Worldwide Universities network (WUN) partner institutions

Context and previous work
This workshop is jointly organised by the Public health and Resilience global challenge groups of WUN. From 2016-17 Prof Mark Hanson and team at University of Southampton, and colleagues at the World Health Organisation (WHO), Department of Ageing and Life course, worked together with the aim of developing a toolkit for the assessment of physiological processes, and biological markers of factors that influence the rate of decline in function throughout the life course. This was based on the concept of Intrinsic Capacity and Functional Ability, introduced in the World report on Ageing (2015). The key objectives of the WHO, post the World Report on Ageing and Health, included addressing the knowledge gaps related to healthy ageing and building platforms to create further networks. Several meetings conducted on frailty, measurement and operationalisation of intrinsic capacity and the development of a clinical consortium for healthy ageing, set the scene for the WHO-WUN meeting, which focused on the application of the intrinsic capacity concept across the life course. In the meeting on Working Group on Metrics and Research Standards on Healthy Ageing1 (27-31 March 2017) the domains for intrinsic capacity were identified, namely - cognition, mobility/locomotor, psychosocial, sensory, vitality, pain, sleep, interpersonal activities and other bodily functions not captured2.

A three-day technical workshop was conducted in Geneva (June 28-30, 2017) led by Prof Hanson and Prof Yoav Ben-Shlomo (University of Bristol). This was attended by colleagues from the WUN, to identify the drivers of intrinsic capacity through the life course. Speakers included key stakeholders from the WHO, and other leading academics in the field of life course epidemiology. A gap highlighted during the meeting was the lack of consideration of resilience and adaptation of intrinsic capacity through the life course and its influence on later life health.

Prof Steve Reid at University of Cape Town together with colleagues at other WUN universities are leading the research group on resilience in youth and service providers, and were part of the Pathways to Resilience IV conference in June 2017. This meeting focused on how individuals, families and communities adapt positively to adversity such as migration. It provided an overview on how this adaptation varies across cultures, how those in the ‘Global South’ define resilience and how professional and semi-professional service providers can meaningfully support health, wellbeing and social justice at a population level.

1 Working Group on Metrics and Research Standards on Healthy Ageing - 27-31 March 2017
Workshop on Promoting Adaptability across the Life course, May 2018

To advance the agenda on using a life course approach to achieve optimal individual, family and population health, we are organising an expert meeting, with emphasis on promoting adaptability across the life course, using the Healthy Ageing framework as well as acknowledging the importance of early child health and development. This interdisciplinary workshop will harness ongoing research at WUN universities, encourage participation from early career researchers and create opportunities for future collaborations.

The need to revise the WHO definition of Health has been widely debated, and the introduction of the concept of intrinsic capacity and functional ability were a start to moving beyond a disease-focused approach. Functional ability comprises the intrinsic capacity (the composite of all the physical and mental capacities) of the individual, relevant environmental characteristics, and the interactions between the individual and these characteristics. The goal of Healthy Ageing is to build, and maintain this functional ability for as long as possible. Healthy ageing in many ways supports the call to define health as the ‘ability to adapt to one’s environment’.

The terms resilience and adaptability are often used across health and social sciences, without a universally agreed definition or measure of resilience or adaptability. As a result, there are variations in the measured prevalence of resilience, and variations in the factors found to be associated with resilience. Resilience can be understood not only as an outcome but also as a dynamic process of positive adaptation in the face of adversity. Through this workshop, we aim to understand the role of resilience in long-term health, how aspects of resilience can be measured and possible interventions that can support developing and sustaining resilience through the life course.

Themes for the 2 day workshop directly preceding the WUN-AGM 2018 at the University of Western Australia include:

- Understanding current knowledge on adaptability across the life course. Clarification on terminologies used in different disciplines. Measuring adaptability vs. reserve capacity.
- Measures that can be undertaken across the life course to slow the rate of decline of intrinsic capacity by sustaining adaptability to challenges.
- Inflammatory processes are key in age related changes occurring in the locomotor domain, and has been the focus of the In-FLAME network. The induction of inflammatory responses across the life course may also contribute to the pro-inflammatory trajectory of an individual. However, immune function has not been adequately considered in the existing domains of intrinsic capacity.
- Physical activity is important at every age, and this includes in later life and for healthy aging, specific activities such as muscle strengthening, and balance and stability exercises to prevent falls and maintain independent living. There is evidence supporting the need for building

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locomotor capacity earlier in the life course, such as in working age adults, by providing interventions to increase levels of physical activity.

