

Nutrition & Health Innovation Research Institute



Our purpose is to discover and share real-world solutions to improve health and quality of life.



Nutrition and Health Innovation Research Institute Strategic Research Institute

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Our purpose is to discover and share real-world solutions to improve health and quality of life.



Our vision

Healthy people Healthy communities Our mission

Reduce disease by developing, translating and implementing nutrition and health innovation research

Our Research Areas







⁹ Public Health, Policy and Implementation



Our multidisciplinary researchers leverage cutting-edge technologies to generate new knowledge and drive real-world change.



We work closely with the community to develop and translate innovations that tackle rapidly emerging health challenges.

Our success is reflected in our people, our pipeline, our funding, our publications, our partnerships, and our research impact.

We provide the evidence needed for better nutrition and healthier environments, informing how people can live healthier lives.



As we scale our impact globally, we will continue to build ECU's international recognition and academic ranking through translation of our research outcomes into innovative policies, programs, and guidelines and training the research leaders of the future.

2024 Highlights and Achievements



>130 Total Members



52

HDR Students



>1.7B

Audience reach



136

Publications



102 Q1 Publications*



Advertising value equivalent



35

New grants awarded



>\$5M





>\$11.5M

Total external funding awarded



2024 has been a year of incredible growth and performance for the Nutrition & Health Innovation Research Institute (NHIRI). Guided by our mission to reduce disease by developing, translating, and implementing nutrition and health innovation research, our Institute has demonstrated outstanding commitment and excellence, driving forward impactful research to improve local and global health outcomes.

Highlights of 2024:

- **Research Excellence:** Over 130 publications, including 100+ Q1 papers and top-tier A/A* computer science conference proceedings.
- *Vibrant Research Community:* 50+ HDR students contributing to our dynamic research environment.
- *Developing a culture of consumer and community engagement:* NHIRI is embedding a strong Consumer and Community Involvement (CCI) culture, with over 100 consumers engaged and 20+ outreach events this year. An internal CCI Workshop assessed current practices, strengths, and gaps to guide future engagement. Using the WAHTN CCI framework, a roadmap will be developed to enhance governance, capacity building, and lived experience involvement.
- **Driving commercialisation opportunities:** An ECU-led team was named one of Heart Foundation Australia's top 20 heart health ideas selected from 223 entries for its innovative and fundable approach. They'll pitch their idea to key investors and influencers in March. <u>Read more</u>
- *Grant Success:* 35 new grants, including NHMRC, MRFF and partnership grants, totalling >\$11.5M in external funding and >\$5M in income into ECU.
- *Global Impact:* Research reached an estimated 1.8B people with an Advertising Value Equivalent (AVE) of \$16M.

Beyond 2025: This year's offsite Strategic Planning Day was a key step in updating NHIRI's Strategic Plan, preparing us for the Institute's next phase and ensuring continued innovation and impact for our key stakeholders.

Future Focus - Embedding CCI:

In September we also hosted a successful Community and Consumer Involvement (CCI) Workshop, deepening our commitment to including consumer voices in shaping our research. We are now focussing on:

- *Governance & Strategy:* Integrating CCI culture into NHIRI's strategy, policies, and processes.
- *Consumer Engagement:* Expanding platforms like project-specific consumer groups, research buddies, and consumer investigators.
- **Outreach & Participation:** Increasing active consumer involvement in NHIRI's key events.

These achievements highlight the dedication and collaborative spirit of our researchers, students, and partners. As we look to 2025, we are excited about the opportunities ahead and are confident NHIRI will continue to advance world leading innovative health and nutrition research.



Prof Jonathan Hodgson Director



Prof Josh Lewis Research Program Lead

ECU Strategic Goal 1: Delivering an Exceptional Student Experience

NHIRI supports student involvement through PhD programs, mentoring, and community projects. Student awards acknowledge academic excellence, research achievements, and leadership skills. Our Institute delivers an exceptional student experience, promoting excellence, inclusivity, and personal development.





HDR Student Completions

NHIRI is thrilled to announce the exceptional achievement of our students who completed their PhD's, with a further three submitting their theses.

Anjana Rajendra

Thesis title: Potential role of dietary nitrate in relation to cognition, cognitive decline, and dementia

NHIRI Supervisors: A/Prof Catherine Bondonno, Prof Jonathan Hodgson & Dr Nicola Bondonno

Catherine Properzi

Thesis title: Comparing the effects of an isocaloric low fat vs Mediterranean diet on hepatic steatosis and cardio-vascular risk factors in patients with nonalcoholic fatty liver disease (NAFLD).

NHIRI Supervisors: A/Prof Therese O'Sullivan

Pratik Pokharel

Thesis title: Dietary Intake of Vegetables and Type 2 Diabetes Prevention

NHIRI Supervisors: Dr Nicola Bondonno, A/Prof Catherine Bondonno, Dr Lauren Blekkenhorst & Prof Jonathan Hodgson.

Caroline Hill

Thesis title: Dietary S-methyl cysteine sulfoxide and human health: Mechanisms of action and cardiometabolic effects

NHIRI Supervisors: Dr Lauren Blekkenhorst, Prof Jonathan Hodgson & Prof Josh Lewis



Dr Caroline Hill

HDR Student Awards

- PhD student Molly Coventry won the WA Sports Medicine Australia Research Foundation

 WA Gender Equity in Research Grant and Australian Physiotherapy Association, \$12k
 seeding grant to support her neurophysiology PhD research, *Neural motor drive impairments following hamstring and calf injury*.
- PhD student **Caroline Hill** won the Australian Nutrition Trust Foundation-Nutrition Society of Australia Early Career Development Award, WACRA EMCR Symposium People's Choice Award and 3rd place in the 2024 SMHS EMCR Committee Publication Prize.
- PhD student **Caron Molster** was awarded Best Abstract at the ECU SMHS HDR Symposium award.
- Masters by Research student **Colin Sylvester** was awarded Best poster presentation at the ECU SMHS HDR Symposium award and Best oral research presentation prize at the Australasian College of Sport and Exercise Physicians Conference.
- PhD student **Montana Dupuy** received the PhD Student runner-up award at the WACRA EMCR Symposium.
- **Samantha Elliot** (ECU Health Science Professional Practice student) was awaded the 2024/25 AHPA (WA Branch) Healthway Health Promotion Scholarship.



Montana Dupuy received the PhD Student runner-up award at the WACRA EMCR Symposium. Photo credit: Albert Lazuardi



Caroline Hill received the WACRA EMCR Symposium People's Choice Award. Photo credit: Albert Lazuardi

HDR's in the community

Raising Awareness, Saving Lives: Free Blood Pressure Screening at ECU



PhD Candidates **Montana Dupuy** and **Carlos J. Toro-Huamanchumo** played a key role in promoting heart health by conducting free blood pressure screenings at ECU Joondalup as part of May Measurement Month 2024—a vital global public health initiative.

High blood pressure (hypertension) is a silent threat, often showing no symptoms until it leads to severe health complications. Alarmingly, more than half of Australians with high blood pressure don't even know they have it.

That's why initiatives like May Measurement Month are crucial in raising awareness and encouraging early detection.

By participating in this campaign, ECU staff, students, and visitors had the opportunity to take a simple yet potentially life-saving step: getting their blood pressure checked.



HDR Student Spotlight

Vanessa Sutton



"My career goal is to improve health and injury outcomes in tactical populations, preventing lifelong repercussions of serious injury in those who serve while aiding organisations' strategic goals in retention and recruitment."

In her current Master's research, Vanessa has focused on the injury epidemiology, health, and performance of tactical populations, particularly police recruits. By exploring these areas, her work aims to reduce injury, improve health outcomes, and enhance the operational readiness of police recruits. Her efforts have been recognised with the 2022 Australian Epidemiological Association Student Prize and the 2023 ASICS Early Career Researcher Award for best paper in injury prevention, and she was also a finalist for the 2024 Cooperative Research Australia Early Career Researcher Award.

"My research explores the connections between cardiovascular diseases, cognitive decline, and dementia, using some machine learning methods to enhance early detection, better understand risk factors, and propose new therapies "

Carlos is a Peruvian MD epidemiologist and biostatistician, currently a Forrest Research Foundation Scholar, and passionate about evidence-based health decision-making.

Carlos's PhD research investigates cardiovascular diseases and their connections to cognitive decline and dementia, with a focus on conditions like abdominal aorta calcification (AAC). Using advanced machine learning algorithms to analyze AAC via DXA scans, his work spans diverse multiethnic populations. This project is designed to enhance early detection methods and establish clearer risk factors, aiming to initiate transformative improvements that benefit patients, caregivers, and healthcare systems globally.

Carlos J. Toro-Huamanchumo



ECU Strategic Goal 2: Undertaking impactful world-class research

At NHIRI, we prioritise high-impact publications, strategic collaborations, and distinctive research areas that reflect ECU's commitment to research excellence. With over **400 publications**, **70% in Q1 journals**, with an **international audience reach exceeding 11 billion** from 2021-2024, we are making great strides towards enhancing ECU's global reputation.

17

35

8

>\$14M

Category 1 grants and fellowships held by NHIRI Core Members New grants awarded

New Category 1 grants and fellowships awarded

New grants awarded



New Grants Awarded

- Murphy, M.C., Hodgson, J., Langridge, D., Bruder, A., Mosler, A., Donaldson, A., Nimphius, S., Kemp, J., Bulsara, M. Co-designing and implementing a sustainable injury prevention program for Police Force recruits, National Health and Medical Research Council, Partnership Projects (2024), 2024 - 2029, \$2,509,580
- Trapp, G.S.A., Howard, J., Pulker, C.E., Cooper, M., Hooper, P.L.H., Cramb, S., Bivoltsis, A.K., Weiss, D., Thornton, L. Pioneering a national 'Food Atlas' to map, measure and monitor food access across Australia, National Health and Medical Research Council, Ideas Grants (2023), 2024 - 2028, \$2,878,533
- Trapp, G.S.A. Feeding the Future: Improving children's nutritional health and wellbeing through innovative food environment interventions, Stan Perron Charitable Trust, Programs and Partnerships Grant, 2024 - 2028, **\$1,462,532**
- Zhong, L., Hodgson, J., Dimmock, J., Lewis, J., Godecke, E., Porock, D.C., Jackson, B., Blekkenhorst, L., Bondonno, N.P., Considine, M., Stanley, M.J., Orchard, A.J., Johnson, S., Bondonno, C., Devine, A., Martini, A., Kennedy, M.A. Printing an appetite for life: developing three-dimensional printed texture modified foods for aged care residents, National Health and Medical Research Council, Ideas Grants (2023), 2024 - 2028, \$1,108,065

- Bondonno, C., Hodgson, J., Lewis, J., Tjonneland, A., Blekkenhorst, L., Bondonno, N.P., Zhong, L., Croft, K.D., Kyro, C., Lundberg, J. The nitrate debate: does dietary source determine health impact?, National Health and Medical Research Council, Ideas Grants (2023), 2024 - 2027, \$1,032,616
- Lim, W.H. Alloantibody in kidney transplant recipients: Is this the missing link to reduce the risk of heart disease? (AN-INSPIRE STUDY), National Health and Medical Research Council, MRFF - Cardiovascular Health Mission - 2021 Cardiovascular Health Grant, 2022 - 2025, \$996,354
- Trapp, G.S.A., Pulker, C.E., Klug, F., Whitton, C., Bivoltsis, A.K. Implementing local government policies to restrict unhealthy food advertising, Healthway (WA Health Promotion Foundation), Healthy Communities Grant, 2024 - 2026, \$922,241
- Lewis, J. Improving screening, understanding, prevention and treatment of abdominal aortic calcification, Heart Foundation, NHF Future Leader Fellowships, 2024 2027, **\$792,623**
- Kennedy, M.A. Standardising Clinical Oncology Pathways for Exercise (SCOPE), Cancer Council of WA Inc, Postdoctoral Fellowship, 2024 - 2026, \$520,785



\$5,077,131

- Trapp, G.S.A. Investigating the impact of fast-food outlets being built near schools, Healthway (WA Health Promotion Foundation), Health Promotion
- Project Grant, 2024 2025, **\$303,174**
- Murphy, M.C., Hodgson, J., Taylor, J.L., Chivers, P., Kemp, J. Harnessing 'brainpower' to reduce the burden of hip-related pain, Raine Medical Research Foundation, Raine Priming Grants, 2024 - 2025, \$238,852
- Sim, M., Herschtal, A., Beck, B., Grech, L., Le-Kavanagh, L., Mesinovic, J., Zengin, A., O'Maley, T., John, N., Allan, M., Butler, E., Scott, D., Jansons, P., Carroll, W., Ebeling, P. A clinician-led feasibility, acceptability, and pilot efficacy intervention to improve bone health and muscle strength in people with multiple sclerosis., National Health and Medical Research Council, MRFF Clinician Researchers Initiative 2023 Clinician Researchers: Applied Research in Health Grant, 2024 2027, \$165,300
- Smith, C.L. Better identification, understanding and prevention of advanced blood vessel disease in women, Heart Foundation, NHF - Postdoctoral Fellowships, 2024 - 2026, \$151,200
- Murphy, M.C. Harnessing 'brainpower': using portable, electrical brain stimulation to enhance injury recovery and physical performance via neuroplasticity., Department of Health WA, Future Health Research & Innovation Fund Innovation Fellowship, 2024 2025, **\$119,489**
- Smith, C.L. Closing the sex disparity gap for cardiovascular disease, Department of Health WA, WA Near-miss Awards: Emerging Leaders Program, 2024 - 2025, \$100,000
- Bondonno, C. Dietary nitrate: separating fact from fiction in human health, Department of Health WA, WA Near-miss Awards: Emerging Leaders Program, 2024 2025, **\$100,000**

1:5

2024 return on investment

- Trapp, G.S.A. Junk food-filled school neighbourhoods: building the evidence for change, Department of Health WA, WA Near-miss Awards: Emerging Leaders Program, 2024 - 2025, **\$100,000**
- Murphy, M.C., Edwards, P., Ebert, J., D'Alessandro, P., Nimphius, S. Optimising rehabilitation outcomes following Anterior Cruciate Ligament (ACL) Reconstruction, Orthopaedic Research Foundation of WA, Industry Engagement PhD Projects, 2024 - 2028, \$85,750
- Trapp, G.S.A., Pulker, C.E. Supporting healthy eating: The Food Environment AssesSments Tool (FEAST), Healthway (WA Health Promotion Foundation), Health Promotion Project Grant, 2024, **\$78,414**
- Trapp, G.S.A. Refining key communication frames to ban energy drink sales to children, Healthway (WA Health Promotion Foundation), Health Promotion Project Grant, 2024 - 2025, **\$70,566**
- Sim, M., Prince, R., Zhong, L., O'Sullivan, T. BoneBoost Gelato: development of an innovative nutritional supplement to enhance musculoskeletal health and reduce falls and fractures, Bone Health Foundation, ANZBMS/BHF Innovation Grant, 2025 -2026, \$49,530
- Hooper, P.L.H. Parks and Community Facilities Australia ("PACFA") database and map portal, Australian Physiotherapy Association, Grant, 2024, \$40,000
- Hooper, P.L.H., Edwards, N. Physical Activity & Mental Health of East Metropolitan Health Service Residents, East Metropolitan Health Service, Grant, 2024, **\$26,079**
- Sim, M. Dementia Risk Prediction and Risk Reduction in Western Australia: DEMRISK-WA, Department of Health WA, Future Health Research & Innovation Fund - Western Australia Cohort Studies - Research Support Program, 2024 - 2027, \$23,702

- Kennedy, M.A., Eldridge, P., Kelly, T., Tuffaha, H., Zissiadis, Y., Edmunds, K. Value-based assessment and cost-effectiveness analysis of two models of exercise oncology implementation, Exercise & Sports Science Australia, ESSA Research Grants 2023, 2024 -2025, **\$21,276**
- Trapp, G.S.A., Mossenson, S. Junk-food filled neighbourhoods: building a local evidence base for change, Cancer Council of WA Inc, Grant, 2024, **\$20,260**
- Wallace, R.M., Sambell, R., Devine, A. Little Aussie Bugs: Designing, piloting and evaluating online professional development to support early years educators build health literacy among young children, Academic Staff Association of Edith Cowan University, Solidarity Research Fund (SRF), 2024 - 2025, \$19,990
- Lewis, J., Suter, D., Schousboe, J., Ilyas, Z., Gilani, S.Z.A., Sim, M., Saleem, A. Collaboration on abdominal aortic calcification study - KURE Korean AAC Study, Yonsei University, Grant, 2024 - 2027, \$15,107
- Sim, M., Lewis, J., Siervo, M., Stephan, B. Forrest Research Foundation Scholarship - Carlos Toro Huamanchumo, Forrest Research Foundation, Forrest Research Foundation Scholarship, 2024 -2027, \$12,000

- Coventry, M., Rio, E., Mosler, A.B., Taylor, J.L., Green, B., Latella, C., Murphy, M.C. Neural motor drive impairments following hamstring and calf injury, Australian Physiotherapy Association, Seeding Grants, 2025 - 2027, **\$11,936**
- Trapp, G.S.A. Junk-food filled neighbourhoods: building a local evidence base for change, Department of Health WA, WA Near-miss Awards: Ideas, 2024, \$11,888
- Murphy, M.C., Sylvester, C. Is your knee weakness in your head? Does Anterior Cruciate Ligament Reconstruction result in impairments to the brain's motor drive, Athlete Alliance, Grants, 2024 - 2025, \$5,000
- Trapp, G.S.A., Mossenson, S., Klug, F., Hooper, P.L.H. Evidence-based research Charitable Food Dashboard for the 13 LGs in EMHS, East Metropolitan Health Service, Grant, 2024, **\$4,921**
- Giglia, R. Healthy Kids Menu Pilot Project, East Metropolitan Health Service, Grant, 2025, **\$3,400**
- Murphy, M.C., Rio, E., Mosler, A.B., Coventry, M.E. Understanding the mind-body connection – the relationship between motor cortex drive and pain response to strength and fitness in female athletes: A cross-sectional cohort study., Sports Medicine Australia, Research Foundation Grants, 2024 - 2025, \$3,350

