School of Health & Human Sciences
2019 Annual Research Report
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Research in Review

Dean & Head of School, Acting Director of Research

Professor Iain Graham

From the very beginning of the School of Health and Human Sciences in 2006 the intention has been to commit to the development of research capacity and capability building both for individuals and for the School. The rationale for having this intent is to maintain and improve health and well-being within an emerging knowledge-based, patient-focused health and well-being service within the Australian hybrid context. Drawing upon the research activities of the former four separate schools that went into the formation of the School of Health and Human Sciences, the intent was to create an academic workforce fundamental to this endeavour.

In this report we draw your attention to not only the contemporary picture within the School but to some of the antecedents.

With my appointment, in 2007, I was given the charge not only of facilitating this capacity building but to also fundamentally review the academic portfolio and introduce new practitioner based health courses. Planning a programme of evolution which would see the synthesis of practice development through both educational and research focused endeavours.

The challenges are ongoing particularly when the funding systems and landscape for research is heavily weighted towards the medical model of health. Also health and well-being research is not a unidisciplinary concern, it requires a multidisciplinary approach, however many health practitioners are playing catch up within this capability so the School has done much to support its academic staff to gain doctoral qualifications. We are now also in partnership with industry colleagues, putting in research career pathways which will help generate Human Resources in research. We received praise for our partnership model at a recent Nursing and Midwifery Research Symposium. The funding of honours students is part of this success. It is important to build this capacity and resource because if we don’t then we will not address the needs of contemporary health, well-being and social care.

Over the years we have sought to create research support activities, sometimes externally funded, sometimes from funds the School has scraped together. Only once did we receive University funding for a postdoctoral fellow. Over time, with the introduction of the ERA we have seen our output in research metrics increase and improve. We have aligned the School support to research to key objectives and a person centred philosophy. This spans both clinical health research and practitioner educational research. This report identifies these goals once again. This alignment has supported the increase in higher degree research students, as well as honours students and focused professional development for staff.

Part of the capacity building agenda features the strong role of mentorship by the School’s professoriate which has been a growing provision. Alongside of this we have established conjoint research positions in some disciplines, many failed but currently, as featured in this report, two are working well, with the desire to evolve the model somewhat in order champion agendas which integrate research and practice development or modernise processes so practice-based research and research practice can flourish! One mustn’t forget the role of the University Clinic in this. Much is beginning to occur but more can and must be done if we are to create a primary care based university...hospital... to support these modernisation processes going forward.

The School has worked hard under the leadership of several research directors over the years to harness a strategic approach to research. This is driven by shifting funding possibilities resulting in our pursuing more and more industry funded research grants. We have been successful in this. However it means that the alignment of the School’s research agenda with partners such as Headspace, the Local Health Districts, the Primary Health Network and various NGOs such as CHESS, or private providers such as Crowley matter. A blending of research strategies is required. Due to these partnerships clearer research themes are emerging, which is always work in progress and requires constant attention, and acknowledgement needs to be made that for many of these industries research has not been seen as core business. However the quest to meet various accreditation outcomes along with the desire to improve access to services and quality assurance along with cost containment means research in its various guises is now required. Having a robust partnership with an academic institution is now imperative.

Over the years we have achieved many successful partnerships with industry partners resulting in various research outputs which have contributed to the ERA and/or professional development of clinical and academic staff. One mustn’t underestimate the
energy required to sustain such relationships so our judicial use of adjunct appointments has been one of our tactics in moving this forward. This has led to academic staff being allowed access to research projects and to contribute to research programmes in the adjunct’s respective organisations. This helps to widen interest and influence the wider research and development agenda to hopefully secure more resources. The other benefits are associated with the staff at large starting to think about research and their own professional development.

There is contention as to whether the health professions should have university education and aim to build themselves as academic as well as vocational disciplines. In many countries of the world only medicine is based in the university sector. There are attitudinal issues too where health administration and managers including some professional discipline specific managers don’t value research or research activities. It receives only low priority and in a world of competing funding needs research often comes low down in the pecking order.

To help counteract this the School has worked hard to build a can do attitude, work on the alignment of agendas and utilise its resources sensitively and for maximum effect. So as we go forward I ask you to consider a brave new world. Drawing upon our successes and perhaps replicating them and learning from our failures, we move forward by grasping the nettle of engagement in industry based and funded research with gusto; and aligning all our activities with such. Embrace the National and state wide research objectives so as to participate in high quality, multidisciplinary research that addresses real problems in health and well-being. And social care.

We review our skill mix within the School to ensure we have statisticians, a health economist as well as a social scientist along with academic clinicians. Perhaps our staff recruitment plan or staff development plan should focus on growing these resources. We have tried in the past but been blocked. Within this thinking we continue the review of the academic workload model to maximise the allocation to research so that it is focused on these partnerships and endeavours, enhancing our own version of the academic clinical career structure.

The School has grown significantly over the last ten years in its research identity. The ERA and other metrics tell us that. We have refreshed the profile of the academic staff so that research is not alien to them or something that they shouldn’t be part of. Staff are invited to speak at various conferences and seminars and some sit on working groups and parties giving voice to health care development and change. We are maturing as a research organisation but we are not there yet and have much development to do! We will have different growing pains as we go forward but look at what we have achieved over the years, often it has been a surprise to many both in the institution and beyond it.

I wish you all well going forward.

Professor Iain W. Graham, PHD, RN
Retiring Dean and Head of School.
School of Health & Human Sciences
Research Propositions

Our research aims to develop knowledge and thereby improve the quality of learning through content improvements and improve the quality of healthcare for our population.

**We aim to:**
- undertake research that has impact on individuals and communities
- work in partnership with key organisations which hold similar views and values
- support scholarship amongst our staff so that they feel nourished and excited by their role within the School/University
- never to lose sight of ourselves as an academy of knowledge in the world of healthcare and well-being.

**Excellence in Research for Australia (ERA) 2018**

The School has again ranked well above and above world standard in the Excellence in Research for Australia (ERA) 2018 national report:

**ERA-5 – well above world standard**
- Complementary and Alternative Medicine (ERA-5 in 2015)
- Nursing (ERA-5 in 2015)

**ERA-4 – above world standard**
- Medical and Health Sciences (11)
- Human Movement and Sports Science (1106)
25 Years of Research at SCU: Drug Testing in Sport

Prof Robert Weatherby

Adjunct Professor Robert Weatherby has been a pioneer of drug testing in sport. This is his story.

At the 1988 Seoul Olympic Games Australian pentathlete Alex Watson was found to have a caffeine concentration of 14.2 mg/mL in his urine. At the time, caffeine in a presence of greater than 12 mg/mL was prohibited by the International Olympic Committee (IOC). Alex Watson was sanctioned with disqualification from the Games and further bans from competition from 2 years to life. Considerable controversy arose about how many cups of coffee would lead to being guilty of a doping offence and whether caffeine was really performance enhancing or “ergogenic”. After Professor Weatherby came to Health Sciences in 1989, with this still raging controversy, it became an interest in the Exercise Science group and Professor Weatherby’s interest in Drugs in Sport began.

