Built Environment and Active Transport to School: BEATS Study

3-Year Report
(2013-2016)

Report prepared by Dr Sandra Mandic on behalf of the BEATS Research Team

University of Otago
Dunedin, New Zealand

June 2016
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BEATS Study Overview

Research Areas and Collaborations
Built Environment and Active Transport to School: BEATS Study (www.otago.ac.nz/beats) spans the fields of exercise science, health, transportation, environment and education (Figure 1). The BEATS Study was designed to advance scientific knowledge and provide service to the government, local community and schools. The study was founded on a multidisciplinary approach and multi-sector collaborations between secondary schools, city council, community, and academia (Figure 1).

Time Period
The BEATS Study was conceptualized, and the research team formed, in May 2013. Therefore, all work presented in this report was accomplished in the last 3 years (2013-2016).

Research Team
The BEATS research team has expertise ranging from exercise science, behavioural medicine, and health promotion to geographic information science, statistics, consumer behaviour, environmental sociology and education, and involves international research collaborations (Figure 1, Appendix A). In addition, the BEATS research team has formed an Advisory Board with representatives from Dunedin Secondary Schools' Partnership, Dunedin City Council, Getting Dunedin Active Initiative and several academics at Otago with relevant expertise.

Figure 1. Fields of research covered by the BEATS Study with national, international and community collaborations
**Conceptual Framework and Purpose**

The BEATS Study\(^1,2\) is based on contemporary ecological models\(^3,4\) for active transport (walking or cycling) that identify individual, social, environmental, and policy influences on behaviour. The study objectives are: 1) to understand the reasons behind adolescents’ and their parents’ choice of transport mode to school; 2) to examine the interaction between the transport choices, built environment, physical activity levels, and weight status in adolescents; and 3) to identify policies that promote or limit active transport to school in adolescents.\(^1\)

**Research Methodology**

A protocol describing the details of the research methodology was published in 2016.\(^1\) This cross-sectional study uses a mixed-method approach incorporating both quantitative (surveys, anthropometry, accelerometers, Geographic Information System [GIS] analysis, mapping) and qualitative methods (focus groups, interviews) to gather data from students, parents, teachers, and school principals (Figure 2). The core data include objective measures of physical activity (measured using accelerometers), anthropometry and the built environment (derived through GIS analytical techniques), and the use of maps to collect data about route to school (students)/work (parents) and perceived safe or unsafe areas along the route. To provide comprehensive data for understanding how to change the infrastructure to support active transport to school, we also examine complementary variables such as individual, social and policy factors (Figure 2). The study consists of six sub-projects: 1) student survey, 2) student focus groups, 3) parental survey; 4) parental focus groups, 5) teachers’ focus groups, and 6) school principal interviews.

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**Figure 2.** The BEATS Study: conceptual framework, outcome measures and assessment procedures. ATS = active transport to school; GIS = Geographic Information System (Mandic et al. 2016)\(^1\)
Scholarly Achievements of the BEATS Research Team (2013-2016)

**Advancing Scientific Knowledge**

**Extending the current knowledge base.** The BEATS Study will extend current national and international projects examining the association of the built and social environments and health in adolescents. The findings will inform the design of future school-, community- and city-based interventions to create positive social and physical environments to encourage active transport to school in adolescents.

**Examining unique context.** Between-country variation exists in how the primary indicators of walkability relate to active transport. New Zealand has one of the highest per capita levels of car ownership in the world, with narrow roads, and Dunedin experiences cool and wet weather. These are all factors that may influence the physical activity and transport decisions of parents and adolescents. Thus, the location provides a unique context to examine the correlates of active transport.

**Comprehensive study design.** The study uses a mixed-method approach incorporating both quantitative and qualitative methods to gather data from students, parents, teachers, and school principals (Figure 2). It involves comprehensive examination of personal, social, environmental and policy correlates of active transport to school in a city with a heterogeneous physical environment. Data are collected across the three seasons (fall, winter and spring) using objectively-measured physical activity and built environment. Therefore, the BEATS Study will provide relevant and timely data to examine correlates of active transport to school at all levels of the ecological frameworks (Figure 2).

