



**AUT BRAIN HEALTH
RESEARCH INSTITUTE**

**ANNUAL
REPORT
2025**

Working together to
optimise brain
health across the
lifespan

KEY SUCCESSES IN 2025

- Successful transition from the Traumatic Brain Injury Network (TBIN) to the Brain Health Research Institute (BHRI)
- Continued growth in our international membership to ~450 members from locations including the US, Canada, UK, Africa, Australia and Europe
- Launch of the AUT Cognitive Neuroscience Lab
- Launch of the Women's Health and Neuroscience (WHN) Programme, in partnership with the global healthcare technology company, Abbott
- 57 peer reviewed articles published in academic journals in 2025. Many of these were in collaboration with international collaborators and students
- Supervision of 19 PhD, 7 Masters and 3 Honours students
- Professor Alice Theadom and the Brain Injury Screening Tool Development Group received the HRC Beaven Medal in recognition of excellence in research translation (pictured below - left)
- Professor Patria Hume was appointed an Officer of Merit in the 2025 King's Birthday Honours for her outstanding services to sports science and injury prevention (pictured below - right)



OVERVIEW OF THE BHRI

Our History

The Traumatic Brain Injury Network (TBIN) was originally established to revolutionise how we prevent, identify and treat traumatic brain injuries (TBIs), with the aim of working towards better health and wellbeing for people affected by TBI. Before the TBIN was established, lots of different researchers were working in isolation, evidence was not meeting stakeholder need and there were large gaps between evidence about how to manage TBI and what we do in practice.

The Traumatic Brain Injury Network was officially recognised as a research institute in 2025, resulting in the change of name to the Brain Health Research Institute (BHRI). The transition to a Research Institute acknowledges our growth and achievements over the years and will enable us to achieve even more going forwards.



The BHRI

The BHRI provides a central hub to facilitate researchers to work in partnership with stakeholders and the community to address the research questions that matter.

Our Vision

Optimised brain health across the lifespan

Our Mission

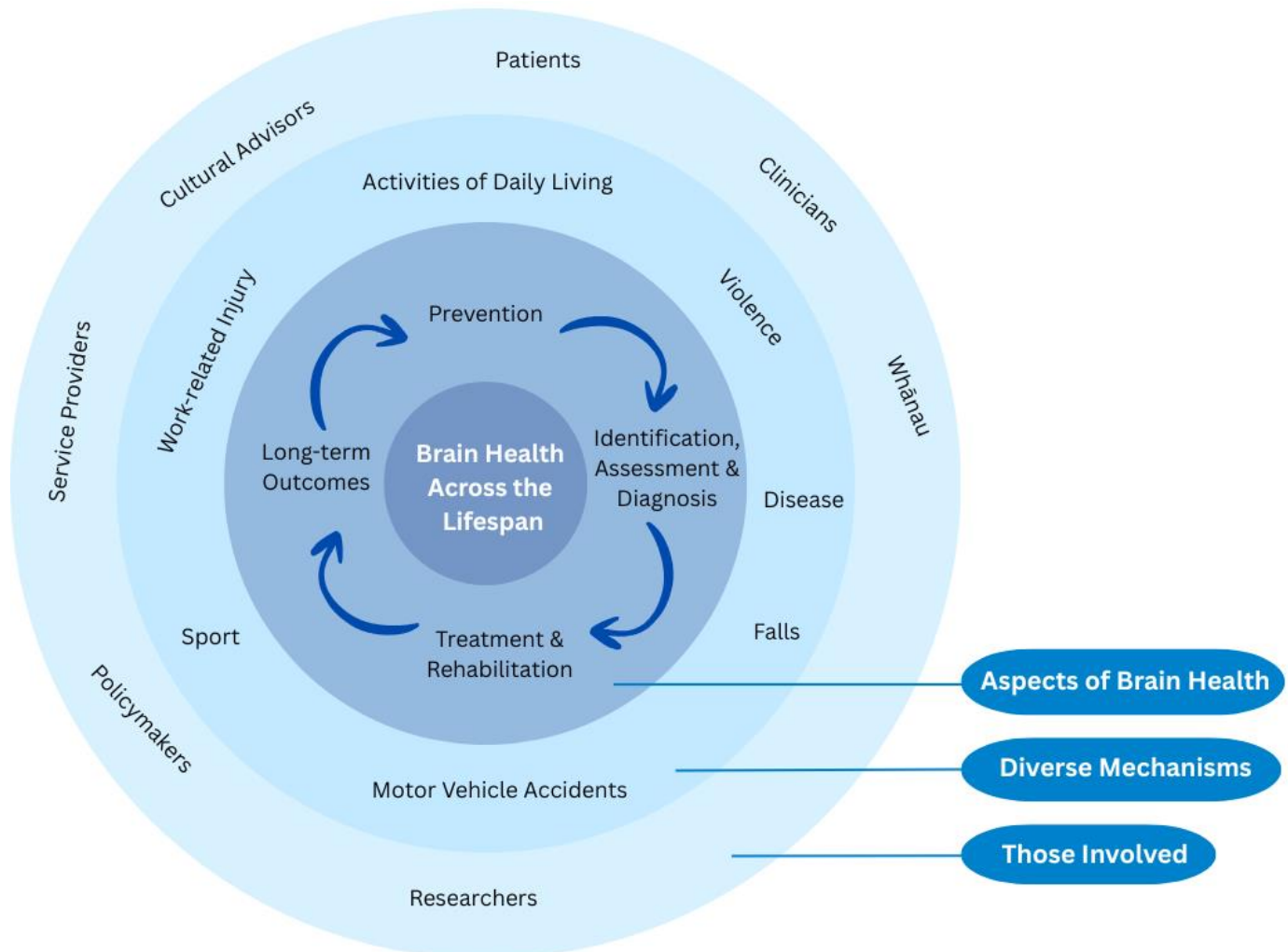
To improve brain health from childhood to older age, in response to brain injury and disease through collaborative research and connection with community

Goals of the Brain Health Research Institute

- Identify gaps in international knowledge of brain health
- Prioritise research that matters to patients, their whānau and the community
- Connect those affected by brain health conditions such as traumatic brain injury, their whānau, researchers, clinicians, service providers and policymakers to conduct and stay connected with the latest research in NZ and across the globe
- Encourage new students and researchers and grow capacity in the brain health field
- Stimulate new ideas and new ways of 'doing'
- Establish collaborative projects to test new innovations and provide evidence of what works to support consistent, high quality brain health care across NZ and internationally
- Facilitate translation of research findings into everyday life to make a difference to those affected by brain injury and other conditions affecting the health of the brain

Comprehensive Coverage of the field of Brain Health

The work of the BHRI encompasses the full spectrum of brain health across the lifespan. This includes injuries arising from falls, assaults, impacts with objects, and vehicle accidents, as well as disease and broader factors that shape lifelong brain wellbeing. Our research covers both the general population and vulnerable or underserved groups, including victims of domestic violence, people in prison, older adults at increased risk of falls, children and adolescents, and sports athletes. In addition to understanding the causes of poor brain health, we also focus on research aimed at improving and promoting brain health across all stages of life.