The start was to set up some analytical capacity to complement the exercise and performance testing area to attempt to determine the dose and urinary concentrations with respect to performance aspects of caffeine. Research infrastructure at SCU was limited at this time. After starting the caffeine research, Professor Weatherby commenced collaboration with the Australian Sports Drug Testing Laboratory (ASDTL) then at Pymble, NSW, and the issue of anabolic steroids became of interest.

Whilst much anecdotal evidence existed that anabolic androgenic steroids were performance enhancing, no controlled studies had ever been published that showed that anabolic steroids improved performance. A study replicating protocols for the use of testosterone enanthate promoted as a male contraceptive and claiming to be free of adverse effects was begun; involving administration of the steroid for 12 weeks followed by a further 12-week period when no steroid was administered concurrent with resistance training. As the study commenced there was publication of another study which showed that after 10 weeks of testosterone enanthate administration together with strength training, there were significant performance gains
and increased body mass. Therefore, our study was destined to be the second controlled study ever published to show performance gains from administration of anabolic steroids. However, given that there was follow up after administration ceased, that the dose was roughly one third of the first study and that testing occurred after 6, 12 and post administration at 18 and 24 weeks there were significant differences.

The results showed significant performance gains and increased body mass after 6 weeks and further, but less dramatic, increases after 12 weeks. There were some baseline health changes as well including increased blood pressure, mild acne and increased muscle tightness. What surprised was that by 12 weeks following cessation of steroid administration, the muscular strength gains and body mass were lost at a rate of reverse of the gain but sprint performance remained at its post 12-week steroid level.

Further steroid work followed with the time frame for administration reduced to 6 weeks and testing also taking place after 3 weeks. For 6 weeks, gains of 15% occurred for bench press and 14% for a short 10 second cycle sprint. However most of these gains occurred in the first 3 weeks which had not been expected and was not in line with the way athletes were abusing steroids. Even the adverse effects appeared after 2-3 weeks. The method then used to test for testosterone use by WADA (World Anti-Doing Agency) was the T/E ratio. 44% of participants in one trial failed to be detected being administered testosterone. Improved testing processes are now in place.

Further research involved assessing the psychological and immunological aspects of anabolic steroid use and studying performance by females during the menstrual cycle, as steroid concentrations vary during the cycle. Improved performance was found to occur when estrogen and progesterone concentrations were low. Putative steroidal like herbal supplements were also tested showing nil performance increases. Anabolic steroid research by Professor Weatherby featured in a Mentorn Channel 4 television documentary which was screened in the U.K. the evening before the opening of the Athens Olympic Games in 2004. The following weeks it was screened worldwide.

The original interest in caffeine, a central nervous system stimulant continued with another stimulant, pseudoephedrine (PSE) which after the removal of caffeine from the WADA prohibited list led to its removal also. Professor Weatherby felt that pseudoephedrine should not be removed and research was undertaken to determine ergogenic effects of PSE and the urinary concentrations found after performance enhancing effects. Results showed that 45 minutes after dosing, knee extension improved by 8.5% and peak power in a 30 second cycle test improved by 2.8%. There were no improvements in strength but lung function increased together with heart rate. A small increase in performance vs health risks to consider. Using Professor Weatherby’s data, Pseudoephedrine has been reinstated to the prohibited list with a urinary concentration cut-off of 150 microg/mL whilst caffeine has been added to the monitoring list to detect patterns of misuse in sport.

With the need for extra staff at ASDTL during the 2000 Sydney Olympic Games, Professor Weatherby assisted in managing the work flow through the drug testing laboratories and the chain of custody of the samples in the laboratory. The most recent work with ASDTL in 2018 has focused on attempting to find a testing method for the peptide hormone Nafarelin.

Professor Weatherby acknowledges his colleagues, PhD students, Honours students and staff at ASDTL who have made this work possible and concludes “when drugs are misused or abused, the consequences must be known so that strategies can be developed to prevent harm of which drug testing is only one part of the answer”.

IMPACT ON INDIVIDUALS AND COMMUNITIES
Innovation to Optimise Australian Performance at the Tokyo Olympic Games

Dr Chris Stevens

Dr Christopher Stevens has led a series of research projects with the goal to optimise the performance of Australian athletes at the Tokyo Olympic Games. These Olympic games are set to be the hottest on record, which presents a major challenge to the athletes, but also a unique opportunity to create an advantage with thorough preparation. As such, Dr Stevens has teamed up with the Australian Institute of Sport and Athletics Australia to develop evidence-based strategies for Australian athletes to obtain an advantage when competing in hot conditions.

A series of research integrated hot-weather training camps were conducted during 2018-2019 by Dr Stevens and Dr Meg Ross at the Australian Institute of Sport, with Australia’s elite race-walking athletes as the participants. In the first camp, Dr Stevens investigated the effects of practical pre-cooling strategies on the athletes, where the aim was to cool the athletes before and during an exercise test with novel strategies, to delay heat-induced fatigue. This technique was based on Dr Stevens’ laboratory research on cooling athletes to optimise endurance performance. A randomised-crossover design was used to assess a range of cooling strategies on the athletes during a standardised training session. Great success was achieved with crushed ice ingestion and cold towel application, and some of the athletes went on to utilise these strategies at the 2018 Gold Coast Commonwealth Games. A detailed case study of the core temperatures experienced during the Commonwealth Games event also took place, which required the athletes to ingest small thermometers before the event to further understand the impact of hot weather within these competitions, and to continue to develop targeted cooling strategies. The core body temperature of the athletes got as high as 41.2°C during the event!

The second camp was an opportunity to pilot a new range of sports nutrition products that Dr Stevens’ has developed, in collaboration with the sports nutrition company GU Energy Labs, that aim to make athletes feel cooler upon ingestion. The new products are based on Dr Stevens’ laboratory research which demonstrates that the addition of cooling compounds to drinks creates a cooling and refreshing feeling upon ingestion that can improve endurance performance in the heat. A product aims to be developed for athletes competing in the Tokyo Olympics before it is released commercially. The second camp was also an opportunity to investigate an innovative heat-acclimation strategy involving hot-water immersion conducted after training. The athletes were randomly assigned to a group in which the athletes completed hot-water immersion immediately after their training sessions, or a control group which avoided hot-water immersion. It was determined that this strategy was beneficial when training in cool conditions, but not when the athletes were already training in the heat, and therefore it will be used accordingly within the programs of the athletes preparing for the Tokyo Olympic Games.

Overall, the training camps were a great success, simultaneously allowing a valuable training opportunity for the athletes, while also accumulating scientific evidence to inform training practices moving forward.
A Research Career to Inform the Ages

Adjunct Associate Professor John Stevens

‘My academic career has generally focussed on developing multidiscipline health-carers to tackle the big issues facing the community: the ageing population and the growth in chronic disease which challenge the sustainability of our health system and environment. Equity-based systems, constantly improving professional practice and technological innovations are key to managing this. Providing people with leadership, taking them along with you and finding opportunities to develop evidenced-based, critical thinking and developing networks are key to not only initiating much needed change in health care but just as importantly, sustaining it.’

