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IRISH CANCER SOCIETY ENGAGEMENT AWARD CREA19NOR

Breast cancer: Engineering your way to being more physically active

Dr. Michelle Norris^{1,4,5,6}, Prof. Ita Richardson^{1,4,5,6}, Dr. Pauline Meskell^{2,4,5}, Yvonne Davis^{3,6}, Vidette Ryan Molyneux⁷ & Karen McAree⁷.

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³Corporate Secretary's Office, ⁴Ageing Research Centre, ⁵Health Research Institute, ⁶University of Limerick,

⁷Limerick Dragons,
Limerick, Ireland.

PROJECT REPORT ON

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This report summarises the background, work completed and outputs made by the Research Team during the project supported by the Irish Cancer Society Engagement Award CREA19NOR, entitled “Breast Cancer: Engineering your way to being more physically active”. The project ran from 18th November 2019 to 17th November 2020. Dr. Michelle Norris, the lead investigator, is an ALECS Research Fellow in Lero – the Irish Software Research Centre, and a member of the Ageing Research Centre (ARC), within the Health Research Institute (HRI), University of Limerick (UL). The Research Team was composed of Dr. Norris, Prof. Ita Richardson (Lero, ARC-HRI and Department of Computer Science and Information Systems, UL), Dr. Pauline Meskell (ARC-HRI and Department of Nursing and Midwifery, UL), Yvonne Davis (Visual Arts Curator, UL), Vidette Ryan Molyneux (breast cancer survivor and member of Limerick Dragons) and Karen McAree (breast cancer survivor and member of Limerick Dragons). Irish Cancer Society contacts for this Engagement Award were Dr. Michelle Lowry and Dr. Claire Kilty.

1. Background

Breast cancer is the most common type of cancer diagnosed in the EU, and the second most common cancer affecting women in Ireland with nearly 3,100 women diagnosed every year (Irish Cancer Society 2019). Additionally about 20 men are diagnosed annually in Ireland. For breast cancer patients and survivors, both during treatment and beyond treatment, engaging in physical activity has been identified as a successful method of improving physiological markers, biomechanical functionality and the overall quality of life of breast cancer patients (McNeely *et al.*, 2006). However, physical activity levels in breast cancer patients and survivors are extremely low, with patients rarely meeting government recommended guidelines for physical activity in adult populations. We believe that Connected Health may facilitate breast cancer patients and survivors in increasing their physical activity levels.

Research focusing on Connected Health, breast cancer and physical activity is currently being undertaken within the larger project BREASTech, funded by ALECS. However, engaging with those affected by breast cancer is a key starting point of BREASTech, thus allowing us to truly undertake impactful research. Therefore, the purpose of our ICS Engagement Award was to initiate engagement with breast cancer patients and survivors, focusing on research surrounding how breast cancer can affect physical activity, and how technology can be utilised to facilitate physical activity. We invited 20 breast cancer patients and survivors to attend two workshops,

during which we presented research on physical activity for breast cancer recovery in an interactive manner, thus generating interest in them getting involved with the research. We then utilised Photovoice to allow workshop attendees to express the roles that physical activity and technology play in their lives. Photovoice is a highly participatory method of action research, and has been recently used for “visualising the lives of people with physical disabilities” (Tornbom *et al.*, 2019), including those with stroke (Tornbom *et al.*, 2019), and those with chronic illness (Allen *et al.*, 2009, Burles and Thomas 2013). Photovoice provided a powerful tool for workshop attendees to express how breast cancer had impacted their lives. Lastly, we informally encouraged learning about the use of technology in supporting physical activity by providing attendees with a piece of technology (Fiit Technology) which may influence their personal activity. The overall output from this project was a set of eight posters, developed by workshop attendees, detailing, through photography, their opinions and thoughts on their breast cancer journey, physical activity and technology.

We also produced a PDF booklet (attached) which contains all of the photos and commentary collected during the Engagement Award. This has been electronically distributed to all workshop attendees, circulated through Lero, the HRI and ARC, and is available online at https://issuu.com/michelle.norrismoloney/docs/no_longer_whole_but_still_strong_a_photovoice_pr with link access through <https://www.lero.ie/people/michelle-norris>.

The initial project team was composed of experts in particular areas. Dr Norris is leading BREASTech, Prof Richardson leads a number of Connected Health projects, Dr Meskeel researches self-management of chronic diseases, and Ms Davis is the Visual Arts curator in UL. Two breast cancer survivors, Vidette Ryan Molyneaux and Karen McAree, members of the Limerick Dragons, joined the team, ensuring that the patient and survivor perspective was taken into account during the project.

2. Project Phases Undertaken

In this project, we followed the agreed Planning, Execution and Dissemination Phases, and produced multiple outcomes (such as the Photovoice project, demonstrating the importance of research to breast cancer patients and survivors) and outputs (such as exhibition posters and Photovoice booklet)

2.1 Phase One: Planning

2.1.1 Research Team Meeting

To begin, we developed a recruitment poster, which we distributed to the Limerick Dragons (Limerick Dragons.ie), a paddling, walking/Nordic walking and aquatics sporting club whose members are breast cancer survivors, supporters and friends (Figure 1). The aim of this recruitment poster was to recruit two Limerick Dragons members to join the Research Team, thus ensuring that the award was actively engaging Public and Patient Involvement (PPI) throughout. Vidette Ryan Molyneaux and Karen McAree self-nominated, and attended the Research Team Meeting on January 14th 2020, in Lero, University of Limerick.

During this meeting Dr. Norris presented the details of the Engagement Award application and the key decisions required from the meeting, such as dates, running orders for the workshops and number of attendees. As we wanted the PPI within the project to be embraced fully we allowed for full discussion around aspects of the project which should be changed, removed or added. Alterations which were made included:

- changing the Pilates class within Workshop 1 to a Nordic Walking class, ensuring that we could meet the mobility abilities of all attendees,
- adding a PDF Booklet as an output to the award, ensuring that all photographs could be included in the output,
- ensuring that the “Top 3” photographs from attendees would be included in the poster exhibition
- changing from a 6-month attendee follow-up to a 1-month attendee follow-up to investigate the impact of the 1-month Fiit Premium membership.



Figure 1. Research Team recruitment poster.

Both Vidette and Karen added invaluable opinions and ideas around how the Engagement Award should be undertaken, and these were adopted during project execution. The Workshops were set for Saturday February 8th and Saturday February 22nd 2020. This allowed for a 2-week period between workshops, during which workshop attendees would take photos which represented their opinions around breast cancer, physical activity and technology. It was decided to recruit 15-20 breast cancer patients and survivors to take part in the Workshops, and recruitment methods employed were be a press release, email release within the UL community, and recruitment through the Limerick Dragons.