**Successful research project implementation through community partnerships.** One of the key strengths of the BEATS Study is the multidisciplinary nature and multi-sector approach to research. It has resulted in a comprehensive study design that meets research and community needs, as reflected by strong community support, 100% school recruitment rate and dissemination of study findings to both academic and non-academic audiences (see Participatory Research Approach and Dissemination of Research Findings sections for more details). This is a great example of a translational research project.

**Participatory Research Approach**

In addition to advancing scientific knowledge, the BEATS Study’s design serves the needs of government, local community and schools (Figure 3).

**Partnerships with stakeholders and end-users.** The BEATS research team has established strong links with and obtained support from the Dunedin community including all 12 secondary schools, Dunedin City Council, Dunedin Secondary Schools’ Partnership and Getting Dunedin Active Initiative (a multi-sector partnership of health promoting organizations in the city of Dunedin) (Figures 1 and 3). Dunedin Secondary Schools’ Partnership and the Dunedin City Council were involved in the project from inception and provided input into the study design. This early involvement ensured broad input on the study design, buy-in and support for the implementation phase of the project. Details on the BEATS Study project implementation have been published.2

**Local impact of research by supporting community needs.** The BEATS Study was designed to provide timely, valuable and comprehensive information about road safety issues
around Dunedin schools, inform the design of the cycle skills training programme and the setup of the bike library in South Dunedin, and inform policy development regarding the school choice in Dunedin (Figure 3). As a result, the study was identified by Dunedin Secondary Schools’ Partnership as a priority research project in Dunedin secondary schools in 2014-2015, was included as one of the key projects in the strategic plans of the Getting Dunedin Active Initiative since 2014 and has achieved 100% school recruitment rate in the city of Dunedin. Study findings were disseminated to the stakeholders and the community in a timely fashion in form of technical reports, presentations and two symposiums organized by the BEATS Research Team (see Research Outputs section for details).

Figure 3. The BEATS Study set up with as a multidisciplinary and multi-sector two-way collaboration with community organizations and details on research funding (Mandic S et al. 2015)

Research Impact within New Zealand

In addition to the strong research impact on the Dunedin community, the collected information and findings from the BEATS Study have an important impact on the national stage:

- The New Zealand Transport Agency will be using our findings to inform the design and implementation of the cycling skills training programme in secondary schools (such programmes are currently offered only in primary and intermediate schools throughout New Zealand) and to inform the organization’s “Behaviour Change Strategy”. Dr Mandic is currently working with the New Zealand Transport Agency to obtain funding to redesign the current cycle skills programme to better suit the needs of the children, youth and schools that are implementing the programme.
- Dunedin City Council has funded a 3-year research evaluation of the cycle skills training programme in Dunedin (PI: Dr Mandic).

- The BEATS Study will form the baseline data for a future natural experiment that will evaluate the effects of Dunedin City Cycleways development on transport to school habits in Dunedin adolescents.

- The Ministry of Transport New Zealand and New Zealand Transport Agency will be able to use the findings from the BEATS Study to inform infrastructure requirements to support walking and cycling to school across New Zealand. Whilst most of the existing data are based on studies conducted in Auckland and Wellington, BEATS is contributing Dunedin-based data collected to create a more comprehensive national picture (in collaboration with Dr Melody Oliver, Auckland University of Technology).

- BEATS Study data will complement existing data from studies conducted in Auckland and Wellington to create a more representative national picture of physical activity habits among New Zealand adolescents. These data will inform the upcoming New Zealand Report Cards on Physical Activity for Children and Youth as a part of the Global Matrix 2.0 initiative of the Active Healthy Kids Global Alliance involving 39 countries. Dr Mandic has been involved with the preparation of the 2016 New Zealand Report Cards on Physical Activity for Children and Youth in collaboration with Professor Ralph Maddison (University of Auckland) and four other New Zealand academics in the field of Physical Activity.9

- The Ministry of Health New Zealand will be able to use health-related findings from the BEATS Study, particularly objective measurements of physical activity, to inform the design of future interventions for addressing physical inactivity as a part of the recently released Childhood Obesity Plan.