Reflecting on a 30 year academic career, Adjunct Associate Professor John Stevens’ research journey has indeed impacted on individuals and entire communities. Publishing over 60 research articles and 2 books, his philosophy is threaded through much of his research and the collaborations he has formed to undertake it.

John’s research career kicked off with his PhD entitled ‘A Career with Older People: Do Nurses Care For it. The idea for the thesis was stimulated by the way his nursing and medical colleagues were reluctant to work with older people even though this cohort made up over 75% of all nursing interactions (excluding paediatrics and midwifery). It was obvious that older people were not being treated well either by society nor, the nursing profession, on the whole. The thesis showed that nursing curriculum was actually turning people off working with not only old people but people with mental illness as well. His findings indicated that nursing education and clinical exposures of students act to construct the view that: 1) high status work is associated with ‘high-tech’ work as is found in surgical wards and related settings; while 2) low status work is associated with environments where medical technology has not infiltrated and basic care dominates, as is found in aged care and mental health. This was ironic because it was in these environments that nurses would have the highest professional autonomy at the time. John’s work in the area led, what was then the Royal College of Nursing, engaging John to undertake a national information and debate tour to address issues of ageism in nursing practice. This research contributed to an overhaul of nursing curricula in Australia to address these issues.

John repeated the same longitudinal study 20 years later. He found that despite significant government campaigns, changes to the nursing curriculum and social movements against the marginalisation of people due to age and mental illness for example, students graduated with ‘exactly’ the same reluctance to work with marginalised people as their counterparts did 20 years previously.

Not satisfied with looking purely at the theory of caring for marginalised groups, especially older people, John produced a number of projects that looked at ways of improving the ageing experience. This included writing a book in 2005, ‘Is it Dementia or Just Old Age’, that sold widely and was used to manage the hysteria that surrounded dementia at the time. John also produced a number of original research projects leading to publication in the area of dementia including, a randomised controlled trial (RCT) showing that regular supported physical activity slows the progression of dementia. 2. Another RTC, with Masters Graduate and long time staff member Annette Morgan, found the herb Bacopa Moniera can improve memory performance of older people with likely early stage dementia. And notably, taking people with dementia through a course in performing ‘stand-up comedy’ was found to have therapeutic effects that improve memory, socialisation, behaviour and overall well-being.

This novel approach to dementia management led to national coverage and featured on broadcasts such as Insiders on the SBS. Reporter George Negus also produced a widely broadcast video on the program called, ‘One Wish’. (http://www.youtube.com/watch?v=dlw2UY6pe0c&feature=youtu.be) and inclusion in the Federal Government’s Standards in Aged Care Committee.
Over time the ageing-well thread evolved into developing an international movement in wellness, rather than the ongoing reliance on the dominant health care approach of treating illness. John has co-founded and grown the Australasian Society of Lifestyle Medicine (ASLM www.lifestylemedicine.org.au) with Adjunct Professor Garry Egger to become the leading multidisciplinary peak body for illness prevention and chronic disease management. Starting in Lismore with just 4 members it now boast approximately 1000 Australian members and at least 15 other societies have emerged in recent years around the world with an estimated combined membership of 15,000+.

Since moving on from his substantive senior executive role in the School, John has continued researching with both SCU and ASLM over the past 7 years. He now translates the science to initiate innovative models of care. Producing evidence and publications, John’s ongoing work shows that health care providers, especially doctors and nurses in primary care, have a significant role to play in illness prevention and chronic disease management. John has also produced significant original research showing how Lifestyle Medicine can be incorporated into practice, for example, through group consultations health care providers can improve outcomes for patients and efficiencies for the health centres.

His research has shown that this new model of care is especially effective in working with Aboriginal communities and with other marginalised groups.

Lifestyle Medicine has also demonstrated effectiveness in managing chronic disease like type 2 diabetes, and overweight and obesity. John believes the best way to reduce human and financial burden of illness is to help as many people arrive at an older age as well as possible. This is the future of health.

John’s work on dementia management through stand-up comedy performances

Group consultations as effective models of care for marginalised communities
Ahead of the Game

Dr Christian Swann

Dr Christian Swann (Senior Lecturer in Psychology) works in close partnership with Movember and University of Wollongong to promote mental health through community sport. Movember is the leading men’s health charity worldwide, and has a core focus on mental health and suicide prevention. Since joining SCU in February 2018, Christian has consulted to Movember as a Subject Matter Expert on the “Ahead of the Game” program: an evidence-based intervention which promotes mental health literacy, wellbeing, help-seeking, and resilience through community sports clubs. Ahead of the Game is delivered to adolescent males, parents, and coaches, and has reached over 1000 participants in Australia alone.

In 2014, Movember awarded $2 million in funding to University of Wollongong to develop Ahead of the Game. Christian’s Subject Matter Expert role builds on his involvement in the development, leadership, and evaluation of Ahead of the Game at University of Wollongong, where he was employed from 2015 – 2018 to work on the program full-time. The Subject Matter Expert role is to maintain the scientific integrity and efficacy of the program while it is adapted and scaled up internationally, as well as disseminating the results through scientific journal publications to continue building the program’s underpinning evidence-base.

A large-scale matched controlled trial was completed in New South Wales – with the highly successful results due to be published in 2020. As a result of that trial, Movember now aims to disseminate Ahead of the Game across Australia, New Zealand, the UK, Ireland and Canada over the next five years. In doing so, this partnership will enable Ahead of the Game to promote mental health to tens of thousands of adolescents through their sports clubs – a setting which they consider to be more engaging than others such as school.
Work is currently underway in Canada and the UK, and Christian is actively involved in the adaptation and delivery of Ahead of the Game in both countries. For example, he travelled to Canada twice in 2018/2019, the UK in November 2019, and he regularly attends meetings at Movember’s headquarters in Melbourne.

In each country, additional local-level partners are also engaged to facilitate the delivery of the program. For example, Movember has partnered with the Greater Toronto Hockey League in Canada who have 40,000 adolescent players (http://gthlcanada.com/article/facing-off-with-mental-fitness). The ‘ Ahead of the Game’ content was adapted for Canadian audiences in late 2018 and early 2019, and piloting took place throughout 2019. Full-scale delivery is due to take place in 2020.

In the UK, Movember has partnered with the Harlequins – one of the most successful professional rugby union clubs in Europe – with high-profile ambassadors (e.g., current professional players) already on board.

Ahead of the Game will also be the official mental fitness program of the Rugby League World Cup in 2021 as a core part of their Mental Fitness Charter which was announced by Prince Harry. This means that Ahead of the Game will be rolled out across every host city in the UK to more than 8000 community members, coaches, and volunteers.

Since 2016, this partnership has led to 14 peer-reviewed publications in leading scientific journals, as well as 8 presentations at international conferences, including the North American Society for the Psychology of Sport and Physical Activity annual conference, the International Society of Behavioural Nutrition and Physical Activity annual conference, and the 5th International Conference on Youth Mental Health.