Continuing Externally Funded Grants involving a NHIRI Core Member

- Sim, M. Preventing falls in older Australians: an appetite for change, Department of Health WA, WA Near-miss Awards: Emerging Leaders Program, 2022 2025, **\$390,444**
- Sim, M. Career Advancement Fellowship 2020, Royal Perth Hospital Medical Research Foundation, Career Advancement Fellowship, 2021 - 2024, \$145,865
- Devine, A., Marino, M., Lewis, J., Prince, R., Miller, M.R., Boston, J., Tay, G., Forlano, R., Hill, J. Investing in your bones: supporting lifelong health and performance, Arthritis Foundation of WA, Grant, 2022 - 2024, **\$307,694.**

- Devine, A., Marlow, E.L. Immunomodulation of the GIT through nutrition, Department of Health WA, Clinician Researcher Training Scholarship, 2023 2029, **\$225,000**.
- Bondonno, C. Nitrate: the Dr Jekyll and Mr. Hyde of human health?, Department of Health WA, WA Near-miss Awards: Emerging Leaders Program, 2023
 2024, \$100,000.
- Christophersen, C.T., Grosse, C., Devine, A. Application of a plant based diet in active Ulcerative Colitis (UC), St John of God Health Care, Scholarships to support Industry Engagement PhD Projects, 2018 - 2024, **\$40,000.**

- Lewis, J., Lim, W.H., Hodgson, J., Suter, D., Schousboe, J., Lagendijk, A., Blekkenhorst, L., Bondonno, N.P., Gilani, S.Z.A, Harvey, N., Kemp, J., Bondonno, C., Duncan, E., Smith, C.L., Hung, J., Sim, M., Schultz, C., Raina, P., Woodman, R. Investigating genetic and lifestyle determinants of abdominal aortic calcification, and their relationship with cardiovascular disease, National Health and Medical Research Council, MRFF - Cardiovascular Health Mission, 2023 - 2026, \$1,202,213
- Linneberg, A., Jakobsen, J., Jensen, K.M., Bondonno, N.P., Sim, M., Jensen, M.B. Health effects of Vitamin K: towards evidence-based nutrition recommendations and prevention. Danmarks Frie Forskningsfond, 2023-2027, Independent Research Fund Denmark, ~\$1,089,000 AUD
- Bondonno, C., Hodgson, J., Dimmock, J., Lewis, J., Schousboe, J., Whitehead, L.C., Sim, M.G.-B., Dalla Via, J., Bondonno, N.P., Bucks, R., Sim, M., Schultz, C., Kennedy, M., Laws, S., Woodman, R. Getting to the heart of healthy aging: a behaviour change program to promote dietary pattern changes, National Health and Medical Research Council, MRFF - Dementia, Ageing and Aged Care Mission, 2022 - 2026, \$626,963
- O'Sullivan, T., Webb, K.G., Richardson, A.C., Calogero, N.D., Sim, M., McDonald, E. Happy Kids Through Connected Parenting, Channel 7 Telethon Trust, Grant, 2023 - 2024, **\$118,558**
- Devine, A. The effectiveness of culturally competent resources in the WA Culturally and Linguistically Diverse (CALD) parent communities, to inform health behaviours., Nutrition Australia, Scholarships to support Industry Engagement PhD Projects, 2023 - 2028, \$53,141
- Barblett, L., Zarb, D., Costello, L.N. Co-designing Playful Health-Arts, Healthway (WA Health Promotion Foundation), Healthy Communities Grant, 2023 - 2025, **\$259,923**
- O'Sullivan, T., Jansen, E., Pulker, C., Pahlsson Morelius, A.E., Sim, M. Mindful mouthfuls: Developing healthy eating behaviours from infancy, Royal Perth Hospital Medical Research Foundation, Springboard Grants, 2023 - 2025, \$28,050

- Galvao, D., Hayne, D., Newton, R., Joseph, D., Tang, C., Taaffe, D.R., Chambers, S., Devine, A., Lopez da Cruz, P., Spry, N.A. Weight loss for overweight and obese prostate cancer patients: a randomised trial of a clinic-based versus telehealth delivered exercise and nutrition intervention, Cancer Council of WA Inc, Prostate Cancer Research Initiative, 2021 - 2026, **\$472,739**
- Latino, C., Christophersen, C.T., Mehta, S., Gianatti, E., Devine, A., Lo, J.S.H. The Effect of Dietary Resistant Starch on Maternal Glycaemia and the Gut Microbiome in Gestational Diabetes., Spinnaker Health Research Foundation, Edith Cowan University Spinnaker Explorers Grant, 2022 - 2025, \$60,000
- Godrich, S., Humphreys, E., Zivkovic, S., Stoneham, M., Devine, A., Bernhagen, M. Food Community: A systemic approach to support healthy food availability, access and use across regional Western Australia., Healthway (WA Health Promotion Foundation), Health Promotion Project Grant, 2022
 2025, \$555,274
- Cattani, M.P., Farr-Wharton, B.S., Oosthuizen, J., Sim, M.G.-B., Doherty, S.-A.J, Selleck, R., Devine, A., Bhullar, N., Bentley, T.A., Coall, D.A. What is the role of the safety Regulator in suicides?, Department of Mines, Industry Regulation and Safety, Grant, 2023 - 2024, **\$125,000**
- Newton, R., Christophersen, C.T., Galvao, D.A., Taaffe, D.R., Broadhurst, D.I., Hart, N.H., Devine, A., Spry, N.A. An exploratory study to determine if exercise can impact the gut microbiota composition of men receiving androgen suppression therapy for prostate cancer, Prostate Cancer Foundation of Australia, Grant, 2018 - 2024, \$98,875
- Raynor, A.J., Scott, S., Costello, L.N. An investigation into how physical activity can enrich the lives of older adults during the transition process from independent living to residential aged care, Fresh Fields Aged Care Pty Ltd, Scholarships to Support Industry Engagement PhD Projects, 2021 - 2026, \$50,000.
- Mills, B.W., Roberts, P.K., Ayre, K.E., Wallace, R.M., Costello, L.N., Rayfield, T. Emotional Literacy Mindfulness Academy Research program evaluation, ELMA EDUCATION PTY LTD, Grant, 2023 - 2024, \$47,086.

- Bloomfield, L.E., Westphal, D., Barwood, D.M., Miller, M.R., Boston, J., Howell, D., Andrew, L.J., Devine, A., Masek, M. Meningococcal Infection, Awareness Prevention and Protection (MIapp) – Improving and evaluating adolescent access to meningococcal education through the use of an app , Lotterywest, Grant, 2019 - 2024, \$290,910.
- Laws, S., Abbiss, C., Ciccone, N.A., Newton, R., Edwards, D., Sim, M.G.-B., Cruickshank, T., Stanley, M.J., Boxall, K., van der Groen, O.L., Devine, A. Develop a systematic profiling of neurological conditions that will facilitate personalised treatment and streamline service delivery, Multiple Sclerosis Society of Western Australia, MS WA - Research funding for social and applied research, 2019 - 2024, \$5,716,059.
- Bondonno, C., Christophersen, C.T., Hodgson, J., Bondonno, N.P., Schultz, C., Croft, K.D., Woodman, R. Pardon the vegetables: how nitrate source determines health impact, Royal Perth Hospital Medical Research Foundation, Springboard Grants, 2022 - 2024, \$53,749.
- Bondonno, C. Pardon the vegetables: how nitrate source determines health impact, Department of Health WA, WA Near-miss Awards: Ideas, 2023 2024, **\$100,000**.
- Bondonno, C. Career Advancement Fellowship 2020, Royal Perth Hospital Medical Research Foundation, Career Advancement Fellowship, 2022 - 2024, \$166,622.
- Suter, D., Mehizadeh, M., Hiew, J., Vignarajan, J., Wood, F., Hamilton, E., Ritter, J., Goodred, C., Manning, L., McLeod, G., Hendrie, D., Gupta, A., Islam, S.M.S., O'Hanlon, S.-M., Gibson, D., Saha, S., Berghuber, A., Masek, M., Abu-Khalaf, J.M., Abela, B. Better and faster than the human eye: artificial intelligence and computational radiomics for foot xrays in patients with diabetes-related foot infections, Department of Health WA, Research Translation Projects, 2022 - 2024, **\$93,265.**
- Hodgson, J., Dimmock, J., Lewis, J., Schousboe, J., Jackson, B., Devine, A., Woodman, R. Developing a novel approach to improve diet and lifestyle, National Health and Medical Research Council, MRFF Preventive and Public Health, 2020 - 2024, \$309,660.

- Hodgson, J., Bondonno, N.P., Parmenter, B.H. Post Doctoral Fellow – Novel Dietary Bioactives (flavonoid), Queen's University Belfast, Grant, 2023
 2024, \$150,345.
- Hodgson, J., Bellinge, J., Hillis, G., Schultz, C. Prevention of Aortic Stenosis progression Phylloquinone Ossification Reduction Trial (PASSPORT), Heart Foundation, NHF - Vanguard Grants, 2022 - 2024, \$150,000.
- Lewis, J., Suter, D., Schousboe, J., Prince, R., Cootes, T., Kiel, D., Harvey, N., Islam, S.M.S. Automated methods for evaluating structural vascular disease, National Health and Medical Research Council, Ideas Grants, 2020 - 2024, **\$652,128**.
- Blekkenhorst, L., Hodgson, J. Stronger evidence for the cardiovascular health benefits of specific vegetables and their bioactive compounds, Heart Foundation, NHF - Postdoctoral Fellowships, 2020 -2026, \$60,000.
- Blekkenhorst, L. Vegetable types and their bioactives: Growing the evidence for cardiovascular benefits, National Health and Medical Research Council, Investigator grants, 2020 - 2026, \$1,028,346.
- Zhong, L. Emerging technologies and approaches to enhance health for people on texture modified diets, Department of Health WA, WA Near-miss Awards: Emerging Leaders Program, 2023 - 2025, **\$393,090**.
- Murphy, M.C., Mosler, A.B., Chivers, P., Sutton, V. Western Australia Police Force Recruit Injury Rates, Physical Performance Capacity and Completion Rates, WA Police, Grant, 2023 - 2024, **\$7,500.**
- Zhong, L. 3D food printing to enhance eating experiences and health for people on texture modified diets, Department of Health WA, Future Health Research & Innovation Fund - Innovation Fellowship, 2023 - 2024, \$49,838.
- Kennedy, M.A., Hodgson, J., Lewis, J., Jeffrey, E., Newton, R., Galvao, D.A., Bayes, S., Zissiadis, Y., Edmunds, K. Exploring the gap in supportive cancer care in rural and remote WA, Department of Health WA, Future Health Research and Innovation Fund -Implementation Science Fellowship, 2022 - 2025, \$731,186.

- Kennedy, M.A., Kirkegaarde, A., Tuffaha, H., Ball, L. Effective Exercise Implementation for the Future: Value assessment for sustainable translation of exercise oncology interventions, University of Queensland, 2023 BEL Connect Grant, 2023 - 2024, **\$2,320**.
- Murphy, M.C., Rio, E., D'Allesandro, P., Whife, C. The efficacy of Transcranial direct current stimulation during rehabilitation following Anterior Cruciate Ligament (ACL) reconstruction on functional outcomes and return to play timelines. A double-blind randomised controlled trial (The TACL study), Orthopaedic Research Foundation of WA, Grant, 2021 - 2024, \$11,753.
- Murphy, M.C. Improving quality of life in people with lower limb osteoarthritis, Department of Health WA, WA Near-miss Awards: Emerging Leaders Program, 2023 2024, **\$100,000**.
- Murphy, M.C., Cochrane-Wilkie, J., Hart, N., Chivers, P., Allen, G., Sutton, V. Predicting operational skill proficiency of para-military recruits using baseline physical performance data., Department of Jobs, Tourism, Science and Innovation, Defence Science Research Higher Degree Student Grant, 2023 - 2024, **\$10,000**.
- Nimphius, S., Kendall, K.L., Cikoratic, T., Hart, N., Murphy, M.C. Understanding bone health in AFL and AFLW athletes, West Coast Eagles Football Club, PhD Scholarship, 2023 - 2027, \$115,500.
- Bondonno, N.P. Variations in flavonoid metabolism as an explanation for interindividual differences in physiological responses to flavonoid-rich foods, National Health and Medical Research Council, Early Career Fellowship, 2019 - 2026, \$551,169.
- Huang, R.-C. Lifecycle Early Life Stressors and LifeCycle Health, National Health and Medical Research Council, European Union Collaborative Research Grants, 2022 - 2024, **\$97,971**
- Gilani, S.Z.A., Lewis, J., Suter, D. Explainable AI Frameworks for Automatic Detection and Localisation of Abdominal Aortic Calcification, Raine Medical Research Foundation, Raine Priming Grants, 2023 - 2024, **\$255,913.**

- Radavelli Bagatini, S. Understanding the barriers and motivators for consumption of fruit and vegetables in women post-stroke: a focus groups from patients and carers perspective, Australian Health Research Alliance, Women's Health Research Translation Network Early and Mid-Career Researcher Award, 2023 - 2024, **\$11,971**.
- Gilani, S.Z.A., Carter, O., Markovic, C., von Mollendorf, D., Lloyd, A., Howard, Z., Hong, J. Dynamic two-way communication using gestures for human-machine teaming, Department of Jobs, Tourism, Science and Innovation, Defence Science Collaborative Research Grants, 2022 -2024, \$150,000.

Professor Gina Trapp Wins Prestigious NHMRC Ideas Grant for Groundbreaking Food Atlas Project

NHIRI celebrates Professor Gina Trapp and her Food Environments Team for securing the 2023 National Health and Medical Research Council (NHMRC) Ideas Grant. This grant will fund the development of a national 'Food Atlas' to map, measure, and monitor food access across Australia.

The Food Environments Team, based at ECU's Joondalup Campus, leads innovative research across four key areas—Community, Organisational, Consumer, and Information Food Environments—to improve public health. Their work is crucial as Australia faces rising obesity rates and poor dietary habits. By making healthy food more accessible and curbing unhealthy options in childhood settings, the team aims to reshape food environments.

The NHMRC-funded Food Atlas will identify areas with limited healthy food availability or excessive unhealthy options, providing data to inform policies, guide planning, and promote healthier communities.

"This project is a step towards ensuring equitable access to nutritious food," Professor Trapp stated. "NHIRI enhances our ability to collaborate and innovate, driving policy and practice changes that support healthy eating."

A key aspect of the team's work is integrating consumer insights and lived experiences into research. By engaging with Consumer and Stakeholder Advisory Committees, they ensure real-world impact, aligning with NHIRI's mission to improve health and quality of life.



Prof Gina Trapp

Professor Trapp's Food Atlas will support the creation of healthier food environments, fostering social, cultural, emotional, and physical well-being. With this new chapter at NHIRI, the team continues advancing nutrition and health innovation to help Australians thrive.

For more information on the Food Environments Team's research, visit: <u>NHIRI</u> <u>Food Environments Team</u>.

NHIRI Researchers Shine in Future Health Research and Innovation Grants

Three NHIRI early and mid-career researchers have secured prestigious national grants of \$100,000 each under the 2023 WA Near Miss Awards: Emerging Leaders (WANMA EL) program, a major achievement in advancing health research and innovation.

The WANMA EL program, part of the Future Health Research and Innovation (FHRI) Fund, awarded \$4.73 million to 25 promising researchers across Western Australia. The grants recognise outstanding research proposals that narrowly missed out on National Health and Medical Research Council (NHMRC) Ideas grants, providing a crucial boost to projects with the potential to make a significant impact.

NHIRI's Winning Researchers:

A/*Prof Catherine Bondonno* - awarded for her groundbreaking research on "Dietary nitrate: separating fact from fiction in human health". Her work aims to clarify the role of dietary nitrate in improving health outcomes.

Dr Cassandra Smith - recognised for her pivotal study "Closing the sex disparity gap for cardiovascular disease", which addresses critical gender differences in cardiovascular health.

Prof Gina Trapp (formerly Telethon Kids Institute) celebrated for her vital research "Junk food-filled school neighbourhoods: building the evidence for change". Her project focuses on creating healthier school environments by tackling the availability of junk food around schools.

The WANMA EL grants not only validate the innovative work of NHIRI's researchers but also position them as future leaders in the health research community. These funds will accelerate their studies over the next 12 months, strengthening their future NHMRC applications.

For the full list of recipients and more information, visit the <u>Future Health Research and Innovation Fund website</u>.



A/Prof Catherine Bondonno



Dr Cassandra Smith



Prof Gina Trapp

\$2.5 Million Funding Boost for Police Injury Prevention Research

A research study led by NHIRI's **Dr Myles Murphy**, has received a significant funding boost, with \$1.17 million committed by the Australian Government's National Health Medical Research Council (NHMRC). This adds to the million-dollar research funding already pledged by the WA Health Department and WA Police Force.

The project focuses on co-designing and implementing a sustainable injury prevention program for police force recruits.

"By implementing a world-leading prevention program into recruit training, the work we will be doing here can improve workforce health and reduce healthcare costs associated with injuries in the police force," Dr Myles Murphy said.

Addressing a Costly Problem

Injuries sustained by police recruits are a significant issue, often leading to high costs and taking officers off active duty. Dr Murphy's research has revealed that 1 in 5 police recruits around the world are injured during training.

The financial burden is substantial. Based on the number of days lost to injury during recruit training, it is estimated that more than \$500,000 per year is spent paying Police Force recruits who are unable to train.

"At the end of the day, we need to invest in ways to prevent these injuries to keep officers training," said Dr Murphy. He went on to explain, "Because the reality is the more time police are injured and sitting on the sidelines, they aren't able to complete their training and graduate and they are not out on the beat."

Supporting Collaborative Research

NHMRC CEO Professor Steve Wesselingh emphasised the importance of partnerships in research. "NHMRC's Partnership Project scheme provides funding and support to create opportunities for researchers to collaborate with partner organisations to deliver meaningful outcomes," he said. "The support we receive from our funding partners, is vital to the success of these collaborative research projects.

Congratulations to Dr Murphy we can't wait to see the impact of your research on health policy, practice and service delivery."



Medical Research Minister Stephen Dawson praised Dr Murphy for securing a total of \$1.7 million in national and state research funding.