- How do the concepts of adaptability and intrinsic capacity apply to the ‘domains’ of psychosocial function as set out by WHO?

At the workshop, there will be an opportunity to review interventions to support adaptability in clinical and community settings – e.g. case studies from Auckland, Beijing (Renmin University China), and South Africa (understanding resilience in later life in lower resource settings).

### Outcomes

The WUN – WHO partnership provides a basis for planning and supporting the WHO ‘Decade of Healthy Ageing 2020-2030’. Key objectives of the WHO, following the *World Report on Ageing and Health*, include addressing the knowledge gaps related to healthy ageing and building platforms to create further networks. We have been successful in establishing strong working relationships with the WHO (Department of Ageing and Life course, and the Department of Maternal, Newborn, Child and Adolescent Health), and this has helped in dissemination of our research on a wider scale. The proposed initiative also follows the strategy of the Global Challenge agreed at the Hong Kong meeting of the Public Health group, linking our expertise in developmental origins of health and disease to that of ageing, using a life course approach.

Expected outcomes include –
- Published meeting report
- Paper in high impact journal
- Input into WHO decade of Healthy Ageing 2020-2030
- Development of a collaborative proposal/grant application, and opportunities for early career researchers.

### Contact details

**Professor Mark Hanson**  
Institute of Developmental Sciences  
Southampton  
M.Hanson@soton.ac.uk

**Professor Steve Reid**  
Primary Health Care Directorate  
University of Cape Town  
steve.reid@uct.ac.za

**Associate Professor Hayley Christian**  
School of Population and Global Health  
The University of Western Australia  
hayley.christian@uwa.edu.au

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Objectives:

1. Understand current knowledge on adaptability across the life course, clarification on terminologies used in different faculties and review best available measures for reserve capacity and adaptability.

2. Review measures that can be undertaken across the life course to slow the rate of decline of intrinsic capacity by sustaining adaptability to the challenges.

3. Develop ideas to promote and test the measures across diverse settings

4. Develop a collaborative programme within the network to support opportunities for early career researchers and review funding opportunities.
# AGENDA

## Day 1: Monday, 21 May 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>8.30 –</td>
<td>Arrival and registration</td>
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<tr>
<td>9.00</td>
<td>Welcoming remarks, Introduction of participants, expectations and review meeting objectives</td>
<td>Prof Mark Hanson</td>
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<tr>
<td>9.20</td>
<td><strong>Session 1: Setting the scene and defining terminology</strong></td>
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<tr>
<td>9:20 –</td>
<td>Healthy ageing, clarifying concepts (intrinsic capacity and functional ability)</td>
<td>Prof Mark Hanson</td>
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<tr>
<td>10.20 –</td>
<td>Update from WHO meeting on trajectories of intrinsic capacity across the life course</td>
<td>Dr Chandni Maria Jacob</td>
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<tr>
<td>10.40</td>
<td>Connecting intrinsic capacity across the life course to resilience and adaptability</td>
<td>Prof Steve Reid</td>
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<tr>
<td>10.20 –</td>
<td>Open discussion</td>
<td>Chair Prof Ngaire Kerse</td>
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<tr>
<td>10.40</td>
<td><strong>10.40 – 11.00 Break</strong></td>
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<tr>
<td>11.00 –</td>
<td><strong>Session 2: Challenges of population Ageing - Highlighting current situation and priority areas in ageing research in respective contexts</strong></td>
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<tr>
<td>11.00</td>
<td>Perspective from country with ageing population – China</td>
<td>Prof Jean Woo</td>
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<tr>
<td>12.00</td>
<td>Perspective from African nations with younger demographics – Ghana</td>
<td>Prof C. Charles Mate-Kole</td>
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<tr>
<td>12.30</td>
<td>Perspective from high income settings – (USA)</td>
<td>Ms Lauren Oberlin</td>
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<tr>
<td>12.00 –</td>
<td>Open discussion</td>
<td>Chair – Prof Leon Flicker</td>
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<tr>
<td>12.30-13.30</td>
<td><strong>Lunch</strong></td>
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<td>13.30 –</td>
<td><strong>Session 3: Promoting Adaptability across the life course</strong></td>
<td>Chair – Prof David Preen</td>
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<td>14.30 –</td>
<td>The first 1000 days and DOHaD perspective</td>
<td>Prof Valerie Verhasselt and Dr Donna Geddes</td>
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<td>14.30</td>
<td>Early childhood interventions</td>
<td>Prof Cate Taylor</td>
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<td>15.00</td>
<td>Factors in early life influencing adaptation (chronic stress in pregnancy)</td>
<td>Dr Demi Letsa</td>
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<td><strong>Case study 1 Domain of psychosocial function and cognition</strong></td>
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<td>Measures through the life course with focus on ageing in relation to the domain of cognition</td>
<td>Prof Anthony Hannan</td>
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</tbody>
</table>
Open discussion
To discuss best available measures for reserve function in the domain of cognition and psychosocial function