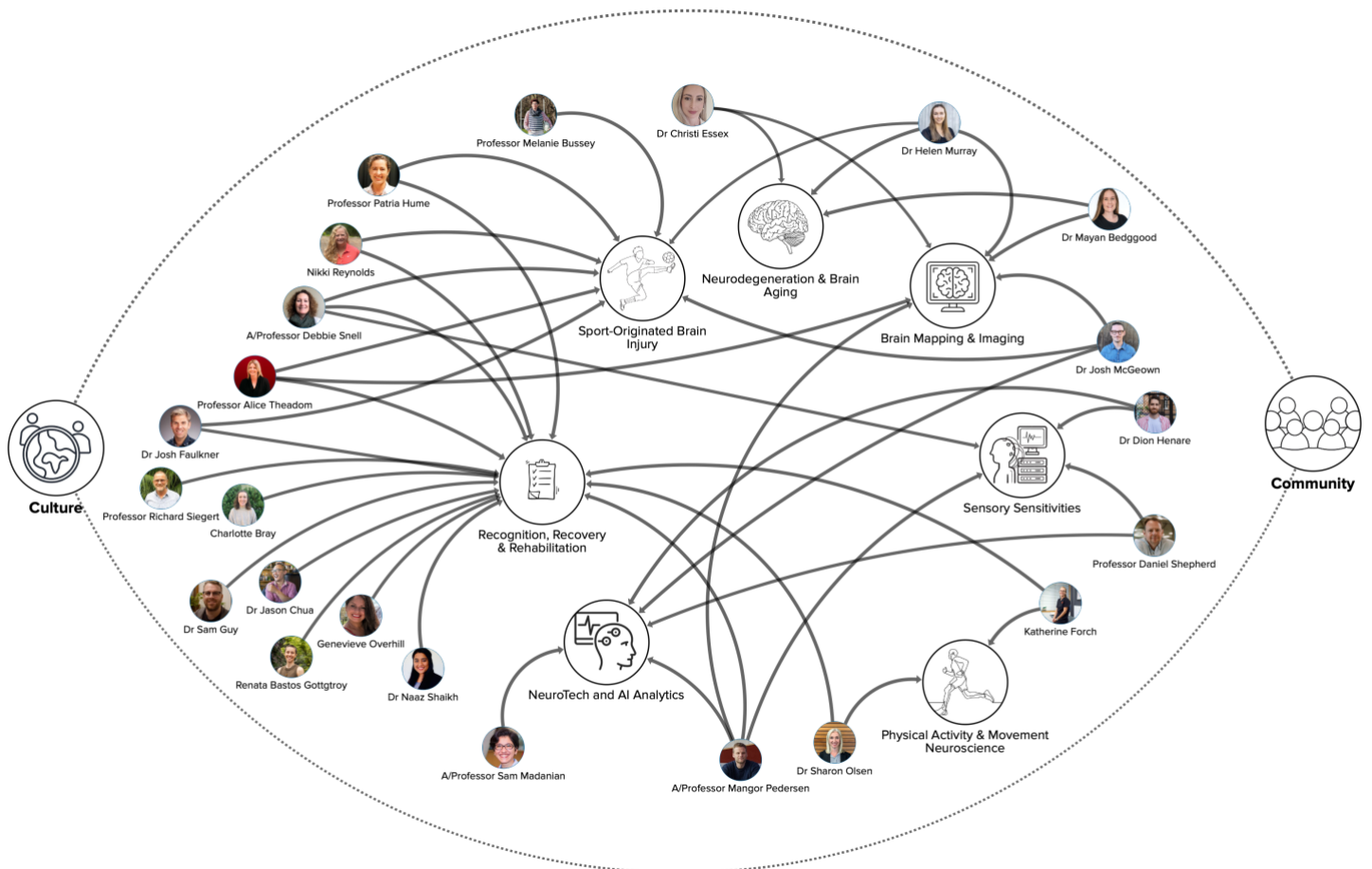


Our Research Streams

The BHRI currently has seven active research streams, as below:



Our core team of researchers choose to work together from across different NZ universities in the area of brain health. We believe that by working together we can achieve more than by competing against each other. The diagram below illustrates the interconnected structure of the BHRI.