"The Cook Government's groundbreaking FHRI Fund continues to provide targeted funding towards inspiring health innovation research projects that make a very real difference to people in our community," Minister Dawson said. "The MRAS program was established to support innovative and impactful research, and Dr Murphy's accomplishments highlight the high calibre of work we seek to encourage. Attracting national funding is vital for the long-term growth of our local research community and ensures our State continues to lead in key areas of research and innovation."

Commitment to Police Recruit Health

Superintendent Michael Dalla-Costa, Principal at the Western Australia Police Academy, highlighted the strong partnership.

"The WA Police Force Academy have been working with Dr Murphy and his team to be leaders in the prevention and management of injuries in Police Forces. This funding continues our established partnership, and we look forward to doing everything we can to optimise recruit health and performance, improving their capacity to serve the WA community," he said.

This collaborative research promises to make a significant impact on injury prevention in police recruit training, improving workforce health and reducing costs.

Improving Injury Prevention for Women Athletes: NHIRI Researcher Leads the Way

ECU has partnered with the Orthopaedic Research Foundation of Western Australia (ORFWA) to improve health outcomes for women athletes, focusing on younger athletes. Running from 2025 to 2028, the project aims to address the high rates of ACL injuries in female athletes and improve rehabilitation support.

Lead researcher, ECU's Pro-Vice-Chancellor (Sport) and Professor of Human Performance, Professor Sophia Nimphius, highlighted the need for contextspecific solutions. "There's been a lot of talk around the differences in ACL injury rates between men's and women's sports, often followed by an unfortunate focus on hormone tracking as a cure-all for women's sport," she said. "While women's health, and understanding a healthy hormonal profile, should absolutely be part of education and consideration for women and girls in sport (and life), it must not come at the cost of addressing the real issue: we have yet to properly support female athletes in their long-term development and in achieving the level of care they deserve through their career and if injury does occur, in their return to play."

NHIRI's Dr Myles Murphy: Bridging the Gap

NHIRI Post-Doctoral Research Fellow Dr Myles Murphy emphasised the disparities in support for male and female athletes during injury rehabilitation. "When a men's program athlete is injured, they are much more likely to have strength and conditioning coaches, physiotherapists, and doctors all on hand to ensure an amazing rehabilitation. The assumption is typically that men will return to the sport post injury. The same can't be said for women athletes," he said.

"Women athletes have a higher chance of serious knee injuries, and there is less support on the sidelines. This partnership is aiming to change that. It is aimed at figuring out the contextual elements and trying to provide rehabilitation that is more contextually specific to women athletes compared with the stock-standard recipes currently given."



Dr Murphy noted that gym-based rehabilitation often overlooks the discomfort young women experience. "Current rehabilitation is often heavily focused on gym programming, however, research in adolescents has proven that young women and girls often feel uncomfortable in going into a gym environment, particularly by themselves," he said.

"If we don't take the contextual elements of being an athlete in a women's program into account, how can we expect favourable outcomes? Or outcomes that are equal to that of men's programs? We rarely consider the restraints on women athletes and the lack of structural support around them. This has to change."

Dr Murphy noted that gym-based rehabilitation often overlooks the discomfort young women experience. "Current rehabilitation is often heavily focused on gym programming, however, research in adolescents has proven that young women and girls often feel uncomfortable in going into a gym environment, particularly by themselves," he said. If we don't take the contextual elements of being an athlete in a women's program into account, how can we expect favourable outcomes? Or outcomes that are equal to that of men's programs? We rarely consider the restraints on women athletes and the lack of structural support around them. This has to change."

Collaborative Effort for Lasting Change

ORFWA Director and Sports Orthopaedic Surgeon Associate Professor Peter D'Alessandro praised the team and the project's potential.

"We are delighted to be partnering with ECU for this study. With Prof Nimphius and Dr Murphy alongside my ORFWA colleagues Dr Jay Ebert and Dr Peter Edwards, we have assembled a world class team who are global leaders in ACL research for this crucial project. The rate of ACL injury and re-injury in women and girl athletes is too high and simply needs to improve," he said.

Associate Professor D'Alessandro also highlighted the challenges women face post-injury. "Women and girl athletes have additional challenges in returning to sport after ACL injury, in a large part due to lack of tailored surgery, rehabilitation, resourcing and support," he said.

"We are determined to level the playing field and are confident that this study will be a catalyst for positive change. We aim to empower our surgical and allied health teams as we strive to improve our prevention programs, surgical techniques and rehabilitation protocols. This targeted approach has the potential to significantly improve outcomes, reduce the risk of injury/re-injury and keep our women and girl athletes on the field playing the sports they love."



2024 Publications



High impact publications <u>Click here for full 2024</u> publication list

Neumann, J. T., Twerenbold, R., Weimann, J., Ballantyne, C. M., Benjamin, E. J., Costanzo, S., de Lemos, J. A., deFilippi, C. R., Di Castelnuovo, A., Donfrancesco, C., Dörr, M., Eggers, K. M., Engström, G., Felix, S. B., Ferrario, M. M., Gansevoort, R. T., Giampaoli, S., Giedraitis, V., Hedberg, P., . . . Ojeda, F. (2024). Prognostic Value of Cardiovascular Biomarkers in the Population. Jama, 331(22), 1898-1909. <u>https://</u> <u>doi.org/10.1001/jama.2024.5596</u>. **Q1**, Impact Factor: 120.7

Jin, Y., Guo, C., Abbasian, M., Abbasifard, M., Abbott, J. H., Abdullahi, A., Abedi, A., Abidi, H., Abolhassani, H., Abu-Gharbieh, E., Aburuz, S., Abu-Zaid, A., Addo, I. Y., Adegboye, O. A., Adepoju, A. V., Adikusuma, W., Adnani, Q. E. S., Aghamiri, S., Ahmad, D., . . . Wu, D. (2024). Global pattern, trend, and cross-country inequality of early musculoskeletal disorders from 1990 to 2019, with projection from 2020 to 2050. Med, 5(8), 943-962.e946. <u>https://doi.org/10.1016/ j.medj.2024.04.009</u>. **Q1, Impact Factor: 17.0**

Murphy, M. C., McCleary, F., Hince, D., Chimenti, R., Chivers, P., Vosseller, J. T., Nimphius, S., Mkumbuzi, N. S., Malliaras, P., Maffulli, N., de Vos, R.-J., & Rio, E. K. (2024). TENDINopathy Severity assessment–Achilles (TENDINS-A): evaluation of reliability and validity in accordance with COSMIN recommendations. British Journal of Sports Medicine, 58(12), 665-673. <u>https://doi.org/10.1136/</u> <u>bjsports-2023-107741</u>. **Q1, Impact Factor: 18.6**

Radavelli-Bagatini, S., Bondonno, C. P., Dalla Via, J., Sim, M., Gebre, A. K., Blekkenhorst, L. C., Connolly, E. L., Bondonno, N. P., Schousboe, J. T., Woodman, R. J., Zhu, K., Mullin, S., Szulc, P., Jackson, B., Dimmock, J., Schlaich, M. P., Cox, K. L., Kiel, D. P., Lim, W. H., . . . Lewis, J. R. (2024). Impact of provision of abdominal aortic calcification results on fruit and vegetable intake: 12-week randomized phase 2 controlled trial. Nature Communications, 15(1), 8126. <u>https:// doi.org/10.1038/s41467-024-52172-1</u>. **Q1, Impact Factor: 14.7** Bondonno, N. P., Pokharel, P., Bondonno, C. P., Erichsen, D.
W., Zhong, L., Schullehner, J., Frederiksen, K., Kyrø, C.,
Hendriksen, P. F., Hodgson, J. M., Dalgaard, F., Blekkenhorst,
L. C., Raaschou-Nielsen, O., Sigsgaard, T., Dahm, C. C.,
Tjønneland, A., & Olsen, A. (2024). Source-specific nitrate
intake and all-cause mortality in the Danish Diet, Cancer,
and Health Study. European Journal of Epidemiology, 39(8),
925-942. <u>https://doi.org/10.1007/s10654-024-01133-5</u>.
Q1, Impact Factor: 13.6

Choudhary, P., Monasso, G. S., Karhunen, V., Ronkainen, J., Mancano, G., Howe, C. G., Niu, Z., Zeng, X., Guan, W., Dou, J., Feinberg, J. I., Mordaunt, C., Pesce, G., Baïz, N., Alfano, R., Martens, D. S., Wang, C., Isaevska, E., Keikkala, E., . . . Sebert, S. (2024). Maternal educational attainment in pregnancy and epigenome-wide DNA methylation changes in the offspring from birth until adolescence. Mol Psychiatry, 29(2), 348-358. <u>https://doi.org/10.1038/s41380-023-02331-5</u>. **Q1, Impact Factor: 11.0**

de Vos, R.-J., Gravare Silbernagel, K., Malliaras, P., Visser, T. S., Alfredson, H., Akker-Scheek, I. v. d., van Ark, M., Brorsson, A., Chimenti, R., Docking, S., Eliasson, P., Farnqvist, K., Haleem, Z., Hanlon, S. L., Kaux, J.-F., Kearney, R. S., Kirwan, P. D., Kulig, K., Kumar, B., . . . Vicenzino, B. (2024). ICON 2023: International Scientific Tendinopathy Symposium Consensus – the core outcome set for Achilles tendinopathy (COS-AT) using a systematic review and a Delphi study of professional participants and patients. British Journal of Sports Medicine, 58(20), 1175-1186. <u>https://doi.org/10.1136/bjsports-2024-108263</u>. **Q1, Impact Factor: 11.8**

Jennings, A., Thompson, A. S., Tresserra-Rimbau, A., O'Neill, J. K., Hill, C., Bondonno, N. P., Kühn, T., & Cassidy, A. (2024). Flavonoid-Rich Foods, Dementia Risk, and Interactions With Genetic Risk, Hypertension, and Depression. JAMA network open, 7(9), e2434136. <u>https:// doi.org/10.1001/jamanetworkopen.2024.34136</u>. **Q1, Impact Factor: 10.5**

NHIRI in the Media

Media coverage highlights the Institute's role in improving community health, influencing policy changes, and addressing critical issues like food environments and chronic disease prevention. As NHIRI continues to drive innovation, its research is not only shaping the future of healthcare but also resonating with a broad audience, reinforcing its position as a leader in health research.



<u>Understanding rapid weight loss in older women:</u> Message from the heart

Unexplained rapid weight loss in older people could be a sign of underlying disease and can be linked with increased risk of falls and fractures, as well as a poorer long-term prognosis.

New research by NHIRI Postdoctoral Research Fellow Dr Cassandra Smith noted that abdominal aortic calcification (AAC), a marker of advanced blood vessel disease, was linked to higher risk of rapid weight loss in the 929 older women who participated in the study.

This research reached more than 267.7-million people, with the coverage worth an estimated \$2.4-million. In addition to Australia, the research was also featured in the US, the UK, India and NZ.

Head gets in the way of recovery - new research

Research undertaken by NHIRI Post-doctoral research fellow Dr Myles Murphy investigated muscle function in people with hip osteoarthritis and found that these patients were unable to activate their muscles as efficiently.

The research ultimately reached 124 million people globally, with the earned media mentions valued at \$1.14 million USD.



Bel Marra Health

New study finds that people with hip osteoarthritis struggle to activate muscles properly due to brain interference, impacting rehabilitation.

Bel Marrie Iteranin (Del 16, 2024



Hip osteoarthritis: Head gets in the way of recovery, study suggests

Muscle activation in people suffering from hip osteoarthritis might be a case of 'mind over matte... Gullancon)



Head gets in the way of recovery - new research

Understanding rapid weight loss in older women: Message from the heart

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Broccoli and kale top the shopping list for lowering blood pressure

Research led by NHIRI Post Doctoral Research Fellow **Dr Lauren Blekkenhorst** and PhD student **Emma Connolly** found that consuming four serves a day of cruciferous vegetables resulted in a significant reduction in blood pressure, compared with four serves a day of root and squash vegetables including carrot, potato, sweet potato and pumpkin.

The media campaign reached a staggering 1.1 Billion people globally, with an earned value of \$10.6 million.

There were 186 media mentions in total. The research featured heavily in Australia, the US, UK and Vietnam.

<u>New research shows provision of blood vessel</u> <u>calcification imaging results may improve</u> <u>cardiovascular risk control</u>

In a first-ever trial, researchers from NHIRI have provided abdominal aortic calcification (AAC) imaging results to attempt to elicit behavioral changes to improve diet, physical activity, and other cardiovascular disease risk factors in older men and women.

The research reached 155 million people globally, with the earned media worth an estimated \$1.4 million.

<u>Researchers offer mums 'liquid gold'</u> <u>alternative to formula feeding in hospital</u>

Interest in antenatal colostrum expression (ACE) is on the rise, with research from NHIRI's **Associate Professor Therese O'Sullivan** showing that around half of pregnant mums in Perth are giving it a go.

This research reached 126 million people.



Offering mums 'liquid gold' alternative to formula feeding in

Dr Mary Kennedy spoke on ABC radio about the work of project SCENIC in boosting exercise participation for cancer patients, to improve their physical and mental health.

You "aorta" look beyond muscle and bone for falls and fracture risk: New AI algorithm identifies high risk older women

A new automated machine-learning algorithm has been developed by researchers at Edith Cowan University (ECU) to accurately assesses abdominal aortic calcification (AAC), which could increase the risk of fall-related hospitalisation and clinical fractures.

The new detection method significantly shortens the timeframe to screen for AAC. Compared with the five to six minutes it would take an experienced reader to obtain an AAC score from one image, the new algorithm takes less than a minute to predict AAC scores for hundreds of images.

This research reached 179,242 people, with the coverage worth an estimated \$1,657.

<u>Plant-sourced nitrate proves positive to</u> <u>human health</u>

New research has found that nitrate from plant sources is associated with a lower risk of mortality while nitrate from other sources such as animal-based foods, processed meat and tap water, is linked to a higher risk of mortality.

NHIRI's **Dr Nicola Bondonno** led the project which has found that among 52,247 participants of the Danish Diet Cancer and Health Study, moderate to high intakes of plant and vegetable sourced nitrate were associated with a 14% to 24% lower risk of all-cause, CVD-related, and cancer-related mortality.

This research reached almost 10 million people globally, with the earned media worth of \$914,447.



Our researchers contribute to Medical Forum magazine, Western Australia's monthly publication for general practitioners and medical specialists, key government people, hospital trainees and corporate subscribers.

CLINICAL UPDATE

Vascular disease and rapid weight loss in older adults: a marker or manifestation?

By A/Prof. Joshua Lewis & Cassandra Smith, Edith Cowan University

Rapid weight loss in older people Rapid weight loss in older people is defined as the involutionary decline in total body weight by 5% over a six to 12-month period. This magnitude of weight loss has been suggested by some to be an indicator of heaght status, and unintentional weight loss occurs in up to one in four community-dwelling frail older adults.

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New mums choosing colostrum

Murdoch Square

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CLINICAL UPDATE

Harnessing 'brainpower' to improve function and reduce pain

By Dr Myles Murphy, Edith Cowan University

3D food printing to nourish vulnerable Australians

Musculoskeletal injuries and pain are a significant cause of disability. This is a worldwide problem. This is a worldwide problem. Just pre-common missiolasitetal mup, off-addition, affrical more than three million Australians. Orimutarhini also bas a foromizable nersional burder with more years burd with installisty than type 2 bielefer isofiaemic mean consiste or rules. Other activities and writes, of multiplicities and basis activities of multiplicities. Wit/ Ivine

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CLINICAL UPDATE



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continued on Page 49



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natal colostrum expression (ACE) involves hand expressing col weeks of pregnancy, which can then be safely frozen and used in place of hospital.

formula during hospital stays, research from ECU suggests.

TCU av nd directors Tr A COLOR popularity of ACE is filely to continue due to its trie in increasing breastly saliding with the development of hand avay easing chilin and decomping rele in a tarty's early days of the

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A cup of tea for brain health?



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Point Diversity



Full articles available in Medical Forum emagazines 2024 editions via mforum.com.au

Research Areas in Focus

A Holistic Approach to Health and Well-being

NHIRI's strength lies in its holistic, interconnected approach to health research, where nutrition serves as the central thread linking diverse fields. Whether the focus is on disease prevention, innovative healthcare technologies, public health policy, or biomedical research, nutrition plays a critical role in shaping outcomes across all areas.





The following are some examples of projects that are transforming nutrition's role in disease prevention and long-term health. **Investing in Your Bones** strengthens bone health through diet, while **The Nitrate Debate** and **Vegetable Types and Their Bioactives** reveal how specific vegetables help lower blood pressure and reduce cardiovascular risk. **Flavonoid** metabolism studies further highlight the heart-health benefits of plant-based bioactives. Clinical trials like **PASSPORT** explore dietary strategies to prevent aortic stenosis, a leading cause of heart disease. **Mindful Mouthfuls** fosters healthy eating habits from infancy, reinforcing NHIRI's commitment to preventing chronic diseases across all life stages.

Research Areas in Focus

A Holistic Approach to Health and Well-being

Research into chronic diseases like cardiovascular conditions, cognitive decline, and musculoskeletal health consistently highlights the fundamental impact of diet on health trajectories. Even in studies where nutrition isn't the primary focus - such as injury prevention or AI-driven healthcare diagnostics - nutritional insights are often integrated to enhance treatment strategies, recovery outcomes, and overall patient care.



NHIRI is redefining patient care through cutting-edge technologies. In the **Printing an Appetite for Life** project, researchers are using 3D food printing to enhance the dining experiences of aged care residents on texture-modified diets, making meals not only safer but also more enjoyable. The Institute is also leveraging artificial intelligence to improve diagnostic accuracy and patient outcomes. Projects like **AI and Radiomics** are enabling faster and more precise foot x-rays for diabetic patients, while **Explainable AI** assists in detecting abdominal aortic calcification, a critical predictor of cardiovascular disease. These innovations are pushing the boundaries of healthcare, creating solutions that are both practical and life-changing.

A Holistic Approach to Health and Well-being

This integrated approach makes NHIRI's work both groundbreaking and translational, with findings in one area enriching others. Biomedical research on vascular health informs dietary recommendations, while public health policies benefit from insights into nutrition and chronic disease. By bridging disciplines, NHIRI develops real-world solutions that enhance health outcomes, strengthen communities, and shape public health strategies.



