Meeting Handbook & Program
With demonstrated reductions in fracture risk compared with placebo, you can feel confident that each dose of Prolia offers 6 months of protection.

SHE’S PROLIA® PROTECTED

*Prolia* reduces the risk of osteoporotic fracture compared with placebo.\(^1\)\(^-\)\(^3\)

With demonstrated reductions in fracture risk compared with placebo, you can feel confident that each dose of Prolia offers 6 months of protection.

PBS Information: Authority required (STREAMLINED) as treatment for osteoporosis. Refer to PBS Schedule for full information.


Table of Contents

Convenor’s Welcome..................................................................................................................... 1
Local Organising Committee ......................................................................................................... 1
Scientific Committee ..................................................................................................................... 1
ANZSSFR Executive Officer .......................................................................................................... 1
President’s Welcome ..................................................................................................................... 2
ANZSSFR Council .......................................................................................................................... 2
Sponsors ......................................................................................................................................... 3
General Information ...................................................................................................................... 6
Conference and Social Events ..................................................................................................... 7
Exhibition ....................................................................................................................................... 8
Invited Speakers ............................................................................................................................ 9
Scientific Program ....................................................................................................................... 12
Poster List .................................................................................................................................... 16
Abstracts ....................................................................................................................................... 19
Invited Plenary Abstracts ............................................................................................................ 20
Symposium Abstracts .................................................................................................................. 23
Outstanding Abstracts ................................................................................................................ 29
Oral Communications Abstracts ................................................................................................ 31
Poster Abstracts .......................................................................................................................... 37
You’re invited

ANZSSFR 2018 Annual Meeting
23–25 November 2018
St David’s Theatre Complex,
University of Otago, Dunedin,
New Zealand
Welcome

It is my pleasure to welcome you to the Australian and New Zealand Society for Sarcopenia and Frailty Research 2017 Annual Meeting. Following the successful inaugural conference in Melbourne last November, the 2017 conference is in Adelaide, South Australia also known as the Festival City.

The conference will be held at Adelaide Health and Medical Sciences Building, The University of Adelaide, North Terrace, Adelaide, South Australia.

Both Sarcopenia and Frailty are increasingly important and affect many people, especially those aged 80 years and older. Identifying, preventing and treating these conditions will better allow older people achieve Healthy Ageing.

Over two days, there will be opportunity to hear from internationally renowned scientists and clinicians and collectively, we will improve our knowledge base in these important health related topics.

There will be opportunity to showcase new research as well as network with our colleagues where we can share ideas and forge collaborations. The abstracts will be published in a special issue of the Australasian Journal of Ageing. This national conference is multi-disciplinary in nature and will be attractive not only to clinicians but also scientists from multiple disciplines not limited to epidemiology, food science, bench-top research and health economics.

On behalf of our Scientific/Steering Committee, I would like to welcome you to Adelaide.

Prof Renuka Visvanathan
MBBS, FRACP, PhD
Convenor
Australian and New Zealand Society for Sarcopenia and Frailty Research 2017 Annual Meeting
Project Lead
National Health and Medical Research Council Centre of Research Excellence in Frailty and Healthy Ageing

Local Organising Committee
Professor Renuka Visvanathan, Convenor
Associate Professor Solomon Yu
Dr Ivanka Hendrix
Dr Natalie Luscombe-Marsh

Scientific Committee
Professor Renuka Visvanathan
Associate Professor Solomon Yu
Professor Gustavo Duque
Professor Rob Daly
Professor Ian Cameron
Professor Ian Chapman
Associate Professor Debra Waters
Ms Rita Kinsella (Scientific Secretary)

ANZSSFR Executive Officer
Gwen McMaster-Fay
E gwen.mcmaster@unimelb.edu.au
https://www.anzssfr.org

Meeting Secretariat
Lara Malcolm, Meeting Managers
The Meeting People Pty Ltd
PO Box 764
MITCHAM South Australia 5062
Tel: +61 8 8177 2215
Email: lara@themeetingpeople.com.au
President’s Welcome

Welcome to the First Annual Meeting of our still young Australian and New Zealand Society for Sarcopenia and Frailty Research (ANZSSFR). Many exciting things have happened since the creation of our Society in November 2016: Our Society was officially registered together with our Constitution; our Council has been created and is composed of some of the most respected leaders in the field from all over Australia and New Zealand; and our membership has grown 200% with requests for affiliations happening in a regular basis. In summary, we are now a vibrant scientific society with a great future!

This time, we are meeting at beautiful Adelaide to listen to significant authorities in the field. During the two days, we will have the opportunity of attending more than 40 lectures and oral presentations while also visiting a large number of poster presentations. This meeting was initially inspired by the successful International Conference on Sarcopenia and Frailty Research, which is organised in the USA and Europe. Although we have followed some of their innovative ideas, such a short duration with multiple oral presentations, we have added our touch by including a balanced program between frailty and sarcopenia, basic and clinical sciences, medical and allied health professions, and senior and junior investigators. Our independent Scientific Committee and our Local Organising Committee have prepared an excellent and high-quality program that I hope you will enjoy. Besides, our event organiser The Meeting People has done a fantastic job to assure that this will be a memorable event.

Although a lot was done this year, we still have a busy agenda facing us. We are working hard to obtain an ICD10 code for sarcopenia in Australia. We are also trying to integrate sarcopenia and frailty within primary care while also providing CME activities for physicians and allied health professionals. In addition, we already started to prepare our next annual meeting in Dunedin (New Zealand) in November 2018.

In the meantime, I invite you to attend as many lectures and to do as much networking as possible. I am convinced that this Society is unique, and that this is also an exceptional opportunity to meet many colleagues from multiple backgrounds but with similar interests on sarcopenia and frailty. After this Conference, I hope that all of us will go back home with lots of new knowledge that hopefully will be of significant benefit to our patients, which should be the “raison d’être” of all these scientific initiatives.

GUSTAVO DUQUE, MD, PhD, FRACP, GSAF
President – Australian and New Zealand Society for Sarcopenia and Frailty Research (ANZSSFR)

Professor and Chair of Medicine – Western Health
Director – Australian Institute for Musculoskeletal Science (AIMSS)
MELBOURNE MEDICAL SCHOOL, THE UNIVERSITY OF MELBOURNE

ANZSSFR Council

Professor Gustavo Duque – Founding President
Professor Ian Cameron – Vice President
Professor Rob Daly – Secretary
Ms Rita Kinsella - Treasurer
Regional Councillors:
Associate Professor Ruth Hubbard - Queensland
Professor Andrea Maier – Victoria and Tasmania
Professor Susan Kurrle – NSW and ACT
Associate Professor Solomon Yu – South Australia
Clinical Professor Charles Inderjeeth – Western Australia
The Australian and New Zealand Society for Sarcopenia and Frailty Research 2017 Annual Meeting gratefully acknowledges the support of the following companies and organisations:

**PLATINUM SPONSOR**

![Amgen Logo](image)

**SILVER SPONSORS**

![Lilly Logo](image)
![ProtoKinetics Logo](image)

**BRONZE SPONSORS**

![Hospital Research Foundation Logo](image)

**INSTITUTIONAL SPONSORSHIP**

![University of Adelaide Logo](image)
![Frailty and Healthy Ageing Logo](image)

**EXHIBITORS**

![AISS Logo](image)
![Hologic Logo](image)
![Nutricia Logo](image)
TAKE BACK CONTROL OF OSTEOPOOROSIS*

*Don’t just preserve bone. Build it.1,2

FORTEO® is the only TGA-approved agent that builds bone, significantly reducing the risk of future fractures.4-6

FORTEO Connect, a free 18-month support service that compliments the care you are already providing.