15.00-15.40 Case study 2: the domain of locomotor function (musculo-skeletal system)
(20 min talks)

- Measures through the life course with focus on ageing in relation to the musculoskeletal system
- Inflammatory pathways and immune processes in ageing

Dr Nicholas Fuggle

15.40 – 16.00 Break

16.00-16.20 Socioeconomic determinants of intrinsic capacity across the life course
Prof Diana Kuh (by Skype)

16.20-16.40 Social pathways and health behaviours across the life course and effects on healthy ageing
Dr Kate O’Loughlin

16.40-17.00 Elderly care and Healthy Ageing
Prof Sue Yeandle

18.30 – Reception and working dinner (Venue TBC)

Day 2: Tuesday, 22 May 2017

9:00-9.20 Open discussion based on topics covered in Day 1
- To discuss best available measures for reserve function in the domains of locomotor function and immune function.
- What are the determinants of decline in intrinsic capacity for these systems? Measures?

Chair Prof Steve Reid

9.20 – 10.30 Session 4: Promoting Adaptability: Physical activity based interventions to improve physical function across the life course
(20 min talks)

- Mid to Older aged adults
  - Importance of physical activity across the life course: birth to adults
  - Complex interventions to prevent frailty

Prof Gavin Turrell

10 min Open discussion
Chair Prof Jean Woo

10.30-11.00 Break

11.00 – 12.00 Session 4 cont.

- The role of physical activity in promoting healthy ageing
- Impact of mental health on physical activity and prevention of falls
- Healthy ageing: Interactions between personal and environmental factors

Ms Lauren Oberlin
Dr Sophia-Lorraine Allie
Dr Ruby Yu, CUHK
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>12.00 –</td>
<td>Maximising Health for older people</td>
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<td>12.30</td>
<td>Prof Ngaire</td>
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<td>12.30 –</td>
<td>Open discussion</td>
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<td>13.00</td>
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<tr>
<td>13.00 –</td>
<td>Lunch</td>
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<tr>
<td>14.00</td>
<td>Open discussion and conclusions, next steps</td>
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<tr>
<td>16.00</td>
<td>Review of opportunities for funding, developing further collaborative</td>
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<td>projects, opportunities for early career researchers</td>
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<td>16.00-17.00 – Closed meeting organizing committee</td>
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**Time:** 18.30-21.30 **Welcome to Western Australia special event**

**Venue:** Frasers Kings Park

Buses depart Pan Pacific at 18.15

The interdisciplinary workshop will be attended by academics, policy makers with expertise across multiple stages of the life course. While some experts will be presenting, others will chair sessions and lead group discussions.

We intend to limit the group size to 25 to 30 participants to encourage productive discussions. We anticipate that attendees from WUN partner institutions will fund their own travel. We have funds for a limited number of invitees from non-WUN universities, and to support a small number of early career researchers.

Participants are encouraged to circulate relevant material for pre-reading before the workshop.