NHIRI's commitment to public health is evident in its wide-reaching community initiatives. Programs like **Feeding the Future** and **Little Aussie Bugs** are improving children's nutrition and health literacy, fostering lifelong healthy habits. Research into food environments, such as the **Junk Food-Filled School Neighborhoods** project and the development of the **Food Atlas**, provides essential data to support policies that promote healthier eating across communities. NHIRI also focuses on injury prevention and rehabilitation, with studies like the **TACL Study** on ACL recovery and programs designed to reduce injury risks in athletes and police recruits. Culturally tailored resources for **CALD (Culturally and Linguistically Diverse) communities** further demonstrate NHIRI's dedication to inclusive public health initiatives.

Research Areas in Focus

A Holistic Approach to Health and Well-being

At the heart of NHIRI's mission is innovation and commercialisation. Our work goes beyond academic publications, translating groundbreaking research into real-world applications that benefit individuals, communities, and industries. Strong consumer engagement, teamwork, and international collaborations amplify our impact, ensuring that NHIRI's research shapes both local and global health landscapes.





NHIRI's biomedical research deepens the understanding of cardiovascular disease and other chronic health conditions. Projects like **Better Identification, Understanding, and Prevention of Advanced Blood Vessel Disease in Women** focus on reducing sex disparities in heart health, while trials such as **PASSPORT** aim to prevent aortic stenosis through early intervention. NHIRI also explores the complex relationship between diet and vascular health, investigating dietary bioactives, automated assessments of vascular calcification, and the role of gut health in chronic disease prevention. The **ur gut**[®] dietary fibre project, designed by ECU researchers, supports microbiome diversity and overall well-being. Studies like **AN-INSPIRE and ELIMINATE** delve into kidney transplant outcomes and their connection to cardiovascular disease, offering critical insights that shape future treatment strategies.

2024 NHIRI/NSA Research Symposium: Showcasing Innovation for a Healthy Future

The 2024 NHIRI/NSA Research Symposium, themed "Innovative Solutions for a Healthy Future," brought together leading researchers, students, and professionals to explore groundbreaking advancements in nutrition and health research. Held in a vibrant atmosphere of collaboration and discovery, the event highlighted cutting-edge findings and practical solutions aimed at transforming public health outcomes.

Keynote Insights: The Role of Food Structure in Metabolic Health

This year's keynote address was delivered by Professor Gary Frost, a world-renowned expert in Nutrition and Dietetics from Imperial College London. Professor Frost captivated the audience with his presentation, "Food Structure: The Forgotten Determinant of Metabolic Health." He explored the crucial role that food composition plays in human metabolism, particularly the impact of dietary carbohydrates on the gastrointestinal tract. His leadership in major research initiatives such as the AGENTS network and the CoDiet project underscores his dedication to advancing nutritional science globally.





Spotlight on Outstanding Research

The Symposium celebrated the remarkable achievements of researchers across various career stages. Congratulations to the award winners:

- EMCR Judge's Choice: **Dr Claire Pulker** for her research on dietary risks in Australian chain food outlets.
- EMCR People's Choice: **Dr Clare Whitton** for her work on healthy children's menus in Western Australian food outlets.
- HDR Judge's Choice: **Montana Dupuy** for her study linking vitamin K1 intake with reduced atherosclerotic vascular disease in older women.
- HDR People's Choice: **Sharonna Mossenson** for her audit of food environment initiatives in WA local government public health plans.

Diverse Research Presentations

The program featured a series of engaging presentations by NHIRI and NSA researchers. Highlights included:

- **Dr Simone Radavelli-Bagatini**'s insights on how imaging results can motivate healthier eating habits.
- **Prof Gina Trapp**'s unveiling of a national 'Food Atlas' to map food access across Australia.
- **Dr Carlos Toro-Huamanchumo**'s integration of public health and clinical nutrition strategies from Peru.

In addition, a series of rapid-fire three-minute presentations showcased emerging research by Higher Degree Research (HDR) students and Early to Mid-Career Researchers (EMCRs). These concise and dynamic talks covered a range of topics, from the nutritional needs of culturally and linguistically diverse (CALD) mothers to the relationship between protein intake and frailty in older women.

A Platform for Collaboration and Networking

The Symposium concluded with an award ceremony recognising the outstanding contributions of participants, followed by a networking lunch. This closing session provided an invaluable opportunity for attendees to connect, exchange ideas, and foster future research collaborations.

The 2024 NHIRI/NSA Research Symposium provided a valuable platform for sharing innovative research and fostering collaboration in nutritional science and public health. We look forward to seeing how these insights contribute to shaping a healthier future.



Research Highlights

Empowering Health Through Imaging: A Groundbreaking ECU Study

In a world-first trial, researchers from Edith Cowan University (ECU) explored whether providing older adults with images of abdominal aortic calcification (AAC) could inspire healthier lifestyle choices. AAC, a marker of advanced vascular disease, significantly increases the risk of heart attacks and strokes, explained **Dr Simone Radavelli-Bagatini**, ECU Post Doctoral research fellow.

Using standard bone density machines—an accessible, low-cost, low-radiation method researchers identified AAC in about 60% of participants aged 60–80. The randomised clinical trial split participants into two groups: one received their AAC imaging results plus educational materials, while the control group received education alone.

"We wanted to see if visualising their calcification would motivate individuals to adopt heart-healthy habits like eating more fruits and vegetables and increasing physical activity," said Dr Radavelli-Bagatini.

Over 12 weeks, both groups improved their fruit and vegetable intake, but those who saw their AAC images showed greater improvements in key cardiovascular risk factors, including total and LDL ("bad") cholesterol levels.

Senior author **Dr Josh Lewis** emphasised the potential for AAC imaging, combined with targeted lifestyle support, to drive long-term health improvements.

The MoDEL Study



NHIRI Post Doctoral Research Fellow, Dr Simone Radavelli-Bagatini

The Heart Foundation's Chief Medical Advisor, Mr. Garry Jennings, reinforced the importance of preventive measures through healthy living, applauding ECU's innovative research as part of the ongoing fight against heart disease.

<u>Published in Nature Communications</u>, this study highlights a promising, scalable approach to cardiovascular disease prevention—turning routine bone density tests into powerful tools for heart health.

Research Highlights

Skeletal Central: Promoting Bone Health Literacy in Schools

NHIRI researchers **Professor Amanda Devine** and **Dr Julie Boston**, in partnership with Arthritis and Osteoporosis WA and Singular Health Group, have launched Skeletal Central — an online educational hub designed to boost bone health literacy among high school students and educators.

"We are aiming to build awareness, knowledge, and motivate behaviour change to promote bone and joint health during formative years," said Professor Devine. "Additionally, these resources serve as professional development tools, empowering educators with essential bone health knowledge."

Skeletal Central offers curriculum-aligned, evidence-based, digitally immersive educational resources focused on key bone and joint health concepts for students in Years 7–11. In a pilot program with 89 Perth high school students, researchers observed significant improvements in bone health literacy and attitudes towards weight-bearing exercise, including avoiding vaping and smoking.

"We found that teachers appreciated the individualised feedback on student learning provided by the game," noted Dr Boston. Over 70% of students found the game engaging and enjoyable, with more than half indicating they would play it frequently.

The educational toolkit includes animations, 3D anatomy viewers, and 20 classroom activities aligned with the Australian Curriculum, making it easier for teachers to incorporate into their lessons.



The educational game uses immersive technology.



The Skeletal Central team of researchers.

"Building strong bones during childhood and teenage years is one of the best ways to prevent osteoporosis later in life," said Professor Devine. "Skeletal Central is a tool that not only helps students make healthier choices for their future but also supports teachers with engaging, evidence-based materials that fit seamlessly into the classroom."

Launched in alignment with World Osteoporosis Day (20 October 2024), Skeletal Central underscores the importance of early education in preventing osteoporosis and promoting lifelong bone health.

Head to the <u>website</u> to learn more about Skeletal Central.

Research Highlights

Uncovering the Link Between Rapid Weight Loss and Vascular Health

Unexplained rapid weight loss in older adults can signal underlying health issues, increasing the risk of falls, fractures, and poorer long-term outcomes. NHIRI Postdoctoral Research Fellow **Dr Cassandra Smith** led new research exploring this phenomenon, revealing a significant link between abdominal aortic calcification (AAC)—a marker of advanced vascular disease—and rapid weight loss in older women.

Rapid weight loss, defined as a loss of more than 5% of body weight within a 12-month period, was observed in 39.4% of the 929 women studied over five years. "Rapid weight loss, when it occurs in older women, can be a sign of bad things to come such as early institutionalisation, cognitive decline, Alzheimer's disease, and pose a higher risk for falls and fractures," said Dr Smith.

The study found that women with moderate to extensive AAC were 36% to 58% more likely to experience rapid weight loss. Moreover, rapid weight loss was linked to a 49% higher risk of death within the following 9.5 years, rising to 87% in women who lost more than 10% of their body weight in a year.

"This has the potential to change how we treat those older individuals who present with rapid weight loss," Dr Smith said.

"The traditional approach would be to increase protein and energy intake, but data is showing us that it could actually be vascular disease that is driving that weight loss, in which case using the traditional approaches may not help with body composition."

Importantly, the association between AAC and rapid weight loss persisted even after accounting for diet, blood pressure, and physical activity.



Dr Smith suggested that reduced blood flow to the gut due to AAC could impair nutrient absorption, influencing body composition.

"Given the poor outcomes commonly associated with rapid weight loss in older adults, AAC may be a tool to identify those older women with highest risk. It also opens the door to an opportunity for cardiovascular disease risk screening and to consider disease in other vascular beds or organs that may be influencing body composition," Dr Smith noted.

The next phase of this research will focus on replicating these findings in other groups and investigating the role of blood flow and nutrient absorption in weight regulation.
The Nitrate Paradox: Plant - Based vs. Animal-Based Sources

New research from NHIRI has uncovered a striking link between nitrate sources and health outcomes. **Dr Nicola Bondonno**, based at the Danish Cancer Institute, led the study, analysing data from over 52,000 participants in the Danish Diet Cancer and Health Study.

Moderate to high intakes of plant-sourced nitrate were associated with a 14% to 24% lower risk of all-cause, cardiovascular disease (CVD)-related, and cancer-related mortality. "In simplistic terms, nitrate can go down two different pathways when introduced into the body. One is to form a compound called nitric oxide, which has been shown to improve blood flow, lower blood pressure, and support overall cardiovascular health," said Dr Bondonno.

Conversely, higher intakes of nitrate from animal-based foods, processed meats, and tap water were linked to an increased risk of mortality. "But nitrate may also go down a second pathway, forming a group of compounds called nitrosamines, which are considered to be carcinogenic and are linked to cancer. It is thought that the antioxidant compounds in vegetables push nitrate towards the first pathway," Dr Bondonno explained.

Participants consuming more animal-sourced nitrate had a 9% to 12% higher risk of all-cause and CVD-related mortality, while nitrite from these sources was linked to even greater risks. Processed meat nitrate and nitrite intake showed a 12% to 22% increase in all-cause and cancerrelated mortality.



Photo credit: Royal Perth Hospital Research Foundation

Interestingly, nitrate from drinking water was more strongly associated with heart disease deaths than cancer, challenging previous assumptions.

"Nitrate sourced from plants and vegetables are protective against the different kinds of mortality. But when nitrate comes from animal sources or tap water, it increases your risks, mainly of heart disease, but also of certain cancers," Dr Bondonno noted.

This research aligns with existing dietary advice: eat more plants, limit animal products, and reduce processed meat consumption. <u>Published in the</u> <u>European Journal of Epidemiology</u>, these findings offer new insights into how nitrate sources can shape health outcomes.

Cruciferous Vegetables: A Natural Solution to Lower Blood Pressure

New research from NHIRI has found that cruciferous vegetables like broccoli, cabbage, kale, and cauliflower can significantly lower blood pressure in middle-aged and older adults with elevated levels, in comparison to root and squash vegetables.

In a randomised, controlled crossover trial, participants consumed four servings of cruciferous vegetables daily, which led to a greater reduction in blood pressure compared to an equal amount of root and squash vegetables such as carrots, potatoes, and pumpkin.

"Compounds called glucosinolates, which are found almost exclusively in cruciferous vegetables, have been shown to lower blood pressure in animals, but evidence in humans has thus far been limited," said NHIRI PhD student **Emma Connolly**.

Cruciferous vegetables also contain nitrate and vitamin K, which likely contribute to their blood pressure-lowering effects. "Hypertension, or high blood pressure, is the leading risk factor for heart disease, with its prevalence increasing with age," Ms Connolly added.

Dr Lauren Blekkenhorst, a NHIRI NHMRC Emerging Leader and Heart Foundation Postdoctoral Fellow, emphasised the benefits: "Cruciferous vegetables are the lowest consumed group of vegetables. If people can increase their intake of this group, they will receive more bang for their buck in terms of lowering blood pressure and reducing the subsequent risk of developing heart disease later in life."



NHIRI Post Doctoral Research Fellow, Dr Lauren Blekkenhorst

Over six weeks, participants showed a 2.5 mmHg reduction in blood pressure after consuming cruciferous vegetables compared to root vegetables. This translates to roughly a 5% lower risk of heart attacks or strokes.

"The Heart Foundation encourages people to eat a variety of vegetables every day as part of a hearthealthy eating pattern. You can experiment with adding cruciferous vegetables, like broccoli or kale, to your meals," said Heart Foundation's Manager for Heart Health, Kym Lang.

<u>Published in BMC Medicine</u>, this study reinforces the role of vegetables, particularly cruciferous varieties, in supporting heart health.

The Rise of Antenatal Colostrum Expression: Boosting Breastfeeding Confidence

Interest in antenatal colostrum expression (ACE) is growing, with research from NHIRI showing that around half of pregnant women in Perth are trying it. ACE involves hand-expressing colostrum in the final weeks of pregnancy, storing it frozen for use if needed after birth.

"Colostrum has been referred to as 'liquid gold' for infants, reflecting both its yellowish colour and the nutritional composition, rich in developmental and immunological factors," said NHIRI **Associate Professor Therese O'Sullivan**.

Colostrum is the first type of breast milk produced, providing vital nutrition for newborns in the first days of life. "Being fed colostrum for the first few days of life has many benefits which are now more well known," Associate Professor O'Sullivan noted. It aids newborns in developing feeding skills and offers concentrated immune support.

ACE has seen fluctuations in popularity over generations. She found that ACE is likely to continue rising in popularity for its role in increasing breastfeeding confidence, assisting with hand-expressing skills, and reducing reliance on formula in the early days of life.

ACE is particularly beneficial for babies at risk of hypoglycaemia, such as those born to mothers with diabetes, preterm infants, and those with oral issues. "Traditionally, these babies are given formula to help increase blood glucose levels quickly. However, if mothers have collected colostrum during pregnancy, this can be used in place of formula if required," Associate Professor O'Sullivan explained.



Research shows ACE is safe for low-risk women from around 36 weeks' gestation. While it may not improve long-term breastfeeding rates, it significantly boosts breastfeeding confidence.

"Women should be reassured that the skill of hand expressing is a valuable tool post-birth, regardless of whether they are able to collect colostrum antenatally or not," Associate Professor O'Sullivan said.

Published findings highlight the need to support pregnant women, addressing anxieties around ACE and promoting its appropriate use during breastfeeding establishment.

Transforming Nutrition in Early Childhood Education and Care (ECEC)

Recent studies from NHIRI highlight concerns about food quality in Early Childhood Education and Care (ECEC) services, emphasising the urgent need for funding to audit the sector and create a Best Practice Food Environment Guide.

"It's imperative that food provision becomes a standard practice in all ECEC services, and exploring options like quarantining a portion of the childcare subsidy for food provision and professional development for ECEC staff could yield significant economic and social benefits for both staff and children," said **Dr Ros Sambell**, Chair of the National Nutrition Network (NNN) – ECEC.

Currently, many ECEC services fall short of meeting 50% of the Australian Dietary Guidelines. "Food access, provision, and quality are integral components of early childhood education and health development," Dr Sambell noted, highlighting the absence of standardised guidelines.

Professor Amanda Devine, ECU Associate Dean of Public Health and OHS and Professor of Public Health and Nutrition, expressed frustration over the lack of nutrition training in ECEC.

"This sentiment is a common issue across all Australian jurisdictions and is frequently raised by the NNN's 35 members," added Associate Professor Rebecca Byrne from QUT.

The NNN-ECEC is calling for Commonwealth funding to develop a Best Practice Food Environment Guide, along with training for staff to improve food quality and promote healthier environments.



"By fostering more efficient resource allocation and promoting improved child health and education outcomes, the implementation of these measures represents a prudent investment in the future of our children," said Associate Professor Byrne.

NNN-ECEC warned that inaction posed the greatest risk of all. By embracing innovative approaches to data collection and analysis, Australia can chart a transformative path toward ensuring optimal nutrition and holistic development for its youngest citizens by targeting resourcing where it is needed most.

<u>Click here to visit the National Nutrition Network</u> <u>website</u>

Revolutionising Road Safety: Detecting Alcohol-Impaired Drivers with AI

Researchers at NHIRI are developing cuttingedge computer tracking technology that uses camera footage to detect whether a driver is impaired by alcohol. Working with Mix by Powerfleet, data was collected from drivers with varying levels of intoxication - sober, low, and high - in a controlled driving simulator.

"Our system detects varying levels of alcohol intoxication impairment, with an overall accuracy of 75% for the three-level classification," said ECU PhD student **Ms. Ensiyeh Keshtkaran**. "This not only benefits vehicles equipped with driver monitoring systems and eye-tracking technologies but also has the potential to extend to smartphones, making alcohol intoxication detection more effective."

The system uses standard RGB cameras to analyse facial features, gaze direction, and head position, identifying impairment before the vehicle is in motion. "This sets it apart from methods reliant on observable driving behaviours, which require extended active vehicle operation to identify impairment," Ms. Keshtkaran explained.

"This research confirms that it is possible to detect intoxication levels using just a simple camera," said ECU Senior Lecturer **Dr Syed Zulqarnain Gilani**. "The next step in our research is to define the image resolution needed to employ this algorithm. If low-resolution videos are proven sufficient, this technology can be employed by surveillance cameras installed on roadside, and law enforcement agencies can use this to prevent drink driving."