2.2 Phase Two: Execution

2.2.1 Workshop 1 – Saturday February 8th 2020

Following a very successful recruitment drive, 18 breast cancer patients and survivors were recruited to attend Workshop 1 (further details about recruitment is provided in Section 3. Impact) (Figure 2). Seventeen breast cancer patients/survivors then attended Workshop 1, with one additional breast cancer survivor taking part in the award remotely. Additional Workshop 1 attendees included the Research Team (Dr. Norris, Prof. Richardson, Dr. Meskell & Ms. Davis), Patricia Sutton (qualified Nordic Walking Instructor and Lymphoedema Therapist) and Dr. Lowry (Irish Cancer Society Research Coordinator).



Figure 2. Workshops recruitment poster for social media.

The running order for Workshop 1 was as follows:

- 10:00 Arrival and introductions (refreshments)
- 10:30 Talk by Dr. Michelle Norris
Physical activity and breast cancer: Why is it important and how can technology help?
- 10:50 Talk by Vidette Ryan Molyneaux and Karen McAree about the Limerick Dragons
- 11:00 Talk by Prof Ita Richardson and Yvonne Davis, Visual Arts Curator, UL
Photography for Photovoice
- 11:30 Group activity on UL campus: facilitated by research team
Attendees take photographs considering topics e.g. “My physical activity”
- 12:30 Introduction to Nordic Walking by Patricia Sutton
- 13:30 Lunch and Workshop close

All the attendees enthusiastically took part throughout Workshop 1, embracing the research presented by Dr. Norris. Following the presentation and questions on the Photovoice method, they broke into groups and spent some time taking photographs around the University of Limerick campus, discussing how these photographs told their personal story. They actively engaged in the Nordic Walking exercise class (Figure 3). Many attendees commented on learning new aspects to Nordic Walking, which they had never known before with others also interested in how they could undertake Nordic Walking in the future. Additionally, we utilised a graffiti wall to gather the thoughts and opinions of workshop attendees on exercise, technology for exercise and the project. The majority of attendees expressed positive opinions, with negative opinions focusing around the fact that technology does not exist for breast cancer patients (Section 2.3.2 for graffiti wall results).

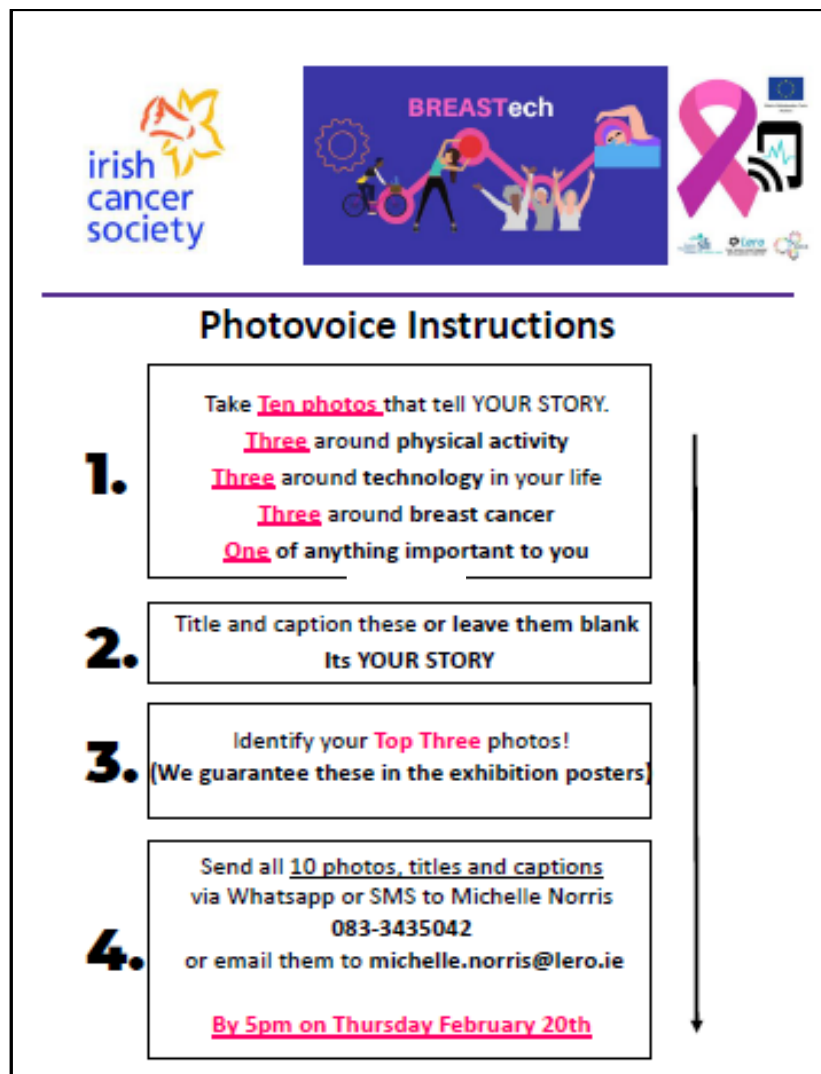




Figure 3. Workshop attendees engaging in Workshop 1.

2.2.2 Two-week period between Workshop 1 and Workshop 2

During the two-week period between Workshop 1 and Workshop 2, workshop attendees were asked to take 10 photos which depicted their opinions on the topics breast cancer (3 photos), physical activity (3 photos), technology (3 photos) and 1 photo of anything they wished. Workshop attendees were provided with instructions (Figure 4), were contacted throughout the 2-week period to ensure they had the information they needed, and were successfully managing the task. Attendees then sent soft copies of these photos to Dr. Norris in preparation for Workshop 2.



The poster features logos for the Irish Cancer Society, BREASTech, and the University of Limerick at the top. Below the logos, the title 'Photovoice Instructions' is centered. The instructions are numbered 1 through 4, each in a separate box. A large downward-pointing arrow is on the right side of the instructions.

- 1.** Take Ten photos that tell YOUR STORY.
Three around physical activity
Three around technology in your life
Three around breast cancer
One of anything important to you
- 2.** Title and caption these or leave them blank
 Its YOUR STORY
- 3.** Identify your Top Three photos!
 (We guarantee these in the exhibition posters)
- 4.** Send all 10 photos, titles and captions
 via Whatsapp or SMS to Michelle Norris
 083-3435042
 or email them to michelle.norris@lero.ie
By 5pm on Thursday February 20th

Figure 4. Photovoice instructions provided to workshop attendees

2.2.3 Workshop 2 - Saturday February 22nd 2020

Due to unforeseen circumstances, two workshop attendees dropped out after Workshop 1, and therefore 15 breast cancer patients and survivors attended Workshop 2. However, all 18 participants submitted photographs to the workshop. Additional Workshop 2 attendees included the Research Team (Dr. Norris, Prof. Richardson, Dr. Meskell & Ms. Davis), Patricia Sutton (qualified Nordic Walking Instructor and Lymphoedema Therapist) and Dr. Lowry (Irish Cancer Society Research Coordinator).