WARNING: In male and female rats, teriparatide caused an increase in the incidence of osteosarcoma that was dependent on dose and treatment duration. The effect was observed at systemic exposures to teriparatide ranging from 3 to 60 times exposure in humans given a 20 mcg dose and occurred after treatment durations ranging from 6 to 24 months. Effects were dependent on dose and duration of treatment, but no effect dose was not determined. The relevance of the rat osteosarcoma findings to humans has not yet been established. (See PRECAUTIONS, Carcinogenesis and ADVERSE REACTIONS – Spontaneous data.)

PBS Information: Authority Required. Initial treatment, as the sole PBS subsidised agent, by a specialist or consultant physician, for severe, established osteoporosis in a patient with a very high risk of fracture who: a) has a bone mineral density (BMD) T-score of -3.0 or less, and b) has had two or more fractures due to minimal trauma, and c) has experienced at least one symptomatic new fracture after at least 12 months continuous therapy with an anti-resorptive agent at adequate doses. Refer to the PBS schedule for full criteria.


FORTEO® (teriparatide[rbe]) MINIMUM PRODUCT INFORMATION. Indication: Treatment of osteoporosis in postmenopausal women. Treatment of primary osteoporosis in men. Treatment of osteoporosis associated with sustained systemic glucocorticoid therapy in women and men at high risk for fracture. Dosage: 20 mcg sc once daily. Refer to User Manual for proper injection technique. Contraindications: Page’s disease. Hypersensitivity to product. Precautions: To minimise potential risk of osteosarcoma, maximum lifetime therapy duration is 18 months. Informed consent from patients required. Not recommended for patients with increased risk of osteosarcoma (unexplained elevations of alkaline phosphatase, open epiphyses, prior radiation therapy involving skeleton). Not recommended for bone disorders other than primary osteoporosis. Children, young adults. Potential for hypercalcemia. Potential for interaction with digoxin, Hypotension, Urolithiasis. Pregnancy and lactation. Haematomas at injection sites with concomitant anticoagulants. Adverse Reactions: Leg cramps, muscle spasms, nausea, hyperuricaemia, local reaction and injection site. Allergic events soon after injection. Refer to PI for others. There has been a report of metastatic osteosarcoma with subsequent fatal outcome in a 72 year old woman with osteoporosis and low back pain who had received teriparatide for 14 months prior to presentation. Causality cannot be established on the basis of this single case and a surveillance program continues. Osteosarcoma occurs at a rate of approximately 4 in one million per year (1 in 250,000 per year) in the general population over 60 years old and at the same rate in women over the age of 70 years. At present it is not known if humans treated with FORTEO have an increased risk of osteosarcoma. Based on PI last amended: 2 November 2015.

ProtoKinetics
The New Standard in Gait Analysis

PKMAS
ProtoKinetics Movement Analysis Software
The Most Innovative Software for Gait & Balance Analysis

Applications:
* Clinical Decision-making
* Quantifying Progress
* Fall Risk Screening
* Clinical Trials
* Research

A Few of Our Customers:

Zeno
Durable, Versatile, Convertible
The Most Popular Gait Mat Technology in the World

www.ProtoKinetics.com  -  info@protokinetics.com  -  610-449-4879

www.GaitAndBalanceAcademy.com
General Information

Venue
Adelaide Health and Medical Sciences (AHMS) Building, The University of Adelaide.
The conference is being held at The University of Adelaide's newest building, the Adelaide Health and Medical Sciences Building on corner of North Terrace and George Street, Adelaide, South Australia. The AHMS is located next door to the SAHMRI building. http://health.adelaide.edu.au

Registration Desk
The registration desk will be open at the following times:
Friday 24 November 08:00 - 17:30
Saturday 25 November 07:30 - 17:30

Name Badges
Each conference delegate will receive a name badge on registration. The badge will be your official pass and must be worn to gain entry to all sessions, lunch and refreshment breaks. If a name badge for a partner attending a social function is required, please ask at the registration desk.

Speaker Preparation
All speakers must report to the Audio Visual Technician located in the room that they are presenting in. Please load your talk with the technician during the breaks prior to your session. It is preferable to load at least two sessions prior to your session.

Poster Presenters
All Posters are up for the duration of the meeting. Posters should be portrait and no more than 1 metre wide x 1.2 metres long. Posters can go up from Friday morning from 8 am and should be removed by the end of afternoon tea on Saturday 25th November. Poster authors should stand by their posters during morning tea on both days to answer queries in relation to your research. Velcro will be provided to affix your poster to the boards.

Abstract Book
All abstracts are available online for downloading prior to the start of the Meeting. Please refer to the link Meeting Handbook to obtain a copy to save to your device. No printed abstract books or programs will be provided during the meeting.

WIFI
WIFI will be available at the AHMS. A code will be given to you at the time of the Meeting.

Catering Breaks and Special Diets
All catering breaks will be located on Level 1 with the exhibitions. We are very grateful for the support of our sponsors and encourage you to take the time to visit them during the breaks. The waiting staff have been advised of any special diets to date. Please see the staff at the Registration Desk or the wait staff to locate your requirements.

Mobile Phones
Please ensure that all mobile phones are switched to silent mode during scientific sessions.

Refreshments
All refreshments will be served in the exhibition area located on Level 1. AHMS. If you have requested a special diet please make yourself known to one of the waiting staff.
Conference and Social Events

**AMGEN Lunchtime Symposium**

Date: Friday 24 November 2017  
Time: 1.15 pm - 2.15 pm  
Venue: AHMS 1059a/1059b Lecture Theatre, Level 1

Chair: Professor Renuka Visvanathan, Director, Adelaide Geriatrics Training and Research with Aged Care Centre, University of Adelaide, South Australia  
**Professor Cyrus Cooper OBE**, Director of the MRC Lifecourse and Epidemiology Unit at University of Southampton and Professor of Epidemiology at Oxford University, United Kingdom  

**Topic:** Sarcopenia and Physical Frailty: Conceptual Frameworks and Descriptive Epidemiology

The AMGEN Lunchtime Symposium will be located on Level 1 during the lunch break on Friday. The symposium will be located in AHMS 1059a/1059b Lecture Theatre, Level 1. Please collect your lunch prior to the start of the session.

**Welcome Reception**  
Sponsored by The Hospital Research Foundation.

Date: Friday 24 November 2017  
Time: 1830-2030 (Coach transfers from AHMS at 1815)  
Venue: National Wine Centre, Corner of North Terrace and Dequetteville Terrace, Adelaide.

This venue is a 10-15 minute walk down North Terrace from the AHMS. There will be a coach transfer that will depart at 1815 from AHMS if you prefer not to walk.

If you have not registered for this event and wish to attend, please notify the Meeting Secretariat to be included in the numbers prior to the event. Substantial finger food, wine, beer and soft drinks will be served. One ticket is included in the full registration fee. Name badges must be worn. Extra tickets may be purchased from the registration desk.

