



NCOIS 2021 Annual Report



NATIONAL CENTRE OF
IMPLEMENTATION SCIENCE



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

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A note from our Director

In 2021, our Centre continued to thrive with the support of our engaged partners and via the commitment and resilience of our research leads and their teams. Despite the continued challenges that the pandemic brought, in 2021 I am pleased to report that we continued to expand our collaborations, research programs and capacity building activities.

It has been a bumper year for publications. We have shared new knowledge around effective prevention interventions and implementation methods and connected with new audiences.

Early in the year, we added a new research program focused on sustainability. This exciting new area will generate much needed evidence about how best to support sustained implementation of public health interventions in schools. This year has also seen great progress in stream one, where our researchers have contributed new knowledge about what programs, practices, and policies are effective in childcare and schools.

This year our Centre continued to expand. We welcomed five new PhD candidates in 2021, with three embedded within policy and practice agencies. We also delivered learning opportunities through workshops and webinars attended by local, national, and international audiences. We were pleased to be able to offer our successful Training Institute for Dissemination and Implementation Research in Health (TIDIRH) Australia implementation science training program again this year.

I am very proud of the continued and meaningful engagement of our partners with our Centre. We firmly believe that we do our best work when we have the input and expertise of our diverse group of partners and stakeholders. We look forward to continuing to strengthen our relationships in 2022. And as always, there are new directions we can be working towards and I look forward to what 2022 will bring.



Professor Luke Wolfenden
NCOIS Director



About the NCOIS

The National Centre of Implementation Science (NCOIS) is an NHMRC funded Centre for Research Excellence associated with the University of Newcastle.

Our aim is to prevent chronic disease through better implementation of effective chronic disease prevention interventions in community settings.

The community settings we focus on are schools, early childhood education and care, sporting clubs and workplaces. The chronic disease risks we target are diet, physical activity, weight status, tobacco and alcohol use.

Acknowledgement of Country

The National Centre of Implementation Science respectfully acknowledges the traditional custodians of the lands where we live, learn and work.

We pay our respects to Elders past, present and emerging.



Snapshot of 2021 Achievements

Knowledge Generation



1 new research stream

3 new research projects



18 publications



26 conference presentations



12 grants awarded

>\$300K new funding

Policy & Practice Impact



2 citations in policy documents



9 requests for advice from Government departments



1 inclusion in text & training curricula

Capacity Building Impact



9 PhDs supervised



11 Training sessions delivered



16 Individuals mentored over the year

Collaborations



10 Research co-production meetings



7 papers with policy/practitioner co-authors



21 organisations partnered with us on funding applications



11 NSW health districts & 6 health organisations engaged in scale-up project

Our Research Structure

Our research is organised into five broad questions, or 'streams' (See Figure 1). The research projects within these streams are outlined below and further information, including our full list of publications and resources, are available on [our website](#).

