presented with the responsibility of compiling an unbiased picture of the circumstances of the siege.

This presentation discusses this historiography and the subsequent critical analysis of later historians of the siege. With further examination of the available primary and secondary

source material, particularly from contributors that vary in their affiliation, an argument can be made for why the Siege of Derry has continued to be commemorated for more than three centuries after its conclusion.

## **29. From Purple Shoes to a Fight Against Gender-Based Abuse: A Multimodal Discourse Analysis of a Twitter Feminist Campaign in Argentina**

Orla Shiel, Bachelor of Arts – Joint Honours (University of Limerick)

### **Abstract**

Ni Una Menos is a key political force in Argentine society in the fight for women's rights and against gender-based violence. The feminist movement has spread throughout Latin America and is an offshoot of #MeToo, which emerged in 2006 and gained traction in the United States in relation to Harvey Weinstein allegations in 2017. Its dissemination is a result of its use of social media and the formation of an online community. This paper examines how Ni Una Menos and feminist activists who support and drive the movement, use social media, specifically Twitter, as a platform to effectively spread their message. It examines their use of multimodal discourses in the form of images and text. A qualitative analysis of Tweets from 2018 that include the hashtag #NiUnaMenos are analysed. The results indicate that images portray a strong method for raising awareness by a means of clear communication, engagement and having an emotional impact on the viewer, through both narrative and conceptual representations. While each representation offers a unique method of conveying a core message, they appear to be equally effective in delivery. The accompanying text included in the Tweets emphasises and clarifies messages. Visual images and verbal texts coexist and integrate with each other to accomplish the delivery of messages in a quicker and more simplistic way, while facilitating the identification of power relations and ideologies. Through this analysis, the multitude of issues that Ni Una Menos and its supporters attempt to contest in Argentina became evident.

### **30. Creating an Acoustic Simulation of the Noise Pollution in an Urban Environment**

Rian Stephens, Music, Media and Performance Technology (University of Limerick)

#### **Abstract**

This research project utilises acoustic simulations to represent traffic noise pollution and prevention in an urban environment.

Noise, defined as 'unwanted sound' (Stansfeld et al., 2003), has 'wide-ranging adverse health, social, and economic effects' (Goines, 2007). Some of the primary sources of noise pollution include traffic, aviation and industrial noise. Noise pollution 'is more severe and widespread than ever before' and is predicted to worsen with a 'growth in highway' traffic (Goines, 2007).

This project consists of a deliverable and a thesis. A three-dimensional acoustic model was developed in the game engine, Unreal Engine (Unreal Engine, n.d.). This three-dimensional acoustic simulation is a computer program that enables the user to walk through a modelled city. Road traffic is programmed to drive through the city's streets. The user experiences traffic noise pollution in real-time as they walk. Users are encouraged to experiment with alternative speed limits and vehicle category restrictions. The user can create virtual sound walls and foliage in order to experiment with solutions to potentially reduce noise pollution.

The thesis examines the techniques of propagating noise pollution in three-dimensional space and how noise level is dependent on average speed, category of vehicle and the average number of vehicles passing through a road section (Kephelopoulos, 2014). Reflection and absorption techniques such as Ray Tracing and Digital Waveguide Mesh are analysed to allow noise pollution to move realistically in 3D space (Funkhouser, 1998; Shearer, 2007; Murphy, 2007; Rober, 2007). The restrictions of a 2D noise map are examined, and an alternative is presented in the 3D noise map (Kurakula, 2014). Various 3D modelling techniques are then presented, such as LiDAR, IFSAR and OSM data (Fricker, 2018; Elakshar, 2012; Mercher, 2001; Ramdani, 2009; Over, 2010). The thesis explores to what extent an acoustic simulation can represent noise pollution in an urban environment.

### **31. The Effect of Public Opinion on Climate Policy Performance in the 28 EU Member States**

James Walshe, Arts - Psychology and Politics (University of Limerick)

#### **Abstract**

This study was aimed at investigating the effect of public opinion on climate policy performance in the 28 EU member states while accounting for other influential factors such as GDP, household income levels, education and fossil fuel dependency. A series of multiple regression tests was conducted to do this with data sourced from both the Eurobarometer survey and Eurostat. Unobserved country and year variables were also accounted for. The results show that public opinion, GDP and household income are all significant predictors of climate policy performance with public opinion exerting much more influence than the latter two. This study adds to an existing body of research on the relationship between public opinion and climate policy in the EU with implications such as highlighting responsiveness of EU states to public opinion.