**Meet the Professor Breakfast Sessions**

Date: Saturday 25 November 2017  
Time: 0800-0850

Venues:  
Breakfast 1: Professor Matteo Cesari - Room 405a, Level 4  
Breakfast 2: Professor Cyrus Cooper - Room 405b, Level 4

Please arrive 10 minutes prior to the start of the session.
Exhibition

Please take the time to visit our conference supporters in the exhibition area.

<table>
<thead>
<tr>
<th>Booth</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Hologic (Australia) Pty Ltd</td>
</tr>
<tr>
<td>4</td>
<td>Nutricia</td>
</tr>
<tr>
<td>5</td>
<td>Eli Lilly (Australia) – SILVER SPONSOR</td>
</tr>
<tr>
<td>6</td>
<td>Amgen – PLATINUM SPONSOR</td>
</tr>
<tr>
<td>7</td>
<td>ProtoKinetics – JC Measurements – SILVER SPONSOR</td>
</tr>
<tr>
<td>8</td>
<td>The Australian Institute for Musculoskeletal Science (AIMSS)</td>
</tr>
<tr>
<td>8</td>
<td>The a2 Milk Company</td>
</tr>
</tbody>
</table>
Invited Speakers

Professor Cyrus Cooper OBE, DL, FMedSci

Cyrus Cooper is Professor of Rheumatology and Director of the MRC Lifecourse Epidemiology Unit; Vice-Dean of the Faculty of Medicine at the University of Southampton; and Professor of Epidemiology at the Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford.

He leads an internationally competitive programme of research into the epidemiology of musculoskeletal disorders, most notably osteoporosis. His key research contributions have been: 1) discovery of the developmental influences which contribute to the risk of osteoporosis and hip fracture in late adulthood; 2) demonstration that maternal vitamin D insufficiency is associated with sub-optimal bone mineral accrual in childhood; 3) characterisation of the definition and incidence rates of vertebral fractures; 4) leadership of large pragmatic randomised controlled trials of calcium and vitamin D supplementation in the elderly as immediate preventative strategies against hip fracture.

He is President-Elect of the International Osteoporosis Foundation; Chair of the BHF Project Grants Committee; an NIHR Senior Investigator; and Associate Editor of Osteoporosis International. He has previously served as Chairman of the MRC Population Health Sciences Research Network; Chairman of the National Osteoporosis Society of Great Britain; past-President of the Bone Research Society of Great Britain; and has worked on numerous Department of Health, European Community and World Health Organisation committees and working groups. He has published extensively (over 850 research papers; h-index 119) on osteoporosis and rheumatic disorders and pioneered clinical studies on the developmental origins of peak bone mass. In 2015, he was awarded an OBE for services to medical research.

Professor Manuel Montero-Odasso, MD, PhD, FRCPC

Manuel Montero-Odasso, MD (University of Buenos Aires, Argentina), PhD, (University of Buenos Aires, Argentina), Postdoctoral Fellowship (McGill University, Canada), FRCPC (Internal Medicine and Geriatric Medicine, Royal College, Canada) is currently Associate Professor of Medicine, Epidemiology and Biostatistics at the University of Western Ontario, Canada and Director of the “Gait and Brain Lab” at Parkwood Institute, London, Ontario.

He leads the Gait and Brain Health Program at Parkwood Institute, with the goal of understanding the mechanisms and potential treatment of age-related mobility and cognitive decline. He focuses on gait performance research as methodology to early detect and future prevent the development of frailty, falls, and dementia in older people. He has pioneered clinical trials applying the novel approach of “improving cognition to improve mobility” and the use of “motor biomarkers” to predict progression to dementia. He is team leader in the Canadian Consortium on Neurodegeneration in Aging, Canada’s dementia research strategy.

Professor Montero-Odasso has established a successful research program while remaining an active clinician. His research has received continued peer-reviewed federal funding, has been published in high-impact journals, and has received several accolades including the American Geriatrics Society Investigator Award, the Schulich Clinician Scientist Award, the Premier of Ontario Excellence Research Award, and the CIHR New Investigator Award. He serves as editorial board member of ageing journals including Journal of Gerontology Medical Sciences, Geriatrics, and Journal of Alzheimer’s Disease. He has been invited to give more than 65 international presentations as a guest speaker.
Invited Speakers

Professor Matteo Cesari

Professor Matteo Cesari is Director of the Geriatric Unit at the Fondazione Ca' Granda-Ospedale Maggiore Policlinico (Milan, Italy) and Professor of Geriatrics at the University of Milan (Milan, Italy). His research expertise is in the screening, assessment and management of the frailty condition to prevent the disabling cascade. Prof. Cesari has been serving as consultant to the World Health Organization in the development of recommendations for healthy ageing and integrated care for older people. He is the coordinator of the European Union Geriatric Medicine Society (EUGMS) Special Interest Group on ‘Frailty in older persons’, Editor-in-Chief of the Journal of Frailty & Ageing, and Associate Editor of the Journal of Gerontology Medical Sciences. He is a member of the International Consensus Committee on Frailty.

Dr Olga Theou

Dr. Theou is a gerokinesiologist and an Assistant Professor of Medicine at Dalhousie University, Nova Scotia, Canada. She is also an Affiliated Scientist of Geriatric Medicine with the Nova Scotia Health Authority and an Adjunct Senior Lecturer of Medicine with the University of Adelaide in Australia. She has extensive experience in clinical and epidemiological frailty and in mobility/physical activity assessments and prescription, in both community and clinical settings. Dr Theou is collaborating with the CRE researchers in frailty, physical activity, mobility and epidemiological research and she is playing a pivotal role on the mentorship of junior centre researchers.

Dr Paul Gregorevic

Dr Gregorevic gained his PhD from the University of Melbourne Department of Physiology in 2001. He subsequently trained as a postdoctoral research fellow within the University of Washington Department of Neurology, Seattle USA, where he acquired expertise in molecular biology and the design of recombinant viral vectors as gene delivery technologies for studying and treating muscle diseases. In 2008, Dr Gregorevic relocated his research program to the Baker Heart and Diabetes Institute, Melbourne, where he is Head of the Laboratory for Muscle Biology and Therapeutics Development, and Director of the Recombinant Viral Vector Core. His research interests focus on elucidating the mechanisms underlying the development and regulation of the skeletal muscle phenotype, and the development of novel therapeutic interventions to combat loss of muscle function associated with heritable and acquired diseases and the aging process.

Dr Gregorevic has authored numerous papers, reviews and book chapters concerning the mechanisms of skeletal muscle function and adaptation, neuromuscular disorders, and intervention strategies for their treatment. He has served as an elected member of the Executive Committee of the Australian Gene Therapy Society since 2009.
Invited Speakers

**Associate Professor Debra Waters**

Associate Professor Waters is the Director of Gerontology Research at the University of Otago in Dunedin New Zealand. This is a joint appointment between the Department of Medicine and School of Physiotherapy. She is also the Director of the University of Otago Collaboration of Ageing Research Excellence (CARE) research theme, Deputy-Director of the Ageing Well National Science Challenge and Vice President of the New Zealand Association of Gerontology.