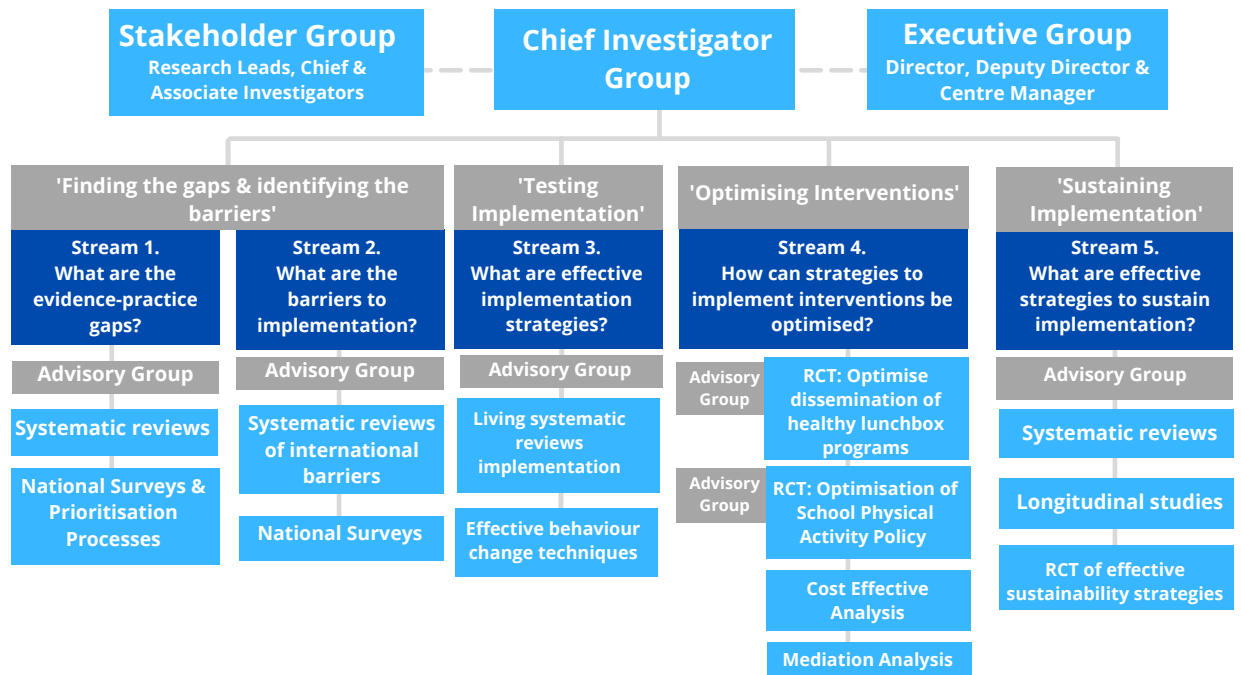


Figure 1. NCOIS structure



Our Research

SYSTEMATIC REVIEWS

In 2021 a major focus of our research involved identifying the nutrition, physical activity, tobacco and alcohol programs, practices, and policies that are effective in preventing chronic disease risks in early childhood education and care (ECEC), schools and workplaces.

We were excited to publish an [umbrella review of school-based nutrition interventions](#). This review provides the most comprehensive summary, to date, of high-quality school-based healthy eating studies from around the world. This review identifies which types of programs lead to children and adolescents eating more fruit and vegetables and less fat.

This year, an update of a Cochrane systematic review of obesity prevention interventions in school settings was progressed to the final stages. This review will be submitted in early 2022.

We also progressed an umbrella review of school based tobacco and alcohol interventions.

A [systematic review of policies and guidelines](#) that support healthy eating and physical activity within the ECEC setting was published in 2021. There are many policies and guidelines that try to prevent obesity in early childhood. Most focus on healthy eating and physical activity and are published by health agencies and early childhood education and care organisations. This review describes the various policies and guidelines, looks for common recommendations and identifies how these could be strengthened.



A Cochrane systematic review of healthy eating interventions in ECEC services was also progressed to the final stages. The protocol was published early in 2021. The review will look at how effective healthy eating interventions are and how much they cost. It will also examine the impact of healthy eating interventions on children's weight, their language and thinking skills, their mental health, and their quality of life.

This year we also progressed work on two umbrella reviews. One is focused on synthesising systematic review evidence of the effectiveness of physical activity interventions on child activity levels in the ECEC setting. The second looks at work place interventions targeting health risk factors.

Within the sporting club setting, work on a systematic review of chronic disease prevention interventions was commenced. Systematic reviews of implementation barriers This year we also commenced research identifying factors that prevent evidence based programs, practices and policies being put into routine practice.

We published a [systematic review of the barriers and facilitators](#) to chronic disease prevention implementation and sustainment in schools and ECEC.

Late in 2021 our researchers also submitted a review which identifies the barriers and facilitators to the implementation of healthy eating, physical activity and obesity prevention policies, practices or programs within home-based ECEC services.