This partnership has also led to a Special Issue on mental health in sport in the Journal of Applied Sport Psychology which Christian is a guest editor for, due to be published in 2020. Christian was also invited to contribute to an International Consensus Statement on psychosocial and policy-related approaches to mental health awareness programmes in sport which was published in a leading open access journal (BMJ Open Sport and Exercise Medicine) in 2019.

This work between SCU, Movember, and University of Wollongong, was a finalist in the 2019 SCU Impact Awards for Research Partnership.
Headspace

Professor John Hurley & Dr Basia Radlinska

The School of Health and Human Sciences (SHHS) has maintained an ongoing partnership with Headspace centres across our university footprint for the past 9 years. Although originally this partnership was intended to provide access for staff to maintain clinical skills, opportunities for research and grant applications have evolved over time. Given the multi-faceted mechanisms that trigger mental health challenges in youth, these research activities have included a breadth of projects including the therapeutic influence of weighted blankets, online gaming and family-based interventions.

This year, two joint research projects were developed and undertaken with Headspace. The first of these examined how feedback from members of the public on art created by young people impacted their wellbeing. The second project aimed to see if therapeutic influence would be experienced by the young person when their parent received the therapeutic intervention. In both studies we were able to establish therapeutic gain through these non-pharmaceutical approaches to youth mental wellbeing.

Looking forward, the SHHS is in partnership with Headspace to commence discussions in early 2020 to build a multi-site research collaborative to undertake projects of shared interest. Centres at Tweed, Lismore, Grafton, Coffs Harbour and Port Macquarie, as well as Headspace National, have all expressed interest. Dr Basia Radlinska from the SHHS is also a practicing Clinical Psychologist at Coffs Harbour Headspace and involved in the research collaboration. This compliments her collaborative research work with the Rural Clinical School and UNSW Medicine. Joint grant applications are being considered for reducing youth suicide and increasing access to evidence-based psychotherapeutic interventions in our region. Additionally options for future clinical placements are being explored.

Given the high rates of youth self-harm and suicide in our region, co-existing with extraordinarily high rates youth unemployment and disengagement, such partnerships are vital to build resources for youth across our university footprint.
CSIRO ON Prime

Dr Rosemary Craig

Dr Rosemary Craig is the lead general practitioner at the Southern Cross University Health Clinic and has been an Adjunct Professional Fellow of the School of Health and Human Sciences since 2015. Her research is in biomolecular physics and nanoengineering where she is developing novel therapeutics which aim to modify the formation of the extracellular matrix in the connective tissues of the body.

The connective tissues make up a large part of the structure of a living body. The extracellular matrix defines the properties of each type of connective tissue more than their cells, whether it is skin, bone, tendons or ligaments. Last century, the molecules of the extracellular matrix were assumed to be in a disordered gel. However, as the ability to see the nanoscale improves, the importance of the position of these molecules becomes more obvious. Living cells produce the molecules of the extracellular matrix which then flow into position in order to lock together in a specific formation. These molecules have physical properties. They are diamagnetic, piezoelectric and/or electrostatically charged. These properties can be harnessed to control the position of the molecules during repair of the matrix.

Dr Craig ran a pilot study in skin repair. The dermis of the skin contains the extracellular matrix and is the slowest part of the skin to repair, since the molecular formation needs to be strong enough to resist re-opening. This study aimed to imitate the electromagnetic conditions of an intact matrix in order to modify skin repair. In this study, an external skin dressing device was tested on one half of a wound that had been closed under tension, after a skin cancer had been cut out. The other half of the wound was used as the control, with identical conditions except for the electromagnetic stimulation. This type of wound would normally need to be stitched closed for about 10-14 days before the skin repair was strong enough for the stitches to be removed and the wound remain closed. As the research progressed, the stitches were removed earlier and earlier. Finally, it was shown that using the skin dressing device the stitches could be removed after just 24 hours without the wounds re-opening.

This research enabled the development of the innovative skin dressing product with the potential to be commercialised. In 2019, the Rapid Repair team, from the Southern Cross University was accepted onto the CSIRO ON Prime program to develop this innovation for the marketplace. The team, consisting of Dr Rosemary Craig, Dr Joanne Bradbury, Dr Nedeljka Rosic and Mr Gerard Criss, travelled to the Brisbane Hub to take part in a set of workshops and presentations with 7 other teams with various scientific innovations. The program helped the teams to identify their potential markets and strategically plan their research around their market’s regulations. The program was competitive and the Rapid Repair team won their hub, receiving a financial reward to fund an animal study to test the product for the veterinary market and a subsidised trip for the team to Melbourne for the CSIRO ON Tribe conference. ON Tribe is the alumni and mentors from the previous ON programs, an inspiring group, willing to share experiences and advice. The Rapid Repair team was encouraged by the administrators of the ON program to apply for ON Accelerate.

ON Accelerate is a full-time commercialisation program, also run by the CSIRO, which aims to support the business to manufacture their innovative product and establish its use in the commercial world. The federal funding for the ON program is due to expire in July 2020 and 57 teams of innovators around Australia applied for the final program from which 20 were accepted onto the Bootcamp in November 2019. The Bootcamp was an intensive evaluation process where the top 11 teams were selected. The Rapid Repair team will be commencing the program in February 2020.
RESEARCH PARTNERSHIPS

Northern NSW Local Health District - Conjoint Nursing Research Academic

Dr Christina Aggar & Dr Nicci Whiteing

The Conjoint Nursing Research Academic role, appointed in 2018, provides academic leadership in clinical nursing research capacity and capability across the Northern NSW Local Health District and the School of Health and Human Sciences, Southern Cross University. With a focus on the translation and implementation of research outcomes into nursing practice, the appointment specifically works with nursing and midwifery clinicians and academics to:

- Maximise nursing contribution to clinical and workforce initiatives, including the increased use of evidence based practice in patient care;
- Promote research endeavours, including increasing engagement of clinical staff in research activities and the publication of research findings in nursing;
- Develop academic and clinical partnerships that contribute to the academic research development of the profession.

In 2019, the collaboration with Northern NSW Local Health District extended to include a Conjoint Nursing Research Academic to support two large multi-dimensional state and local projects:

- A New South Wales Hospital Acquired Pressure Injury (HAPI) Prevention and Management toolkit: a mixed method study.

This multicentre study with 13 participating Local Health Districts and one Health Network aims to evaluate the implementation of a HAPI toolkit, to support preventative interventions and management strategies.

- Preparation of student nurses and midwives for registration and health care delivery: a prospective cohort study

This study follows the 2019 cohort of Bachelor of Midwifery and Bachelor of Nursing students that undertake work integrated learning activities within the Northern NSW Local Health District (LHD). The study aims to understand and support the quality of clinical placements for students and their supervisors. An evaluation of new graduate’s experiences, level of preparedness and intention to remain in the profession at graduation, completion of transition program and two years post registration will be undertaken.