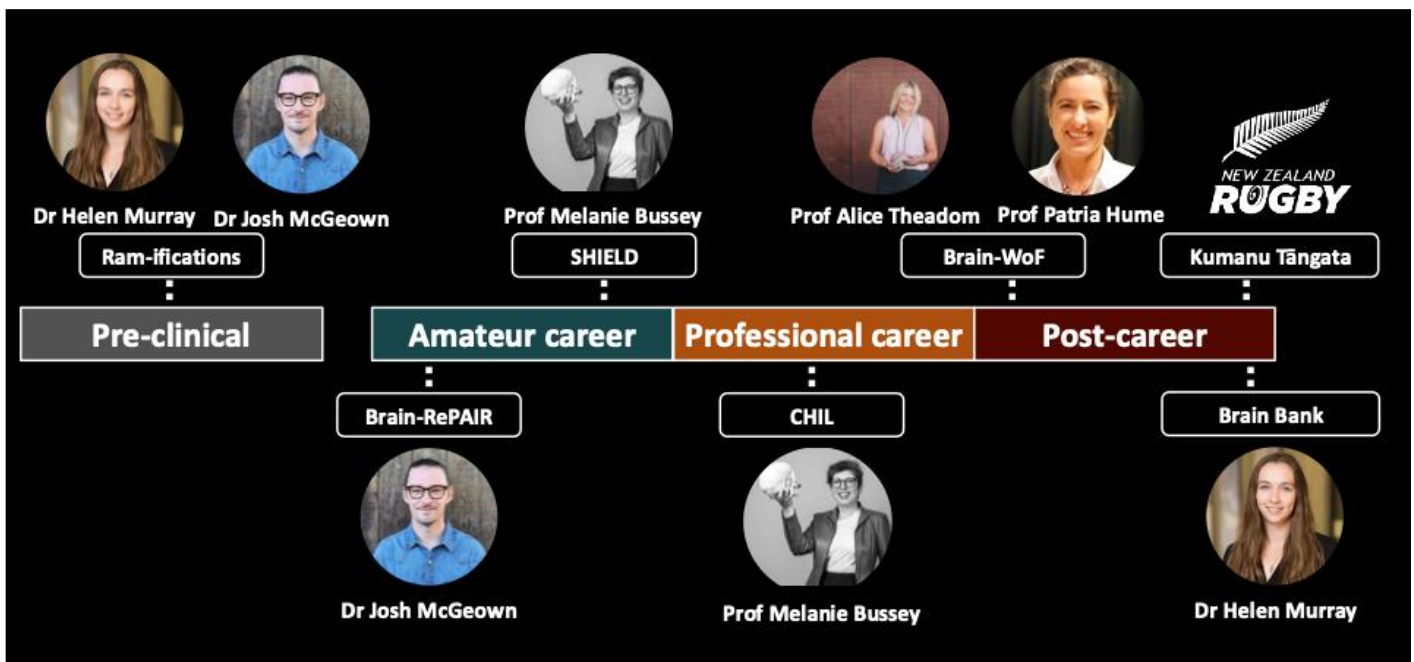


A LIFESPAN APPROACH

At the BHRI, we are proud to support a wide range of brain health research across our team. Our projects are either led by BHRI researchers or involve BHRI members as associate investigators, covering many aspects of brain health.

As a key example of how by working together we can generate insights beyond specific studies, we outline below some of our work in the area of brain health in sport. Our work includes pre-clinical animal models of repeated head injury in rams; studies on the impact of rugby on adolescent brain health; interventions aimed at reducing head impact exposure through enhanced neck function; analyses of cumulative head impact load; development of a “brain warrant of fitness” framework to assess prevalence of long term problems, risk stratification, and prevention; investigations into post-mortem neurodegeneration associated with repeated head impacts; and retrospective population analyses to better understand the overall scale of the problem.

As shown in this figure our work spans all stages of an individual’s playing career, from pre-clinical work, studying people over their lives and through to post-mortem studies after death. This unique approach allows us to learn from each other and test out discoveries in one phase of life to another quickly, helping us to show how injury and illness affects the brain over a lifetime. Below are examples of the types of studies BHRI leads or contributes to across this continuum.



The Core BHRI Team

There are no line management roles in the BHRI except for Research Fellows and Research Assistants employed to work on specific projects that are managed by the lead researcher of that project(s). The BHRI team consists of experienced and early career academics from a range of interprofessional backgrounds who have come together from across Aotearoa New Zealand to drive change in the field of brain health.



Professor Alice Theadom

Recognition, recovery and rehabilitation



Dr Josh Faulkner

Recognition, recovery and rehabilitation



Professor Patria Hume

Sport-originated brain injury



Professor Deborah Snell

Recognition, recovery and rehabilitation



Professor Richard Siegert

Recognition, recovery and rehabilitation



A/Professor Mangor Pedersen

NeuroTech and AI Analytics



Dr Helen Murray

Neurodegeneration and brain aging



Professor Daniel Shepherd

Sensory sensitivities



Dr Dion Henare

Sensory sensitivities





Dr Josh McGeown
Brain mapping and imaging



Dr Sharon Olsen
Physical activity and movement
neuroscience



Professor Melanie Bussey
Sport-originated brain injury



Dr Naaz Shaikh
Recognition, recovery and rehabilitation



Dr Jason Chua
Recognition, recovery and rehabilitation



A/Professor Sam Madanian
NeuroTech and AI Analytics



Katherine Forch
Physical activity and movement
neuroscience & Recognition, recovery and
rehabilitation



Dr Christi Essex
Brain mapping and imaging &
Neurodegeneration and brain aging



Dr Mayan Bedgood
Brain mapping and imaging &
Neurodegeneration and brain aging



Dr Sam Guy
Recognition, Rehabilitation, Recovery



Our Research Staff

Research Officers

- Maggie Sandleback
- Christi Essex
- Jessica Earnshaw
- Jessica Doughty
- Nicole Hulka
- Emma Duffy
- Evana Main

Research Assistants

- Lowry Hurl-Hodges
- Leesa Irving
- Cassandra McGregor
- Charlotte Bray
- Genevieve Overhill

International Visitors

- **Lea Varanne Monteriro**

Joined us for 5 months as part of her engineering internship from Montpellier University in France. Lea focused on developing an impact testing device and equestrian vest testing protocols.



- **Jesse Abdenour**

An Associate Professor in the School of Journalism and Communication at the University of Oregon joined us in 2025 as part of a Fulbright Scholarship to develop a documentary film to improve education/awareness around concussion



Our Postgraduate Students

The BHRI provides a range of opportunities for students to study with us. Our students are a key part of the team and are invited to all team and strategic meetings to facilitate learning, collaborative working and sharing of ideas. In 2025 we began setting up a postgraduate network to support postgraduate students at BHRI, including postgraduate meetings, a peer support group chat and plans for postgraduate-specific events.

Our PhD Students in 2025



Fredy Rojas

Use of speech recognition for mTBI detection and recovery



Renata Gottgroy

An applied data science approach to explore mild TBI health care pathways



Charlotte Bray

Measuring recovery following mild TBI



Nikki Reynolds

Validating blood biomarkers for acute mild TBI detection



Natalie Hardaker

The impact of female sex hormones on concussion



Sam Guy

Impacts of brain injury history on cognition in offenders



Christi Essex

Use of a quantitative susceptibility mapping in acute mild TBI



Mayan Bedggood

Use of quantitative MRI T2 relaxometry and physical activity in acute mild TBI



Mahmoud Abdallah Hassan Almomani

AI driven injury risk prediction and prevention in taekwondo



Katherine Forch

Physical exertion in the assessment of balance and visual function for concussion



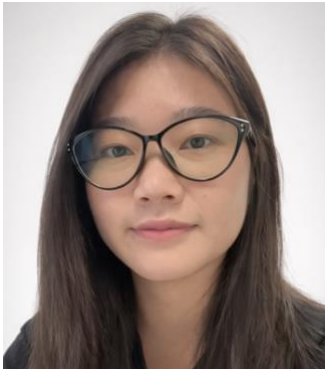
Qi Zhang

Effect of exercise on balance in mild TBI



Elise Callagher

Factors affecting cognitive recovery following mild TBI



Keke Li

Influence of fatigue on hamstring strength and injury risk in field-sport athletes