The running order for Workshop 2 was as follows:

- 10:00 Arrival and refreshments
- 10:15 Explanation of how we theme photos and create posters by Dr. Michelle Norris
- 10:30 Group work to create posters
- 12:15 Incentive hand out and explanation
- 12:30 Lunch and Workshop close

During Workshop 2 attendees came together and through multiple rounds of K-J analysis¹, attendees grouped and themed photographs (Figure 5).



Figure 5. Photo movement into themes/posters during Workshop 2.

Where disagreement occurred as to where a photo should be located, an open discussion was had between all attendees until a decision was reached. The result of these discussions was eight posters, with the following titles (and sub-titles where necessary) confirmed:

1. Our Lifelines
2. Eyes Wide Open Now!
3. There's an App for that!
4. Support Comes in All Different Forms
5. "Rock Star" – Braver and Stronger
Reclaiming our lives both physically and emotionally!
6. Side Effects
Side effects that nobody wants to know about!
7. THE Big Day
8. Rollercoaster of Emotions

When this was completed, the photographs were sent to a Graphic Designer² who designed and printed the photographs.

2.2.4 Poster Exhibition – International Women's Day Conference 2020, University of Limerick

The posters were displayed at International Women's Day Conference 2020 in the University of Limerick, on March 6th 2020. Six of the Workshop attendees attended the conference and Dr. Norris gave a 10-minute presentation titled "Breast Cancer: Engineering your way to being more physically active" at the conference (approximately 150 attendees) outlining what the project entailed. Many conference attendees visited the posters during the conference coffee breaks, and the workshop attendees were extremely happy with the final exhibition (Figure 6).

¹ <https://www.isixsigma.com/tools-templates/affinity-diagram-kj-analysis/effective-use-special-purpose-kj-language-processing/>

² Additional cost for this was covered by the UL Arts Office.



Figure 6. Poster exhibition at International Women's Day Conference 2020, University of Limerick.

2.3 Phase Three: Dissemination, Attendee Feedback and Impact

Dissemination, Attendee Feedback and Impact were utilised and assessed throughout the entire Engagement Award, through recruitment, undertaking the workshops, the poster exhibition and distribution of the booklet.

2.3.1 Recruitment

To recruit workshop attendees, the Limerick Dragons and Irish Cancer Society were utilised to aid in information dissemination.



Figure 7. Example of recruitment and project dissemination facilitated by the Irish Cancer Society.

Additionally, a national press release from the Lero Communications officer was distributed, and resulted in articles surrounding the project appearing on TipperaryLive.ie, Limerick Leader, IrishHealth.com, WaterfordLive.ie, Lero.ie, and Avondhupress.ie. (Figure 8) (See Appendix A for full press coverage). This was an incredibly powerful method of recruitment for the workshops and resulted in full recruitment (18 breast cancer patients/survivors) and we were unable to accommodate a further 30 breast cancer patients/survivors who expressed interest in the project. Regarding impact, 100% of both those recruited for the workshops and those we were unable to accommodate indicated they are willing to take part in future research in the area.



Figure 8. Selection of press appearances during Engagement Award recruitment.

2.3.2 Workshops

We utilised a graffiti wall and a project feedback wall within Workshop 1 to gather attendee insights and thoughts around breast cancer, physical activity and technology, and to assess impact of the project from workshop attendees (Figure 9).

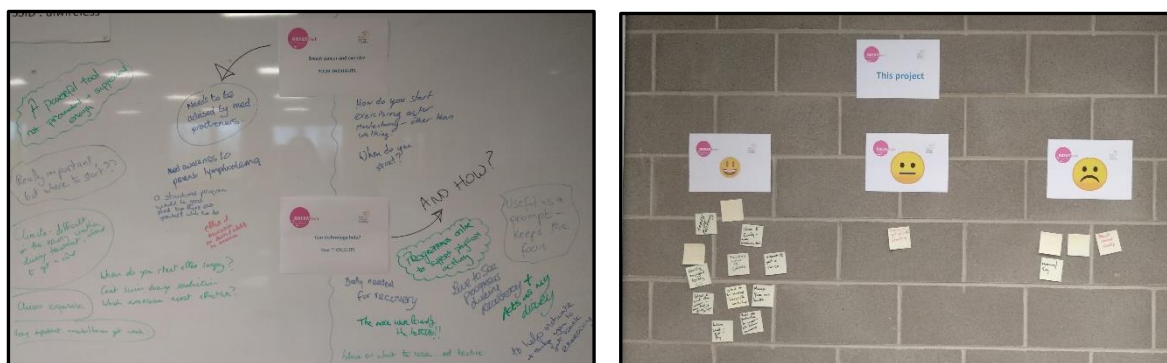


Figure 9. Graffiti wall and project feedback wall utilised within Workshop 1.

The graffiti wall provided us with invaluable thoughts from the attendees around the topics of “Breast cancer and exercise – Your thoughts” and “Can technology help – Your thoughts”. Reoccurring thoughts that occurred focused on the type of exercise to undertake and where to start, and whether technology is or can be user friendly (Table 1).

Table 1. Graffiti wall results around breast cancer, exercise and technology.

Graffiti Wall	
Breast cancer and exercise - Your thoughts	Can technology help - Your thoughts
Needs to be advised by medical practitioners	Programmes online to support physical activity
Need awareness to prevent lymphoedema	Useful as a prompt - keeps the focus
A powerful tool not promoted and supported enough	Improving everyday
Really important but where to start?	Badly needed for recovery
How do you start exercising after mastectomy - other than walking?	Love to see progress during recovery and acts as my diary
When do you start?	To help motivate and to get you back exercising.
A structured programme would be good, hard to figure out yourself what to do.	The more user friendly the better
Effect of medication on desire/ability to exercise	Advice on what to use. Not techie
When do you start after surgery? Cannot swim during radiation.	
Which exercise is most effective	
Very important, muscles/tone gets weak	
Classes expensive	
Climate - difficult in the rainy weather during treatment, afraid to get a cold.	

In regards to what workshop attendees thought of the Engagement Award being undertaken the majority of attendees expressed positive opinions, with negative opinions focusing around the fact that technology doesn’t exist for breast cancer patients (Table 2).

Table 2. Project feedback wall results.

This Project		
Happy Face	Straight Face	Sad Face
Manage your own health	Hoping to get a little creative	Memory fog
There are positivity's to cancer - life balance, awareness		Need to identify technology
Great to see some focus on activity		Doesn't exist
Loads of positivity		Breast cancer sucks
Close to family - more communication		
Great to get a voice		
Always good to share		
Great to be a part of something positive		
Really enjoyed today :)		
Great to meet other women and hear their story - all unique		
Balance, work, rest, play		
Great to be involved, loved the workshop		

To engage further with breast cancer stakeholders, information about how the workshops were undertaken and what we did within the workshops was disseminated via Twitter (Figure 10) (Twitter Engagement analytics Table 3).