- The BEATS Study represents a model for future design and implementation of translational research projects.

**Research Impact Internationally**

Though data collection is ongoing and the publication of research findings is just underway, the BEATS Study design and implementation have attracted the attention of the international scientific community. Details are provided in Appendices B and C.

- The BEATS Study protocol article describing details of the methodology was recently published in a high-impact international journal.¹

- The research team was invited to submit an article for a special journal issue on schools and communities that promote healthy active living. The article described the setup and implementation of the BEATS Study as a multidisciplinary and multi-sector collaboration. The article was published in 2015.²

- Recently, four abstracts reporting our findings were accepted for a presentation at a high profile international conference, including two abstracts accepted for verbal presentation. In addition, three abstracts were presented at high profile international conferences in 2014 and 2015.
• Dr Mandic was invited to deliver a keynote conference address about the BEATS Study at an International Conference “Exercise and Quality of Life” held in Novi Sad, Serbia, in April 2016.

• Dr Mandic was an invited speaker at two International Workshops on Active Transport held in Granada, Spain (July 2015 and December 2015).

• Dr Mandic was invited to deliver research seminar presentations about the BEATS Study at five universities abroad including Stanford University (Palo Alto, CA, USA), University of California San Diego (San Diego, CA, USA), University of Valencia (Valencia, Spain), University of Zaragoza (Huesca, Spain) and University Union - Nikola Tesla (Belgrade, Serbia).

• The BEATS Study design and implementation experiences attracted attention of researchers internationally. The insights from the BEATS Study have informed the design of the recent research projects in the United States (“Physical Environment and Active Transport (PEAT): The Impact of the Washington, DC Metro Silver Line Extension on Adolescent Active Transport”; PI: Assoc Prof Jennifer Roberts, University of Maryland, Maryland, USA) and Spain (“Pedalea y Anda al Colegio [Cycle and walk to school]: PACO Study; PI: Dr Palma Chillón-Garzón, University of Granada, Granada, Spain).

• In February-March 2016, a visiting early-career academic Dr Emilio Villa-González from University of Chimborazo (Ecuador) worked with Drs Mandic and Moore on analysis of routes to school data from the BEATS Student Survey (research article preparation in process).

• The BEATS research team will be hosting five visiting academics at Otago throughout 2017 and is organizing the International Symposium “Active Living and Environment” in August 2017.

**Development of Research Capability**

The BEATS research team has demonstrated a strong commitment to the development of research capability within both academic and non-academic settings:

• To date, 1 postdoctoral research fellow (Dr Debbie Hopkins, 2013-2016), 1 Master’s, 2 Honours and 3 summer research students have been involved in the BEATS Study (see Appendix A for details).

• In 2015-2016, two recent PhD graduates (Dr Jillian Frater, Dr Judith Rodda), a current PhD student (Daniela Aldabe), an early-career academic at Otago (Dr Christina Ergler) and three academics from other universities (Dr Melody Oliver, Dr Palma Chillón Garzón and Dr Emilio Villa González) joined the BEATS research team (see Appendix A for details).

• In 2014 and 2016, the team organized research seminar series for the BEATS research team members, research assistants and volunteers. In addition to learning sessions related to different aspects of the research journey (sessions offered only to the members of the Active Living Laboratory), 2016 seminar series also include guest speakers from the University of Otago, other New Zealand universities and abroad (sessions open to the wider community).
Involvement of stakeholders especially Dunedin City Council and Dunedin Secondary Schools Partnership throughout the design and implementation phases of the BEATS Study has resulted in better understanding of the research process among these stakeholders and development of further collaborative research projects ("Evaluation of Cycle Skills Training Programme" led by Dr Mandic).

**Comprehensive Dissemination of Research Findings**

The BEATS research team has made substantial effort to communicate research findings to both academic and non-academic communities.