Jie Chen

Muscle-detailed model to understand low back or pelvic pain during pregnancy



Aks Kumar

Psychosocial support interventions for women recently diagnosed with ADHD



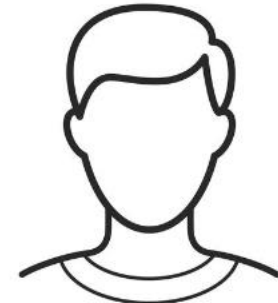
Handi Wang

Cognitive-physical cross-training in soccer players



Connor Silvester

Culturally responsive measurement of mental health in athletes



Melissa Cuthbertson

The “digital gym instructor” to educate gym users to prevent gym injuries



Ahsan Ilyas

Visuo-motor and cognitive-behaviour-based interventions in athletes post-ACL



Masters Students in 2025

Cassandra McGregor - Quantitative susceptibility mapping and T2 relaxometry of amygdala and thalamic nuclei in acute mild traumatic brain injury

Sarniya Moganathas - Walking patterns, hormonal cycles, and injury risks in female athletes' post-concussion

Daniel Lambert - Enhancing recovery after mTBI: Investigating aerobic and resistance exercise protocols

Rachel Skilling - Exploring the relationship between post-exertion oculomotor function and recovery after sports-related mild traumatic brain injury

Sarah Rodgers - Genetic factors and attention differences

Pete Cordes - Predictive validity of the Brain Injury Screening Tool in the Emergency Department

Nidhi Nariya - The role of flexibility training in injury prevention among athletes

Honours Students in 2025

Aria Courtney - Brain connectivity changes at the individual level following acute mild traumatic brain injury in athletes

Chevaunne Roffe - Mapping the aftermath: Investigating cortical thickness and white matter integrity after mild traumatic brain injury

Genevieve Overhill - Impact of mild TBI on intimate relationships



RESEARCH OUTPUTS - 2025

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CURRENT RESEARCH PROJECTS

BHRI Projects

Project	BHRI Lead	Funder
Wayfind-TBI – Implementation of a digital concussion assessment for the Emergency Department	Alice Theadom	Health Research Council
Primary care concussion pathway pilot project	Alice Theadom	Accident Compensation Corporation
Concussion awareness and helmet use in sailing	Alice Theadom	-
Testing safety of equestrian helmets	Alice Theadom	AUT Faculty of Health and Environmental Science
Use of Plantiga Insoles for tracking concussion recovery	Naaz Shaikh	
Scoping review of TBI History screening tools	Jason Chua	
Determining optimal sampling times for concussion blood biomarkers for prediction of recovery in females.	Patria Hume	Abbott
Signals in the blood: Developing personalized reference ranges and validating UCH-L1 and GFAP for acute mTBI detection and recovery prediction	Patria Hume	Abbott
Effects of confounding factors on mTBI blood biomarkers	Patria Hume	Abbott
Walking patterns, hormonal cycles, and injury risks in female athletes' post-concussion	Patria Hume	Abbott
Epidemiology and injury prevention activity review. 25 years of ACC rugby union, rugby league,	Patria Hume	

football, touch, netball and basketball injury MSC claims		
Assessing knowledge and attitudes towards concussion in amateur football players and coaches	Patria Hume	
Hormones, biomarkers and concussion in female athletes; A case series study	Patria Hume	Abbott
Acceptance and Commitment Therapy for Tinnitus after Mild Traumatic Brain Injury	Josh Faulkner	Eisdell Moore Centre
Cognitive Recovery after Mild Traumatic Brain Injury	Josh Faulkner	
Network Modelling of mTBI Recovery	Josh Faulkner	
ACTION-mTBI: ACT to improve recovery after Mild Traumatic Brain Injury	Josh Faulkner	Neurological Foundation
The Australian Epilepsy project	Mangor Pedersen	Medical Research Future Fund, Australia
Advanced MRI in Concussion Diagnosis and Prediction	Mangor Pedersen	HRC
Preliminary validation of a 10-item version of the Depression, Anxiety and Stress Scale in a mild traumatic brain injury sample.	Debbie Snell	HRC
Comparative predictive validity of a psychological risk screening tool in adults after mild traumatic brain injury	Debbie Snell	HRC
Cognition after mTBI	Debbie Snell	HRC
Networks between vestibular, noise sensitivity and anxiety symptom domains after mTBI	Debbie Snell	PNZ
TBI and spinal cord injury/ dual diagnosis	Debbie Snell	HRC
Psychological factors and variability in recovery and outcomes after mTBI	Debbie Snell	HRC
Neuropathology of CTE	Helen Murray	Neurological Foundation
Neurodegeneration in headbutting rams using IHC	Helen Murray	Philanthropy - Dame Rosie Horton Fellowship
Optimising aerobic exercise interventions after concussion	Sharon Olsen	
Exercise tolerance and post-exertion impairment testing after concussion	Sharon Olsen	
Smartphone accelerometry for improved diagnosis and management of gait and balance disorders	Sharon Olsen	Te Titoki Mataora - MedTech Research Translator

Cultural and Environmental Approaches to Brain Health: Social and Outdoor Physical Activity for Cognitive Health	Sharon Olsen	
Enhancing Neck Function to Reduce Head Acceleration Exposure and Concussion Risk in Female Adolescent Rugby Players: The Shield Study	Melanie Bussey	New Zealand Rugby Foundation
Instrumented Mouthguard Research	Melanie Bussey	
Brain health in collision sports: Linking early-life changes to long-term clinical outcomes using multimodal neuroimaging	Josh McGeown	Neurological Foundation, Hugh Green Foundation, New Zealand Rugby Foundation, HRC, Marsden
From Playground to Scanner: Experimental Effects of Physical Activity, Play, and Screen Time on Paediatric Brain Networks	Josh McGeown	HRC, Sport NZ
Development and psychometric property evaluation of a novel oculomotor assessment tool	Katherine Forch	HRC
Understanding the effect of exertion on balance, dual-tasking, and visual function in people with, and without, recent concussion – the SMART-RTP study	Katherine Forch	HRC