NATIONAL AND STATE-WIDE SURVEYS

With the input of our partners and key stakeholders, we finalised our national representative surveys to collect practice gap data from ECEC services, and primary schools, and a state-wide survey in secondary schools.

The aim of these surveys is to gain a deeper understanding of the implementation of current chronic disease prevention, programs, policies and practices. The national surveys will also capture data regarding barriers and facilitators of implementation, acceptability and sustainability. In 2021 the surveys commenced in the ECEC setting.

OPTIMISATION TRIALS

The [Physically Active Children in Education \(PACE\)](#) project has made some great progress in 2021. Phase I of the Optimisation project has been completed, with the outcomes paper currently under review.

The cost-effectiveness study (which includes both the initial trial and Phase I of Optimisation) has been completed and the outcomes are being written up for publication.

A formative evaluation of the PACE trial has explored the determinants of sustained implementation relevant to this program. The paper was drafted in 2021 and is very close to submission.



The Physically Active Children in Education (PACE) program is an effective intervention for improving teachers' implementation of school physical activity policy and increasing child physical activity levels.



Understandably, the continued pandemic and associated restrictions, staff redeployment and general uncertainty has impacted several projects. The substantial disruptions of COVID-19 have required amendments to the PACE Phase II project study design.

We are no longer directly assessing face-to-face training vs. online training. Instead we are comparing no support to online training and face-to-face training combined using a pre-post design. While not as robust, we will be able to evaluate the impacts, feasibility, acceptability and cost of providing online training to teachers.

In similar circumstances, the SWAP IT scale up and dissemination project experienced some delays. However, we are pleased to report that by the end of 2021, 11 of the 15 LHDs in NSW had agreed to partner with us in a state-wide roll-out which will commence in Terms 1-2 2022.

In 2021 discussions also commenced with all states and territories in regards to partnering with us in a national roll-out.



SWAP IT is an app-based program that helps parents change what they pack in their children's lunchboxes.

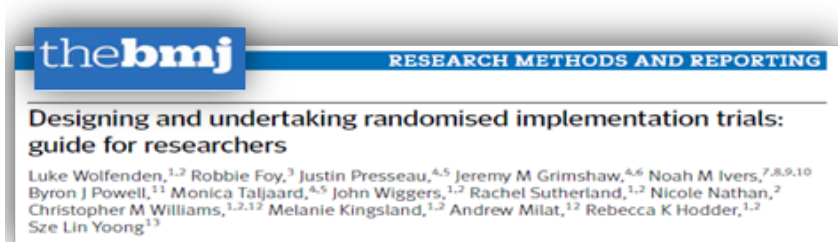
We have proven that SWAP IT works and doesn't need to cost a lot. It is now ready to be used in more schools.



OTHER RESEARCH ACTIVITY

In 2021, our researchers also produced implementation research guidance to inform implementation methods. This included a seminal guidance paper on the development, conduct, and reporting of randomised trials of implementation strategies. The paper was published in the BMJ and will be a key resource for researchers, healthcare and public health policy makers and practitioners, research funders, and journal editors.

Watch Luke's video about the guide [here](#). Read the full article [here](#).



NEW RESEARCH FUNDING

In 2021, our researchers secured over \$300,000AUD in new grant funding. With this funding we will broaden the reach of existing projects such as [SWAP-IT](#), further explore the potential for online physical activity interventions in schools, and expand the evaluation of school-based implementation interventions.



Policy & Practice Impact

In 2021, our Centre demonstrated its impact at international, national and local levels. Our Director, Professor Luke Wolfenden, was invited to a WHO forum facilitated on behalf of the Ukraine Government to advise on healthy school policy and practice implementation. Our Deputy Director, Associate professor Serene Yoong, and early-career researcher Dr Alix Hall were also called on by the WHO to share their [review findings](#) regarding adolescent use of e-cigarettes with a group of international regulators.