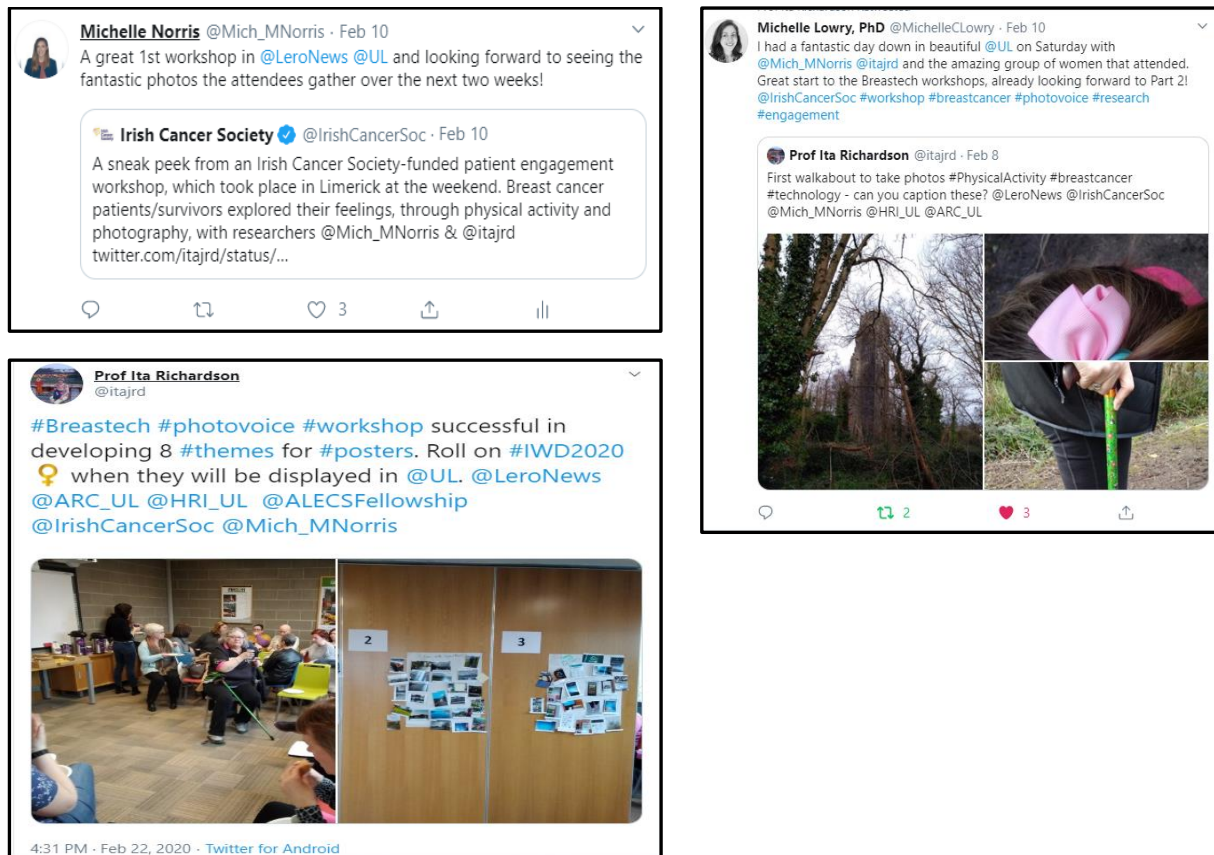


Figure 10. Workshop dissemination via Twitter.

2.3.3 International Women's Day Conference 2020

Our first exhibition of the posters was at the International Women's Day Conference 2020, held in the Bernal Building in the University of Limerick on March 6th 2020. The conference was attended by 150 members of UL Community and industries such as Bank of Ireland and Analog Devices. Dr. Norris presented a brief introduction about the Engagement Award to increase engagement with the posters further. Six of the workshop attendees were able to attend the conference and commented both on the calibre of speakers at the conference and also how great the posters were. The posters will also be used in further exhibitions in both UL and nationally. Plans for this will be developed post-COVID-19 restrictions.



Figure 11. Poster exhibition at International Women's Day Conference 2020.

2.3.4 One-month Follow-up Feedback

Workshop attendees were contacted via email, one-month after the completion of Workshop 2. Attendees were asked for feedback on the following questions:

- (1) Did taking part in the project make you think about the exercise you undertake and how important exercise is?
- (2) Did taking part in the project make you think about the role technology plays in your life?
- (3) Did you find the Fiit Device/Fiit Classes useful?
- (4) How could the Fiit Device/Fiit Classes be improved?
- (5) Do you think it is important to engage with research around breast cancer, exercise and technology?

Nine out of sixteen attendees responded (56%) (below).

(1) Did taking part in the project make you think about the exercise you undertake and how important exercise is?

“The project gave me the motivation and courage to increase my exercise. I was wary as I am still in treatment. I exercise everyday now as a result of the project. It has also encouraged my mother to do more.”

Workshop Attendee 1

“It was it reaffirmed that we do need to exercise, however it also pointed out that the correct type of exercise is also very important. We all have issues with health so it would be unrealistic to have one sport for all.”

Workshop Attendee 2

“I walk nearly 4 miles everyday so I feel I was always conscious of exercise, however I was on holiday after 2nd workshop and really noticed a lot of people with the Nordic walking sticks, I would not have known what they were without the workshop. They were very popular abroad.”

Workshop Attendee 3

“Yes. While I was already getting out for walks, weather permitting, I felt that there was a lot more that I could do to get my overall body back to shape following chemo / operation etc. I found the section on the Nordic walking excellent as the warm up exercises and indeed the walking technique itself focussed on all muscles.”

Workshop Attendee 4

“Yes taking part made me think more about exercise and how important it is especially in regards to risk reduction of my cancer recurring.”

Workshop Attendee 5

“Yes taking part in your fantastic program was a huge eye opener for me exercise wise because I often wondered why my Lymphoedema literally disappeared 7 years ago and never realized it was when I took up tennis!! What a revelation!! Not only super exercise but a fantastic outlet for me and making super friends.”

Workshop Attendee 6

“Exercise plays a huge part in my life - it was useful to see that validated by the project. I was particularly interested in the statistics from the American college of sports medicine.”

Workshop Attendee 7

“Yes it did, I took up Nordic walking after it and go into yoga.”

Workshop Attendee 8

(2) Did taking part in the project make you think about the role technology plays in your life?

“It has, I'm aware of the benefits of technology to me as opposed to random scrolling through apps. I'm using technology to my benefit. (Exercise, meditation, connecting). I'm also looking at photographic opportunities in a far more appreciative manner. I'm sharing photos to uplift people now. I'm exercising now as a result of it, this is benefiting my recovery and future health.”