Projects Involving BHRI Collaborators

Project	BHRI Investigator	Funder	Collaborators
Use of the Brain Injury Screening Tool in Pediatric Inpatient Settings	Alice Theadom	Starship Foundation	Use of the Brain Injury Screening Tool in Pediatric Inpatient Settings
Aus mTBI: The Australian Mild TBI Initiative	Alice Theadom	MRFF	Led by Curtin University, Australia
Head, Health and Healing: Developing information and training resources to support women affected by violence-related brain injury	Alice Theadom	NHMRC	Led by Menzies School of Health Research, Australia
BRAINS-UK: Biomarkers for Rational Investigation for Neurological decision Support in TBI	Alice Theadom	NIHR	Led by University of Cambridge, UK
Systematic review of primary outcome measures in clinical trials in TBI	Alice Theadom		Led by International initiative for TBI Research (InTBIr), USA
Prevalence of TBI in the general population	Alice Theadom		Led by Trnava University, Slovakia
Development of Clinical Guidelines for Assessment and Management of mild TBI in Australia and NZ	Alice Theadom	MRFF	Led by Centre for Children's Health Research, Brisbane
Development of the BIST4Kids (Under 8s)	Alice Theadom		Led by University of Waikato

LEADING THE WAY IN BRAIN TECHNOLOGIES

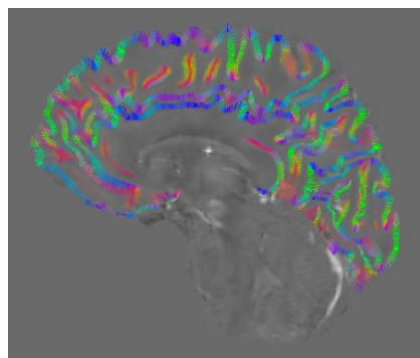
- In 2025 **Abbott's ARCHITECT® ci4100 blood analyser** was installed at AUT Millenium. This fast, non-invasive method of understanding changes taking place in the body following a brain injury may aid diagnosis and recovery prediction and ultimately improve outcomes following brain injury and is being used for a number of BHRI research studies.



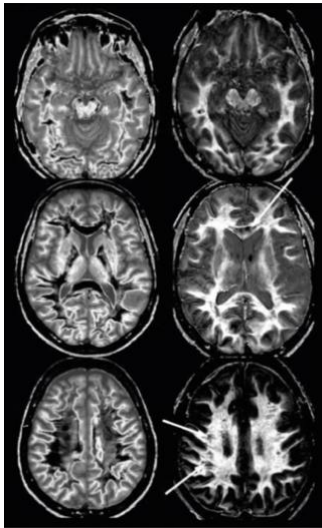
- **Portable electroencephalogram (EEG) devices** are used in AUT's Cognitive Neuroscience Lab that enable fast set-up and real-time app-based brain activity read-outs.



- **Advanced magnetic resonance imaging (MRI)** is being utilised by BHRI researchers at the Centre for Advanced MRI (CAMRI) to study brain health. For example, quantitative T2 relaxometry is being used to study potential brain inflammation post-concussion and quantitative susceptibility mapping (QSM) is utilised to investigate potential iron in the brain (QSM image pictured below on the right).



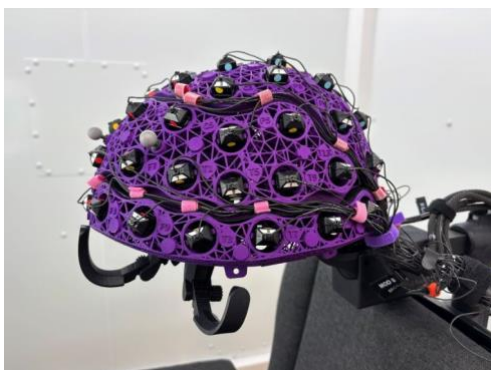
- **Ultra-high contrast MRI:** Recent findings from Mātai Medical Research Institute, including BHRI team member Dr Josh McGeown, using a new Ultra-High Contrast (UHC) MRI technique are a major leap forward in the ability to detect and understand the underlying changes to the brain after traumatic injury. This Mātai technique is now being implemented at leading hospitals around the world.



- **Instrumented mouthguards** are a central component of BHRI team member Professor Melanie Bussey's research at The University of Otago, where they enable the collection of detailed data on head acceleration events associated with suspected concussions.



- **OPM-MEG:** Plans are in place for AUT's Cognitive Neuroscience Lab to home New Zealand's first Optically Pumped Magnetometer (OPM) MEG scanner. This is an innovative, wearable brain imaging device that enables real-time, high-resolution mapping of brain activity.



- **Health AI in Mental Health and Neurodegenerative Disorders:** BHRI team member Associate Professor Sam Madanian has been researching AI and machine learning capabilities to analyse physiological data, specifically speech. Eventually, Sam's goal is for this tool to be used to screen for mental health conditions and detect more serious brain disorders such as dementia or Parkinson's disease in their early stages. Right now, the tech is being developed to assess the severity of a brain injury. Sam describes the tool as a decision support system that can promote telehealth services and integration into mainstream healthcare. It aims to assist general practitioners, particularly those without specialised training in areas such as mental health or neurodegenerative disorders, in screening and diagnostic processes.



INTEGRATION OF RESEARCH INTO TEACHING

The BHRI team are all primarily teaching staff and therefore the work of the BHRI is highly integrated into both undergraduate and postgraduate teaching across different universities. The work of the BHRI has significant clinical relevance and has been integrated throughout interdisciplinary programmes across the faculty. Students from our taught courses often decide to study with us based on our teaching. BHRI team members taught a wide range of papers in 2025, including:

Teaching at Auckland University of Technology:

- Brain and Behaviour
- Cognitive Psychology
- Postgraduate Selected Topics in Psychology
- Readings in Psychology
- Introductory Research Methods
- Biopsychology
- Health Psychology
- Special Topics in Psychology - Masters
- Research Design and Methods
- Managing Complexity in the Acute Care Environment
- Health Conditions in Physiotherapy
- Research Methods
- IT Project Management in Organisation
- Digital Transformation and Change Management
- Research Project
- Service Modelling
- Introduction to Psychology A
- Emotions and Human Nature
- Advanced Musculoskeletal Physiotherapy
- Sports and Exercise Physiotherapy
- Managing Complexity in the Community Environment
- Musculoskeletal Disorders: Diagnosis and Rehabilitation

Teaching at The University of Auckland:

- Anatomy and Physiology for Speech Language Therapy
- Analytical Anatomy and Visualisation
- Integrative Neuroscience: From Fetus to Adult
- Biomedical Science Capstone
- Advanced Physiotherapy Practice

Teaching at Victoria University of Wellington:

- Adult and Child Clinical Psychology: Advanced Intervention Skills
- Practicum / Clinical Psychology Practicum
- Clinical Adult Assessment and Intervention
- Neuropsychology and Clinical Neuroscience
- Clinical Applications of Psychology

Teaching at the University of Otago:

- Athlete Conditioning and Rehabilitation
- Biomechanics
- Neuromechanics in Athlete Injury

OTHER BHRI EVENTS AND ACTIVITIES

Launch of AUT's Cognitive Neuroscience Lab

The Cognitive Neuroscience Lab has re-opened on AUT's North campus, led by BHRI team members Associate Professor Mangor Pedersen, Professor Daniel Shepherd and Dr Dion Henare. This facility empowers researchers and students to explore the complexities of cognition, behaviour, and neurological health using technologies like EEG. The work done here has direct implications for improving lives, from better diagnosis and treatment of neurological conditions, to enhancing mental health support and rehabilitation.



Launch of the Women's Health and Neuroscience Programme

Professors Patria Hume and Alice Theadom led the launch of the Women's Health and Neuroscience Research Programme at AUT Millenium, in collaboration with SPRINZ and global healthcare technology company Abbott. This world-leading initiative tackles the historic neglect of research on female athletes, focusing initially on mild traumatic brain injury. Using Abbott's "blood detective" machine, researchers will analyse blood markers (e.g., relating to brain health, inflammation, vitamins, & hormones) to compare healthy and concussed athletes.



BHRI Attendance at Fieldays June 2025

Members of the BHRI team, including Prof. Alice Theadom and Dr Helen Murray, attended the annual Fieldays event at Mystery Creek in Hamilton this June. Fieldays is the Southern Hemisphere's largest agricultural event, attracting a diverse audience interested in innovations in farming and beyond. The BrainSpace exhibit within the Health Hub brought together researchers from across the country to share insights into brain health and research with the wider public.



Feature in the NZ Listener Article

In June we had an important feature in the NZ Listener Magazine on how ACC New Zealand handles concussions. This feature was about the experiences of people in Aotearoa New Zealand with concussions and how we can do better for them.



Faculty of Health and Environmental Sciences Research Roadshow

The Brain Health Research Institute proudly held an exhibition space at the 2025 FHES Research Roadshow at AUT where multiple members of the BHRI team showcased some of our exciting research looking at brain health.



Research Week at AUT

Brain Health Research Institute team members participated in the Research Week at AUT in September, including Professor Alice Theadom, who gave a presentation at the opening breakfast event. Each year, AUT's Research Week – Te Wiki Rangahau is a week of presentations, conversations and connections that brings together external research partners and collaborators, AUT staff and research students.



BHRI Public Forum Events

This year we held two online Public Forum events. In June, this event featured two speakers: Jesse Abdenour (Documentary impact: Using messages to change attitudes about sport concussions) and Sarah McKenzie (Picturing the invisible: Mens' experiences of living with concussion). For our second public forum event in November, we had four guest speakers: Stacey Mowbray (Shaping Support for Brain Health After Sport), Dr. Christi Essex (Women's Health and Neuroscience Project), Prof. Melanie Bussey: (Protecting the Brain in Collision Sport: Science, Sensors, and the Resilient Athlete) and Prof. Alice Theadom (Co-creating Resources to Support Women at risk of Brain Injury following Domestic Violence).

<https://www.youtube.com/watch?v=LPiLmGKq320&t=167s>



BHRI Strategic Planning Day 2025

In October we got together as a team at AUT's North Campus in Auckland to talk about our vision and goals for the BHRI going forward. This was a great time to collaborate in person, share ideas and discuss successes of BHRI as well as how we can tackle things differently going forward.



Implementation of the BIST into Primary Care Systems

The Brain Injury Screening Tool (BIST), whose development has been led by BHRI member Prof. Alice Theadom, has been implemented in the BPAC CareSuite, including integration into the *Indici* and *Medtech* primary systems. This step marks an important advancement in the utilisation of the BIST-3 by primary healthcare providers, enabling efficient access in their embedded clinic systems.



Brain Injury Screening Tool (BIST-3)

A guide for traumatic brain injury assessment

The Brain Injury Screening Tool (BIST-3) is a brief tool for use on initial presentation for suspected mild traumatic brain injury/concussion.

Its purpose is to help guide the clinical assessment by operationalising current international best practice guidelines.¹

The BIST was developed for health professionals working across primary and secondary health care.

The BIST facilitates clinical decision making through identification of people who are at risk of longer-term difficulties who may benefit from early specialist treatment.

This tool should be used in addition to clinical judgment and other assessments such as the Vestibular/Oculomotor Motor Screening (VOMS), King-Devick or the Romberg's test. Additional questioning to add to the clinical picture is encouraged.

The first 10 questions can be administered in any order to assist flow of the consultation. The symptom scale should be completed as presented.

The symptom scale and impact item can be repeated at follow up to monitor recovery over time.