Drawing on their expertise and the work of the Centre, our researchers have provided advice on implementation of healthy eating and physical activity programs in primary schools and ECEC to national health policy jurisdictions in the ACT, Tasmania, Queensland and NSW. In NSW, the Centre's research of effective interventions has informed reviews of chronic disease prevention programs in NSW schools led by the NSW Centre for Population Health and the NSW Department of Education.

State and national bodies have also requested specific items be included in our surveys of schools and childcare services to obtain data to meet evidence needs in their jurisdictions.

Our Centre is also funding the scale up of the SWAP-IT healthy eating program with several local health district partners. Our research has also been used by local health districts in NSW to inform their development of chronic disease prevention in schools.



Knowledge Translation

NCOIS Researchers and the Centre Operations team have worked closely over the past 12 months to communicate our research with a variety of audiences.

We have translated our research findings into policy briefs and infographics and provided briefing presentations to national and state government departments.

In 2021, our researchers have invested in communicating to new audiences in a variety of ways. We shared our findings through TV and radio interviews, online media outlets such as The Conversation, and in print media including The Guardian and multiple state and local newspapers.

In 2021, we also developed summaries for all our published research which have been disseminated via our newsletters and on our website. View these summaries on the NCOIS website's [‘Resources’ page](#).

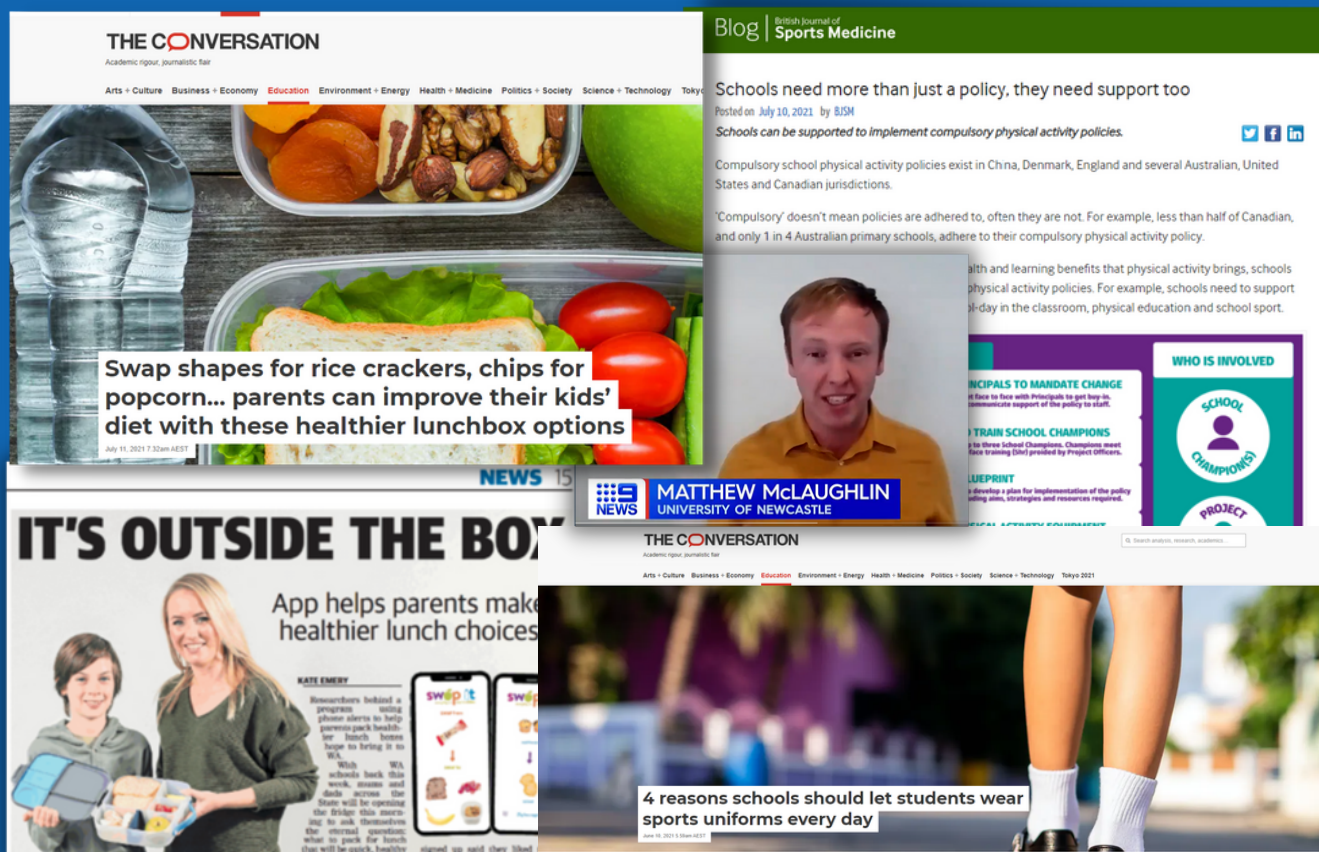


Figure 2. Examples of NCOIS research translation

Collaborations

2021 has seen a high level of partner engagement in our Centre's research and capacity building activities.

In 2021, our partners and stakeholders continued their strong engagement with our research teams through involvement in research advisory groups and consultation processes for the development of our national surveys.

Our partners within the health promotion teams of Mid North Coast, Central Coast, and Hunter New England Local Health Districts, along with the NSW Ministry of Health, have worked with our researchers to co-author papers, reports and conference presentations.

NCOIS has supported collaborations to develop and submit a number of joint funding applications. For example, representatives from the Department of Education Schools Sports Unit and the Catholic Schools Office were listed as co-investigators on a funding proposal to evaluate an online education program to improve the delivery of physical activity to students in the Hunter New England Local Health District.