She began research on sarcopenia and sarcopenic-obesity in the 1990 as the co-director of the New Mexico Ageing Process study in Albuquerque, New Mexico. She immigrated to New Zealand in 2005 and since then has been involved with testing safe and effective life-style interventions for frail obese elders, effective community-based interventions for pre-frail older adults, and peer-led models of community falls prevention.

**Associate Professor Dina LoGiudice**

Associate Professor Dina LoGiudice is a Consultant Physician in Aged Care, at Royal Park campus Melbourne Health, and visiting Geriatrician at the Victorian Aboriginal Health Service and Aboriginal Community Elders Service in Melbourne. Dina is a clinical researcher and has been awarded NHMRC funding since 2003 to address the assessment, prevalence and unmet needs of older Aboriginal and Torres Strait Islander people with dementia and other common conditions of the aged, particularly those living in remote and regional areas of Australia. This work has extended to collaborations in a number of states and more recently with First Nation Canadians. Her other interests include cross cultural assessment of older people and best practice of dementia care in hospitals.
Friday 24th November 2017

08:00-17:30 Registration Desk open Ground Floor Foyer

09:00-09:20 Conference Opening and Welcome AHMS G030 Lecture Theatre, Ground Floor Convenor: Professor Renuka Visvanathan, Director, Adelaide Geriatrics Training and Research with Aged Care Centre, University of Adelaide, South Australia
Welcome To Country: Taylor Power-Smith Hon Ken Wyatt AM, MP, Minister for Aged Care

09:20-10:10 Plenary Session AHMS G030 Lecture Theatre, Ground Floor Chair: Professor Renuka Visvanathan, Director, Adelaide Geriatrics Training and Research with Aged Care Centre, University of Adelaide, South Australia
A/Professor Dina LoGiudice, Geriatrician, Melbourne University, Victoria
Understanding Frailty in Older (and not so old) Aboriginal and Torres Strait Islander people

10:15-11:15 Symposium 1 - Muscle health during hospitalization and recovery AHMS G030 Lecture Theatre, Ground Floor Chair: Andrea Maier
EMPOWER: Determinants of muscle health during acute hospitalization
Esmee Reijnierse
EMPOWER geriatric rehabilitation: Improving recovery from acute physical deterioration
Andrea Maier
EMPOWER: Understanding the role of inflammation in muscle health to improve geriatric rehabilitation
Gordon Lynch


11:15-11:30 Morning tea, posters and exhibition Level 1 Foyer

11:30-12:30 Plenary Session AHMS G030 Lecture Theatre, Ground Floor Chair: Dr Tim Henwood, Southern Cross Care, South Australia
Dr Olga Theou, Assistant Professor of Medicine, Dalhousie University, Nova Scotia, Canada
Are Sedentary Behaviour Harmful For All Older Adults?

12:30-14:30 Lunch, posters and exhibition including: AMGEN Sponsored Symposium AHMS 1059a/1059b Lecture Theatre, Level 1 Chair: A/Professor Solomon Yu, Geriatrician, The Queen Elizabeth Hospital, South Australia
Professor Cyrus Cooper OBE, Director of the MRC Lifecourse and Epidemiology Unit at University of Southampton and Professor of Epidemiology at Oxford University, United Kingdom
Sarcopenia and Physical Frailty: Conceptual Frameworks and Descriptive Epidemiology

14:30-15:30 Symposium 3 - Novel Exercise and Dietary Approaches For Sarcopenia and Cognitive Frailty AHMS G030 Lecture Theatre, Ground Floor Chair: Robin Daly
Novel exercise and nutritional approaches to optimise muscle health and mobility in the elderly
Robin Daly
Multi-factorial dietary, exercise and cognitive interventions for cognitive frailty
Helen Macpherson
Protein-fortification for managing frailty: implications for aged-care service providers
Natalie Luscombe-Marsh