Drink driving is a major contributor to road fatalities in Australia, accounting for around 30% of fatal crashes. "Existing approaches to detect alcohol-impaired driving, primarily relying on random breath tests, do not adequately address this pressing problem," Ms. Keshtkaran noted.

This innovative system could revolutionise road safety, enabling swift detection of intoxicated drivers and reducing risks on the road.

<u>Published in the IEEE/CVF Winter</u> <u>Conference on Applications of Computer</u> <u>Vision</u>, this research represents a significant step forward in preventing drink drivingrelated incidents.

Mind Over Matter: Understanding Muscle Activation in Hip Osteoarthritis

Muscle activation in people with hip osteoarthritis may be more of a 'mind over matter' issue, according to new research from NHIRI. **Dr Myles Murphy**, NHIRI Post Doctoral Research Fellow, found that individuals with hip osteoarthritis struggle to activate their muscles efficiently, regardless of muscle strength.

"Previous research has well established that the degree to which a joint degenerates is not directly related to the amount of pain a person with arthritis will experience. In fact, the stronger your muscles are, the more protected your joint is, and the less pain you will experience," said Dr Murphy.

The study revealed that the brain plays a significant role in this inefficiency. "Basically, people with hip arthritis are unable to activate their muscles properly because the brain is actively putting on the brake to stop them from using the muscle. We don't know why that is, yet. But the brain seems to really be hampering the progress of rehabilitation and the muscles to protect the joint," Dr Murphy explained.

Hip osteoarthritis, more common in people over 45, especially women, can result from previous joint damage or abnormalities.

"The impact on their daily lives is the biggest burden of osteoarthritis. The condition also results in substantial time-loss from work, and is associated with a high economic cost," Dr Murphy noted.



Despite these challenges, Dr Murphy urges individuals with hip osteoarthritis to continue strength training under professional guidance.

"You will need to work quite hard to build the strength in those muscles, but it can be done. There is no quick fix. Staying strong is something that people with hip osteoarthritis will need to actively keep working on," he said.

Dr Murphy's ongoing research focuses on overcoming this automatic muscle inhibition to improve rehabilitation outcomes for those living with hip osteoarthritis.

Little Aussie Bugs: Growing Health Literacy in Early Childhood

The creators of the Little Aussie Bugs book series have launched a short course to support early years educators in enhancing children's health literacy skills. Published in collaboration with NHIRI, ECU's School of Education, and Channel 7's Telethon, the series targets children aged two to four.

"With the initial release of the Little Aussie Bugs series, we ran three face-to-face workshops walking educators through how the books could be used. Since then, we have had feedback from educators that we have incorporated into the course," said ECU senior lecturer **Dr Ruth Wallace**.

The one-to-two-hour course offers an overview of health literacy, guidance on using the dialogic books, and activities shared by educators. "The course was developed in consultation with the sector. We had education leaders on an advisory committee, as well as staff from the ECU School of Education and representatives from public health. The course was piloted with great success," Dr Wallace added.



Dr Amelia Ruscoe, ECU lecturer, emphasised the series' role in embedding health-conscious routines into daily life. "The Little Aussie Bugs series hits two important areas of development in early childhood in terms of pre-literacy skills and health literacy. One leverages the other, creating an ideal way to get children talking about healthy practices and making this part of their everyday life."

<u>Educators can access a complete Little Aussie</u> <u>Bugs package</u>, including the online course, print and e-books, and downloadable resources, fostering both pre-literacy and health literacy in young learners.



Revolutionising Nutrition: 3D Food Printing for Texture Modified Diets

Poor nutrition contributes to more deaths globally than any other factor including smoking and inadequate physical activity.

It is estimated to be responsible for 7% of Australia's disease burden. Despite the perception that it is "an issue of the past" in Australia, malnutrition is disproportionately common in various vulnerable groups such as people who have difficulties chewing (e.g., tooth loss, dry mouth, gum disease) and swallowing (dysphagia), who require texture modified foods.

Texture modified foods are generally minced, pureed or thickened to reduce the risk of aspiration and choking . It is estimated that 8% of the population worldwide has difficulty swallowing. Speech Pathology Australia suggest that over one million Australians are affected by swallowing disorders, including people with motor neurone disease, multiple sclerosis, Parkinson's disease or Alzheimer's disease, cancer/stroke survivors, the geriatric population and children with cerebral palsy.

These foods often lack visual and/or taste appeal and are regularly served in "blobs" and "ice cream scoops", making people feel "left out". Poor food visual quality impacts food intake, physical health, mood and mental wellbeing. Furthermore, in order to achieve the required texture, the foods are commonly overcooked, destroying nutrients and diluting flavour.

People on texture modified foods report lower appetite, vitamin A & E intake, protein and fluid intake, and higher weight loss than those on a standard diet.

Eating for pleasure and health in communities on texture modified diets is often sacrificed in favour of safe eating.



NHIRI Post Doctoral Research Fellow, Dr Liezhou Zhong and Chef Amanda Orchard

Three-dimensional (3D) food printing technology is an innovative solution to improve food enjoyment in these vulnerable groups by rebuilding the foods into aesthetically pleasing dishes. 3D food printing can fabricate food objects layer by layer, from the bottom to the top, to achieve designed shapes.

3D food printing is a new frontier in the food industry and has been rendered as a "magic bullet" to enable rapid prototyping, customised food design, and personalised nutrition (based on food preferences, health conditions, specific dietary requirements, and social context).

Extrusion-based 3D food printers are the most common as their relatively simple operation and easy material handling are compatible with a wide range of food materials. Typically, these materials should flow through a nozzle and then be self-supporting after being served. This includes chocolate, fats, dough, pureed or mashed fruits and vegetables, edible gels (gums, starch and protein), hummus, creamy cheese, icing, spread, surimi and meat slurry. Thus, texture modified foods are ideal for extrusion-based 3D food printing.

Link to full article

Community and Consumer Engagement at NHIRI

NHIRI is deeply committed to engaging with the community and industry to ensure its research has real-world impact. Through invited talks, presentations, and public outreach, NHIRI researchers actively share their expertise and foster collaboration. From **Dr Liezhou Zhong's** 3D food printing demonstrations at Vasse and Oberthur Primary Schools to **Benjamin Parmenter's** keynote on international nutrition research, NHIRI experts are bringing cuttingedge science to both local and global audiences. NHIRI's presence at major industry and scientific events, such as the Pre-Evoke Ag Conference, WA BioInnovation Symposium, and the European Calcified Tissue Society Congress, highlights its leadership in translating research into practical solutions.



Beyond academic and industry engagement, NHIRI prioritises consumer involvement, embedding consumer and community input into its strategy, governance, and research design. NHIRI's work with the Consumer and Community Involvement Program is actively shaping research priorities, ensuring that findings align with public health needs. Consumer participation is further integrated through project-specific consumer groups, research buddies, and consumer investigators, strengthening the Institute's commitment to co-designed research. Initiatives such as **Nourishing Leederville Town Hall** meetings and the **Farm to Fork** game at the City of Joondalup's Little Feet Festival, exemplify NHIRI's dedication to making nutrition and health education accessible to the wider community. Through these activities, NHIRI continues to bridge the gap between research, policy, and community well-being. Our extensive list of external stakeholder engagements.

Putting heads together on concussion

ECU's Nutrition Health Innovation Research Institute partnered with the WA Concussion Network (WACN) on a symposium addressing the heavy weighing topic of concussion. The NHIRI 2024 Sports Medicine Series Western Australian Concussion Symposium: Mastering the assessment and management of concussion offered both a clinical and policy focus.

Dr Myles Murphy, Early Career Clinician Researcher from ECU's School of Medical and Health Sciences, hosted the first NHIRI Sports Medicine Series Event for 2024. He partnered with WACN, with support from the Perth Concussion Centre at SportsMed Subiaco and the Connectivity Traumatic Brain Injury—two WA based leaders in current best practice and management of concussion.

The audience included clinicians, such as the lead for the Department of Health's State Head Injury Unit, and policy makers, like the head of the WA Football's Concussion Strategy. Reflecting on the turnout, Dr Murphy noted, "Event Delegates included researchers, general practitioners, neuroscientists, neuropsychologists, occupational therapists, physiotherapists, sports medicine physicians and policy makers. It was great to see that the event was so popular that we had to cap numbers," adding, "The Symposium featured eminent WA presentations covering everything from how to diagnose concussions to the implications of the new national concussion policy."

Dr Murphy stressed the importance of early diagnosis, stating, "An accurate diagnosis of concussion early is so important to ensure people can refrain from highrisk activities until they have recovered," and emphasised, "With athletes making up around 25 per cent of concussion cases, an early diagnosis is what keeps them off the field for adequate recovery."

He further explained his holistic approach:

"My presentation focussed on how an assessment of concussion should include function of the neck and visual systems, as dysfunction in these systems drive concussion symptoms. What most people do not know is that the management of concussion includes treating a number of different body systems, not just the brain. Current recommendations are focussed on treating impairments to the neck, visual, exercise tolerance and psychological health to improve recovery."

Additional insights from presenters such as Dr Gillian Cowen (General Practitioner and WACN Chairperson), Ms Jacinta Thorne (PhD Candidate, Curtin University), Dr Mandy Viduvich (Neuropsychologist), and Mr Troy Kirkham (Executive Manager at the WA Football Commission) enriched the discussion.

With the success of this event, the next NHIRI Sports Medicine Events Series is eagerly anticipated in the second half of the year.



3D Printed Foods: A New Frontier in Nutrition and Sustainability

NHIRI's 3D printed foods were recently showcased at the Tech Policy Futures event at Parliament House Canberra. Hosted by the Australian National University's Tech Policy Design Centre, the event brought together politicians, officials, civil society advocates, industry, innovators, and scholars to talk about designing the technology of tomorrow.

Post Doctoral Research Fellow **Dr Liezhou Zhong** and Research Assistant and Chef, **Amanda Orchard**, are leading researchers in using 3D food printing technology. They worked with the Department of Parliamentary Services' Director and Executive Chef, David Learmouth, and Chef, Joshua Brown to demonstrate ECU's innovative food technology and its capacity to address urgent challenges in Australia and beyond.

Dr Zhong explains that 3D food printing is a new frontier in the food industry with the ability to make meals more interesting and enticing to groups who may not get the appropriate nutritional intake. Produce is cooked and texture modified to create 'inks', which are then printed into a range of enticing designs, creating 3D printed foods.

"ECU is using 3D food printing to help vulnerable groups such as aged care residents, remote communities and young children to achieve healthy and sustainable eating, with a special focus on increasing their fruit and vegetable intake," Dr Zhong said.

"Our work also upcycles aesthetically imperfect but perfectly edible and unspoiled produce, which are currently treated as farm waste, into affordable 3D printable food products.

"The approach aligns with a minimal food budget and contributes to Australia's target of halving food waste by 2030."

On the menu at the event was a 3D printed 'Signature Cheesecake', petit four democracy sausage, grilled chicken kofta and a green pea vol-au-vent with beetroot fennel and orange 'ink', which incorporated freeze dried fruit and vegetable ingredients.

Original article: Putting heads together on concussion

Event attendees exhibited a mix of curiosity and excitement, with the 'Signature Cheesecake' as the crowd favourite.

"This was a white chocolate and rose cheesecake printed in the shape of Australia, then filled with pastry creams, lemon curd and fluid gels," Amanda said. "It's a blend of delicate white chocolate sweetness combined with floral hints of rose, complemented by the rich, creamy textures of pastry creams and lemon curd which created a memorable culinary experience."

ECU's showcase highlighted the innovative role 3D printed foods play in promoting healthy, accessible and sustainable eating. ECU NHIRI researchers are bringing together world-renowned experts across aged care, nutrition, dietetics, healthcare, food science and technology to work alongside agriculture industry partners and chefs to utilise 3D food printing and freeze-drying technology to develop novel foods.

"We are aiming to establish a new food system facilitating the real-world application of 3D food printing, using aged care settings as an exemplar, from farm to table," Dr Zhong said.

"For the first time, 3D printed food technologies and food formulations will be easily implementable and standardised, contributing to the improvement of eating experiences, nutrition and health of various groups, including people on texture modified diets such as those with dementia, multiple sclerosis and other neurodegenerative disorders, stroke and cancer survivors, and children with autism."



ECU Strategic Goal 3: Leading the Sector in Internationalisation

Through partnerships with esteemed institutions such as the Danish Cancer Society, Health Partners Institute, Cornell University, McMaster University, Cambridge University, Harvard University and University of Oxford, NHIRI strengthens ECU's global research presence and contributes to the university's goal of sustaining productive relationships with overseas institutions.



Heatmap of 2024 countries of international collaborations on NHIRI Publications (in orange) (Source: SciVal, accessed 27.02.2025) Our international collaborations not only advance world-class research in health sciences but also create opportunities for higher degree by research students to engage in global partnerships, aligning with ECU's commitment to attracting and supporting international research talent. Additionally, NHIRI's student mobility initiatives support an internationalised student experience, facilitating inbound and outbound exchanges that promote global citizenship. By actively engaging in international research and education networks, NHIRI helps position ECU as a leader in global education, international research partnerships, and transnational education delivery.



Dr Zulqarnain Gilani delivered the Keynote lecture at the D3 Spring School organized by the Nutrition Machine Learning School of Leibniz University, Hannover. The title was "AI-driven Localization and Prediction of Aortic Calcification".

The DECIPHER Consortium's international training workshop, led by NHIRI researchers **Professor Joshua Lewis, Dr Cassandra Smith, Dr Marc Sim, and Dr Zulqarnain Gilani**, together with international experts Dr Pawel Szulc, Professor John Schousboe, provided handson training in AAC24 scoring. Bringing together researchers from multiple countries, the workshop enhanced global expertise in AAC assessment, reinforcing NHIRI's commitment to international collaboration and research excellence in digital spine imaging and cardiovascular disease prognosis.



ECU Strategic Goal 4: Empowering Talent and Potential

NHIRI empowers talent and potential by fostering a strong research culture that supports the development of high-performing researchers and future leaders in health innovation. Through a strong culture of mentorship, leadership training, and interdisciplinary collaborations, NHIRI equips early-career researchers with the skills and experience needed to excel in academia and industry. Our commitment to equity, diversity, and inclusion ensures a supportive environment where researchers from diverse backgrounds can thrive. Additionally, NHIRI provides PhD scholarships, student awards, and professional development opportunities, reinforcing ECU's goal of cultivating a workforce that is agile, skilled, and ready for the future. By building research capacity, fostering innovation, and supporting career progression, NHIRI plays a critical role in empowering the next generation of leaders in nutrition and health innovation research.

Award Highlights

Dr Liezhou Zhong Wins Prestigious WA Young Tall Poppy Award

Dr Liezhou Zhong, Postdoctoral Research Fellow at the Nutrition & Health Innovation Research Institute (NHIRI), has been recognised with the WA Young Tall Poppy Award for 2024. This prestigious honour acknowledges his outstanding contributions to research, science communication, and community engagement.

The Young Tall Poppy Science Awards, presented by the Australian Institute of Policy and Science (AIPS), celebrate earlycareer researchers who excel in their fields while actively promoting science to the broader community.

Dr Zhong's research explores innovative food processing technologies, including 3D food printing, to enhance human nutrition and health. As the founder and lead researcher of the Future Foods & Digital Gastronomy Laboratory at Edith Cowan University (ECU), he is at the forefront of cutting-edge advancements in food technology. Beyond research, Dr Zhong has been instrumental in engaging with industry, community groups, and students. He has led an extensive outreach initiative focused on 3D food printing, promoting healthy and sustainable eating and fostering STEM education.



Dr Liezhou Zhong

His efforts include more than 65 demonstrations and food tastings, along with over 20 school incursions and excursions. Notably, he has extended his impact to regional schools in Pilbara and the South West, supported by the Polly Farmer Foundation.

Further amplifying ECU's leadership in food technology, Dr Zhong recently showcased the university's pioneering research at the Tech Policy Futures event at National Parliament House in Canberra, highlighting solutions to pressing challenges in Australia and beyond.

Colleagues at ECU have commended Dr Zhong's dedication, noting that the award is a well-deserved recognition of his significant contributions to STEM outreach and scientific engagement across Western Australia.

About the Tall Poppy Campaign

Established in 1998 by AIPS, the Tall Poppy Campaign honours Australia's leading researchers and fosters a culture of scientific excellence and public engagement. The annual Young Tall Poppy Science Awards highlight exceptional early-career scientists, encouraging them to inspire the next generation through school and community outreach initiatives.

The campaign has played a vital role in strengthening public appreciation for science and cultivating Australia's future scientific leaders.



Dr Liezhou Zhong showcasing 3D printing at the ANU Tech Policy Futures event.



Dr Liezhou Zhong hosting a school incursion in South West, W.A.

NHIRI Shines at the WACRA Awards

In addition to ECU's Staff Excellence Awards, NHIRI researchers were also recognised at the Western Australian Cardiovascular Research Alliance (WACRA) Awards, winning five of the nine award categories. These achievements highlight NHIRI's leading role in advancing cardiovascular and cardiometabolic research.

WACRA Award Winners from NHIRI:

- *Research Impact Award & Researcher of the Year Award*: Associate Professor Catherine Bondonno was recognised with both the Research Impact Award and the prestigious Researcher of the Year Award for her contributions to cardiovascular health research. This marks the second year in a row that a NHIRI researcher has received the esteemed Researcher of the Year Award.
- **Publication Award:** Dr Simone Radavelli-Bagatini received the Publication Award for her groundbreaking research on the impact of abdominal aortic calcification results on dietary intake, published in Nature Communications.



Dr Simone Radavelli-Bagatini was awarded the WACRA Publication Award. Photo courtesy of Albert Lazuardi and the Heart Foundation.



Associate Professor Catherine Bondonno was awarded the Researcher of the Year Award. Photo courtesy of Albert Lazuardi and the Heart Foundation.



Associate Professor Catherine Bondonno was also awarded the Research Impact Award. Photo courtesy of Albert Lazuardi and the Heart Foundation.

- Elevate Award: Professor Jonathan Hodgson, Director of NHIRI, was awarded the Elevate Award, supporting high-ranking cardiovascular researchers in securing future grant funding.
- **Travel Award: Dr Caroline Hill** received the Travel Award, enabling her to present her research on the benefits of cruciferous vegetables in cardiovascular health at the European Atherosclerosis Society Congress in Glasgow, UK, in 2025.