Workshop Attendee 1

“I think we have proved that we all use technology and that it one way in which we can all be communicated with instantly and it would be easier to monitor and capture responses.”

Workshop Attendee 2

“Again with Technology I use my Fitbit daily and it does encourage movement. In regard to other technology, mobile, Wi-Fi, computer used regularly whether it is good for us or not, that is the way the world has evolved and I don't think it will change anytime soon.”

Workshop Attendee 3

“Partly. I have a bit of a phobia to technology. I can see the benefits of having an app. However, I find group activity better as it is easier to be motivated when with your peers.”

Workshop Attendee 4

“Yes, the project has made me realise just how much technology I use every day, how useful it can be, but also how dependent I am on it now.”

Workshop Attendee 5

“Yes, I never realized how important technology was in my life and using the Fitbit is brilliant, I walk every single day now instead of sometimes!!”

Workshop Attendee 6

“Yes definitely. My use of technology especially throughout my cancer treatment has kept track of everything from appointments, guided daily meditations and my exercise regime. I use a variety of apps, email, calendars, Office 365 & sports wearables. I found using technology in this way particularly important as it gave me a sense of control when I was unable to control many of the external factors of my life. In addition, I found that recording this data showed my return to fitness and how far I had come since treatment finished.”

Workshop Attendee 7

“Yes all the choice of mediums to use is just amazing.”

Workshop Attendee 9

(3) Did you find the Fiit Device/Fiit Classes useful?

“The FIIT app is brilliant, I use it every day. It's motivational, it's great to have someone to guide you through a class. I'm really loving it.”

Workshop Attendee 1

“To be perfectly honest I did not use it as I am currently experiencing too much pain, however I do see the benefits.”

Workshop Attendee 2

“Between being on holidays and now with home schooling I have not yet used the Fiit device, I’m also wary of using something just under my breasts! Maybe that’s how it can be improved, could it be located elsewhere?”

Workshop Attendee 3

“Unfortunately, I did not use it. Again I am better motivated in a group or by getting outside.”

Workshop Attendee 4

“The Fiit classes are really good especially now that we can't leave our homes due to Corona virus. I find them easy to use and there is a large selection of classes for all levels which is brilliant.”

Workshop Attendee 5

“I did set up the Fiit device and logged on to the classes. However, due to an injury, I was unable to partake in any of them. I have looked at them though and they do look very interesting and I am looking forward to trying them out once I'm better.”

Workshop Attendee 7

“I found I tried it, I found the basic class advanced!”

Workshop Attendee 9

(4) How could the Fiit Device/Fiit Classes be improved?

“I think for me personally it’s too generic, I end up hurting myself more if I don't do it correctly. I currently can’t afford to injure myself further.”

Workshop Attendee 2

“Maybe there is a way to have a group class. Something with a competitive edge that would make one want to do the classes to achieve a target. Maybe this already exists but I didn’t check.”

Workshop Attendee 4

“I don't know how they can be improved.”

Workshop Attendee 5

“Personally I found the strap uncomfortable to wear but that is purely down to my own scarring, however, I imagine many cancer patients would be of the same opinion - perhaps a wearable heart rate monitor for the wrist may be more useful for someone in my situation.”

Workshop Attendee 7

“Too advance from recovering for cancer, even the basic, could concentrate on the various moves more slowly.”

Workshop Attendee 9

(5) Do you think it is important to engage with research around breast cancer, exercise and technology?

“I really do think it's so important to engage in this research. It raises awareness but also educates us in matters that we weren't aware of. It opened us education that the health services didn't address.”

Workshop Attendee 1

“I think it's vital that help in research as it's the only way forward, there are a few issued like lymphedema for instance that the medical community ignore, don't understand, unable to advise patients etc. I think if we work together, we can make a difference and make a better path for all the people going through the cancer treatment and recovery. I think we certainly identified that finishing your in hospital treatments are not the end of the journey for survivors which is why new developments are necessary to improve people's quality of life both emotionally and physically.”

Workshop Attendee 2

“Yes all research in regard to breast cancer is vital, the more done the more we will learn and hopefully someday a cure for all will be found. Even evidence based on exercise and longer life would be great.”

Workshop Attendee 3

“Certainly. Exercise is so important to help with ongoing recovery both from a mental and physical point of view. Technology is certainly useful as a tool to enable this and will certainly appeal to a certain cohort of people. I could definitely see this as the future for younger more computer literate people.”

Workshop Attendee 4

“Yes I personally feel it is important to be engaged. Anything that can raise awareness about breast cancer and show how exercise plays such a large role in lowering risk of breast cancer is so important for everyone.”

Workshop Attendee 5

“Yes it is a huge undertaking to engage with research around breast cancer, technology and exercises but so worthwhile and a massive learning curve, especially to others that are diagnosed on a daily basis.”

Workshop Attendee 6

“I found the research to be very therapeutic - it was the first time I had engaged in discussing my cancer with other people and although emotional, I felt a huge relief once I confronted all the topics raised during the workshops. I previously had struggled to come to terms with the

fact that I had breast cancer, (I thought I was too young and too fit to have this diagnosis) meeting these women helped me in a profound way. I especially like the fact, that although we have all come along different paths we all have a common goal in getting better and improving our outcome. If through this project, we can help other women to see that there is life after a diagnosis I am very proud to have been a part of it."

Workshop Attendee 7

"Probably applies to all illnesses/conditions, but I can only speak from my own experience with breast cancer - when treatment is over, there is very little follow-up/ support. If all of the information re side effects, exercise, nutrition, etc., was available in a sort of controlled, mini internet it would be fantastic."

Workshop Attendee 8

"Without a shadow of a doubt, thoroughly enjoyed it and meeting women like minded."

Workshop Attendee 9

As seen above responses were mixed in terms of the Fiit Device and classes, however some attendees appear to be getting great use out of the device provided. All participants benefited from taking part in the project, and could see the value in engaging in research within this area. It is also important to note that the regulations around the COVID-19 pandemic (self-isolation, physical distancing etc.) were implemented soon after the completion of Workshop 2 and therefore attendee's responses are relevant to that period of time.

2.3.5 Output Metrics

As outlined within the Engagement Award application, outputs from CREA19NOR were also quantified using Impact Monitoring (Table 3). In general, the press release and Twitter interactions contributed significantly to the public engaging with the project. Most significantly, within Limerick and its environs, the Limerick Leader is a widely read publication and web resource. Having spoken with numerous potential workshop attendees it was clear the Limerick Leader provided a source of information for those interested.

Table 3. Output monitoring metrics.

Output	Impact Monitoring Method	Result
PDF Booklet	Impressions, reads and average reading time all extracted from Issuu statistics.	215 impressions, 125 reads and an average read time of approx. 6 minutes (as of 20/05/2020).
Poster exhibition outlining barriers and technology solutions	Number of people who interact with the posters (Attendees to exhibition, virtual interaction through Twitter, Facebook). Number of times posters displayed in exhibitions.	Over 150 people at International Women's Day Conference, and 6 workshop attendees.