14:30-14:50 14:50-15:10 15:10-15:30

15:30-16:30 Symposium 4 - Critical windows: Early-life precursors to sarcopenia and osteosarcopenia AHMS 1059a/1059b Lecture Theatre, Level 1 Chair: Sharon Brennan-Olsen
Optimising neuromuscular and musculoskeletal development in children to reduce later risk of sarcopenia: The Paediatrician’s viewpoint
Christine Rodda
Social disadvantage, childhood adversity and the musculoskeletal system: Poverty of muscle and bone?
Sharon Brennan-Olsen
The sedentary child: Muscle mass and strength
Rachel Duckham
**Friday 24th November 2017 continued...**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:30-15:45</td>
<td>Afternoon tea and exhibition</td>
<td>Level 1 Foyer</td>
</tr>
<tr>
<td>15:45-16:45</td>
<td><strong>Plenary Session</strong></td>
<td>AHMS G030 Lecture Theatre, Ground Floor</td>
</tr>
<tr>
<td></td>
<td>Chair: Professor Susan Kurrle, Curran Chair in Health Care of Older People in the Faculty of Medicine at the University of Sydney</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Professor Manuel Montero Odasso</strong>, Director, Gait and Brain Laboratory, Parkwood Institute London, Ontario, Canada</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frailty and cognitive impairment in older adults. Fellow travelers or partners in crime?</td>
<td></td>
</tr>
<tr>
<td>16:45-17:45</td>
<td><strong>Outstanding Abstracts</strong></td>
<td>AHMS G030 Lecture Theatre, Ground Floor</td>
</tr>
<tr>
<td>16:45-17:00</td>
<td>Construct and predictive validity of SARC-F as a risk assessment community screening tool for sarcopenia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wee Shiong Lim, Laura Tay, Yew Yoong Ding, Audrey Yeo, Suzanne Yew, Bernard Leung, Cher Heng Tan, Noor Hafizah, Mei Sian Chong</td>
<td></td>
</tr>
<tr>
<td>17:00-17:15</td>
<td>The effects of vitamin D supplementation on skeletal muscle function and fatigue in sedentary and physically active mice</td>
<td>Danielle Debruin, Emma Rybalka, Craig Goodman, Alan Hayes</td>
</tr>
<tr>
<td>17:15-17:30</td>
<td>Sarcopenic obesity, metabolic syndrome and insulin resistance over five years in older men: The Concord Health and Ageing in Men Project</td>
<td>David Scott, Robert Cumming, Vasi Naganathan, Fiona Blyth, David Le Couteur, Vasant Hirani</td>
</tr>
<tr>
<td>17:30-17:45</td>
<td>Vitamin D and its metabolism is directly associated with improved bone quality in elderly patients</td>
<td>Deepti Sharma, Tom Robertson, Roumen Stamenkov, Catherine Stapledon, Gerald Atkins, Peter Clifton, Bogdan Solomon, Howard Morris, Paul Anderson</td>
</tr>
<tr>
<td>18:30-20:30</td>
<td><strong>Welcome Reception, National Wine Centre</strong></td>
<td>Corner of North Terrace and Dequetteville Terrace, Adelaide</td>
</tr>
<tr>
<td></td>
<td><strong>Sponsored by</strong></td>
<td></td>
</tr>
</tbody>
</table>
### Saturday 25th November 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:30-17:45</td>
<td>Registration Desk open</td>
<td>Level 1 Foyer</td>
</tr>
<tr>
<td>08:00-08:50</td>
<td><strong>Meet the Professor Breakfast 1</strong>&lt;br&gt;Professor Matteo Cesari</td>
<td>Room 405a, Level 4</td>
</tr>
<tr>
<td></td>
<td>Clinically, is it useful to measure for Sarcopenia?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderator: A/Professor Debra Waters</td>
<td></td>
</tr>
<tr>
<td>08:00-08:50</td>
<td><strong>Meet the Professor Breakfast 2</strong>&lt;br&gt;Professor Cyrus Cooper</td>
<td>Room 405b, Level 4</td>
</tr>
<tr>
<td></td>
<td>Osteoporotic fracture: recent advances in risk assessment, prevention and treatment at the bone muscle interface&lt;br&gt;Moderator: Professor Ian Chapman</td>
<td></td>
</tr>
<tr>
<td>09:00-10:00</td>
<td><strong>Plenary Session</strong>&lt;br&gt;Chair: Professor Gustavo Duque, Director of the Australian Institute for Musculoskeletal Science, Melbourne University, Victoria&lt;br&gt;A/Professor Paul Gregorevic, Head Muscle Research and Therapeutics Laboratory, Baker Heart and Diabetes Institute, Melbourne, Victoria&lt;br&gt;Exploring new roles for the TGFβ signalling network in skeletal muscle</td>
<td>AHMS G030 Lecture Theatre, Ground Floor</td>
</tr>
<tr>
<td>10:15-11:15</td>
<td><strong>Symposium 5 - Protein and Specific Amino Acids Regulate Food Intake and Skeletal Muscle Homeostasis - Mechanistic Insights Maintaining a Health Body Weight</strong>&lt;br&gt;Chair: Stijn Soenen&lt;br&gt;Ageing, dietary protein and appetite related gastrointestinal mechanisms</td>
<td>AHMS G030 Lecture Theatre, Ground Floor</td>
</tr>
<tr>
<td>10:15-10:35</td>
<td>Amino acid metabolism in skeletal muscle: Implications for metabolic homeostasis&lt;br&gt;Rene Koopman</td>
<td></td>
</tr>
<tr>
<td>10:35-10:55</td>
<td>The challenges of translating mechanistic insights regarding the regulation of energy intake and skeletal muscle into effective weight management programs for adults aged 65 years and older&lt;br&gt;Natalie Luscombe-Marsh</td>
<td></td>
</tr>
<tr>
<td>11:15-11:30</td>
<td>Morning tea, posters and exhibition</td>
<td>Level 1 Foyer</td>
</tr>
<tr>
<td>11:30-12:30</td>
<td><strong>Plenary Session</strong>&lt;br&gt;Chair: Dr Ivanka Hendrix, Pharmacist, The Queen Elizabeth Hospital, South Australia&lt;br&gt;Professor Matteo Cesari, Fondazione Ca’ Granda-Ospedale Maggiore Policlinico (Milan, Italy) and Professor of Geriatrics at the University of Milan (Milan, Italy)&lt;br&gt;Frailty: One Word For Multiple Applications</td>
<td>AHMS G030 Lecture Theatre, Ground Floor</td>
</tr>
<tr>
<td>12:30-14:30</td>
<td>Lunch, posters and exhibition</td>
<td>Level 1 Foyer</td>
</tr>
<tr>
<td>14:30-15:30</td>
<td><strong>Oral Communications A</strong>&lt;br&gt;Chair: Professor Gordon Lynch&lt;br&gt;A spotlight on preventing falls and fractures in older adults: The Osteosarcopenia Roadshow²&lt;br&gt;Sharon Brennan-Olsen, Steven Phu, Ebrahim Bani Hassan, Gustavo Duque</td>
<td>AHMS G030 Lecture Theatre, Ground Floor</td>
</tr>
<tr>
<td>14:30-14:40</td>
<td>Association of sitting time and breaks in sitting with muscle mass, strength, function, and inflammation in community-dwelling older adults&lt;br&gt;Natasha Reid, Genevieve Healy, Jenny Gianoudis, Melissa Formica, Paul Gardiner, Caryl Nowson, Robin Daly</td>
<td></td>
</tr>
<tr>
<td>14:40-14:50</td>
<td>Predicting trajectories of functional decline in 60-70 year old people&lt;br&gt;Nini Jonkman, Vieri Del Panta, Trynke Hoekstra, Marco Colpo, Natasja van Schoor, Stefania Bandinelli, Luca Cattelani, Jorunn Helbostad, Beatrix Vereijken, Mirjam Pijnappels, Andrea Maier</td>
<td>AHMS 1069a/1069b Lecture Theatre, Level 1</td>
</tr>
<tr>
<td></td>
<td>Replacing gait speed in definitions of sarcopenia for a subjective measure: diagnostic accuracy of modified definitions&lt;br&gt;Esme M. Reijnierse, Marijke C. Trappenburg, Gerard Jan Blauw, Carel G.M. Meskers, Andrea B. Maier</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Session</td>
<td>Location</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>14:50-15:00</td>
<td>Oral Communications A cont.</td>
<td>AHMS G030 Lecture Theatre, Ground Floor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:00-15:10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:10-15:20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:20-15:30</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:30-15:45</td>
<td>Afternoon tea and exhibition</td>
<td>Level 1 Foyer</td>
</tr>
<tr>
<td>15:45-16:45</td>
<td>Plenary Session</td>
<td>AHMS G030 Lecture Theatre, Ground Floor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:45-17:30</td>
<td>Annual Meeting of the Australian and New Zealand Society for Sarcopenia and Frailty Research</td>
<td></td>
</tr>
<tr>
<td>17:30-17:40</td>
<td>Awards and closure</td>
<td>AHMS G030 Lecture Theatre, Ground Floor</td>
</tr>
</tbody>
</table>
Poster Presentations

P1  Telomere Length Associates with a Frailty Index Based on Standard Laboratory Measurements (FI-LAB)
Elsa Dent, Emiel Hoogendijk, Max Moldovan 0008

P2  Underdiagnosis of delirium in an entire Australian tertiary hospital
Peter W. Lange, Marissa Lamanna, Rosie Watson, Andrea B Maier 0009

P3  WITHDRAWN

P4  Factors Predicting Operative vs Non-operative Management of Elderly Hip Fracture Patients in Singapore
Pamela Sebastian, Vignesh Sivasamy, Minh Ha Nguyen, Kelvin Yip, Kaysar Mamun, Dennis Seow 0011

P5  Plasma Level of IL-6 and IL-10 in Association with Frailty in Community-Dwelling Elderly
Diana Jent, Sri Sujadi, C. Singgih Wahono, Djoko Wahono 0012

P6  Does a pleasant sex life protect against mortality in older age?
Suzanne Luesken, Shanice Beerepoot, Dorly Deeg, Martijn Huisman 0014

P7  Demographic and medical characteristics of oldest old frail hospitalised patients
Kellie Hanna, Charles Inderjeeth 0015

P8  Bone turnover markers in frail older (senile osteoporosis) vs post-menopausal osteoporosis: a principal component analysis
Charles Inderjeeth, Warren Raymond, Kien Chan, Preeti Nair, EE Mun Lim 0016