### **32. Evolution of toughness in a glassfibre/vinylester composite laminate cured at ambient temperature and 30°C for extended period of time**

Nathan Whiting, Design and Manufacture Engineering (University of Limerick)

#### **Abstract**

The aim of this study is to examine the interlaminar fracture toughness (IFT) of a glassfibre reinforced vinyl ester (GFRVE) laminate, for evaluation of its application in large scale marine vessels above 50m length, as part of a European project named FibreShip. This study compares the IFT of GFRVE with respect to ageing in ambient conditions and at 30°C, over a selected timescale. This is of interest because the manufacturing environments required for large scale composite moulding are difficult to control in terms of applying normal post-manufacture curing processes. 30°C was chosen to reflect the ambient temperatures possible in a boatyard in the south of France where the demonstrator vessel will be manufactured. Vinyl ester and unidirectional (UD) fiberglass composite samples were made using vacuum assisted resin transfer moulding (VARTM) and cured across several timescales, 72 hours, 14 days, 40 days and 65 days at both 30°C and room temperature, as well as a control set that were post-cured, for 6 hours at 80°C. Mode I IFT is examined using a double cantilever beam (DCB) test, following the ASTM standard D5528. Results showed that IFT increased marginally across the timescale for both temperatures, yet room temperature samples yielded the higher value of IFT consistently, when compared to both 30°C samples and the control, while the 30°C samples could be seen to exhibit lower values than the control for 14 days and less.

## Student Posters

### **33. IoT Domestic Air Quality Monitoring**

Connie Collins, Electronic and Computer Engineering (University of Limerick)

#### **Abstract**

Domestic air pollutants are an ever-increasing concern to public health. According to the World Health Organisation, 3.8 million people die from exposure to domestic air pollutants each year. With the advent of better insulation, sealing and double glazing, there is less air flow through houses. This is good for keeping toxic gases out but equally keeps toxic gases in. In industrial settings, toxic gas sensing is extremely accurate. However, this technology has been slow to trickle down to consumer use. Here, the aim was to create a device to measure domestic air pollutants and have the measurements displayed clearly for a consumer to view. A device was created, using industrial components, that is capable of measuring domestic air pollutants to a high accuracy. The device has the capability of measuring four different toxic gases, it includes a rechargeable battery and WiFi capabilities for fully wireless use. The data gathered by the device can be accessed easily through a web browser. The device created was successful in measuring toxic gas levels and sending these measurements to the cloud for viewing and storage. Overall, it is concluded that it is possible to bring industrial technology into the home in a seamless way to protect our health from air pollutants.

### **34. Causes and Impact of Stigma in Chronic Obstructive Pulmonary Disease: A Qualitative Meta-Synthesis**

Anna Healy, BSc in Physiotherapy (University of Limerick)

#### **Abstract**

**Introduction:** COPD is a leading cause of morbidity and mortality internationally. The number of people with COPD around the world is growing, causing an increase in the socioeconomic burden of the disease. Stigmatisation negatively impacts healthcare utilisation and quality of life for people with COPD (pwCOPD). Although COPD-associated stigma has been explored in several small-scale studies, evidence on its causes and implications has not yet been synthesised.

**Aims:** This study aims to explore the phenomenon of stigma in COPD through its causes and impact on pwCOPD.

**Methods:** A qualitative meta-synthesis was conducted and reported in line with the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ)

statement. Studies for screening were identified by systematic searching of CINAHL, MEDLINE, EMBASE and PubMed plus hand checking reference lists of relevant articles. The CASP tool was used for quality appraisal. NVivo Plus software facilitated use of Braun and Clarke's thematic analysis framework for data synthesis.

**Results:** Nine high-quality studies were included in the synthesis. Three themes were identified as causes of COPD-related stigma: 1) visibility of COPD; 2) link between cigarette smoking and COPD; 3) feeling discredited by society. An additional three themes described the impact of stigma on pwCOPD: 1) loss of previous societal role; 2) a changed sense of self; 3) the adopting of strategies to avoid stigmatisation.

**Conclusion:** Stigmatisation of COPD stems from society's negative perceptions of the disease and people with the disease and has several adverse psychosocial and lifestyle implications for pwCOPD.