Engagement with Auckland City Mission

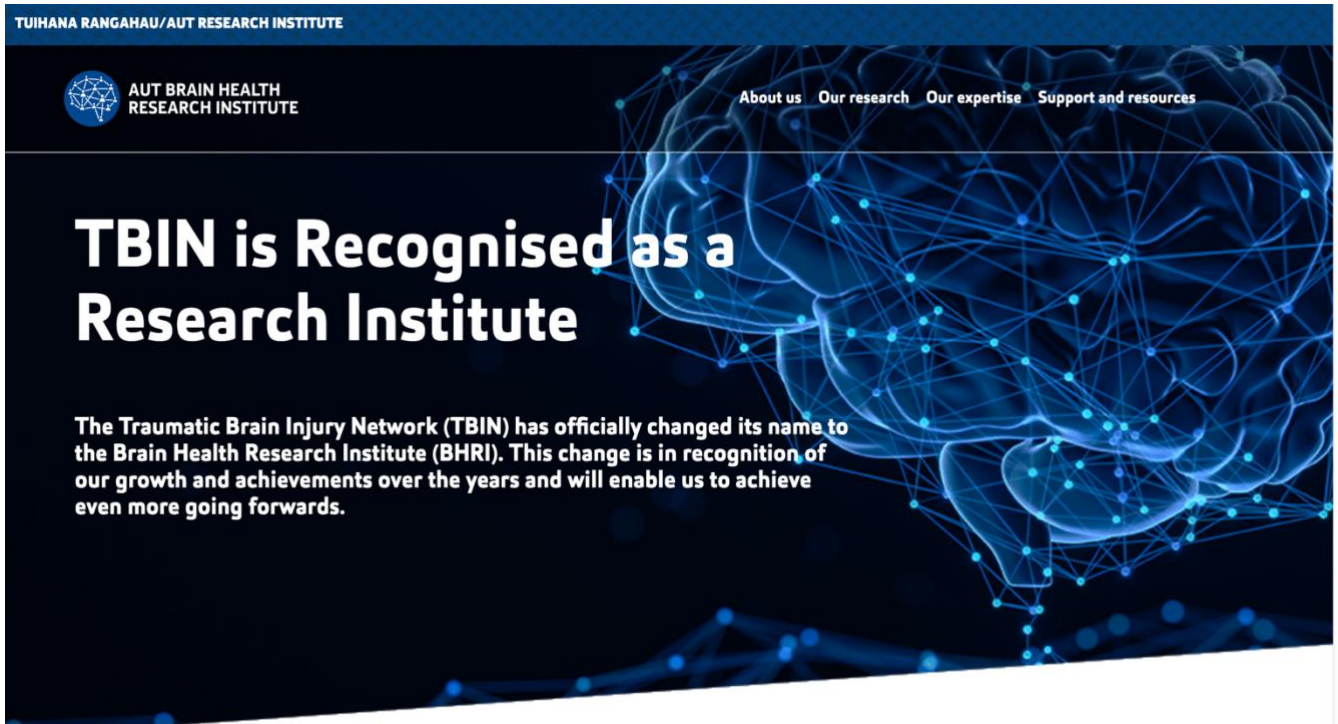
Members of the BHRI established a new collaboration with the Auckland City Mission and will be undertaking some collaborative research projects in 2026 to explore the experiences and needs of this population.



BHRI ONLINE ACTIVITY

BHRI Website

The central hub of the BHRI is its website: <https://bhri.aut.ac.nz/>. Its content is regularly updated with information provided by the team including lay research summaries and our public forums, access to latest education resources, media links to our research and upcoming events.



TUIHANA RANGAHAU/AUT RESEARCH INSTITUTE

AUT BRAIN HEALTH RESEARCH INSTITUTE

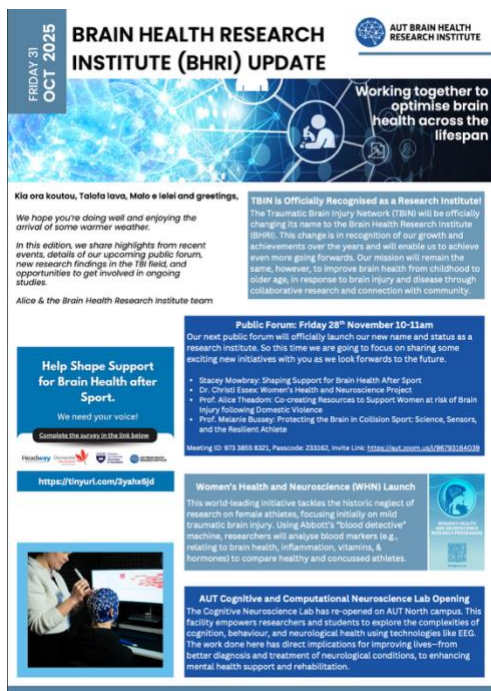
About us Our research Our expertise Support and resources

TBIN is Recognised as a Research Institute

The Traumatic Brain Injury Network (TBIN) has officially changed its name to the Brain Health Research Institute (BHRI). This change is in recognition of our growth and achievements over the years and will enable us to achieve even more going forwards.

Newsletters

The BHRI circulates an update to all members (including community, clinicians, stakeholders international members) every ~3 months. The updates are made available on our website so that they are openly accessible.



FRIDAY 31 OCT 2025

BRAIN HEALTH RESEARCH INSTITUTE (BHRI) UPDATE

Working together to optimise brain health across the lifespan

Kia ora koutou, Talata lava, Malo e lelei and greetings.

We hope you're doing well and enjoying the arrival of some warmer weather.

In this edition, we share highlights from recent events, details of our upcoming public forum, new research findings in the TB field, and opportunities to get involved in ongoing studies.

Alice & the Brain Health Research Institute team

TBIN is Officially Recognised as a Research Institute!

The Traumatic Brain Injury Network (TBIN) will be officially changing its name to the Brain Health Research Institute (BHRI). This change is in recognition of our growth and achievements over the years and will enable us to achieve even more going forwards. Our mission will remain the same, however, to improve brain health from childhood to older age, in response to brain injury and disease through collaborative research and connection with community.

Public Forum: Friday 28th November 10-11am

Our next public forum will officially launch our new name and status as a research institute. So this time we are going to focus on sharing some exciting new initiatives with you as we look forwards to the future.

- Stacey Mowbray: Shaping Support for Brain Health After Sport
- Dr. Christl Essex: Women's Health and Neuroscience Project
- Prof. Alice Theadom: Co-creating Resources to Support Women at Risk of Brain Injury Following Domestic Violence
- Prof. Measite Bussey: Protecting the Brain in Collision Sport: Science, Sensors, and the Resilient Athlete

Meeting ID: 973 3885 8331, Passcode: 233363, Invite Link: <https://bit.ly/38858331>

Help Shape Support for Brain Health after Sport.

We need your voice!

[Complete the survey in the link below](https://bit.ly/38858331)

<https://bit.ly/38858331>

Women's Health and Neuroscience (WHN) Launch

This world-leading initiative tackles the historic neglect of research on female athletes, focusing initially on mild traumatic brain injury. Using About's "Blood Detective" machine, researchers will analyse blood markers (e.g. relating to brain health, inflammation, vitamins, & hormones) to compare healthy and concussed athletes.

AUT Cognitive and Computational Neuroscience Lab Opening

The Cognitive Neuroscience Lab has re-opened on AUT North campus. This facility empowers researchers and students to explore the complexities of cognition, behaviour, and neurological health using technologies like EEG. The work done here has direct implications for improving lives—from better diagnosis and treatment of neurological conditions, to enhancing mental health support and rehabilitation.



HAVE YOU HAD A CONCUSSION? DO YOU WANT A RESEARCH-LEVEL BIOMARKER PANEL?