P9  Frailty: Impact on Functional Gain, Resource Utilisation, and Discharge Destination: An Observational Prospective Study in a Geriatric Evaluation Unit
Sujatha Kawryshanker, Warren Raymond, Katharine Ingram, Charles Inderjeeth 0017

P10  Charlson Comorbidity Index scores as a marker of frailty do not influence gains in Functional Independence Measure score in older rehabilitation patients
Sarah Bernard, Charles Inderjeeth 0018

P11  Frailer patients with Osteoporosis and Dementia in Orthogeriatric Care: poorly managed with high morbidity and mortality
Noreen Mughal, Andrishta Inderjeeth, Charles Inderjeeth 0019

P12  WITHDRAWN

P13  Frailty in Hospitalized Older Adults: Comparing Different Frailty Measures in Predicting Short- and Long-term Patient Outcomes
Edward Chong, Esther Ho, Jewel Baldevarona-Lego, Lynn Wu, Mark Chan, Laura Tay, Ding Yew Yoong, Lim Wee Shiong 0024

P14  Systematic review and meta-analysis of prevalence of sarcopenia in post acute inpatient rehabilitation
Irina Churilov, Leonid Churilov, Richard MacIsaac, Elif Ekinci 0025

P15  The association of sitting time with sarcopenia status and physical performance at baseline and 18-month follow up in the residential aged care setting
Natasha Reid, Justin Keogh, Paul Swinton, Paul Gardiner, Timothy Henwood 0027

P16  Geriatric assessment in older lung cancer patients
Claire Maddison, Lou Irving, Kwang Lim, Andrea Maier 0028

P17  Effects of preoperative sarcopenia on progression of rehabilitation in elderly patients following cardiovascular surgery
Yosuke Morimoto, Yudai Yano, Yuichi Tawara, Takuya Fukushima, Yui Tabuchi, Naoki Mio, Kazuyoshi Tanigawa, Kiyoyuki Eishi, Ryo Kozu 0029

P18  Frailty screening in elderly patients referred to orthopaedics for elective joint replacement
Claire Meyerkort, Matt Brbich, Trish Baldwin, David Oldham, Charles Inderjeeth 0030

P19  Lower Indigenous mortality in very remote areas at old age
Edward Carson, Sifat Sharmim, Andrea Maier, Johannnes Meij 0031

P20  Frailty Predicted Urinary Incontinence among Hospitalized Older Adults
Edward Chong, Esther Ho, Jewel Baldevarona-Lego, Lynn Wu, Laura Tay, Mark Chan, Lim Wee Shiong, Ding Yew Yoong 0032

P21  Concurrence of frailty and multimorbidity in geriatric outpatients
Prasenjit Sengupta, Esme M. Reijnierse, Suey S.Y. Yeung, Alain K. Koyama, Gerard-Jan Blauw, Wen Kwang Lim, Carel G.M. Meskers, Andrea B. Maier 0033

P22  Handgrip strength cannot be assumed a proxy for overall muscle strength
Poster Presentations

P23 Does muscle mass and muscle strength in hospitalised older patients depend on acute inflammation?
Jessamine Y.J. Liu, Esmeee M. Reijnierse, Sjors Verlaan, Carel G.M. Meskers, Andrea B. Maier 0035

P24 Prediction of falls and mortality three months after discharge in hospitalised older patients
Vivien K. Pham, Esmeee M. Reijnierse, Sjors Verlaan, Carel G.M. Meskers, Andrea B. Maier 0036

P25 Orthostatic hypotension is not associated with falls and frailty in a cohort of geriatric outpatients
Phuong Thanh Silvie Bui Hoang, Esmeee M. Reijnierse, Rebecca Iselt, Gerard Jan Blauw, Carel G. M. Meskers, Wen Kwang Lim, Andrea B. Maier 0039

P26 Orthostatic hypotension is not associated with cognition in a cohort of geriatric outpatients
Vi Truc Vo Nguyen, Esmeee M. Reijnierse, Rebecca Iselt, Gerard Jan Blauw, Carel G. M. Meskers, Kwang Lim, Andrea B. Maier 0040

P27 Patterns of disease accumulation in middle-aged to old individuals
Aaron Diker, Sifat Sharmin, Alain Koyama, Natasja van Schoor, Wen Kwang Lim, Andrea B. Maier 0041

P28 Does executive function mediate the association between white matter lesions and gait speed in geriatric outpatients?
Julius M. Nagaratnam, Sifat Sharmin, Alain Koyama, Wen Kwang Lim, Ana Ruiz Clauvi, Tanik T. Binneke, Marijke C. Trappenburg, Andrea B. Maier 0042

P29 Relationships of inflammatory markers TNF-α, IL-6, IL-10 and IL-1RA with age and muscle parameters in healthy young and old individuals
Lachlan A.N. Thang, Camilla S.L. Tuttle, Sarianna Sipila, Laurie Stenroth, Marco V. Nanci, Jean-YPES Hugrol, Gillian Butler-Browne, Jamie S. McPhie, Mali Ptaaive, Helena Gapeyeva, Andrea B. Maier 0043

P30 Living in very remote areas, benefit Indigenous survival at old age: A systematic review and meta-analysis
Edward Carson, Sifat Sharmin, Andrea B Maier, Johannes J Mej 0044

P31 Handgrip strength is less significantly associated with health characteristics compared to knee extension strength among geriatric outpatients
Suey S. Y. Yeung, Esmeee M. Reijnierse, Marijke C. Trappenburg, Gerard J. Blauw, Carel G.M. Meskers, Andrea B. Maier 0045

P32 Implementing 4ATs and TIME bundles: Early Recognition and Management of Delirium in Geriatric Patients Admitted to Acute Trauma Wards Post Falls
Min Yi Yap, Jing Yi Yap 0046

P33 Risk factors for fragility fracture in stroke patients post Rehabilitation
Shivival David, Warren Raymond, Kien Chan, Charles Inderjeeth 0047

P34 Association between limits of stability and lower limb function, static balance and fear of falling in community dwelling older adults
Steven Phu, Rita Kinsella, Sara Yorgrin, Ahmed Al Saedi, Gustavo Duque 0048

P35 Association of frailty and management outcomes (operative vs non-operative) of elderly hip fracture patients
Pamela Ann Sebastian, Yu Ling Tay, Rachel Ng, Vignesh Sivasamy, Minh Ha Nguyen, Dennis Seow 0049

P36 Sarcopenia and Frailty "The Voice Of The Stakeholders"
Giovanna Anselmi 0050

P37 Profile of musculoskeletal health among the preretiree demographic
Julie Pasco, Kara Holloway, Natalie Hyde, Mark Kotowicz, Monica Tembo, Pamela Rufus, Sophia Sui, Michael Berk 0051

P38 Fall risk and balance confidence in patients with diabetic peripheral neuropathy
Kavita Venkataraman, Vivian Pun, Tessa Riandini, Michelle Wong, Dinesh Natarajan 0056

P39 SARC-F: Defining a validated cutoff for pre-sarcopenia for risk assessment among community dwelling older persons
Wee Shiong Lim, Laura Tay, Audrey Yeo, Suzanne Yew, Noor Hafizah, Yew Young Ding 0057