The success of the collaborative partnership has led to:

- Honours Scholarship program, supporting 8 scholarships worth $20,000 each over the next 4 years.
- Collaborative research projects on delirium, falls management, gestational diabetes, pain and patient experience
- Increase in HDR enrolments
- Increase in grant applications

The Conjoint Nursing Research Academic roles continue to support the opportunity for clinicians and academics to work collaboratively on research projects and curriculum development, particularly in the areas of informatics, health promotion, preventative health and behaviour change. Collaborative research education and activities include the provision of research support services and skill acquisition programs to further develop clinician skills required to initiate, facilitate and engage in research projects. Projected work includes an increased emphasis on integrated care and research opportunities to support

- interprofessional research
- clinical research outside of the acute care system
- innovative opportunities to engage in high fidelity simulation learning and research opportunities

Dr Christina Aggar and Dr Nicci Whiteing
Community Connections that Support Research

**Associate Professor Jacqui Yoxall**

Engagement with community is a key strength of the School of Health and Human Sciences (SHHS). Research opportunities are often realised as connections through placements, project work and other shared activities evolve.

**CHESS-Connect** is a regional human services organisation which provides employment, NDIS and wellness services across a footprint from the Clarence Valley, south to the Hastings Valley and Taree regions. Over several years, our collaboration with CHESS-Connect, through Paul Kelly, CEO, and his staff, has grown from student clinical placements (speech pathology and occupational therapy), to student health promotion project work and HDR research. Through joint funding from CHESS and SCU, we are now offering a PhD scholarship which provides an opportunity to complete a PhD and conduct research in mental health and physical activity. Specifically, this PhD will examine the delivery of a physical activity program to users of CHESS-Connect employment support services, and physical/mental health benefits of physical activity such as improvements in mood, self-esteem, motivation and wellbeing. The PhD will focus on identifying the most effective ways to assist these individuals in becoming more active.

Connections with the education sector has also provided opportunities for innovative, role-emerging clinical placements, often interdisciplinary in nature. Through collaboration with the University Department of Rural Health, Broken Hill Far West Region, interdisciplinary health promotion and primary health care immersion placements have been conducted for three years. Disciplines included Occupational Therapy, Speech Pathology, Osteopathy, Podiatry and Nursing. These placements are primarily based in primary and secondary schools and involved health promotion and primary health care projects with provision of on-the-ground supervision and support from Dr Tara Walker, Director of the Academic Centre, and inter-professional tele-supervision provided by SCU academic staff. Connection with local communities, ensuring that projects are developed to meet needs identified by community members has been an invaluable for students and the School more broadly. Enhancement of cultural responsivity and development of students’ ‘soft skills’ (interpersonal communication, problem solving, conflict resolution, teamwork, flexibility etc.), are key outcomes to these experiences.

In geographically closer education settings, allied health students are working collaboratively in clinical placement and health promotion projects with local early, primary and secondary education providers, including Goonellabah Public School, Wandarrah Preschool, and Okeedokee Learning Centre. Several pedagogical research projects evaluating various aspects of these inter-professional placements, both in regard to student experience and contribution to communities are underway.

Another example of research involving close collaboration with a broad range of early intervention and education service providers - Gr8 Start, KU Children’s services, Social Futures, Shaping Outcomes and early childhood education and care centres across NNSW and SE QLD - is the PhD research program, ‘Early Detections, Better Outcomes’ conducted by Occupational Therapy Course Coordinator Beth Mozolica-Staunton.

In the aged care sector, collaborations with Feros Care have led to a variety of projects including the introduction of the Speak Out! This voice therapy program for individuals with Parkinson’s Disorder is being delivered by Speech Pathology students and evaluated Dr Kirstine Shrubsole and Bridgette...
RESEARCH PARTNERSHIPS

Hill. The ongoing connection with the Diocesan Aged & Community Care (Lismore) is providing opportunities for discipline specific and inter-professional student placements, health promotion projects and research collaboration and HDR opportunities.

A partnership between Gold Coast University Hospital and SHHS has led to a conjoint appointment in mental health nursing which aims to develop mental health workforce capacity. This has led to a significant increase in the number of SCU students accepted for the Mental Health Graduate program. The conjoint appointment of Dr Christina Aggar, by the Northern New South Wales Local Health District and SCU has led to numerous HDR scholarships, enrolments, publications and funding.

Through collaboration with St Vincent’s Hospital High Risk Foot Service & Garvan Institute of Medical Research in Sydney, Dr Paul Butterworth is conducting a series of N-of-1 Trials to explore footwear and insole design parameters to prevent occurrence and recurrence of neuropathic plantar forefoot ulcers in patients with diabetes.

In Exercise Science, a collaboration with RISE Coffs Harbour Incorporated is yielding opportunities for education and research opportunities. RISE is a community football academy who offer free scholarships to all their players. It is open to all socio-economic, cultural, and ethnic groups, with specific strategies in place to assist those from disadvantaged or vulnerable backgrounds. All players become involved in community service with organisations such as Wesley Mission, Meals on Wheels, and Surf Lifesaving Australia and the players’ parents also commit to volunteering in the outreach program. The model couples football training with exposure to various life-skills, educational and outdoor leisure activities. Dr Kyle Bennett is working with RISE to study the model underpinning this work and the outcomes associated.

Community connections, collaborations and partnerships are a fundamental aspects of all teaching, research, clinical education and research activities across SHHS. We continue to grow these connections to ensure that we contribute positively to the communities within which we work and live.
Director of Higher Research Degrees Training

Professor John Hurley

Looking back on 2019, a picture has emerged of steady growth in the number of enrolled Higher Degrees Research (HDR) students for the School of Health and Human Sciences (SHHS). Many of these are through our industry links with health services. This situates much of our HDR activity into making important contributions to the health of our own communities, as well as to both national and indeed international settings. Nursing has figured prominently in these activities along with Allied Health.

Higher Degrees Research in the SHHS was restructured to align with the professoriate in 2019. I would like to commence by thanking the previous HDR Director, Dr Joanne Bradbury, for her commitment and work in developing and growing this important part of the School’s research. The restructuring has culminated with myself as director, Dr Zachary Crowley-McHattan as deputy and with part-time administrative support from Kegan Barlow and Dr Ann Mulder.

As of November 2019 the SHHS had 65 HDR students enrolled. While the bulk of these students were domestic we have a small but hopefully growing number of international students with both Professor Shi Zhou and Dr Christian Swann forging dual badged opportunities in China and the United Kingdom respectively. Equally so, Professor Myers and Professor Grace continue to develop strong international links in the field of chiropractic.

The past year also saw what I understand to be the largest number of RTP scholarships (11) ever offered to the school, with Psychology making a significant contribution to that achievement. I thank the Dean of the Graduate School, Professor Christidis for supporting these offers. The year also saw Sport and Exercise Science growing their HDR presence in the School.

There was also growth in the number of staff who were qualified and prepared to undertake HDR supervision roles with numbers now close to 50 staff. This is in part due to the support of Group Leads as well as the fast track programme which enables staff to become eligible for the supervision register. Many of these supervising teams are multi-disciplinary. While I thank all supervisors for their work, I especially note the contribution of Professor Sandra Grace who has taken on a large number of high quality HDR students over the past year. I also encourage any staff member who may be interested in being eligible for the register to contact myself or healthhdr@scu.edu.au.