This year we were thrilled to collaborate with partners in the NSW Ministry of Health Aboriginal Health Evidence and Evaluation team to establish an embedded PhD program.



Capacity Building

NCOIS continued to expand our learning opportunities in 2021. We recruited additional high quality PhD candidates and now have nine students in our Centre.

We were successful in establishing a PhD program embedded with partners in the NSW Ministry of Health Aboriginal Health Evidence and Evaluation team and awarded PhD scholarships to students working within Sydney Local Health District and ACT Health.

Despite COVID challenges we initiated a second Australian Training Institute for Dissemination and Implementation Research in Health which attracted 24 participants with a broad range of backgrounds across policy, practice and research.

Our Centre delivered tailored training on planning behaviour change, evaluation, and scale up with our NSW local health district partners. We also established a research and evaluation network for all NSW health district health promotion teams.



We have established a Capacity Building Advisory Group with key contacts from the Mid North Coast and Central Coast Local Health Districts and representatives from the Heart Foundation and The Australian Prevention Partnership Centre (TAPPC). The advisory group is working together with our early-mid career researchers (EMCRs) and PhD students to shape our future capacity building activities.

This year we have also worked with teams from the Mid North Coast and Central Coast Local Health Districts to develop and deliver targeted training opportunities and supported their staff to participate in NCOIS' TIDIRH Australia and in knowledge translation and social media training workshops.

In 2021, we continued our partnership with the Collaboration for Enhanced Research Impact (CERI). NCOIS is one of the founding research centres of CERI, which now includes six Centres for Research Excellence (CREs) and more than 500 researchers. The initiative has proven to be a positive step towards developing a united voice for the prevention of chronic disease.

In 2021, CERI collaborations included a user guide for CREs to effectively translate and communicate their prevention research, opinion pieces published in Croakey Health Media and MJA InSight+ and a scoping review (led by NCOIS researchers) of strategies for dissemination of public health research.