		Future expected poster displays > 5 (Oncology Departments, and Charities). Plans have been severely restricted due to COVID-19.
National press release Local Press uptake (radio interviews etc.)	Number of articles published, where, readership of the relevant newspapers.	Article placed on 11 news websites, Cancer.ie and Lero.ie February 2020 Total News Website Traffic: TipperaryLive.ie – 415,000 Limerick Leader – 1.22 million IrishHealth.com – 178,000 WaterfordLive.ie – 205,000 Avondhupress.ie (N/A)
White Paper Report	Number of people the report is read by (online views/downloads if posted online, number of people circulated to via email).	This report will be made available on website lero.ie.
Tweets, Facebook posts	Number of people who like/retweet the post	Numerous tweets by Ita Richardson, Lero, Michelle Norris, Irish Cancer Society etc. > 80 people retweeted, >100 people liked. Dr. Norris Twitter Analytics around Engagement Award. <ul style="list-style-type: none"> • Across February 2020 9,500 impressions • 344 impressions, 10 engagements and 2.9% engagement rate for Workshop 1 Tweet, • 2,450 impressions, 29 engagements and 1.2 % engagement rate for recruitment Tweet • 748 impressions, 18 engagements and 2.4% engagement rate for International Women's Day Poster Display Tweet. Prof. Richardson Twitter Analytics around Engagement Award. <ul style="list-style-type: none"> • 1,261 impressions and 66 engagements for Workshop 1 Tweet, • 947 impressions and 59 engagements Workshop 2 Tweet

		<ul style="list-style-type: none"> 1,382 impressions and 160 engagements for International Women's Day Poster Display Tweet.
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3. Budget

The budget allocated to complete this Engagement Award was €2,498.55, whilst total actual expenditure was €2,241.87 (Table 4). An itemised breakdown of costs indicates that costs were well estimated, with savings possible on attendee incentives (discount provided by Fiit), workshop materials (available freely within Lero) and advertising/dissemination (the press release and twitter allowed for full recruitment and dissemination).

Table 4. Budget breakdown.

Item	Estimated Cost (€)	Actual Cost (€)
Travel for Research Team Meeting	20.00	21.51
Compensation	30.00	30.00
Catering for Research Team meeting	74.55	63.90
Catering for Workshop 1	191.70	187.50
Travel for Workshop 1	186.00	213.89
Incentives for attendees	702.00	603.18
Catering for Workshop 2	191.70	187.50
Travel for Workshop 2	186.00	203.04
Workshop 2 Materials	30.00	0.00
Workshop 2 Materials (Photos)	18.00	31.35
Poster printing for exhibition	798.60	700.00
Advertising/Dissemination	70.00	0.00
Total	2,498.55	2,241.87

4. Conclusion

The Irish Cancer Society Engagement Award CREA19NOR was successfully completed and had a very meaningful impact on all attendees as displayed in the attendee feedback comments above. Attendees willingly engaged with the research and the Photovoice process, resulting in a fantastic poster display, which can, in the future, have an impact nationally. Additionally, CREA19NOR was successfully completed within budget and on time.

5. References

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APPENDIX A

Press appearances of ICS Engagement Award

RUEPOINT MEDIA			
Publication:	Vale Star	Media Cost (€):	135.66
Date:	Thursday, February 6, 2020	Reach	8,000
Page:	64	Size (Sq. Cm)	114

Call for breast cancer patients and survivors to engage with research

Researchers at Lero, the Science Foundation Ireland Research Centre for Software, are looking for breast cancer patients and survivors to take part in a workshop at University of Limerick (UL) this weekend. The workshop is funded through an Irish Cancer Society Research Engagement Award, and is focused around engaging breast cancer patients and survivors with current research being undertaken in the UL project BREASTech: increasing physical activity levels in breast cancer patients through technology-enabled care. Research fellow Dr Michelle Norris of Lero at UL is looking for breast cancer patients and survivors who are willing to engage with the process and are available to attend UL on the mornings of Saturday, February 8th and Saturday, February 22nd for the half-day workshops. "Breast cancer patients and survivors will explore their feelings and thoughts surrounding breast cancer, physical activity and technology, through photography using a method called Photovoice. There are still places open in the workshop and anyone who is interested and available to come along can contact me," he said. "The aim of the Research Engagement Award is, firstly, to engage breast cancer patients and survivors with research around why exercise is important for those with, and survivors of, breast cancer, and how technology may help," explained Dr Norris. The first workshop will begin with a talk by Dr Norris on the importance of exercise for breast cancer and how technology could help to increase exercise levels in breast cancer patients and survivors. "The first workshop will conclude with an introduction to Nordic Walking class led by Patricia Sutton, a qualified Nordic Walking Instructor and Lymphoedema Therapist. Within the second workshop, attendees will assemble posters from photographs they have taken on their phones/cameras to be exhibited at the International Woman's Day Conference in the University of Limerick on March 6th," she added. Participants will receive funding for travel costs, tea/coffee at break time, a light lunch and a piece of technology to support physical activity. To take part contact Michelle on 061 234158 or by email at michelle.norris@lero.ie.

RUEPOINT MEDIA			
Publication:	Mallow Star	Media Cost (€):	135.66
Date:	Thursday, February 6, 2020	Reach	8,000
Page:	64	Size (Sq. Cm)	114

Call for breast cancer patients and survivors to engage with research

Researchers at Lero, the Science Foundation Ireland Research Centre for Software, are looking for breast cancer patients and survivors to take part in a workshop at University of Limerick (UL) this weekend. The workshop is funded through an Irish Cancer Society Research Engagement Award, and is focused around engaging breast cancer patients and survivors with current research being undertaken in the UL project BREASTech: increasing physical activity levels in breast cancer patients through technology-enabled care. Research fellow Dr Michelle Norris of Lero at UL is looking for breast cancer patients and survivors who are willing to engage with the process and are available to attend UL on the mornings of Saturday, February 8th and Saturday, February 22nd for the half-day workshops. "Breast cancer patients and survivors will explore their feelings and thoughts surrounding breast cancer, physical activity and technology, through photography using a method called Photovoice. There are still places open in the workshop and anyone who is interested and available to come along can contact me," he said. "The aim of the Research Engagement Award is, firstly, to engage breast cancer patients and survivors with research around why exercise is important for those with, and survivors of, breast cancer, and how technology may help," explained Dr Norris. The first workshop will begin with a talk by Dr Norris on the importance of exercise for breast cancer and how technology could help to increase exercise levels in breast cancer patients and survivors. "The first workshop will conclude with an introduction to Nordic Walking class led by Patricia Sutton, a qualified Nordic Walking Instructor and Lymphoedema Therapist. Within the second workshop, attendees will assemble posters from photographs they have taken on their phones/cameras to be exhibited at the International Woman's Day Conference in the University of Limerick on March 6th," she added. Participants will receive funding for travel costs, tea/coffee at break time, a light lunch and a piece of technology to support physical activity. To take part contact Michelle on 061 234158 or by email at michelle.norris@lero.ie.