P40 A multicomponent intervention program to improve physical function and frailty in vulnerable older adults: a designed-delay intervention study
Il-Young Jang, Hee-Won Jung, Chang Ki Lee, Sang Soo Yu, Ju Jin Jung, Seon-hee Cheon, Young Soo Lee, Eunju Lee, Robert J. Glynn, Dae Hyun Kim 0058

P41 Urologic symptoms and burden of frailty and geriatric conditions in older men: The Aging Study of Pyeongchang Rural Area
Il-Young Jang, Chang Ki Lee, Hee-Won Jung, Sang Soo Yu, Young Soo Lee, Eunju Lee, Dae Hyun Kim 0059

P42 A New Flow Cytometry Method to Quantify Lamin A Expression in Circulating Osteoprogenitor (COP) Cells
Ahmed Al Saedi, Piumali Gunawardene, Gustavo Duque 0062
Poster Presentations

P43  Protocol for the validation of the health assets index to predict improved outcomes for frail older adults admitted to hospital
Kate J Gregorevic, Ruth E Hubbard, Nancye M Peel, Wen Kwang Lim  0063

P44  The impact of sarcopenia on surgical outcomes in patients undergoing surgery for head and neck cancer
Thi Pham, Hau Cher Choi, Andrew Foreman, Catherine Gibb, Solomon Yu  0064

P45  Are current definitions of (pre)sarcopenia suitable for older men treated with androgen deprivation therapy for prostate cancer?
Patrick Owen, Robin Daly, Niamh Mundell, Jack Dalla Via, Stephen Foulkes, Patricia Livingston, Steve Fraser  0066

P46  Effects of substitution or addition of carbohydrates and fat to protein-supplements on energy intake and underlying gastrointestinal-mechanisms in healthy older men
Caroline Giezenaar, Trygve Hausken, Karen Jones, Michael Horowitz, Ian Chapman, Stijn Soenen  0068

P47  Using a Frailty Index in intellectual disability outpatient clinics
Clive Sun, Seeta Durvasula, Samuel Arnold, Ian Cameron  0069

P48  Orthostatic hypotension and falls in older adults: A systematic review and meta-analysis
Phuong Thanh Silvie Bui Hoang, Arjen Mol, Esmee M. Reijnierse, Carel G. M. Meskers, Andrea B. Maier  0070

P49  Towards a biological geriatric assessment
Camilla Tuttle, Andrea Maier  0071

P50  Using falls data to identify patterns in the environment and circumstances of injurious falls among older community-dwelling women
Karen Lim, Kerrie Sanders, Catherine Connaughton, Ghazala Naureen, Amanda Stuart, David Scott, Geoff Nicholson, Lucy Busija  0072

P51  Sarcopenia and its association with falls and fractures in older adults: A systematic review and meta-analysis
Vivien K. Pham, Suy S.Y. Yeung, Esmee M. Reijnierse, Marijke C. Trappenburg, Carel G.M. Meskers, Andrea B. Maier  0073

P52  Markers of cellular senescence and chronological age in various human tissues: a systemic review of the literature
Manette Waajar, Camilla Tuttle, Rudi Westendorp, Andrea Maier  0074

P53  Inflammation and its association with muscle strength and muscle mass: a systematic review and meta-analysis
Lachlan Thang, Jimmy Ky, Camilla Tuttle  0076

P54  The anabolic effect of Piclonolic acid on Wnt signalling pathway in vitro
Ahmed Al Saedi, Lakshman Singh, Gustavo Duque  0077

P54  Twitter as a tool for knowledge translation in #frailty research: A snapshot report
Sumita Jha, Julee McDonagh, Ros Prichard, Phillip Newton, Louise Hickman, Peter Macdonald, Caleb Ferguson  0078

P55  Frailty independently predicts 12 monthly mortality following an acute heart failure admission
Phillip Newton, Si Si, Christopher Reid, Peter Macdonald  0079

P56  Frailty is associated with reduced patient reported quality of life in advanced heart failure patients and clinicians are poor at identifying it
Roslyn Prichard, Stephen Goodall, Peter Macdonald, Fei Li Zhao, Sumita Jha, Patricia Davidson, Julee McDonagh, Phillip McD, Christopher Hayward  0080

P57  Frailty is highly prevalent among inpatients and outpatients with heart failure according to two frailty measurement instruments
Julee McDonagh, Roslyn Prichard, Sunita R. Jha, Caleb Ferguson, Peter S Macdonald, Phillip J Newton  0081

P58  Patient, Hospital, and Environment related risk factors of all-cause adult hospital readmission: A systematic review
Katherine Carasco, Sifat Sharmin, Johannes J Meij, Andrea B Maier  0082

P59  Clinical and non-clinical indicators for unplanned hospital readmissions: in an Australian population
Katherine Carasco, Sifat Sharmin, Johannes J Meij, Andrea B Maier  0083

P60  WITHDRAWN

P61  A Review of Frailty in Head and Neck Cancer
Anthony Noon, Catherine Gibb, Andrew Foreman  0086

P62  Screening for health fragility in the emergency department
Ouyachchi Younes, Pamart Philippe, Wiel Eric  0081
Understanding frailty in older (and not so old) Aboriginal and Torres Strait Islander people

A/Professor Dina LoGiudice
Geriatrician, Melbourne University, Victoria

OBJECTIVES: Frailty has been measured in several ethnic groups, but not, to our knowledge, in Aboriginal Australians or other Indigenous peoples. We aimed to determine the prevalence and incidence of frailty, and associations with death and disability, in remote-living Aboriginal people.

STUDY DESIGN: 363 Aboriginal people aged ≥45 years from 6 remote communities and one town in the Kimberley region of Western Australia were assessed in 2006. Five years later, 182 surviving participants participated in a follow-up study. We assessed frailty with a frailty index, comprising 20 health-related items. Participants with ≥4 deficits (frailty index ≥0.2) were considered frail. Disability was assessed by family/carer report. Those unable to do ≥2 of 6 key or instrumental activities of daily living were considered disabled. We investigated associations between frailty, and disability and mortality, with logistic regression and Cox proportional hazards models.

RESULTS: At wave 1 (W1), 188 participants (85.3%) were frail, and of robust people at W1 who participated in wave 2, 38 (51.4%) had become frail. Frailty emerged at a younger age than expected. A total of 109 people died (30.0%), of whom 80 (73.4%) were frail at W1. Frailty at W1 was not associated with becoming disabled, but was associated with mortality (HR=1.9; 95% CI 1.2, 3.0).

CONCLUSIONS: Frailty in remote-living Aboriginal Australians is highly prevalent; substantially higher than other populations. Research to understand the underlying causes of frailty in this population, and if possible, reverse frailty, is urgently needed.

Are sedentary behaviours harmful for all older adults?

Olga Theou
Assistant Professor, Department of Medicine, Dalhousie University; Affiliated Scientist, Geriatric Medicine, Nova Scotia Health Authority; Adjunct Senior Lecturer, School of Medicine, University of Adelaide

Many people who would never smoke, get into a car without wearing a seatbelt, or keep an unlocked handgun in their home often think nothing of sitting on a couch in front of the television for prolonged periods. But increasingly, sedentary behaviours such as watching television and driving are now acknowledged as independent health risks. Some researchers suggest that this may be true even in people who exercise. Older adults are the most sedentary group. They are sedentary for more than 70% of their waking hours. In addition, levels of sedentary behaviours closely corresponded to levels of frailty but the effect of sedentary behaviours on adverse health outcomes differs across levels of frailty. The risk from prolonged lying/sitting is likely even more profound in hospitalized patients. During their hospital stay, many patients spend much of their time lying in bed awake, even when they can walk independently. This puts patients’ in-hospital recovery and post-hospital independence at risk. This presentation will introduce the concept of sedentary behaviour and review the current evidence on the association of frailty with sedentary behaviours in community and clinical populations.