Awards

HUNTER MEDICAL RESEARCH INSTITUTE RESEARCH EXCELLENCE AWARDS

Early Career Researcher
Winner: Dr Nicole Nathan

Research Team
Finalist: PACE project team

UNIVERSITY OF NEWCASTLE COLLEGE OF HEALTH, MEDICINE AND WELLBEING INAUGURAL AWARDS

Confirmation of the Year
Winner: Adam Shoemith

Publication of the Year
Winner: Adam Shoemith

Best 'Population Science' Virtual Poster
Winner: Alison Brown

UNIVERSITY OF NEWCASTLE PRIORITY RESEARCH CENTRE FOR HEALTH BEHAVIOUR AWARDS

Leading Female Researcher
Winner: Courtney Barnes

Impact and Translation
Winner: Cassandra Lane

Best Publication EMCR category
Winner: A/Prof. Serene Yoong

Best Publication PhD category
Winner: Matthew 'Tepi' Mclaughlin

Publications

A full list of all publications and links to access can be found on the [NCOIS Publications page](#). In 2021, we published the following papers:

RESEARCH PUBLICATIONS

School-Based Nutrition Interventions in Children Aged 6 to 18 Years: An Umbrella Review of Systematic Reviews. In *Nutrients*, 2021 Nov;13(11):4113.

Authors: O'Brien KM, Barnes C, Yoong S, Campbell E, Wyse R, Delaney T, Brown A, Stacey F, Davies L, Lorien S, Hodder RK.

Healthy eating interventions delivered in early childhood education and care settings for improving the diet of children aged six year and below. In *Cochrane Database of Systematic Reviews* 2021, Issue 1. Art. No.: CD013862.

Authors: Yoong SL, Lum M, Jackson J, Wolfenden L, Barnes C, Jones J, Pearson N, McCrabb S, Hall AE, Leonard A, McDonnell T, Grady A.

Obesity Prevention within the Early Childhood Education and Care Setting: A Systematic Review of Dietary Behaviour and Physical Activity Policies and Guidelines in High Income Countries. In *Int J Environ Res Public Health* 2021, 18 (2), 838.

Authors: Jackson JK, Jones J, Nguyen H, Davies I, Lum M, Grady A, Yoong SL.

The Association between Australian Childcare Centre Healthy Eating Practices and Children's Healthy Eating Behaviours: A Cross-Sectional Study within Lunchbox Centres. In *Nutrients*, 2021 Apr;13(4):1139.

Authors: Barnes C, Yoong SL, Wolfenden L, Nathan N, Wedesweiler T, Kerr J, Pearson N, Grady A.

Improving implementation of school-based healthy eating and physical activity policies, practices, and programs: a systematic review. In *Translational Behavioral Medicine*. 2021 Jun 3.

Authors: Barnes C, McCrabb S, Stacey F, Nathan N, Yoong SL, Grady A, Sutherland R, Hodder R, Innes-Hughes C, Davies M, Wolfenden L.

Barriers and facilitators influencing the sustainment of health behaviour interventions in schools and childcare services: A systematic review. In *Implementation science* (2021) 16:62

Authors: Shoesmith, A., Hall, A., Wolfenden L. et al.

How effective are physical activity interventions when they are scaled-up: a systematic review. In *International Journal of Behavioral Nutrition and Physical Activity*. 2021 Dec;18(1):1-1.

Authors: Lane C, McCrabb S, Nathan N, Naylor PJ, Bauman A, Milat A, Lum M, Sutherland R, Byaruhanga J, Wolfenden L.

Multi-strategy intervention increases school implementation and maintenance of a mandatory physical activity policy: outcomes of a cluster randomised controlled trial. In *British Journal of Sports Medicine*, (2021).

Authors: Nathan N, Hall A, McCarthy N, Sutherland R, Wiggers J, Bauman AE, et al.,

Exploring the effect of a school-based cluster-randomised controlled trial to increase the scheduling of physical activity for primary school students on teachers' physical activity. In *Health Promotion Journal of Australia*. 2021 May 4.