RUEPOINTMEDIA

Publication:	Limerick Post	Media Cost (€):	396.5
Date:	Saturday, February 8, 2020	Reach	48,196
Page:	6	Size (Sq. Cm)	61

Survivors needed for breast cancer workshop

by **Bernie English**
bernie@limerickpost.ie

BREAST cancer patients and survivors are being urged to take part in a workshop at the University of Limerick this weekend.

Researchers at Lero, the Science Foundation Ireland Research Centre for Software, want participants for the event, which is focused around engaging breast cancer patients and survivors with research being undertaken in the UL BREASTech project.

Funded through an Irish Cancer Society Research Engagement Award, the project aims at increasing physical activity levels in breast cancer patients through technology-enabled care.

Lero researcher Dr Michelle Norris is looking for breast cancer patients and survivors who are willing to engage with the process and are available to attend UL on the mornings of Saturday, February 8 and Sunday, February 9 for the half-day workshops.

"Breast cancer patients and survivors will explore their thoughts about breast cancer, physical activity and technology. There are still places open in the workshop and anyone who is interested and available to come along can contact me."

"The aim is to engage breast cancer patients and survivors with research around why exercise is important for those with, and survivors of, breast cancer and how technology may help," explained Dr Norris.

The first workshop will conclude with an introduction to Nordic Walking class led by Patricia Sutton, a Nordic Walking Instructor and Lymphoedema therapist.

Participants will receive funding for travel costs, tea/coffee at break time, a light lunch and a piece of technology to support physical activity. To take part contact Michelle on 061 234158 or by email at michelle.norris@lero.ie.

RUEPOINTMEDIA

Publication:	avondhupress.ie	Media Cost (€):	16
Date:	Thursday, February 6, 2020	Reach	1,700
Page:	Link	Size (Sq. Cm)	308

Call for breast cancer patients and survivors to engage with research

The workshop is funded through an Irish Cancer Society Research Engagement Award, and is focused around engaging breast cancer patients and survivors with current research being undertaken in the UL project BREASTech: increasing physical activity levels in breast cancer patients through technology-enabled care.

Research fellow Dr Michelle Norris of Lero at UL is looking for breast cancer patients and survivors who are willing to engage with the process and are available to attend UL on the mornings of Saturday, February 8th and Sunday, February 22nd for the half-day workshops.

"Breast cancer patients and survivors will explore their feelings and thoughts surrounding breast cancer, physical activity and technology, through photography using a method called Photovoice. There are still places open in the workshop and anyone who is interested and available to come along can contact me."

"The aim of the Research Engagement Award is firstly to engage breast cancer patients and survivors with research around why exercise is important for those with, and survivors of, breast cancer, and how technology may help," explained Dr Norris.

Importance of exercise

The first workshop will begin with a talk by Dr Norris on the importance of exercise for breast cancer and how technology could help to increase exercise levels in breast cancer patients and survivors.

"The first workshop will conclude with an introduction to Nordic Walking class led by Patricia Sutton, a qualified Nordic Walking Instructor and Lymphoedema Therapist."

"Within the second workshop, attendees will assemble posters from photographs they have taken on their phones/cameras to be exhibited at the International Woman's Day Conference in the University of Limerick on March 6th," she added.

Participants will receive funding for travel costs, tea/coffee at break time, a light lunch and a piece of technology to support physical activity. To take part contact Michelle on 061 234158 or by email at

RUEPOINT MEDIA

Publication:	Weekly Observer	Media Cost (€):	139.23
Date:	Wednesday, February 5, 2020	Reach	7,500
Page:	36	Size (Sq. Cm)	117



Call for breast cancer patients and survivors to engage with research

Researchers at Lero, the Science Foundation Ireland Research Centre for Software, are looking for breast cancer patients and survivors to take part in a workshop at University of Limerick (UL) this weekend. The workshop is funded through an Irish Cancer Society Research Engagement Award, and is focused around engaging breast cancer patients and survivors with current research being undertaken in the UL project BREASTech: increasing physical activity levels in breast cancer patients through technology-enabled care. Research fellow Dr Michelle Norris of Lero at UL is looking for breast cancer patients and survivors who can

February 22nd for the half-day workshops. "Breast cancer patients and survivors will explore their feelings and thoughts surrounding breast cancer, physical activity and technology, through photography using a method called Photovoice. There are still places open in the workshop and anyone who is interested and available to come along can contact me," he said. "The aim of the Research Engagement Award is, firstly, to engage breast cancer patients and survivors with research around why exercise is important for those with, and survivors of, breast cancer, and how technology may help."

technology could help to increase exercise levels in breast cancer patients and survivors. "The first workshop will conclude with an introduction to Nordic Walking class led by Patricia Sutton, a qualified Nordic Walking Instructor and Lymphoedema Therapist. Within the second workshop, attendees will assemble posters from photographs they have taken on their phones/cameras to be exhibited at the International Woman's Day Conference in the University of Limerick on March 6th," she added. Participants will receive funding for travel costs, tea/coffee at break time, a light lunch and a piece of

RUEPOINT MEDIA

Publication:	limerickleader.ie	Media Cost (€):	110
Date:	Wednesday, February 5, 2020	Reach	21,420
Page:	Link	Size (Sq. Cm)	171



Limerick researchers seek breast cancer patients and survivors for weekend workshop

The workshop is funded through an Irish Cancer Society Research Engagement Award, and is focused around engaging breast cancer patients and survivors with current research being undertaken in the UL project BREASTech: increasing physical activity levels in breast cancer patients through technology-enabled care.

Read also: 'Another milestone' as units for crucial 60-bed block land at University Hospital Limerick

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Research fellow Dr Michelle Norris of Lero at UL is looking for people who are willing to engage with the process and are available to attend UL on the mornings of Saturday, February 8 and Saturday, February 22 for the half-day workshops.

"Breast cancer patients and survivors will explore their feelings and thoughts surrounding breast cancer, physical activity and technology, through photography using a method called Photovoice," she explained.

Participants will receive funding for travel costs, tea/coffee at break time, a light lunch and a piece of technology to support physical activity. Contact Michelle on 061 234158 or by email at michelle.norris@Lero.ie.

RUEPOINT MEDIA

Publication:	Limerick Leader (Wednesday Edition)	Media Cost (€):	619.99	T 
Date:	Wednesday, February 5, 2020	Reach	13,420	
Page:	26	Size (Sq. Cm)	119	



Breast cancer patients and survivors needed

REBECCA LAFFAN
rebecca.laffan@limerickleader.ie

RESEARCHERS at Lero, the Science Foundation Ireland Research Centre for Software, are looking for breast cancer patients and survivors to take part in a workshop at University of Limerick (UL) this weekend.