Reflecting on this year of significant growth, I’d also like to take this opportunity to thank the remarkably supportive Graduate School administration staff for the support they offer to our school’s HDR activities.

Looking forward to 2020 and beyond there are exciting possibilities, including plans to hold the next HDR Symposium at the Coffs Harbour campus for the first time. While increasing enrolments is an admirable outcome, the achievement of completions is a significantly more important. We have five current HDR students either submitted or on the verge of doing so. I encourage all supervisors to focus on achieving completions moving forward into 2020 and beyond. Congratulations to Louisa Salmon, Matthew Snow and Storme Heathcote for completing their HDR journey in 2019.
Social Experiences of Children with Disabilities

Louisa Salmon, PhD Graduand

PhD Graduand Louisa Salmon submitted her research on Social Experiences of Children with Disabilities: Resilience, Social Identity and Bullying in November 2019. Louisa’s research, supervised by Dr Gail Moloney and co-supervisor Professor Lewis Bizo, Professor Iona Novak and Professor Iain Graham, looked at how differences in social inclusiveness influence a child’s resilience to negative social situations. Louisa investigated whether children with severe disabilities were less able to deal with stressful situations if, as previous research suggested, they do not experience as many stressors as children with milder disabilities. Four studies undertaken for her PhD focused on bullying, how well children cope with bullying and attitudes toward bullying.

Study One looked at the bullying experiences of children without disabilities and how they cope with negative social experiences. Forty-one students from a regional school completed a self- and a peer-assessment on their experience of bullying, as well as a scale measuring emotional reactions to being bullied and fighting with a friend. Boys and girls were found to experience same amount of bullying but girls experienced more verbal victimisation and social manipulation. Experiencing bullying was positively correlated with both coping less with bullying and coping less well with having had a fight with a friend.

Study Two extended Study One’s findings by examining how to better measure children without disabilities’ experience of bullying and their resilience to the notion of being bullied and the notion of having had a fight with a friend. Forty students from three different schools in regional NSW completed self- and peer-assessments about their experience of bullying, as well as a scale measuring their retrospective emotional reaction to a specific story about having been bullied and a specific story about having had a fight with a friend. The ability to cope with bullying was associated with having personally experienced less bullying. There was also a positive correlation between children’s experiences of bullying and a lack of ability to cope with the notion of fighting with a friend, as well as between the emotional responses to the idea of having been bullied and having had a fight with a friend.

Study Three investigated the experiences of bullying and the resilience of children with cerebral palsy and their siblings. The study involved nine children with cerebral palsy and seven siblings. A multidimensional approach was used to rate the severity of the children with cerebral palsy’s disability. It was found that while children with cerebral palsy seemed to report being bullied at similar rates as their siblings without disabilities, they seemed to be able to cope less well with bullying. No difference was found between children with different levels of cerebral palsy with regards to bullying or their ability to cope with stressful situations. The results of Study Three suggested that children with disabilities felt excluded by others, which, given that having good social support is an effective way that children cope with bullying, might be a reason these children cope less well with bullying.

Study Four looked at whether or not it was possible to manipulate the acceptability of bullying if the victim of the bullying had a particular level of disability. One hundred and two children were presented with one of four stories about two boys belonging to two different friendship groups. The story was designed so that one of the boys might be perceived as a bully and the other perceived as a victim. The story attempted to depict the victim of the bullying as having a mild or severe disability. Participants were required to rate how much they like each character and each group. While it was expected that participants would like the bully and the bully’s group less and the victim and his group more when the groups differed from one another and the victim had more of a disability than when the groups were similar and the victim was less disabled. Neither of these predictions happened, the study showed that participants reported having very little experience of people with disabilities similar to that in the particular story they read, once again suggesting that children with disabilities are socially isolated from their peers. This supports the idea that children with disabilities might miss out on some social support when they are bullied.
HDR Symposium: Standing on the Shoulders of Giants & 3 Minute Thesis

Dr Joanne Bradbury

The annual HDR cohort gathering occurred at the Gold Coast campus in June 2019, over two days incorporating 25 presentations. Supervisors, professors and researchers attended in force to chair sessions, and ask questions and facilitate discussions.

The theme of the 6th Annual SHHS HDR Symposium was ‘Standing on the Shoulders of Giants’, to coincide with the 25th anniversary of SCU as an institution. All the presenters were invited to include a discussion on the theoretical tradition that their thesis rests upon and to speculate on ways their thesis may contribute to this tradition. The theoretical framework aspects of the thesis can be quite challenging for higher degrees research students to develop and articulate. This year’s symposium provided an excellent opportunity for students to share with others their own ideas and insights and to carefully listen to those of others. Our keynote speaker was our own Dean of Health and Head of the School, Professor Iain Graham, who was to leave us through retirement at the end of the year. Professor Graham has had a long and distinguished research career, much of which has been built upon strong philosophical groundings, which reflected upon in his speech.

It is also increasingly important for higher degree research candidates who are seeking employment in industry after graduation to be able to recognise and articulate clearly the development and attainment of their capabilities, not only in terms of the methodological expertise required for knowledge creation, but also the more generic, transferable skills such as the ability to communicate all aspects of research to non-expert audiences. Another keynote speaker at the HDR Symposium was Professor Susan Nancarrow who led a reflection of the important role of research in the future health workforce.

This was a fabulous symposium, with around 60 people registering for each day. It was truly inspiring to hear about all the theoretical traditions and all the giants within. The opening address by A/Prof Sally Sargent pointed out that giants come in many forms and that we ourselves are giants for those who come behind us. Iain shared that we can and should also be our own giants. Susan reflected upon the importance of constructing new meaning, rethinking, reinventing, repackaging old skills for new applications, and the importance of developing a strong narrative. Dates for the SHHS HDR symposium are the 25th and 26th of June to be held at the Coffs Harbour campus for the first time.

3MT

Three HDR students competed at the 2019 SCU 3MT finals.

They were:

- Peter Wong; “Employment Retention for people with autism”
- Megan Lee; “Dietary Patterns and Depression” and
- Shuangshuang Zhang; “An investigation on the effects of eccentric exercise and intramuscular needling on mitochondrial Ca2+ overload in skeletal muscle”

All were very good presentations, with Megan Lee being selected as the 2019 SCU 3MT Runner Up!
It is with great pleasure – and a twinge of sadness, as I really enjoy working with Honours students, that I hand over the baton of Course Coordination for the Bachelor of Psychological Science with Honours to Dr Christina Samios. The year 2019 was my seventh as Honours Course Coordinator, and the programme has both changed and grown considerably during my time. The degree, which is made up of course work and a research thesis, can be completed in a part-time or full-time mode. In 2019, our Honours degree was offered for the first time at both Coffs Harbour and Gold Coast campuses. It is not surprising that 2019 saw our largest enrolled Honours cohort (60 enrolled students) with the majority of students coming to study with us from other universities.

Our Honours supervisory staff have also grown, and we warmly welcomed Dr Basia Radlinska at Coffs Harbour, and Dr Anna Praskova and Dr Christina Samios at the Gold Coast this past year. In 2020, we will also have Dr Kachina Allen on the supervisory team at the Gold Coast.