**Dissemination of findings to academic audiences.** The comprehensive study design and successful implementation of the BEATS Study provide a base for multiple research outputs in the areas of physical activity, health, transport, environment and education. To date, the research team has published two articles in peer-reviewed international journals describing the setup and implementation of the BEATS Study\(^2\) and the study protocol.\(^1\) One book chapter was published recently. The findings have been presented/accepted at three key international conferences in the field including the World Congress of Cardiology 2014, American College of Sports Medicine Annual Meeting 2015 and International Congress on Physical Activity and Public Health 2016. Five papers are currently in review and multiple papers are in preparation as evidenced by 17 abstracts to be presented at the 2nd BEATS Study Symposium in July 2017 (http://www.otago.ac.nz/beats/otago611204.pdf). To date, the BEATS Study methodology and preliminary findings have been shared through two keynote conference addresses and 12 academic research seminars in New Zealand and abroad. Details on research outputs to date can be found in Appendix B.

**Disseminations of findings to non-academic audiences.** One of the key elements emphasized during the planning and implementation of the BEATS Study has been timely dissemination of the results to the stakeholders, end-users and the community. The BEATS research team has made an extra effort to release preliminary findings to the local community through technical reports, presentations to the government, professional organizations and community groups, and two symposia (Figure 4, see Appendix B for details).

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**Figure 4.** BEATS Study Research Outputs to date (see Appendices B and C for details)
Symposia. The BEATS research team has organized two local symposia to share the study findings to date with academics, schools' representatives, health professionals, policy makers and general public. As a next step, the members of the BEATS research team have initiated organization of an international symposium for 2017.

- **BEATS Study Symposium 2014** (University of Otago, 05 November 2014): Held a symposium for the local community with 7 presentations showcasing preliminary findings from the BEATS Student Survey (48 attendees from Dunedin). For more details, see [http://www.otago.ac.nz/beats/publications/index.html](http://www.otago.ac.nz/beats/publications/index.html).

- **BEATS Study Symposium 2016** (University of Otago, 21 July 2016): Hosting a symposium for the local academic and non-academic community showcasing findings from 17 abstracts prepared based on the BEATS Study findings to date (70 attendees expected including attendees from Auckland, Wellington and Christchurch). For more details, see [http://www.otago.ac.nz/beats/news/index.html](http://www.otago.ac.nz/beats/news/index.html).

- **International Symposium “Active Living and Environment: Towards a Healthier and More Sustainable Future”** (University of Otago, Dunedin, 28-30 August 2017): We are currently organizing this international symposium to gather international and national experts from multiple disciplines including public health, urban design, transportation and environment, to exchange ideas. Symposium themes will include Health, Transportation, Environment and Sustainability. Six international speakers have been confirmed to date. For more details, see [www.otago.ac.nz/active-living/news](http://www.otago.ac.nz/active-living/news). In June 2016, Dr Mandic and Dr Christina Ergler received the first research conference grant of $4,000 from OERC Sub-theme Funding 2016/2017 towards the organization of this symposium.
Research Funding

The BEATS Study is funded by seven research grants (including six external grants). The names of the principal investigators are bolded.

Table 1. BEATS Study research funding

<table>
<thead>
<tr>
<th>Start-End Date</th>
<th>Title of Research Grant, Contract or Project</th>
<th>Funding Agency</th>
<th>Amount</th>
<th>Investigators in order</th>
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<tr>
<td>10/2014-09/2017</td>
<td>Built Environment and Active Transport to School: BEATS Parental Survey</td>
<td>National Heart Foundation of New Zealand (Project Grant)</td>
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<td>S Mandic A Moore J Williams JC Spence E García Bengoechea</td>
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<td>10/2014-09/2017</td>
<td>Built Environment and Active Transport to School: BEATS Parental Survey</td>
<td>Health Research Council Emerging Researcher Grant</td>
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<td>09/2014-03/2016</td>
<td>Built Environment and Active Transport to School (BEATS) Student Survey: GIS Analysis</td>
<td>National Heart Foundation of New Zealand</td>
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<td>03/2014-02/2016</td>
<td>Built Environment and Active Transport to School: BEATS Student Survey</td>
<td>Lottery Health Research Grant</td>
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<td>University of Otago Research Grant</td>
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<td>Built Environment and Active Transport to School (BEATS) Study: Accelerometers (Equipment grant)</td>
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<td>06/2013</td>
<td>Built Environment and Active Transport to School: BEATS Pilot Project</td>
<td>Dunedin City Council</td>
<td>$8,200</td>
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Work Accomplished to Date

To date, we have completed data collection for five of the six sub-studies including surveying 1780 students, completing 18 focus groups with students, parents and teachers, and conducting 12 interviews with school principals.