The workshop is funded through an Irish Cancer Society Research Engagement Award, and is focused around engaging breast cancer patients and survivors with current research being undertaken in the UL project BREASTech: increasing physical activity levels in breast cancer patients through technology-enabled care.

Research fellow Dr Michelle Norris of Lero at UL is looking for people who are willing to engage with the process and are available to attend UL on the mornings of Saturday, February 8 and Saturday, February 22 for the half-day workshops.

"Breast cancer patients and survivors will explore their feelings and thoughts surrounding breast cancer, physical activity and technology, through photography using a method called Photovoice," she explained.

Participants will receive funding for travel costs, tea/coffee at break time, a light lunch and a piece of technology to support physical activity. Contact Michelle on 061 234158 or by email at norris@lero.ie



Lero is looking for volunteers this weekend and next

RUEPOINT MEDIA

Publication:	Nenagh Guardian	Media Cost (€):	247.23	T 
Date:	Saturday, February 8, 2020	Reach	6,502	
Page:	10	Size (Sq. Cm)	67	



IN BRIEF...

Cancer research workshop

RESEARCHERS at Lero, the Science Foundation Ireland Research Centre for Software, are looking for breast cancer patients and survivors to take part in a workshop at University of Limerick (UL).

The workshop is funded through an Irish Cancer Society Research Engagement Award, and is focused around engaging breast cancer patients and survivors with current research being undertaken in the UL project BREASTech: increasing physical activity levels in breast cancer patients through technology-enabled care.

Research fellow Dr Michelle Norris of Lero at UL is looking for breast cancer patients and survivors who are willing to engage with the process and are available to attend UL on the mornings of Saturday, February 8th, and Saturday, February 22nd for the half-day workshops.

Participants will receive funding for travel costs, tea/coffee at break time, a light lunch and a piece of technology to support physical activity.

To take part contact Michelle on 061 234158 or by email at michelle.norris@lero.ie.

RUEPOINT MEDIA

Publication:	Irishhealth.com	Media Cost (€):	58	
Date:	Tuesday, February 4, 2020	Reach	7,820	
Page:	Link	Size (\$q. Cm)	249	

Participants needed for breast cancer workshops

The workshops will be run by researchers at **Lero**, the Science Foundation Ireland (SFI) Research Centre for **software** at the University of Limerick (UL). The two half-day workshops will be run on Saturday, February 8, and Saturday, February 22.

They will centre around a UL project known as BREASTech, which aims to increase physical activity levels in breast cancer patients via technology-enabled care.

"Breast cancer patients and survivors will explore their feelings and thoughts surrounding breast cancer, physical activity and technology through photography using a method called Photovoice. There are still places open in the workshop and anyone who is interested and available to come along can contact me," explained Dr Michelle Norris of **Lero** at UL.

The first workshop will begin with a talk by Dr Norris on the importance of exercise for breast cancer and how technology could help to increase exercise levels in breast cancer patients and survivors.

"The first workshop will conclude with an introduction to Nordic walking class led by Patricia Sutton, a qualified Nordic walking instructor and lymphoedema therapist.

"Within the second workshop, attendees will assemble posters from photographs they have taken on their phones/cameras to be exhibited at the International Woman's Day Conference in the University of Limerick on March 6," Dr Norris said.

Participants will receive funding for travel costs, tea/coffee at break time, a light lunch and a piece of technology to support physical activity. Anyone interested in taking part can call Dr Norris on (061) 234 158 or email

RUEPOINT MEDIA

Publication:	waterfordlive.ie	Media Cost (€):	10	
Date:	Monday, February 3, 2020	Reach	986	
Page:	Link	Size (\$q. Cm)	330	

Waterford breast cancer patients and survivors needed for research

Researchers at **Lero**, the Science Foundation Ireland Research Centre for **software**, are looking for breast cancer patients and survivors to take part in a workshop at University of Limerick (UL) this weekend.

The workshop is funded through an Irish Cancer Society Research Engagement Award, and is focused around engaging breast cancer patients and survivors with current research being undertaken in the UL project BREASTech: Increasing physical activity levels in breast cancer patients through technology-enabled care.

Research fellow Dr Michelle Norris of **Lero** at UL is looking for breast cancer patients and survivors who are willing to engage with the process and are available to attend UL on the mornings of February 8 and February 22 for the half-day workshops.

"Breast cancer patients and survivors will explore their feelings and thoughts surrounding breast cancer, physical activity and technology through photography using a method called Photovoice. There are still places open in the workshop and anyone who is interested and available to come along can contact me," Dr Norris says.

"The aim of the Research Engagement Award is firstly to engage breast cancer patients and survivors with research around why exercise is important for those with, and survivors of, breast cancer, and how technology may help," explains Dr Norris.

The first workshop will begin with a talk by Dr Norris on the importance of exercise for breast cancer and how technology could help to increase exercise levels in breast cancer patients and survivors.

"The first workshop will conclude with an introduction to Nordic walking class led by Patricia Sutton, a qualified Nordic walking instructor and lymphoedema therapist. Within the second workshop, attendees will assemble posters from photographs they have taken on their phones/cameras to be exhibited at the International Woman's

RUEPOINTMEDIA

Publication:	tipperarylive.ie	Media Cost (€):	10	
Date:	Monday, February 3, 2020	Reach	986	
Page:	Link	Size (Sq. Cm)	330	

Tipperary breast cancer patients and survivors needed for research

Researchers at **Lero**, the Science Foundation Ireland Research Centre for **software**, are looking for breast cancer patients and survivors to take part in a workshop at University of Limerick (UL) this weekend.

The workshop is funded through an Irish Cancer Society Research Engagement Award, and is focused around engaging breast cancer patients and survivors with current research being undertaken in the UL project **BREASTech**: Increasing physical activity levels in breast cancer patients through technology-enabled care.

Research fellow Dr Michelle Norris of **Lero** at UL is looking for breast cancer patients and survivors who are willing to engage with the process and are available to attend UL on the mornings of February 8 and February 22 for the half-day workshops.

"Breast cancer patients and survivors will explore their feelings and thoughts surrounding breast cancer, physical activity and technology through photography using a method called Photovoice. There are still places open in the workshop and anyone who is interested and available to come along can contact me," Dr Norris says.

"The aim of the Research Engagement Award is firstly to engage breast cancer patients and survivors with research around why exercise is important for those with, and survivors of, breast cancer, and how technology may help," explains Dr Norris.

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Participants will receive funding for travel costs, tea/coffee at break time, a light lunch and a piece of technology to support physical activity. To take part, contact on 061-234158 or email michelle.norris@Lero.ie.