The students completed their research thesis on a variety of fascinating topics, which were showcased this year at the 16th Annual Psychology Honours Research conference. The Gold Coast students travelled down to Coffs Harbour campus for the 2 day conference in late September making this our largest conference to date. Every student delivered a 10 minute presentation to the 150 or so conference attendees, which included the students’ family and friends, local psychologists and allied health workers, academics, and interested community members. The opening address, which was also a farewell, was presented by our now retired Emeritus Professor Iain Graham, who we gratefully acknowledge for his continued strong support of the conference.
A further feature of the Honours year was the research proposal poster conference at both the Coffs Harbour and the Gold Coast campuses, where students had an opportunity to present their research proposal in the form of a poster to their peers, PhD students and academic staff.

Overall, the year was extremely successful, with 58 students graduating with the Bachelor of Psychological Science with Honours.

For a detailed overview of the diverse research topics investigated within our Honours course, the conference abstract book and programme can be accessed online (with mediasite recordings of the presentations available on request):


### Highlights & Awards 2019

Leshey Wells  Nominated for the Australian Psychological Society prize for the top student in the Honours year

Awarded the Best Conference Presentation (Day 1): Priyanka Aggarwala

Awarded the Best Conference Presentation (Day 2): Lisa McPeake

Awarded a Highly Commended Conference Presentation (Day1): Janelle Driscoll

Awarded a Highly Commended Conference Presentation (Day1): Roslyn Adams

Awarded a Highly Commended Conference Presentation (Day 2): Shady Chapel

Awarded a Highly Commendable Conference Presentation (Day2): Maejoy Obach

Awarded the People’s Choice Award (Day 1): Hannah Jeffers

Awarded the People’s Choice Award (Day 2): Declan Forrester

Kylie Wilson Award Coffs Harbour: Claire Korte

Kylie Wilson Award Gold Coast: Lisa McPeake

Diederik Stapel Award (by Dr Steve Provost): Savanah Mason

A huge thank you to all our sponsors
BUILDING RESEARCH SCHOLARSHIP

The Bachelor of Health & Human Sciences (Honours) program is open to high performing graduates of bachelor degrees in health and human sciences fields. The program sees students undertake coursework in research methods and a research project under the guidance of supervisors from the School over the course of a year.

In 2019, this program provided students from exercise and sports science, biomedicine and nursing backgrounds with the opportunity to pursue their diverse research interests. Project topics ranged from the link between the gut microbiome and Parkinson’s disease, soccer coaching and inpatient hospital care. For students completing in 2019, the work was showcased at the Health & Human Science Honours Symposium at the end of the year with staff, students, friends and family invited along.

2019 also saw the commencement of two nursing honours students receiving Nursing & Midwifery Graduate Honours Scholarships worth $20,000. This scholarship supports nurses commencing their graduate nursing program to conduct a research project in their workplace aligning with the Northern New South Wales Local Health District. This is a collaborative effort between Southern Cross University and the Northern New South Wales Local Health District facilitated by the conjoint nursing research academic Dr Christina Aggar.

Congratulations to all our students and their supervisors on their success in 2019. We wish you all the best for your future endeavours.
When Professor Grace first trained as an osteopath, chiropractor, acupuncturist and herbalist, complementary medicine (CM) education in Australia was at a rudimentary stage. In her previous career she had trained and worked as a teacher in high schools and TAFE colleges. Consequently, she was well placed to bring educational theory and evidence-informed pedagogy to CM education. By the mid-1980s she had established a government-accredited private college of natural medicine. She was committed to providing the highest quality CM education, a commitment that has continued throughout her professional career. Her concern for the challenges faced by highly skilled naturopaths in establishing viable practices motivated her MSc(Research) (Macquarie University) and her PhD (the University of Sydney) on integrative medicine, a model of healthcare where medical and CM practitioners work together in multidisciplinary clinics. Findings of these studies demonstrated the value of multidisciplinary healthcare for patients and practitioners, confirming what she had experienced in her own multidisciplinary health clinics.

This early research was the precursor for much of her subsequent work, which has focused on three areas:

1. Health workforce research, including preparing students for clinical placements (e.g. the Better Prepared Better Placement project), surveys of the CM workforce, secondary analyses of osteopathic workforce data, and the emergence of a model of multidisciplinary rural general practice. Recent work on ways in which CM consumers self-manage the totality of their healthcare (practitioner services, medicines and self-directed health activities) has implications for the ways in which healthcare providers communicate and collaborate to manage their patients’ care. She places a high value on her collaboration on health workforce research with colleagues like Professor Susan Nancarrow, who led a project to evaluate learning from 55 pilot sites of allied health workforce redesign in Queensland, Australia, and a rapid review of rural health in NSW, brokered by the Sax Institute for the Ministerial Advisory Committee for Rural Health and Ministry of Health.

2. Interprofessional education and practice research, including research on role boundaries (e.g. between dietitians and naturopaths), interprofessional clinical reasoning, interprofessional clinical placements (e.g. The Well Athlete project), students’ experiences of interprofessional supervision, health educators’ views on interprofessional education, and research focusing on common values across allied health professions. Sandra recently completed a scoping review of models of interprofessional education.
3. Complementary medicine education and practice. Research projects in this area include the SNAPPS project (a strategy used in student clinical learning to routinely incorporate the best available evidence in patient care), clinical reasoning in osteopathy, reliability of a viva examination, and the Framework for Experiential Learning (FEEL) in Health project. Since 2017, Professor Grace, with colleagues Drs Joanne Bradbury and Cathy Avila, established the Natural Medicine N-of-1 Trials Unit as SCU. To date, three cohorts of CM practitioners have participated in N-of-1 studies, most recently investigating the effectiveness of probiotics, glutamine and fish oil in reducing mild to moderate stress in healthy adults. In 2018, Sandra established the Osteopathic Research Alliance (ORA) of osteopathic researchers from Australia and New Zealand. This group is already generating publications and is currently working on projects investigating the role of osteopathy in managing chronic health conditions. In 2020, ORA will conduct the Australian arm of a UK trial investigating the effectiveness of osteopathic touch in crying, unsettled and distressed infants.

The impact of Professor Grace’s work is significant. For example, her early CM workforce data signalled the changing demographic of the CM workforce to a number of professional associations, including the Australian Traditional Medicine Society, and triggered changes in membership categories, CPD activities and the strategic direction of the Society. Her work on the SNAPPS project has been taken up in a number of Australian universities and has attracted interest from international clinical educators in France. The FEEL project led to the development of a policy for ethical experiential learning that has been adopted across all health disciplines in the School and a number of other Australian universities. Perhaps her highest impact recent research is her work revising the Capabilities for Osteopathic Practice, which was commissioned by the Australian Health Practitioner Regulation Agency. The revised Capabilities were published in December 2019. Since that date, all osteopathy programs in Australia are required to align their curriculum to the Capabilities. As a result, her work will have a direct impact on the quality of osteopaths entering the workforce over the coming years.