Data collection for the parental survey is in progress (project funding: 2014-2017).
Summary

The BEATS Study is a multidisciplinary and multi-sector collaboration designed to advance scientific knowledge and provide service to the government, local community and schools. In the first 3 years, the BEATS research team has demonstrated outstanding scholarly achievements in advancing scientific knowledge across several disciplines, delivering an exemplary model for participatory approach to research, demonstrating important impact on the national and local stage, contributing to the development of research capability, and ensuring comprehensive dissemination of research findings. The participatory nature of the BEATS Study, with inclusion of key stakeholders and end-users from its inception and through its phases, will help to translate knowledge in an integrated manner thus ensuring that knowledge is being co-created with the intended users.

For further information about this report or the BEATS Study, please contact Dr Sandy Mandic or visit the BEATS website at www.otago.ac.nz/beats.

The BEATS research team would like to thank all funding agencies, partners, collaborators, advisory board members, research assistants, volunteers, schools, and study participants for their support and contribution to the BEATS Study in 2013-2016. We look forward to continue working together on disseminating findings from the BEATS Study and making a difference in our society.

Sincerely,

Dr Sandra Mandic
BEATS Study Principal Investigator
University of Otago
School of Physical Education, Sport and Exercise Sciences
Phone: +64 3 479 5415
Email: sandra.mandic@otago.ac.nz
Web: www.otago.ac.nz/beats

Acknowledgements

The BEATS Study is a collaboration between Dunedin Secondary Schools’ Partnership, Dunedin City Council and University of Otago. We would like to acknowledge all BEATS Study investigators, collaborators, advisory board members, research personnel (research assistants, students and volunteers), and all participating schools, principals, teachers, students and parents for their time, effort and contribution to research. The study is funded by Health Research Council of New Zealand, National Heart Foundation of New Zealand, Lottery Health Research Grant (New Zealand), University of Otago Research Grant, Dunedin City Council and internal grants from the School of Physical Education, Sport and Exercise Sciences, University of Otago.
References


APPENDIX A
BEATS Study Research Team

Principal Investigator:
Dr Sandy Mandic
School of Physical Education, Sport and Exercise Sciences, University of Otago

Associate Investigators:
Dr Antoni Moore, School of Surveying, University of Otago
Dr John Williams, Department of Marketing, University of Otago
Dr Debbie Hopkins, Transport Studies Unit, School of Geography and the Environment, University of Oxford, United Kingdom (2013-Feb 2016: Centre for Sustainability, University of Otago)
Prof John C Spence, Faculty of Physical Education and Recreation, University of Alberta, Edmonton, Canada
Dr Enrique García Bengoechea, Participatory Research at McGill, McGill University, Montreal, Canada
Mrs Charlotte Flaherty, Safe and Sustainable Transport Coordinator, Dunedin City Council
Dr Jillian Frater, Canterbury University, Christchurch

Recent collaborators (2015-2016):
Dr Christina Ergler, Department of Geography, University of Otago
Dr Judith Rodda, School of Surveying, University of Otago
Dr Melody Oliver, Auckland, University of Technology, Auckland, New Zealand
Dr Palma Chillón-Garzón, University of Granada, Granada, Spain
Dr Emilio Villa-González, University of Chimborazo, Riobamba, Ecuador
Daniela Aldabe, PhD student, School of Physical Education, Sport and Exercise Sciences, University of Otago