CONCUSSIONS CAN SEVERELY IMPACT STUDENTS' LEARNING, YET THERE APPEARS TO BE A LACK OF CONSISTENCY IN HOW CONCUSSION IS MANAGED IN NZ SCHOOLS.

Adolescents aged 13-18 have the highest concussion rates, but return-to-learn protocols are poorly understood. In partnership with schools, sport organisations, and healthcare providers, we have co-developed a concussion management framework and website to help support students in their return to learn post-concussion.

Check out the new website here: www.headsmartschools.ac.nz

Headsmarts Schools NZ Website Launch

Concussions can severely impact students' learning, yet there appears to be a lack of consistency in how concussion is managed in NZ schools. Adolescents aged 13-18 have the highest concussion rates, but return-to-learn protocols are poorly understood. In partnership with schools, sport organisations, and healthcare providers, we have co-developed a concussion management framework and website to help support students in their return to learn post-concussion.

Check out the new website here: www.headsmartschools.ac.nz

New Research: Neurodegenerative Diseases in Male Former First-Class New Zealand Rugby Players

A recent study published in the Sports Medicine journal by Arora and colleagues examined the risk of neurodegenerative disease associated with playing rugby. The researchers used hospital and death records from 1988 to 2023 to see how many developed neurodegenerative diseases (like Alzheimer's disease, Parkinson's disease, motor neuron disease, and other dementias). They included a large sample (>12,800) of males who were active in high-level rugby and compared them to the general population. The results showed a 22% increased risk of any neurodegenerative disease in the elite rugby players compared to the general population. There was also a 61% increased risk for Alzheimer's disease specifically.

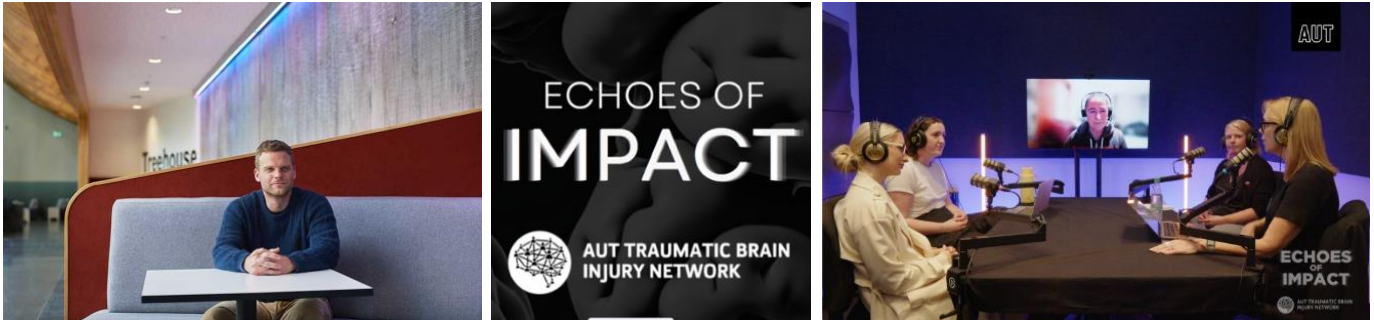
Read the full paper here: <https://doi.org/10.1007/s40279-025-0239-y>

New Research: Potential Biomarker of Brain Inflammation Following Concussion

A study led by Dr. Mayan Reddick, Associate Professor Mangor Pedersen and colleagues has identified signs of possible brain inflammation after concussion. Using a specialised MRI technique called quantitative T2 relaxometry, the team compared people recently concussed with healthy controls and found higher T2 signals in the concussion group. As this method is sensitive to changes in tissue water content, the results may reflect inflammatory processes following injury. These findings suggest even mild brain injuries may trigger subtle inflammation, and that quantitative T2 relaxometry could provide an objective way to monitor recovery. Read the full paper here: <https://doi.org/10.1007/s10096-025-03036-9>

Echoes of Impact: Podcast

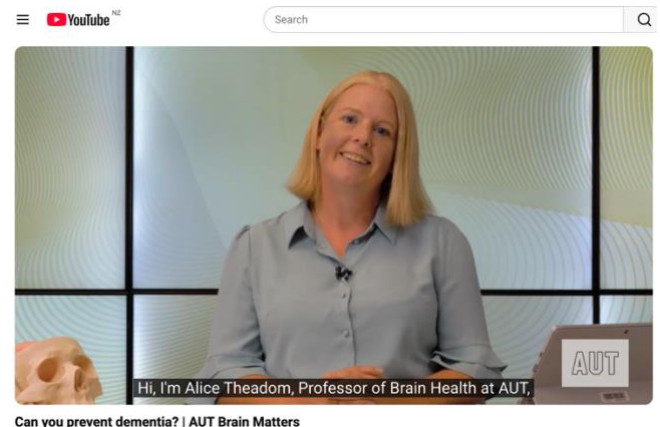
BHRI team member Associate Professor Mangor Pedersen led the creation of a new podcast aimed at demystifying concussions and providing greater insights into the risks and benefits of playing contact sports. *Echoes of Impact* guests included legendary All Blacks Frank Bunce and Conrad Smith with independent journalist Alison Mau joining the team as the podcast writer and host. The three-episode podcast intends to generate a healthy and balanced debate on the risks and benefits of sports from experts and people with lived experience.



AUT Brain Matters Video

BHRI team member Professor Alice Theadom presented information on the human brain in an educational video hosted on AUT's YouTube channel. This included question-and-answer format information about the mechanics and symptoms of concussions, helmet use for brain protection, sleeping after head injuries, preventing dementia, strengthening neural pathways, neuroplasticity and memory.

<https://www.youtube.com/watch?v=zzd2uVJ1qME>



Media Publicity

Our work and team have received media attention in 2025 including via radio, television, newspaper and social media. This includes:

- [Headbutting rams key to research](#)
- [Release of new Australia and NZ Guidelines for mild traumatic brain injury](#)
- [Shane christie death: top neuroscientist calls for longer professional rugby concussion stand-down period](#)
- [AUT and Abbott launch pioneering female athlete health research initiative](#)
- [Research into improving female athletes concussion rates](#)
- [Brain injury breakthrough: New Zealand scientists discover telltale marker after concussion](#)
- [Brains of rugby players shed new light on CTE disease](#)



Thank you for being part of the Brain Health Research Institute Community in 2025



Brain Health Research Institute Team Planning Day October 2025