These accolades underscore NHIRI's impact in cutting-edge cardiovascular research and its commitment to translating scientific discoveries into meaningful health advancements.

We congratulate all NHIRI researchers on their exceptional achievements and their continued contributions to improving public health outcomes.



Professor Jonathan Hodgson was awarded the Elevate Award. Photo courtesy of Albert Lazuardi and the Heart Foundation.



Dr Caroline Hill was awarded the Travel Award. Photo courtesy of Albert Lazuardi and the Heart Foundation.

NHIRI Recognised in ECU Vice-Chancellor's Staff Excellence Awards

Each year, Edith Cowan University (ECU) recognises and celebrates staff who exemplify excellence in their roles through the Vice-Chancellor's Staff Excellence Awards. These prestigious awards highlight individuals and teams who embody ECU's core values of Integrity, Respect, Rational Inquiry, Personal Excellence, and Courage.

In 2024, nearly 200 ECU staff members were nominated across a range of categories, including Learning and Teaching, Research and Research Supervision, Inspirational Staff, Aboriginal and Torres Strait Islander Advancement, and Health, Safety and Wellbeing Practice.

ECU Vice-Chancellor Professor Clare Pollock congratulated all nominees and winners, emphasising that these awards are a testament to the dedication, passion, and commitment of ECU staff in delivering outstanding benefits to students, colleagues, and the wider community.

NHIRI's Commitment to Research Excellence Recognised

The Nutrition & Health Innovation Research Institute (NHIRI) was proud to be represented among this year's winners, with **Dr Myles Murphy** receiving the Excellence in Research by an Early Career Researcher award. This award acknowledges Dr Murphy's significant contributions to research, showcasing innovation, dedication, and a commitment to advancing knowledge and impact within the field of health sciences. We extend our congratulations to Dr Murphy and all nominees for their exceptional achievements and contribution to research excellence.



Dr Myles Murphy

Dr Claire Pulker Honoured with Prestigious PHAA Fellowship Award

Dr Claire Pulker has been awarded a prestigious Fellowship by the Public Health Association of Australia (PHAA) in recognition of her outstanding contributions to the field of public health nutrition and significant impact on nutrition policy and practice at national and international levels. The PHAA presented this award at the Australian Public Health Conference, held in Perth recently.

Dr Pulker's Fellowship acknowledges her pivotal role as an active PHAA member and Executive Committee member of the Food and Nutrition Special Interest Group. Her support for PHAA's advocacy efforts has ensured that public health nutrition remains on the national policy agenda, and her work has been instrumental in advocating for stronger public health measures that prioritise the wellbeing of Australians.

Dr Pulker's extensive contributions to public health nutrition showcase a career dedicated to improving community health outcomes. Her efforts have not only influenced public health policy and practice but have also set a standard in academic and governmental circles. Her dedication and her strategic vision for public health nutrition continue to inspire and pave the way for future advancements in the field.



Dr Claire Pulker

ECU Celebrates Award-Winning Research Media Campaign

In March 2024, ECU's annual Media Awards celebrated the exceptional achievements of its researchers over the past year. Hosted by the ECU Corporate Relations team and Deputy Vice-Chancellor (Research) Professor Caroline Finch, this record-breaking event recognized 22,225 media mentions that reached an astounding global audience of 36.34 billion. This milestone underscores ECU's commitment to showcasing world-class research and innovative ideas on the global stage.

A standout moment was the recognition of the Best Research Media Campaign, awarded to NHIRI's **Dr Marc Sim** and Professor Simon Laws (CPH) from the School of Medical and Health Sciences. Their innovative campaign, Slowing down in your old age? It may be a dementia warning sign, captivated media outlets for months, achieving 473 mentions and engaging almost 1.5 billion people worldwide. This groundbreaking effort not only shed light on the critical link between age-related muscle loss and dementia but also demonstrated ECU's commitment to impactful, research-based communication.

As ECU continues to spread its expertise around the globe, the achievements of researchers like Dr Marc Sim serve as a powerful reminder of the transformative power of innovative ideas and strategic media engagement.



Slowing down in your old age? It may be a dementia warning sign Its generally accepted we will lose muscle strength and slow down as we age, but new ECU research indicates this could ware be a signed framatement and stern that in concern of ageing



01 May 2023 • 3 minute read By ECUNewsroom in Research 13 X 15 0 69 775am

It's generally accepted we will lose muscle strength and slow down as we age, making it more difficult to perform simple tasks such as getting up, walking and sitting down. But new Edith Cowan University (ECU) rasparch indicates this could also be a signal for

another cinitizer health concern of ageing: late-life dementia.

Staff Awards

2024 has been an extraordinary year for NHIRI, with staff and students earning prestigious awards that underscore our commitment to excellence and innovation across multiple fields. Our team's accomplishments span groundbreaking research collaborations, clinical and research excellence, individual leadership, and outstanding publication efforts—each reflecting the high caliber and impact of our work. Below, we celebrate the awardees by category.

Research Collaboration & Funding Awards:

- Dr Benjamin Parmenter, Dr Lauren Blekkenhorst, Dr Myles Murphy and Dr Ros Sambell were recognised for advancing research collaboration at ECU.
- Dr Zulqarnain Gilani secured the ECU EMCRN Conference Grant, while Prof. Amanda Devine, Dr Marc Sim, and Dr Ros Sambell, and Dr Stephanie Godrich obtained funding through the SMHS Enhancing Category 2 and 3 Funding Success Scheme.
- **Prof Josh Lewis** was awarded one of three Distinguished Visiting Fellowships to facilitate international research collaboration.



Dr Lauren Blekkenhorst



Dr Benjamin Parmenter



Dr Ros Sambell

Clinical & Research Excellence Awards:

- **Dr Marc Sim** received the Allied Health Award at the European **Calcified Tissue Society Congress.**
- The Future Foods & Digital Gastronomy Lab was recognised as a finalist in the 2024 InnovationAus Awards for Excellence, while also capturing a coveted spot on the People's Choice shortlist.

Individual & Leadership Awards:

- **Dr Liezhou Zhong** was named Western Australia's 2024 Young Tall Poppy.
- **Prof Gina Trapp** earned the Early-Mid Career Research Contribution Award from Telethon Kids Institute.
- **Dr Claire Pulker** received the Fellowship Award from the Public Health Association Australia.
- **Prof Josh Lewis** was honored as an Outstanding Research Mentor
- **Dr Myles Murphy** was recognized as a Next Generation Leader at the Isokinetic Conference in Madrid.
- **Dr Ruth Wallace** secured the SMHS T & L Subsidy for the HEAd'24 Conference in Valencia
- **A/Prof Paula Hooper** was nominated for the Parks and Leisure Australia Volunteer of the Year Award.
- **Dr Clare Whitton** received the Curtin School of Population Health HDR Publication Award.



Dr Clare Whitton





Prof Gina Trapp



Dr Claire Pulker



Prof Josh Lewis

Publication Prizes:

- Dr Jack Dalla Via, Dr Cassandra Smith, Prof Josh Lewis, and Dr Abadi Gebre were lauded for their best clinical papers at the World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases, with Dr Jack Dalla Via also winning the Best Article Award at the European Calcified Tissue Society Congress.
- **Dr Marc Sim** and **Dr Zulqarnain Gilani** were also awarded the Best paper Award at the Third Workshop on Applications of Medical Artificial Intelligence.
- **Dr Marc Sim** (1st place), **Matheus Pinto** and **Caroline Hill** (tie for 3rd place) were awarded the SMHS EMCR Committee Publication Prizes.
- **Dr Myles Murphy** received the Best Paper Award at Scandinavian SportsKongres and secured the prestigious ASICS Oceania medal for Best Paper at the Sports Medicine Australia conference.



Dr Cassandra Smith



Dr Jack Dalla Via

Promotions

- **Prof Josh Lewis** Promoted to Professor (Level E)
- A/Prof Catherine Bondonno Promoted to Associate Professor (Level D)
- **Dr Ros Sambell** Promoted to Senior Lecturer (Level C)



Dr Zulqarnain Gilani



Prof Josh Lewis



Dr Myles Murphy



Dr Abadi Gebre



2024 NHIRI Fellowships

Prof Josh Lewis



Improving screening, understanding, prevention and treatment of abdominal aortic calcification, Heart Foundation, NHF - Future Leader Fellowships, 2024 - 2027, \$792,623

Prof Wai Lim



ECU Vice Chancellor's Professorial Fellowship

Dr Annie De Leo



A/Prof Catherine Bondonno

Career Advancement Fellowship 2020, Royal Perth Hospital Medical Research Foundation, Career Advancement Fellowship, 2022 -2024, \$166,622

Exploring the gap in supportive cancer care in rural and remote WA Department of Health WA, Future Health Research and Innovation Fund - Implementation Science Fellowship, 2022 - 2025, \$731,186

Dr Mary Kennedy



Standardising Clinical Oncology Pathways for Exercise (SCOPE), Cancer Council of WA Inc, Postdoctoral Fellowship, 2024 - 2026, \$520,785

Dr Nicola Bondonno



Variations in flavonoid metabolism as an explanation for inter-individual differences in physiological responses to flavonoid-rich foods, National Health and Medical Research Council, Early Career Fellowship, 2019 - 2026, \$551,169

Dr Benjamin Parmenter



Post Doctoral Fellow – Novel Dietary Bioactives (flavonoid) , Queen's University Belfast, Grant, 2023 – 2024, \$150,345

Dr Zulqarnain Gilani



Explainable AI Frameworks for Automatic Detection and Localisation of Abdominal Aortic Calcification, Raine Medical Research Foundation, Raine Priming Grants, 2023 - 2024, \$255,913

Prof Gina Trapp



Feeding the Future: Improving children's nutritional health and wellbeing through innovative food environment interventions, Stan Perron Charitable Trust, Programs and Partnerships Grant, 2024 - 2028, \$1,462,532

Dr Cassandra Smith

ECU Vice Chancellor's Professorial Fellowship



Better identification, understanding and prevention of advanced blood vessel disease in women, Heart Foundation, NHF - Postdoctoral Fellowships, 2024 - 2025, \$151,200

ECU Vice Chancellor's Research Fellowship

Dr Lauren Blekkenhorst



Stronger evidence for the cardiovascular health benefits of specific vegetables and their bioactive compounds, Heart Foundation, NHF - Postdoctoral Fellowships, 2020 - 2026, \$60,000 Vegetable types and their bioactives: Growing the evidence for cardiovascular benefits, National Health and Medical Research Council, Investigator grants, 2020 - 2026, \$1,028,346

Dr Liezhou Zhong



Emerging technologies and approaches to enhance health for people on texture modified diets, Department of Health WA, WA Near-miss Awards: Emerging Leaders Program, 2023 - 2025, \$393,090 3D food printing to enhance eating experiences and health for people on texture modified diets, Department of Health WA, Future Health Research & Innovation Fund - Innovation Fellowship, 2023 - 2024, \$49,838

Dr Marc Sim



Career Advancement Fellowship 2020, Royal Perth Hospital Medical Research Foundation, Career Advancement Fellowship, 2021 - 2024, \$145,865 Preventing falls in older Australians: an appetite for change, Department of Health WA, WA Near-miss Awards: Emerging Leaders Program, 2022 - 2025, \$390,444

Dr Myles Murphy



Harnessing 'brainpower' to reduce the burden of hip-related pain, Raine Medical Research Foundation, Raine Priming Grants, 2024 - 2025, \$238,852 Harnessing 'brainpower': using portable, electrical brain stimulation to enhance injury recovery and physical performance via neuroplasticity., Department of Health WA, Future Health Research & Innovation Fund - Innovation Fellowship, 2024 - 2025, \$119,489

ECU Strategic Goal 5: Securing Our Future

As we continue to grow, NHIRI remains committed to pioneering research, nurturing talent, and driving global health innovation. By positioning nutrition as the common thread that connects diverse research fields—from technology to public health—NHIRI is making a lasting impact on global health and well-being, while solidifying ECU's reputation as a leader in health and nutrition research.

Through initiatives like AI-driven health diagnostics and 3D food printing, NHIRI contributes to ECU's vision of integrating nextgeneration technologies into research and learning environments. Our Future Foods & Digital Gastronomy Lab acts as a hub for collaborations with industry, government, and healthcare providers, supporting ECU's goal of transforming its campuses into vibrant, yearround hubs for innovation while ensuring that research findings translate into real-world applications.

NHIRI plays a key role in supporting regional communities and driving social change by partnering with rural healthcare providers to implement research-led health interventions. Recognising the vital role of nutrition in cancer treatment, NHIRI has launched a three-year project in South West WA to bridge the gap between best practice recommendations and real-world implementation. By collaborating with local community partners, we are developing an exercise and nutrition referral pathway that is both practical for clinicians and accessible for patients. Successfully embedding this system into cancer care will enhance survivorship, improve health outcomes, and strengthen ECU's commitment to regional capacity building and equitable healthcare access.

Ensuring financial sustainability is a core priority for NHIRI, with success in securing competitive research grants, industry partnerships, and philanthropic funding that contribute to ECU's financial resilience. NHIRI plays a key role in translating research into commercial applications, particularly in AIdriven solutions and gut health and microbiome dietary fibre powder. Through external investment and translational research projects, we help diversify ECU's revenue streams while driving the development and commercialisation of cutting-edge technologies and products.

By embedding sustainability in research, fostering interdisciplinary collaborations, and expanding engagement with industry and community stakeholders, NHIRI continues to support ECU's long-term vision of becoming a leader in innovative, impactful, and financially sustainable research.



Photo credit: RPH Research Foundation

Our Focus: Translation

Informing Policy Decisions

NHIRI is dedicated to translating research into impactful policy and practice, ensuring that scientific evidence drives meaningful change in public health, nutrition, and urban planning. Through public policy engagement and advocacy, NHIRI works to inform policy decisions, develop best-practice guidelines, and support education initiatives that promote healthier communities.



The WA Food Atlas, the first project in Australia to comprehensively map, measure, and monitor food access. Combining expertise from nutrition, public health, geography, and urban planning, the Atlas spatially visualizes community access to food, identifying areas with limited availability of healthy food or an oversupply of unhealthy food options. Developed in consultation with professionals in food policy, public health, environmental health, and planning, the WA Food Atlas is now being scaled nationally to support food regulation, public health planning, nutrition interventions, and local government strategic frameworks. The tool has also strengthened the evidence base for policy advocacy, contributing to the inclusion of public health considerations within the Planning and Development Act 2005 (WA).

NHIRI actively engages with policymakers to drive meaningful reforms. In 2024, **Dr Ros Sambell** represented NHIRI at the Parliamentary Friends of Nutrition event, advocating for stronger nutrition policies to improve the food environment for 1.4 million children in Early Childhood Education and Care (ECEC). As Chair of the National Nutrition Network (NNN), Dr Sambell played a key role in launching a call to action statement, co-developed with Dietitians Australia, to promote healthy eating habits from an early age.



From left, Leanne Elliston (CEO, Nutrition Australia, ACT); Dr Ros Sambell, ECU; Dr Penny Love, Deakin; Associate Professor Rebecca Byrne, QuT; and Kirsty Elliott (CEO, Nutrition Australia, Qld)



NHIRI Organisational Structure







Nutrition and Health Innovation Research Institute Strategic Research Institute





Prof Jonathan Hodgson Level E



A/Prof Leesa Costello Level D



Prof Joshua Lewis Level E



A/Prof Catherine Bondonno Level D



Prof Amanda Devine Level E



Dr Lauren Blekkenhorst Level B



Prof David Suter Level E



Dr Nicola Bondonno Level B



Dr Annie De Leo Level A



Dr Ros Sambell Level B



A/Prof Therese **O'Sullivan** Level D



Dr Liezhou Zhong Level B



Dr Myles Murphy Level B



Mrs Cheryl Croce **Professional Staff**



Mrs Bianca Lovi **Professional Staff**

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Dr Zulqarnain Gilani Level C



Dr Cassandra Smith Level B



Dr Mary

Kennedy

Dr Benjamin Parmenter Level A



Dr Jack

Dalla Via

Level A

Dr Abadi Gebre Level B



Dr Claire Pulker Level C



Prof Gina Trapp Level E



Prof Wai Lim Level E



Level D





Dr Simone

Dr Marc Sim

Level C

A/Prof Rae-Chi

Huang

Level D

Radavelli-Bagatini Level A





Prof Jonathan Hodgson Director/Chair



Prof Joshua Lewis Research Program Lead



A/Prof Claus Christophersen Associate Dean (Research) SMHS



Cheryl Croce Strategic Initiatives & **Operations Manager**



Prof Amanda Devine A sustainable future Co-Lead



A/Prof Rae-Chi Huang A sustainable future Co-Lead



Dr Liezhou Zhong Technology and innovation Co-Lead



Dr Zulgarnain Gilani Technology and innovation Discovery and excellence Co-Lead



Dr Marc Sim Co-Lead



Dr Lauren Blekkenhorst **Discovery and excellence** Co-Lead



A/Prof Therese O'Sullivan Real-world impact Co-Lead



Dr Mary Kennedy Real-world impact Co-Lead



Caroline Hill **NHIRI HDR Candidate**



NHIRI Advisory Board



Professor Jason Wu (Chair) Program Head, Nutrition Science, Food Policy, The George Institute for Global Health



Dr Michael Considine (Acting Chair from Oct 24-Mar 25) Principal Research Fellow, School of Molecular Sciences, The UWA Institute of Agriculture, The University of Western Australia



Professor Robin Daly Chair of Exercise and Aging, Institute for Physical Activity and Nutrition (IPAN) School of Exercise and Nutrition Sciences, Deakin University



Dr Joe Kosterich GP, Health Industry Consultant



Professor Carl Schultz Consultant cardiologist, Royal Perth Hospital and Associate Dean: Research, Medical School, The University of Western Australia



Rohan Prince Director of Horticulture, Department of Primary Industries and Regional Development



Dr Michael Tieland Associate Professor of Nutrition Science, Institute for Physical Activity and Nutrition (IPAN) School of Exercise and Nutrition Sciences, Deakin University



NHIRI Advisory Board Members



Prof Jonathan Hodgson Director



Prof Joshua Lewis Research Program Lead



Cheryl Croce Strategic Initiatives & Operations Manager



Dr Marc Sim Representative of the Early Career Investigator Research Committee



A/Prof Catherine Bondonno Chair of Professional Development Committee

Appendix A: Heart Foundation Catalyst Partnership Grants -Twenty of the Best

Message from the heart: a new solution to screen for blood vessel calcification

Professor Joshua Lewis



The problem

Heart disease is the leading cause of death globally. Existing screening initiatives focus on risk factors and risk equations and provide little insight into the actual health of an individual's blood vessels – information that improves an individual's likelihood of undertaking risk-reducing behaviours. To date, there are no widely available community-based vascular imaging solutions to screen for blood vessel disease.