Advisory Board:
Mr Gordon Wilson, Chair, Dunedin Secondary Schools' Partnership
Dr Susan Sandretto, Senior Lecturer, College of Education, University of Otago
Mr Andrew Lonie, Recreation Planning Officer, Dunedin City Council (2013-2015)
Ms Ruth Zeinert, Project Manager, Getting Dunedin Active (2013-2016)
Dr Tara Duncan, Lecturer, Department of Tourism, University of Otago
Dr Janet Stephenson, Director, Centre for Sustainability: Agriculture, Food, Energy, Environment, University of Otago

Research Students (University of Otago):
Kek Chiew Ching (Master’s student; 2016-Present)
Leiana Sloane (Honours student; 2015)
Lauren Keaney (Honours student; 2014)
Tessa Pocock (Summer research student; 2015/2016)
Alex Mintoft-Jones (Summer research student; 2015/2016)
Ashley Mountfort (Summer research student: 2013/2013 and 2014/2015)
**Research Assistants** (University of Otago):

<table>
<thead>
<tr>
<th>Name</th>
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<td>Tessa Pocock</td>
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<td>Emily Brook, BSc PGDip</td>
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<td>Candice Perring, BPhEd</td>
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<td>Daria Gibbons, BSc</td>
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<td>Ashely Mountfort, BSc</td>
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<td>Lizhou Liu, PhD student</td>
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<tr>
<td>Hayley Horwood, MPhEd</td>
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<td>Priya Kannan, PhD student</td>
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<td>Claire Hodge, PGDip</td>
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<td>Arum Balasundaram, PhD</td>
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<td>Angela Findlay, PhD student</td>
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<td>Chelsea Cunningham, BPhEd</td>
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<td>Kareem Diab, PhD</td>
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<td>Madeep Kaur, PhD student</td>
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<td>Manal Aziz, PhD</td>
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**Volunteers:**

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<td>Luiza Gheorghe</td>
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APPENDIX B
BEATS Study Publications to Date (2013-2016)

Published Journal Articles


Submitted/In Review Journal Articles

1. Mandic S, Flaherty C, Pocock T, Mintoft-Jones Alex, Frater J, Chillón P, García Bengoechea E. Attitudes towards cycling skills training in New Zealand adolescents. (In revision)

2. Hopkins D, Mandic S. Perceptions of cycling among high school students and their parents. (In review)


4. Mandic S, García Bengoechea E, Spence JC. Clustering of (Un)Healthy Behaviours and Weight Status in Adolescents from Dunedin, New Zealand. (Submitted)

5. Frater J, Mandic S, Williams J, Hopkins D, Flaherty C, Moore A. A tale of two New Zealand cities: Influences on cycling to high school by adolescents in Christchurch and Dunedin. (Submitted)

Published Book Chapters


Published/Accepted Conference Proceedings for International Conferences

1. Mandic S, García Bengoechea E, Chiew Ching K, Spence JC. Physical activity in adolescents using active, motorized or combined active and motorized transport to school: Results from Dunedin, New Zealand. The 6th International Congress on Physical Activity and Public Health, Bangkok, Thailand, November 2016 (Accepted for verbal presentation)


Published/Accepted Conference Proceedings for National Conferences (within New Zealand)


2. Flaherty C, Mandic S. Cycling habits and cycle skills in Dunedin adolescents: Should cycle skills training be available to New Zealand adolescents? (Verbal presentation) TRAFINZ Conference, Transport Futures: The Changing Face of Transport, Dunedin, New Zealand (August 2015)

3. Flaherty C, Mountfort A, Mandic S. Attitudes towards cycle skills training in Dunedin adolescents. 2 Walk and Cycle Conference, October 2014, Nelson, New Zealand (Presented)


Abstracts Presented at Local Conferences


BEATS Study Symposium 2016 Abstracts


**BEATS Study Symposium 2014 Abstracts**


Technical Reports


7. Mandic S. King’s High School: Key results of the Built Environment and Active Transport to School (BEATS) Student Survey 2014/2015. November 2015 (50 pages)

8. Mandic S. Logan Park High School: Key results of the Built Environment and Active Transport to School (BEATS) Student Survey 2014/2015. November 2015 (50 pages)