### 35. 'Discourse of Detachment? Investigating Representations of Autism in the Irish Print Media'

Melissa Mooney, B.A. in Applied Languages (University of Limerick)

#### Abstract

According to a prevalence study carried out by the Department of Health in 2018, approximately 1-1.5% of the Irish population are currently believed to be living with an Autism Spectrum Disorder (ASD). However, a cursory search for media discourse analyses around this small but nevertheless distinctive subset of Irish society revealed a gaping cavity within existing academic literature. Hence, by combining the principles of corpus linguistics and Critical Discourse Analysis (CDA), the present research sought to investigate newspaper coverage from *The Irish Times* and *The Daily Irish Mail* over a year timeframe between 31st January 2018 and 31st January 2019. Scrutiny of word frequencies, thematic patterns, weighting of referential sources and the narrative distance/proximity of autistic actors yielded a myriad of consequential findings supporting the perpetuation of a "discourse of detachment" around autism – that is, a discourse in which autistic individuals are largely depicted as *subordinates* (achieved through infantilisation), *deviants* (achieved through a variety of "othering" mechanisms and overrepresentation of crime on a thematic level) or *intangible, abstract individuals* (achieved through preoccupation with infrastructure narratives over human interest stories) within the current social order in Ireland. Implications of current representations for social practice are discussed and recommendations as to how more balanced reportage may be attained are proposed.

### **36. A Systematic Review of the Epidemiology and Aetiology of Foot and Ankle Injuries in Professional Ballet Dancers**

Jessica Ryan, BSc Physiotherapy (University of Limerick)

#### **Abstract**

**Introduction:** Ballet has been described as the most technically demanding dance modality that has a substantial injury rate, particularly foot and ankle injuries. Evidence on the prevalence, incidence and causes of these injuries has yet to be synthesized.

**Aim:** To assemble and synthesise the literature on the epidemiology and aetiology of foot and ankle injuries in professional ballet dancers.

**Methods:** Systematic review conducted in accordance with The Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines. Four online databases were searched and screened by two independent reviewers. Primary research studies that reported the incidence of foot and/or ankle injuries in professional ballet dancers were included. Study quality assessed using checklists from the Joanna Briggs Institute.

**Results:** Nine studies were included. 2,914 injuries were recorded in 1,432 professional ballet dancers, with 40.3% (n=1,173) occurring in the foot and ankle region. The majority of these injuries were overuse in nature and where diagnoses were known (n=5 studies), tendinopathies, metatarsalgia and stress fractures were the most common types. Mean injury incidence rate per 1,000 dance hours was 1.30 (range: 0.24-4.44). Mean injury incidence per dancer per annum was 1.94 (range: 0.36-6.82). This is to say that every year a professional ballet dancer can expect to sustain at least 1 new injury. However, various injury definitions were used across studies.

### **37. Evaluation of an Inter-professional Education Placement Resource Pack in Practice Education Settings**

Andrea Tobin, BSc Physiotherapy (University of Limerick)

#### **Abstract**

**Introduction:** Inter-professional education (IPE) aims to create an environment where health professionals from different disciplines learn with and from each other, resulting in improved health outcomes (WHO 2010), and a developed workforce that effectively treats the needs of the population (Olenick *et al.* 2010). The University of Limerick (UL) IPE Placement Resource pack was developed to support IPE in practice education for students engaging in clinical placements.

**Aims:** To examine the content and usage of the UL IPE resource pack.

**Methods:** This was a cross-sectional study of mixed methods. Students, practice educators, and practice education staff of the physiotherapy and speech and language therapy (SLT) courses in UL were invited to participate. Participants received the IPE placement resource prior to placement and were contacted about participation in the study (online survey) post-completion of placement. Data analysis was completed using quantitative tools (Microsoft Excel; SPSS) and qualitative methods (thematic analysis).

**Results:** 45 individuals responded. 14 respondents, physiotherapy students (50%; n=7), SLT students (14.29%; n=2), physiotherapy staff (21.43%; n=3), SLT staff (14.29%; n=2), were included in the study. Participants responded positively to the pack, 100% (n=14) stated they would use it on subsequent placements and 85.72% (n=12) stated they are 'very likely' or 'likely' to recommend it to another. Respondents commented on the pack's clarity, and ability to direct IPE interactions. Respondents noted that more support/education is required to use the pack and suggested improvements to the layout, such as increased writing space.

**Conclusion:** Overall, the participants from both disciplines have positive attitudes towards the resource pack and IPE, with some minor improvements suggested to the structure and implementation of the resource.

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