The solution

Our solution has been developed, tested and validated by our multidisciplinary team of global experts who are trusted voices in the field. In our discussions with significant global and US-based companies, there is strong interest in low cost and accessible screening solutions. Widespread availability of DEXA machines enhancing scalability combined with first mover-advantage with large-scale clinical validations in multiple jurisdictions (currently Australian, UK, US and Canadian) make our AI solution attractive to global wellness and health 'non-regulated' and healthcare 'regulated' markets.

Our solution empowers wellness enthusiasts as well as patients and healthcare professionals with a person's actual level of blood vessel disease – something we know provokes startlingly high and lasting levels of heart-healthful behaviour change. This will offer a genuine chance for people to change and monitor the trajectory of their own heart health.

Appendix B: 2024 Publications

1.Abela, B., Masek, M., Abu-Khalaf, J., Suter, D., & Gupta, A. (2024, July). An exploration of diabetic foot osteomyelitis x-ray data for deep learning applications. In International Conference on Artificial Intelligence in Medicine (pp. 30-39). Cham: Springer Nature Switzerland. <u>https://</u> <u>doi.org/10.1007/978-3-031-66535-6_4</u>

2. Andrew, L., Arthur, T. O. M., Mawer, T., Sambell, R., Krisnakumar, G., & Lawlis, T. (2024). A review of Australian universities work-integrated learning policies and procedures: Referencing disability. International Journal of Work Integrated Learning, 25(2), 259-287. <u>https://www.ijwil.org/files/IJWIL_25_2_259_287.pdf</u>. IF:1.1

3. Anokye, R., Via, J. D., Dimmock, J., Jackson, B., Schultz, C., Schæffer, M., Dickson, J. M., Blekkenhorst, L. C., Stanley, M., Hodgson, J. M., & Lewis, J. R. (2024). Impact of Cardiovascular Imaging Results on Medication Use and Adherence: A Systematic Review and Meta-Analysis. American Journal of Preventive Medicine, 67(4), 606-617. <u>https://doi.org/10.1016/j.amepre.2024.06.008</u>, Q1, IF:5.5

4. Bakar, K. S., Teixeira-Pinto, A., Gately, R., Boroumand, F., Lim, W. H., & Wong, G. (2024). Dynamic prediction of kidney allograft and patient survival using post-transplant estimated glomerular filtration rate trajectory. Clinical kidney journal, 17(11), sfae314. <u>https://doi.org/10.1093/ckj/sfae314</u>. Q1, IF: 3.9

5. Barghchi, M., Grace, B., Edwards, N., Bolleter, J., & Hooper, P. (2024). Park thermal comfort and cooling mechanisms in present and future climate scenarios. Urban Forestry & Urban Greening, 101, 128533. <u>https:// doi.org/https://doi.org/10.1016/j.ufug.2024.128533</u>. Q1, IF: 6.0

6. Bauer, C., Smith, C., Vogrin, S., Palmer, A. S., Woessner, M., Landen, S., Jacques, M., Byrnes, E., Eynon, N., Sim, M., Lewis, J. R., & Levinger, I. (2024). Circulating lipocalin-2 across the adult lifespan. JBMR plus, 9(2), ziae162. <u>https://doi.org/10.1093/jbmrpl/ziae162</u>

7. Beer, J., Lambert, K., Lim, W., Keane, C., & Boudville, N. (2024). Can Telehealth Improve Access to Dietary Management in Patients Receiving Dialysis? Insights from Consumers. Nutrients, 16(1), 105. <u>https://</u> www.mdpi.com/2072-6643/16/1/105 8. Bell, W., Jennings, A., Thompson, A. S., Bondonno, N. P., Tresserra-Rimbau, A., Kühn, T., & Cassidy, A. (2024). A flavonoid-rich diet is associated with lower risk and improved imaging biomarkers of nonalcoholic fatty liver disease: a prospective cohort study. The American Journal of Clinical Nutrition, 120(6), 1325-1334. <u>https://doi.org/https://doi.org/10.1016/j.ajcnut.2024.09.022</u>. Q1, IF: 6.5

9. Bolleter, J., Edwards, N., Cameron, R., & Hooper, P. (2024). Density my way: Community attitudes to neighbourhood densification scenarios. Cities, 145, 104596. <u>https://doi.org/https://doi.org/10.1016/j.cities.2023.104596</u>. Q1, IF: 6.0

10. Bolleter, J., Hooper, P., Kleeman, A., Edwards, N., & Foster, S. (2024). A typological study of the provision and use of communal outdoor space in Australian apartment developments. Landscape and Urban Planning, 246, 105040. <u>https://doi.org/https://doi.org/10.1016/</u> j.landurbplan.2024.105040. Q1, IF: 9.1

11. Bondonno, N. P., Parmenter, B. H., Murray, K., Bondonno, C. P., Blekkenhorst, L. C., Wood, A. C., Post, W. S., Allison, M. A., Criqui, M. H., Lewis, J. R., & Hodgson, J. M. (2024). Associations Between Flavonoid Intake and Subclinical Atherosclerosis: The Multi-Ethnic Study of Atherosclerosis. Arteriosclerosis, thrombosis, and vascular biology, 44(11), 2347–2359. <u>https://</u> <u>doi.org/10.1161/ATVBAHA.124.321106</u>. Q1, IF: 7.4

12. Bondonno, N. P., Parmenter, B. H., Thompson, A. S., Jennings, A., Murray, K., Rasmussen, D. B., Tresserra-Rimbau, A., Kühn, T., & Cassidy, A. (2024). Flavonoid intakes, chronic obstructive pulmonary disease, adult asthma, and lung function: a cohort study in the UK Biobank. The American journal of clinical nutrition, 120(5), 1195–1206. <u>https://doi.org/10.1016/</u> j.ajcnut.2024.08.032. Q1, IF: 6.5

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131. Truby, H., Allman-Farinelli, M., Beck, E. J., Beckett, E. L., Bondonno, C., Dordevic, A. L., Livingstone, K. M., Willcox, J., Wilkinson, S. A., & National Committee for Nutrition and its working groups (2024). Advancing the decadal plan for the science of nutrition: Progressing a framework for implementation. Nutrition & dietetics: the journal of the Dietitians Association of Australia, 81(2), 133–148. <u>https://doi.org/10.1111/1747-0080.12876</u>. IF: 3.1

132. Vijayan, K., Schroder, H. J., Hameed, A., Hitos, K., Lo, W., Laurence, J. M., Yoon, P. D., Nahm, C., Lim, W. H., Lee, T., Yuen, L., Wong, G., & Pleass, H. (2024). Kidney Transplantation Outcomes From Uncontrolled Donation After Circulatory Death: A Systematic Review and Metaanalysis. Transplantation, 108(6), 1422-1429. <u>https://</u> <u>doi.org/10.1097/tp.000000000004937</u>. Q1, IF: 6.2

133. Voisin, R., Horwitz, P., Godrich, S., Sambell, R., Cullerton, K., & Devine, A. (2024). What goes in and what comes out: a scoping review of regenerative agricultural practices. Agroecology and Sustainable Food Systems, 48(1), 124-158. <u>https://doi.org/10.1080/21683565.2023.2270441</u>. Q1, IF: 2.6

134. Wallace, R., Sambell, R., Fu, S. C., Lo, J., Cook, E. J., & Devine, A. (2024). Enhancing nutrition information utilisation, confidence, and role legitimacy and adequacy among early childhood education professionals through evidence-based online training. Australasian Journal of Early Childhood. Advance online publication. <u>https://doi.org/10.1177/18369391241270539</u>. IF: 1.6

135. Wells, G., Trapp, G., Wickens, N., & Heritage, B. (2024). Powerful promotions: An investigation of the teen-directed marketing power of outdoor food advertisements located near schools in Australia. Health Promot J Austr, 35(1), 144-153. <u>https://doi.org/10.1002/hpja.724</u>. IF: 1.9

136. Zhong, L., Bondonno, N. P., Siervo, M., & Bondonno, C. P. (2024). Editorial: Dietary nitrate: friend or foe [Editorial]. Frontiers in Nutrition, 11, Article 1516811. <u>https://doi.org/10.3389/fnut.2024.1516811</u>. Q1, IF: 4.0

Appendix C: External Stakeholder Engagement - Local and National

Advisory Groups and Committees

- A/Prof Therese O'Sullivan: Inaugural Perth Children's Hospital Foundation Scientific Advisory Committee.
- Prof Josh Lewis: Chair of the research committee member, Australian and New Zealand Bone and Mineral Society
- Prof Josh Lewis: Director, Western Australian Cardiovascular Research Alliance
- Prof Josh Lewis: Council Member, Australian and New Zealand Bone and Mineral Research Society
- Prof Josh Lewis: Research committee member, Australian and New Zealand Bone and Mineral Society
- A/Prof Catherine Bondonno: Australian Academy of Science, National Committee of Nutrition
- A/Prof Catherine Bondonno: Australian Nutrition Trust Fund, Director
- A/Prof Catherine Bondonno: Chair, Nutrition Society of Australia Regional Group Chairs Group
- Dr Marc Sim: Publications Committee for Exercise and Sports Science Australia (ESSA)
- Dr Marc Sim: Australia and New Zealand Society for Sarcopenia and Frailty Research (ANZSSFR) Taskforce
- Prof Gina Trapp: Cancer Council WA Pre-Doctoral Subcommittee
- Prof Wai Lim: National Renal Transplant Advisory Committee (RTAC)
- Prof Wai Lim: Transplantation Society of Australia and New Zealand (TSANZ)/RTAC Kidney Allocation Subcommittee
- Prof Wai Lim: TSANZ Virtual Crossmatch Allocation Committee
- Prof Wai Lim: Commonwealth-funded National Indigenous Kidney Transplant Taskforce (NIKTT)
- Prof Wai Lim: Co-Chair of the TSANZ Scientific Program and Education Committee
- Prof Wai Lim: Chair of the Scientific Review Ethics Subcommittee at SCGH
- Dr Simone Radavelli-Bagatini: Committee member, Western Australian Cardiovascular Research Alliance (WACRA)
- Dr Simone Radavelli-Bagatini: Committee member, Nutrition Society of Australia (NSA) Perth Regional Group
- Dr Claire Pulker: Nourish Network nutrition criteria harmonisation project
- Dr Ros Sambell & Sharonna Mossenson: Community Nutrition Network
- Dr Ros Sambell: National Nutrition Network Early Childhood Education and Care (Chair)
- Dr Ros Sambell: Founding Member: Wattle Seed Association of Australia and WA Chapter
- A/Prof Paula Hooper: WAPC Neighbourhood Design policy review expert committee
- Dr Ros Sambell: National Allergy Council's Allergy Aware Schools and Children's Education and Care Project Working Group
- Dr Ros Sambell: Food Systems working group: World Public Health Nutrition Association
- Dr Ros Sambell: Fruit and Vegetable Consortium Research Committee
- Dr Claire Pulker & Dr Clare Whitton: PHAA Food and Nutrition Special Interest Group Executive Committee
- Dr Simone Radavelli-Bagatini: The National Heart Foundation The journey towards Vision 2050 WA Consultation Roundtable participant
- Dr Myles Murphy: Sports Medicine Australia, Western Australia Branch Chairperson
- Dr Clare Whitton: PHAA WA Branch Committee
- Dr Clare Whitton: PHAA WA Branch Committee planning meetings
- Dr Clare Whitton & Dr Claire Pulker: PHAA Food and Nutrition group
- Dr Clare Whitton & Dr Claire Pulker: PHAA Food and Nutrition Special Interest Group Executive Committee
- Dr Elizabeth Cook: Work-Integrated Learning Australia National Board, Research and Impact Committee, Finance and Risk Committee and Governance Committee, WA Chapter Chair
- Dr Elizabeth Cook: Open Access Publishing Association Seminar Lead for Memberships Committee
- Dr Elizabeth Cook: Australian Collaborative Education Network (ACEN) Board Meeting and AGM
- Dr Elizabeth Cook: Australian Centre for Student Equity and Success (ACSES) Advisory Board meeting.
- Dr Claire Pulker: Research Advisor on the Public Health Advocacy Institute's Food and Nutrition Expert Panel
- Dr Claire Pulker: National Committee for Nutrition at the Australian Academy of Science, Implementation subcommittee
- Dr Claire Pulker: Management committee meeting for 'Building effective and equitable food relief' project
- Prof Gina Trapp: Health Promotion and Education Research Group Viably Increasing Publications (VIP) team (Chair)

- Dr Claire Pulker: Implementation Subcommittee member for Nourishing Australia, the decadal plan of the National
- Dr Claire Pulker: Committee for Nutrition at the Australian Academy of Science, as the ex-officio representative of the Public Health Association of Australia
- Dr Ros Sambell & Prof Amanda Devine: Leederville Connect : Urban Food Environment
- Dr Ros Sambell: Invitation to attend "Friends Parliament Ministerial lunch" Canberra 24th June
- Dr Claire Pulker: Executive Committee for the Food and Nutrition Special Interest Group at the Public Health Association of Australia
- Dr Claire Pulker: Member of Fair Food WA
- Dr Claire Pulker: Curtin University Advisory Board for Nutrition Courses
- Dr Claire Pulker: Nourish Network National Food Classification Unification Group
- Prof Gina Trapp: Health Promotion and Education Research Group Post-Doc Support Group, Telethon Kids Institute
- Prof Gina Trapp: Adolescent Consumer Advisory Group for the 'Amped Up' Energy Drink Project, Telethon Kids Institute
- A/Prof Paula Hooper: Department Planning Lands and Heritage Neighbourhood Design Advisory Group

Tools/Products/Services Developed

- A/Prof Paula Hooper Map My Say PPGIS used by UDIA to conduct their National Housing Pipeline Survey.
- A/Prof Paula Hooper Development of a prototype "Thriving Perth" web map making accessible to LGAS state government department datasets to assist with urban greening initiatives.
- A/Prof Paula Hooper Development of the (pilot/prototype) WA Alcohol Atlas (dashboard)
- A/Prof Paula Hooper Development of the parks and community facilities Australia (PACFA) interactive mapping portal (output from AURIN High Impact Project funding and with PLA WA research collaboration agreement)

Contributions to the development of guidelines and/or policies

- Anna Gannett: Liveable Neighbourhoods Design Guidelines Results from the TREK2School Study will be used to faciliate government stakeholder workshops as part of the Liveable Neighbourhoods Design Review process to improve safety for children walking or riding bikes to school.
- Paula Hooper: Facilitated a workshop with the Victorian state government Department of Energy, Environment and Climate Action (DEECA) at the Parks and Leisure Australia Victoria state conference to workshop the use/ integrate/adopt a national framework to classify the function of public open space I developed into the Victorian State Governments new planning policy "guide to open space strategies" to inform how LGs should conduct open space strategies. ; My "Map My Say" PPGIS is being used by the Urban Development Institute of Australia (UDIA) to conduct a "National Housing Pipeline" survey to curate a development industry assessment of the short and medium-term pipeline of land supply for forward residential development across each of Australia's capital cities.; The ultimate purpose of the National Housing Pipeline Project is to provide an objective and robust measure that can be used by Federal, State and Territory, and Local Governments that identifies how much Development Ready land is available across the capital cities along with the expected residential yields year-on-year, so Governments can incentivise boosting housing supply across the spectrum and combat accelerating affordability challenges.
- Anna Gannett: Presentation of evidence at the Active School Transport Working Group Meeting at the WA Department of Transport will be used to update School Crossing policy. whch is being reviewed by The Children's Crossing Unit (consisting of representation from MainRoads and the WA Police).

Report/Policy Briefs

- Gannett, A., Hooper, P., Saunder, J., Trapp, G. TREK2School Interim Report 2 Preliminary Findings. Planning and Transport Research Centre, 29 Feb
- Dr Ros Sambell: <u>Policy Brief 1 Achieving Equality and Equity in the Provision of Food and Nutrition Support in</u> <u>Early Childhood Education and Care Settings</u>
- Dr Ros Sambell: <u>Evidence Brief 1 : Achieving Equality and Equity in the Provision of Food and Nutrition Support</u> <u>in Early Childhood Education and Care Settings: Opportunities and Actions for System Change in Australia</u>
- Dr Ros Sambell: Policy Brief 2 A case for mapping Food Provision across jurisdictions and ECEC services and settings
- Dr Ros Sambell: Policy Brief 3 A call to update the National Get Up & Grow guidelines and associated resources
- <u>A/Prof Paula Hooper: Park Life Survey LGA reports</u>

- Anna Gannett: TREK2School Study Interim Report 2 Preliminary Findings, Steering Committee Meeting, Western Australian Department of Transport
- Prof Gina Trapp, Anna Gannet & A/Prof Paula Hooper: Gannett A, Hooper P, Saunders J, Trapp G. 2024. "TREK2School: Final Report." Department of Transport.