12. Mandic S. St Hilda’s Collegiate School: Key results of the Built Environment and Active Transport to School (BEATS) Student Survey 2014/2015. November 2015 (50 pages)


14. Mandic S. Ao Tawhiti Unlimited Discovery School: Key results of the Built Environment and Active Transport to School (BEATS) Student Survey 2014. February 2015 (45 pages)

15. Mandic S. Bayfield High School: Key Results of the BEATS Pilot Project 2013. December 2013 (8 pages)

16. Mandic S. King’s High School: Key Results of the BEATS Pilot Project 2013. December 2013 (8 pages)

17. Mandic S. Queens High School: Key Results of the BEATS Pilot Project 2013. December 2013 (8 pages)

18. Mandic S. Taieri College: Key Results of the BEATS Pilot Project 2013. December 2013 (8 pages)
APPENDIX C

BEATS Study Presentations to Date (2013-2016)

For Academic Audiences:

Keynote Conference Presentations

1. Mandic S. Multidisciplinary and multisector approach to research in physical activity and health field. (April 2016) Exercise and Quality of Life Conference, University of Novi Sad, Novi Sad, Serbia.


Research Seminar and Workshop Presentations at Academic Institutions Abroad

1. Mandic S. Active living and health: Informing policy and community development through multidisciplinary research. (April 2016, presented in Serbo-Croatian). Faculty of Sport, University Union - Nikola Tesla, Belgrade, Serbia

2. Mandic S. Adolescents’ transport choice(s): Walk, cycle, bus or drive? (December 2015, presented in Spanish). Second International Workshop on Active Transport, Faculty of Sport Sciences, University of Granada, Granada, Spain

3. Mandic S. Factores personales, sociales y medioambientales que condicionan el transporte activo en edades juveniles en la ciudad de Dunedin (Nueva Zelanda) ["Personal, social and environmental influences on active transport to school in the city of Dunedin, New Zealand"][4]. (July 2015, presented in Spanish). Encuentro formativo de investigación del Grupo de Investigación Consolidado S65 por el Gobierno de Aragón Educación Física y Promoción de la Actividad Física (EFYPAF) [Formal research meeting of the Alliance S65 of Government of Aragón Physical Education and Promotion of Physical Activity], University of Zaragoza, Huesca, Spain

4. Mandic S. Physical activity, built environment and health in New Zealand adolescents. (July 2015). Unidad de Investigación de Teoría y Pedagogía de la Actividad Física y el Deporte (UTPAFIDE) "Physical Activity and Pedagogy Research Unit", University of Valencia, Valencia, Spain

5. Mandic S. BEATS Study: Vision, implementation and preliminary findings. (June 2015), Workshop “Despazamiento activo: investigaciones y experiencias de transferencia” ["Active transport: research and experiences transfer"], First International Workshop on Active Transport, Faculty of Sport Sciences, University of Granada, Granada, Spain

6. Mandic S. From clinical exercise physiology to public health: New Zealand research experiences. (June 2015) VA Hospital / Stanford University, Palo Alto, CA, United States

7. Mandic S. BEATS Study: Multidisciplinary and multi-sector collaboration for physical activity promotion. (May 2015). Active Living Research, University of California San Diego, San Diego, CA, United States

Research Seminar Presentations at Other Academic Institutions with New Zealand

Research Seminar Presentations within the University of Otago


3. Mandic S. BEATS Study from vision to implementation: A look behind the scene. (July 2014). School of Physical Education, Sport and Exercise Sciences, Dunedin, New Zealand.


For Non-Academic Audiences:

Presentations to the Government, Professional Associations and Community Groups


2. Mandic S. Update from the BEATS Study: A “quiet” time after data collection? (June 2016) For support staff (administrative and technical), School of Physical Education, Sport and Exercise Sciences, Dunedin, New Zealand


4. Mandic S. Active transportation research at the Active Living Laboratory. (February 2016). Presentation to a delegation from the Ministry of Transportation New Zealand visit, University of Otago, Dunedin, New Zealand.