Authors: Murawski B, Reilly KL, Hope K, Hall AE, Sutherland RL, Trost SG, Yoong SL, McCarthy N, Lecathelinais C, Wolfenden L, Nathan NK.

A Multicomponent mHealth-Based Intervention (SWAP IT) to Decrease the Consumption of Discretionary Foods Packed in School Lunchboxes: Type I Effectiveness-Implementation Hybrid Cluster Randomized Controlled Trial. In *Journal of Medical Internet Research*. 2021 Jun 24;23(6):e25256.

Authors: Sutherland R, Brown A, Nathan N, Yoong S, Janssen L, Chooi A, Hudson N, Wiggers J, Kerr N, Evans N, Gillham K.

METHODS & GUIDANCE PUBLICATIONS

Adaptation and Validation of the Program Sustainability Assessment Tool (PSAT) for Use in the Elementary School Setting. In International Journal of Environmental Research and Public Health. 2021 Jan;18(21):11414.

Authors: Hall A, Shoesmith A, Shelton RC, Lane C, Wolfenden L, Nathan N.

Guidance for conducting feasibility and pilot studies for implementation trials. In Pilot and feasibility studies. 2020 Dec;6(1):1-2.

Authors: Pearson N, Naylor PJ, Ashe MC, Fernandez M, Yoong SL, Wolfenden L.

Designing and undertaking randomised implementation trials: guide for researchers. In British Medical Journal 2021; 372 :m3721.

Authors: Wolfenden Luke, Foy Robbie, Presseau Justin, Grimshaw Jeremy M, Ivers Noah M, Powell Byron J et al.

An Overview of Research Opportunities to Increase the Impact of Nutrition Intervention Research in Early Childhood and Education Care Settings according to the RE-AIM Framework. In International Journal of Environmental Research and Public Health 2021.

Authors: Yoong, S.L.; Jones, J.; Pearson, N.; Swindle, T.; Barnes, C.; Delaney, T.; Lum, M.; Colley, R.; Matwiejczyk, L.; Kelly, B.; et al.

Authors: Yoong, S.L.; Jones, J.; Pearson, N.; Swindle, T.; Barnes, C.; Delaney, T.; Lum, M.; Colley, R.; Matwiejczyk, L.; Kelly, B.; et al.



Presentations

In 2021, we presented at the following events:

- Evidence and Implementation Summit, Australia (7 presentations)
- International Society of Behavioural Nutrition and Physical Activity XChange (4 presentations)
- Implementation Science Health Conference Australia panel discussion, keynote speaker and abstract presentation
- International Society for Physical Activity and Health Conference
- Australasian Society for Behavioural Health and Medicine, 12th Annual Scientific Meeting
- Hunter Cancer Research Alliance Symposium
- Implementation Science Masterclass; Sydney Health Partners
- The Great Implementation Debate; the Australian Prevention Partnership Centre
- WHO Report on the Global Tobacco Epidemic panel discussion
- Fifth Meeting of the Global Tobacco Regulators Forum
- Eurasian Economic Commission and countries of Eurasian Economic Union on attractiveness and addiction potential of novel and emerging nicotine and tobacco products workshop
- Ukrainian Government; Organised by WHO European Office for Prevention and Control of Non-communicable Diseases (NCD Office) Division of Country Health Programs. Moscow, Russian Federation





Contact Us

Web: www.ncois.org.au

Twitter: [@ncoisaustralia](https://twitter.com/ncoisaustralia)

LinkedIn: [NCOIS](https://www.linkedin.com/company/ncois)

Email: info@ncois.org.au

Postal Address:

National Centre of Implementation Science
c/o Hunter New England Population Health
Booth Building, Longworth Avenue,
Wallsend NSW 2287 Australia

Physical Address:

Booth Building, Longworth Avenue,
Wallsend NSW 2287 Australia