Workshops & Training Facilitated

- Dr Lauren Blekkenhorst: Invited to co-facilitate the nutrition workshop, "Bite-sized nutrition tools to improve cardiac rehabilitation practice", at the Australian Cardiovascular Health and Rehabilitation Association (ACRA) Annual Scientific Meeting 2024 (28-30 July) in Sydney, NSW.
- Joelie Manzdufas Guest lecture: Food environments and food behaviours, University of Western Australia Master of Public Health

Providing External Expertise

- Prof Amanda Devine & Dr Ros Sambell: Early Years Draft Strategy Response to consultation. Draft Strategy Response for Australian Government Department of Social Services.
- Prof Amanda Devine & Dr Ros Sambell: Productivity Commission Response to consultation, Comment for Australian Government Productivity Commission
- Dr Ros Sambell: Presentation to Productivity Commission ECEC Inquiry
- Dr Clare Whitton: Advice provided to East Metro Health Service on Healthy Community Events project
- Dr Roslyn Giglia: Feedback provided on Dietitians Australia DRAFT HSR Briefing note September 2024 The Health Star Rating System after 10 years
- Prof Gina Trapp Dr Claire Pulker & Dr Clare Whitton: Healthway CEO chat with FB, ECU and CCWA about healthy advertising policies.
- A/Prof Paula Hooper: Spatial dataset of open space shared with the Department of Planning Lands and Heritage to inform the state open space strategy.
- Dr Ros Sambell: Co-development of position statement for Dietitians Australia for ECEC food environment
- Dr Ros Sambell: Presentation at the Productivity Commission Inquiry For ECEC https://www.pc.gov.au/ inquiries/current/childhood/public-hearings/20240313-childhood-transcript.pdf

Oral Presentations

- Prof Gina Trapp Recipe for change: Essential ingredients to turn research into policy. Public Health Association of Australia Conference 2024, Basil Hetzel Oration. Invited Keynote Speaker.
- Anna Gannett: Australasian Society for Behavioural Health and Medicine, Adelaide
- Anna Gannett: TREK2School Project Update with the Liveable Neighbourhoods Design Review Team, Department of Planning, Lands and Heritage
- Anna Gannett: TREK2School Project Update and School Walkablity Web Portal Demo, Western Australian Active Travel to School Working Group
- Frith Klug: Klug F, Bivoltsis A, Hooper P, Pulker C, and Trapp G. "Co-development of the WA Food Atlas: a case study for Multi-Sector Collaboration". Australian Public Health Conference 2024, Perth
- Dr Claire Pulker: What is the dietary risk of Australian chain food outlets? Food Governance Conference, Sydney
- Dr Claire Pulker: Butcher LM, Whitton C, Large A, Klug F, Hooper P, Trapp GSA, Pulker CE. Mapping the dietary risk of chain food outlets for public health planning in Australia. World Congress on Environmental Health, Perth
- Dr Claire Pulker: Butcher L, Klug F, Hooper P, Large A, Brewer L, Win J, Mossenson S, Trapp G, Pulker C. Filling in the missing pieces: mapping the charitable food sector in Metropolitan Perth, Australian Public Health Conference, Perth
- Sharonna Mossenson: "WA local government public health plans: An audit of food environment initiatives". Australian Public Health Conference 2024, Perth
- Dr Ros Sambell & Margaret Miller Understanding successful and unsuccessful food system policy initiatives through conference abstract analysis Food Governance Conference, Sydney.
- A/Prof Paula Hooper: Presentation to City of Swan with EMHS on the Food Atlas
- A/Prof Paula Hooper: Swan LGA Presentation
- Dr Claire Pulker: Hooper P, Klug F, Pulker C, Trapp G. Results from the WA Food Atlas: mapping, measuring, and monitoring food environments, Australian Public Health Conference, Perth
- Dr Claire Pulker: Student Careers Night hosted by the Australian Health Promotion Association and Public Health Association of Australia WA branches. Invited Speaker

- Dr Claire Pulker: Klug F, Pulker C, Whitton C, Bivoltsis A, Hooper P, Trapp G. Shaping healthier communities: ٠ review of local government public health plans and leveraging evidence-based insights from the Western Australian Food Atlas to inform local food environment policies and actions. Food Governance Conference, The University of Sydney
- Dr Claire Pulker: Pulker C, Whitton C, Klug F, Trapp G. "What else is needed to implement unhealthy food marketing restrictions in Australia?" Australian Public Health Conference 2024, Perth
- Dr Claire Pulker: Longo J, Whitton C, Beckingham K, Large A, Butcher L, McStay C, Pulker C. Mapping mobile food environments: Food trucks hosted by local governments in 2022, Australian Public Health Conference, Perth
- Frith Klug: Presentations as invited speaker on Food Atlas/PHP review (EMHS Public Health Planning: An ٠ exploration of data for local governments; Local Government Health & Wellbeing Group, Invited speaker, Chaired by Kirsten Beckingham (Armadale LG); Local Health Authorities Analytical Committee (Chairman Ryan Janes, ECU); City of Canning)
- Jacinta Francis Francis, J., Ross, E., Pulker, C., Brinkman, S., Mandzufas, J., Martin, K., Howard, J., Trapp, G. "Children's views on outdoor advertising of unhealthy food and beverages near schools". Australian Public Health Conference 2024, Perth
- Dr Elizabeth Cook: Cook, E. J. Book launch event. Book: Relational and multimodal higher education. Invited Speaker.
- Dr Elizabeth Cook: Jackson J, Cook E.J. (2024, August 28). "GOS Webinar: Snapshots and changes". Online. Invited Co-Presenter.
- Dr Clare Whitton: Whitton C, Veurink S, Cooper M, Dempsey Z, Pulker C, Mandzufas J, Gannett A, Bivoltsis A, Trapp G. "Healthy Childrens' Menus: Feasibility and Acceptance in Western Australian Food Outlets". Australian Public Health Conference 2024, Perth, 17-19 September 2024.
- Frith Klug: Food Atlas presentation to Deakon RE-FRESH: Next Generation EMCR Special Interest Group
- Dr Ros Sambell: "When fast-food moves in next-door: Perceptions of living beside a fast-food outlet". Australian Public Health Conference 2024, Perth
- Joelie Manzdufas: "How often do apartment residents purchase meals out of the home?" Australian Public Health Conference 2024, Perth
- Frith Klug: Food Atlas and HAP discussion with Mayor of Stirling LGA
- Dr Ros Sambell: Forming a Community of Practice to improve food environments in early childhood education and care: The "how to" for system change. AJEC, virtual conference
- Dr Ros Sambell, Dr Ruth Wallace & Dr Lesley Andrew: Supporting organisations and universities to support accessible and inclusive work-integrated learning (WIL) experiences for students with disability. WATFL, Nedlands.
- Dr Claire Pulker: Bernhardt F, Pulker C. Workshop 1: Lessons learned from working with local authorities in the UK on successful advocacy routes for policies restricting unhealthy food advertising.
- Dr Claire Pulker Bernhardt F, Pulker C. Workshop 2: Insights on industry lobbying and commercial oppostition to policies restricting unhealthy food advertising, and how to navigate it.
- Dr Elizabeth Cook: Wallace, R., Doherty, S., & Cook, E. J. (2024). "Using image-reflections with the relational employability framework to support undergraduate students' critical reflection". ECUlture 2024, Edith Cowan University, Perth; Cook, E. J., Doherty, S., & Wallace, R. (2024). "Fostering global citizenship for ECU's public health graduates through relational employability". ECUlture 2024, Edith Cowan University, Perth.
- Dr Elizabeth Cook: Cook, E. J. (2024). "Exploring ACEN research grant opportunities: Advancing SoTL in Health Professions Education". Transforming Scholarly Teaching to Scholarship of Teaching & Learning (SoTL) in Health Professions Education, 31 October. University of Queensland. https://itali.uq.edu.au/events/teachinglearning-week. Invited Speaker (on behalf of ACEN).
- Anna Gannett: TREK2School Study Interim Report 2 Preliminary Findings, Steering Committee Meeting, Western Australian Department of Transport
- A/Prof Paula Hooper: Speaker / presenter at the East Metropolitan Health Service Seminar Series: an exploration of credible data for Local Governments: "Public Participatory data for public health planning"
- Prof Gina Trapp, Jacinta Francis & Dr Claire Pulker: Francis, J., Ross, E., Pulker, C., Brinkman, S., Mandzufas, J., ٠ Martin, K., Howard, J., Trapp, G. "Billboard Busters: Perth schoolchildren's perceptions of outdoor advertising near their school". Western Australian Non-Government Organisation Obesity Consensus Group. Perth, Western Australia. 80

- Dr Ros Sambell: Invitation to present at the ECA Conference (WA): Nutrition in ECEC
- A/Prof Paula Hooper: Parks and Leisure Australia VIC/TAS state and regional conference: Workshop facilitator and presentation
- Anna Gannett: Discussion Leader, Decarbonisation of the Transport Sector, ImpactX Conference, Sydney. Invited speaker.
- Dr Benjamin Parmenter: From Down Under to Europe: An overview of my Australian Nutrition Trust Fund Travelling Fellowship from Prague to Vienna to Belfast, ANTF Travelling Fellowship webinar. Invited speaker.
- Simone Radavelli-Bagatini: The link between diet and stress, ANTF Travelling Fellowship webinar. Invited speaker.
- Dr Liezhou Zhong: 3D food printing for future!, NZ Delegation of Ag Tech Experts of Pre-Evoke Ag Conference 2024. Invited Speaker.
- Dr Liezhou Zhong: Food, glorious food!, 5th WA BioInnovation Symposium 2024. Invited Speaker.

Professional Associations

- Member, Nutrition Society of Australia
- Member, Australian Atherosclerosis Society
- Member, High Blood Pressure Research Council of Australia
- Member, Australian and New Zealand Obesity Society
- Member, Western Australian Cardiovascular Alliance
- Member, Australian Cardiovascular Alliance
- Member, Australian and New Zealand Bone and Mineral Society
- Member, Australian Society for Medical Research
- Fellow, Public Health Association of Australia
- Member, Weight Education and Lifestyle Leadership Collaborative
- Member, Women in Public Health
- Member, Nutrition Australia
- Associate Member, Dietetic Association
- Member, Engineers Australia
- Member, Australian Pattern Recognition Society
- Member, Australian and New Zealand Society for Sarcopenia and Frailty Research
- Member, Sports Medicine Australia
- Member, Australian Physiotherapy Association
- Member, Sports Physiotherapy Australia
- Member, Australian College of Physiotherapists
- Member, Exercise and Sports Science Australia (ESSA)
- Member, The Health Services Research Association of Australia & New Zealand (HSRAANZ)
- Member, The Australasian Society for Behavioural Health and Medicine (ASBHM);
- Member, Australasian Epidemiological Association
- Member, Australian and New Zealand Alliance for Cardiovascular Trials
- Accredited Practising Dietitian, Dietitians Australia
- Member, Australian Breastfeeding Association
- Member, Australian Institute of Food Science and Technology
- Accredited Exercise Physiologist and Scientist, Exercise and sports Science Australia (ESSA)
- Member, Australia Physiological Society (AuPS)
- Member, Australian College of Midwives
- Member, Australian Nurses Federation
- Member, Cardiac Society of Australia and New Zealand (CSANZ)
- Member, Australian Health Promotion Association

Appendix D: External Stakeholder Engagements - International

Reviewer and Editorial Responsibilities

- A/Prof Paula Hooper: Associate Editor Health & Place (invited)
- A/Prof Paula Hooper: Paper review Health & Place
- Dr Claire Pulker: Paper review International Journal of Health Policy and Management
- Dr Claire Pulker: Peer-review of a journal article for Public Health Nutrition
- Dr Elizabeth Cook: Memberships Committee meeting, Open Access Publishing Association (OAPA).
- A/Prof Catherine Bondonno: Associate Editor, Food & Function (Royal Society of Chemistry)
- Prof David Suter: Editorial Board "Pattern Recognition"
- Prof Wai Lim: Editorial Board member of "Kidney International"
- Prof Wai Lim: Associate Editor of "Frontiers in Immunology"
- Prof Wai Lim: Associated Editor of "Transplant International"
- Prof Wai Lim: Associated Editor of "Nephrology" journals

Advisory Groups and Committees

- Dr Ros Sambell: World Public Health Nutrition Association Food Systems Working Group member
- Dr Ros Sambell: Research Advisor on the Public Health Advocacy Institute's Food and Nutrition Expert Panel
- Prof Josh Lewis: Co-chair Future Global Leaders Committee, International Federation of Musculoskeletal **Research Societies**

Oral Presentations

- Prof Josh Lewis: Plenary Symposium Presenter: World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases, vascular-bone nexus, evidence form epidemiology and randomised controlled trials. London.
- Prof Josh Lewis: Workshop Masterclass Presenter: Abdominal Aortic Calcification: Clinical importance April 4th. Singapore.
- Prof Josh Lewis: Invited training workshop on abdominal aortic calcification (AAC) plenary presenter: Abdominal Aortic Calcification: Clinical importance. Marsielle, France.
- Prof Josh Lewis: Invited training workshop on abdominal aortic calcification (AAC) keynote presenter: Abdominal Aortic Calcification: Automated assessment of abdominal aortic calcification for cardiovascular outcomes. Marseille, France.
- Dr Jack Dalla Via: Dalla Via J, Gebre AK, Smith C, Gilani Z, Suter D, Sharif N, Szulc P, Schousboe JT, Kiel DP, Zhu K, Leslie WD, Prince RL, Lewis JR, Sim M. Machine-learning assessed abdominal aortic calcification is associated with long-term fall and fracture risk in community-dwelling older Australian women. European Calcified Tissue Society (ECTS) Congress, Marseille, France.
- Dr Marc Sim: Abdominal aortic calcification assessed in DXA-derived images using machine learning predicts increased injurious falls risk in older adults: the Manitoba Bone Mineral Density Registry (Other Specify) 2024 European Calcified Tissue Society Congress.
- Dr Benjamin Parmenter Dr Abadi Gebre: (Session chairs) Thematic Session Nutrition / Lifestyle (Other Specify) European Association for Predictive, Preventive & Personalized Medicine (EPMA) World Congress satellite meeting.
- Dr Benjamin Parmenter: Dietary flavonoid intake and risk of ischemic stroke and its subtypes: a cohort study, European Association for Predictive, Preventive & Personalized Medicine (EPMA) World Congress - satellite meeting.
- Abadi Gebre: Getting to the heart of healthy ageing; understanding cardiovascular causes of falls and fractures, European Association for Predictive, Preventive & Personalized Medicine (EPMA) World Congress - satellite meeting.
- Simone Radavelli-Bagatini: Eating-related strategies to alleviate stress and improve stress-related conditions, European Association for Predictive, Preventive and Personalised Medicine (EPMA) World Congress 2024.
- Frith Klug: Utility of the WA Food Atlas for local government public health planning and policy development, IFEH World Congress, Perth.
- Dr Lauren Blekkenhorst: Cruciferous vegetable effects on cardiometabolic health measures in non-diabetic adults with mildly elevated blood pressure (Other Specify) European Association for Predictive, Preventive & Personalized Medicine (EPMA) World Congress - satellite meeting.
- Dr Claire Pulker: Mapping the Australian food environment for public health planning: A cross-sectional audit of Perth, IFEH World Congress, Perth

- Prof Josh Lewis: Invited Symposium presenter: Centre for Health Innovation Research Institute "Abdominal aortic calcification and healthy ageing: a message from the heart".
- Prof Josh Lewis: Food for thought invited Symposium presenter: Royal Perth Hospital Medical Research Foundation "Abdominal aortic calcification and healthy ageing: a message from the heart".
- Dr Claire Pulker: Health-related front-of-pack labelling of supermarket own brand foods, World Public Health Nutrition Congress, London, UK.
- Dr Claire Pulker: Mossenson S, Pulker CE, Giglia R, Pollard C. Unmonitored, unsightly and unsafe: Insights from an audit of food donations in Australia World Congress on Environmental Health, Perth.
- Anna Gannett: Student and parent preferences for active school transport interventions, Environmental Design Research Association Conference, Portland, USA.
- Dr Ros Sambell: Invitation to present : Food Systems Webinar WPHNA : Review of abstracts for conference
- Dr Ros Sambell: Andrew, L., Wallace, R., and Sambell, R. (2024). Evidence-based resources to enhance the practice learning experience of nursing students with disability. Nurse Education Conference 27-30 Oct, Singapore.
- Sharonna Mossenson: Unmonitored and unsuitable: An audit of food donations to an Australian food bank, IFEH World Congress, Perth.
- Dr Clare Whitton: Healthier options on children's menus in Western Australia: demand and acceptability. World Public Health Nutrition Congress, London, UK.
- Dr Zulqarnain Gilani: Keynote lecture at the D3 Spring School organized by the Nutrition Machine Learning School of Leibniz University, Hannover.
- Prof Josh Lewis: AI and musculoskeletal health discussion at the American Society for Bone and Mineral Research conference
- Dr Benjamin Parmenter: International conference on polyphenols and Health.
- Dr Claire Pulker: Invited chair for session: Evidence-informed policy for food retail environments, World Public Health Nutrition Congress, London.

Education Material

• Joelie Manzdufas: Presented a guest lecture (pre-recorded) to students of the University of Otago third level unit HUNT341: Nutrition and Behaviour Change Communication to introduce the protocol for investigating health topics on TikTok, as a basis for an assessment piece.

Editorial and Reviewer responsibilities

- Dr Elizabeth Cook: Review completed for Evaluation Journal of Australasia.
- Dr Elizabeth Cook: Journal of Teaching and Learning for Graduate Employability Special Issue Launch Introduced the Special Issue at the launch as the Chief Editor of the Journal could not attend.
- Dr Roslyn Giglia: Giglia, R. Reviewer Western Australian Early-Career Child Health Researcher (ECCHR) Fellowships Bright Spark Foundation WA
- Prof Gina Trapp: Invited NHMRC Idea Grants Peer Reviewer

Professional Memberships

- Member, International Society for Behavioural Nutrition and Physical Activity
- Member, American Association of Geographers
- Registered Nutritionist (Food), Association for Nutrition UK
- Member, Nutrition Society UK
- Member. World Public Health Nutrition Association
- Member, TABLE/Food and Climate Research Network
- Member, International Federation of Musculoskeletal Research Societies
- Member, American Heart Association, Council on Epidemiology and Prevention (EPI) and Council on Lifestyle and Cardiometabolic Health
- Member, American Society for Bone and Mineral Research
- Member, American Nutrition Society
- Member, Federation of Oceanic Nutrition Societies (FONS)
- Member, Medical Image Computing and Computer Assisted Intervention (MICCAI) Society
- Life member, Pakistan Engineering Council (Member of Washington Accord)
- Member, American College of Sports Medicine (ACSM)
- Member, The Society for Implementation Research Collaboration (SIRC)
- Member, International Society for Nutritional Psychiatry Research (ISNPR)
- Member, International Network for Child and Family Centred Care

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