Professor Grace’s extensive research on interprofessional education and practice has always argued for its benefits in patient health outcomes, interprofessional relationships, and efficiencies in the healthcare system. Her recent research into models of interprofessional learning and professional identity formation is currently guiding the re-structure of the curricula of the School towards a model of integrated interprofessional learning.

Professor Grace’s most recent project involves a group of CM researchers who are investigating ways in which CM can promote healthy environmental, social and economic systems. The group will look for funding opportunities to conduct research into a truly sustainable model of healthcare, that is, one that not only reduces its carbon footprint in its business practices, but also draws on sustainable diagnostic and treatment approaches in patient care.
ANNUAL RESEARCH REPORT

2019

ACADEMY OF KNOWLEDGE IN THE WORLD OF HEALTHCARE AND WELL-BEING

‘Celebrating 25 Years’ in SHHS Sport & Exercise Science

Professor Shi Zhou

It is well-known that participating in adequate levels of daily physical activity is essential to health and well-being; exercise interventions are effective in prevention, treatment and rehabilitation of many chronic diseases; and scientifically validated training theories, methods and skills are essential for athletes to fully achieve their potential in sports. Over the past 25 years, the growth of research in the discipline of Sport and Exercise Science has generated remarkable achievements, across all these fronts. The research group evolved from a Key Research Area “Enhancement of Human Performance” prior to year 2000; recognised as a Designated Area of Research “Sport, Exercise and Related Health Issues” 2001-2007; became a part of the Research Centre “Tourism, Leisure and Work” under the theme “Sport and Human Performance” 2009-2013; and as a research area of “Exercise, Health and Human Performance” in the School of Health and Human Sciences. To date, the researchers in Sport and Exercise Science have supervised over 30 PhD and 20 MSc candidates to completion. Many of these graduates have become leading academics, sport and exercise scientists or business managers in Australia and overseas. The research outcomes have been rated as ERA 4 that is “above the world standard” in 2015 and 2018 under the research field of Human Movement and Sports Science. Several excellent researchers in this field have joined in the School in recent years and we continue in building up the research strength for great achievements.

Professor Shi Zhou is one of the academics who has grown up with Southern Cross University. He did his PhD at the University of Melbourne, and joined this University (formerly UNE-NR) in 1991 as a Lecturer in Exercise Physiology. Professor Zhou then developed his research track record in neuromuscular physiology and exercise science and was promoted to full Professor in 2010. To date he has published 8 book chapters, 100 journal articles and delivered over 140 conference presentations including one which was honoured with the Best Oral Presentation Award at 2008 International Convention on Science, Education and Medicine in Sport (Pre-Olympic Congress), and numerous invited presentations. To date he has supervised 11 PhD and 4 MSc candidates to completion at SCU.

Copenhagen Muscle Research Centre, University of Colorado at Boulder, University of Massachusetts at Amherst and Tianjin University of Sport. In recent years, he has developed several lines of research in collaboration with colleagues from sport universities in China, including neuromuscular responses and adaptations to exercise and training, particularly the effects and mechanisms of unilateral exercise, needling and electromyostimulation, that have both theoretical significance in understanding the neural control of muscle function and clinical implications in neuromuscular rehabilitation; investigations on the cellular mechanisms of the effects of exercise and training, on human athletes and patients, as well as using animal models; and currently developing research to investigate the efficacy of applying hypoxia intervention as a complementary means in management of hyperglycaemia and type 2 diabetes. The collaborations have resulted in over 40 co-authored journal publications, co-supervision of over 20 HDR students, hosting 10 visiting scholars, and obtained external research grants of $130,800 AUD and over 1 million CNY. The collaborations have also contributed to the global development in Exercise Science and Clinical Exercise Physiology. In 2019, Prof Zhou led in a project that examined the current professional development in Sport and Exercise Science and Clinical Exercise Physiology in China mainland, Hong Kong and Taiwan; and has recruited HDR students under the Multi-Badged Degree arrangement that offers a new way of collaboration in postgraduate research training, developed by the University.
The Victorian Allied Health Workforce Research Project

Professor Susan Nancarrow

As a health services researcher with 20 years’ experience in Australia and the UK, Professor Susan Nancarrow’s research has focussed on health workforce reform, service delivery and organisation with particular expertise in allied and community health, regional and rural health issues, new models of care and capacity building.

Professor Nancarrow has collaborated on more than 50 projects, including project lead for a three year large scale mapping of 27 allied health professions for the Victorian Department of Health and Human Services. The Allied Health Professions (AHP) Workforce Research Program (2015-18), generated new qualitative and quantitative information to capture, describe and explore the key workforce issues facing the AHP workforce in Victoria.

The research team (Susan Nancarrow, Gretchen Young, Katy O’Callaghan, Alison Roots, Anna Moran & Annie Banbury) used a three-tiered, mixed methods approach to obtain data using an environmental scan (n=27 professions) (Nancarrow et al., 2017), survey of organisations and individual clinicians and focus groups with clinicians (n=11 purposively selected AHPs). Questions explored the size, location, skill set, recruitment and retention issues, and organisational contexts. Individual clinician data captured information about education and training, the nature and location of work, job satisfaction and career pathways. Focus groups were used to explore issues highlighted in the survey responses.

ACADEMY OF KNOWLEDGE IN THE WORLD OF HEALTHCARE AND WELL-BEING

Professor Susan Nancarrow
Survey data were analysed descriptively. Qualitative data were extracted from notes using a framework to analyse themes of workforce capacity, capability, and engagement.

In total, 7399 survey participants from 11 disciplines (exercise physiology, dietetics, medical laboratory science, audiology, AH assistants, speech pathology, sonography, physiotherapy, social work, psychology, occupational therapy) responded to the survey (response rates ranged from 14% to 50%). Over 100 AHPs participated in focus groups.

Substantial new and rich data were collected about the allied health professions, but across all of the professions, five high level themes were identified, which have been used by allied health leaders to start to change the way that allied health professions work and communicate the effectiveness of their work, specifically:

AHP roles are poorly understood by the public and other health care providers which limits the effectiveness and efficiency of referrals and service delivery and commissioning.

AHPs undersell their attributes and need to be clear about their value proposition. There is strong evidence to support the contribution that allied health can make to the delivery of high value care, such as reducing hospital admissions, improving surgical outcomes and preventing falls (to mention just a few). This information is not used systematically to drive workforce decisions and service delivery options.

AHPs bring multiple skills to the role from a range of different career pathways. On average, 40% of allied health professionals had had another career (defined as working for more than 6 months full time in another occupation), ranging from 22% of physiotherapists to 80% of sonographers). Yet, there was no way to acknowledge or incorporate the learning from previous roles.

The AHP workforce paradox: there is a perception of an oversupply of AHPs however there is still unmet community need suggesting market failure in allied health services in some areas.

The allied health workforce is predominantly young and dominated by new graduates which has important implications for workforce development. There has been a long-held perception that the workforce is ageing, which was not supported by the data.

The data have been used by the professions to help guide workforce planning and development decisions. The Department have introduced a number of workforce development initiatives, including new research pathways for allied health professions. State allied health leads around the country are working with their allied health profession groups to develop new narratives about the benefits the allied health workforce can add to high value health care.


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