Goals of this session will also be to identify gaps in the current literature and future directions for research.

Sarcopenia and Physical Frailty: Conceptual Frameworks and Descriptive Epidemiology

Cyrus Cooper
MRC Lifecourse Epidemiology Unit, University of Southampton, and Institute of Musculoskeletal Science, University of Oxford, UK

Musculoskeletal disease constitutes a major health burden worldwide. The principal chronic musculoskeletal disorders are osteoporosis, sarcopenia and osteoarthritis; these conditions increase in frequency with advancing age, and understanding their epidemiology throughout the life course is critical to the development of effective preventive strategies. Osteoporosis contributes to disability and death through its association with age related fractures. These fractures typically occur at the hip, spine and distal forearm. It has been estimated from incidence rates derived in North America that the lifetime risk of a hip fracture in Caucasian women is 17.5% with a comparable risk in men of 6%. Sarcopenia refers to an age related loss of skeletal muscle mass and function. Between the ages of 20 and 80 years, a decline in muscle fibre size and number causes a loss of muscle mass (30%), with a greater accompanying loss of muscle strength (60%). The origins of sarcopenia are multifactorial and include biological senescence, muscle disuse, endocrine dysfunction, comorbidity, inflammation and nutritional deficiency. While the clinical relevance of sarcopenia is widely recognised, there remains no universally accepted definition of the term. Recent approaches to definition incorporate combinations of decline in fat free mass by DXA; strength assessments using isometric dynamometry; and poor physical performance using observational tests (gait speed, sit to stand time and standing balance). The establishment of these recent methods for the assessment of sarcopenia has led to a characterisation of the prevalence of this disorder with advancing age in men and women. Modifications of the definition will inform outcome studies and future randomised controlled trials. Finally, shared aetiological mechanisms underpinning the senescence of bone, muscle and joint, will open an arena in which novel therapeutic strategies for musculoskeletal disease will become available.
Invited Plenary Abstracts

Frailty and cognitive impairment in older adults. Fellow travelers or partners in crime?
Professor Manuel Montero Odasso
Director, Gait and Brain Laboratory, Parkwood Institute London, Ontario, Canada

Cognitive-frailty, defined as the presence of both frailty and cognitive impairment, is proposed as a distinctive entity that predicts dementia. However, it remains controversial whether frailty alone, cognitive-frailty, or the combination of cognitive impairment and motor impairment like slow gait pose different risks of incident dementia.

Results from the Gait and Brain Study cohort, which follows 300 older adults (mean age 76 years) free of dementia at baseline for up to 6 years, will be presented. Cox proportional hazard analyses of 256 participants included in this project revealed that the presence of cognitive-frailty at baseline significantly increased risk of developing cognitive decline with an incident rate of 80/1000 person-years but not risk for progression to dementia. On the other hand, the combination of slow gait and cognitive impairment posed the highest risk for progression to dementia with an incident rate IR: 130/1000 person-years.

Our results suggest that cognitive-frailty may embody two different manifestations, slow gait and low cognition, of a common underlying mechanism. Potential research and clinical implications for diagnosis and prognosis will be discussed.

Exploring new roles for the TGFb signalling network in skeletal muscle
A/Professor Paul Gregorevic
Head Muscle Research and Therapeutics Laboratory, Baker Heart and Diabetes Institute, Melbourne, Victoria

ABSTRACT STILL TO COME

Frailty: One Word For Multiple Applications
Professor Matteo Cesari, MD, PhD
Fondazione IRCCS Ca’ Granda, Ospedale Maggiore Policlinico, Università di Milano, Milano, Italy

Frailty is a clinical condition characterized by reduced homeostatic reserves, exposing the individual at increasing risk of negative health-related events (e.g., functional loss, hospitalization, institutionalization, death). To date, more than 60 different validated tools exist for measuring frailty, and the agreement among them is relatively modest. Indeed, each operational definition seems to capture a different risk profile, consequently generating ambiguities and misunderstanding.

The concept of frailty might be considered under two main viewpoints. Frailty might be intended as “a condition to treat”, a syndrome centered around an organ-specific decline. For example, a condition of physical frailty is currently used as the clinical/functional manifestation of sarcopenia in the ongoing SPRINTT trial. At the same time, frailty might more broadly be considered as the crossway for allocating adapted care (i.e., comprehensive geriatric assessment) to biologically old individuals. This perspective provides the term “frailty” with a public health connotation, potentially paving the way for new clinical approaches based on function rather than on chronological age. In this presentation, the different ways for conceiving and implementing frailty into the clinical and research routine are presented and discussed.
Invited Plenary Abstracts

Sarcopenic and Obese: Challenges for Identification and Treatment
A/Professor Debra Waters
Director of Gerontology Research, Dunedin School of Medicine, University of Otago, New Zealand

In New Zealand, Australia and other developed countries, sarcopenic-obese older adults are becoming increasingly prevalent. The idea of an obese patient who is also sarcopenic is often an enigma for clinicians, who picture sarcopenic patients as thin and weak. In reality, a proportion of obese older adults have low skeletal muscle mass and poor physical function, and thus, an increased risk of frailty. Moreover, sarcopenic-obese people are a challenge to identify in a clinical setting because typical measures of weight and BMI are not sensitive to age-related changes in skeletal muscle, bone and fat. Thus, weight and BMI may be “normal” in sarcopenic-obese patients, while body composition and function, are anything but normal. Clinical algorithms have been proposed to identify sarcopenia using grip strength and/or gait speed, but assessment of lean body mass is still needed and is not always available in clinical settings. Compounding the challenge of identifying sarcopenic-obese people is the ongoing debate on safe and effective interventions to reverse the adverse body composition and poor function, while not accelerating the age-related loss of skeletal muscle and bone. This presentation will cover the current thinking around classification, identification and effective interventions for people with sarcopenic-obesity, who are not often identified as “at risk” for frailty and may be given advise to diet to reduce body weight and lower other metabolic risks. The RCTs presented in this talk will show that this advice can have damaging consequences for bone and skeletal muscle if not managed with appropriate exercise and dietary interventions. Finally, we will look at preliminary results from the Dunedin Multidisciplinary Health and Development study. This is a birth cohort in Dunedin, NZ who are currently 45 years of age. Preliminary results indicates that at age 38 almost 10% of the cohort were sarcopenic-obese with poor cardio-respiratory health. Furthermore, participants who were overweight (versus frankly obese) were much more likely to be SO compared to normal weight people. These findings will be discussed in the context of the origins of sarcopenic-obesity and potential for early intervention.

Osteoporotic fracture: recent advances in risk assessment, prevention and treatment at the bone muscle interface
Cyrus Cooper, MRC Lifecourse Epidemiology Unit, University of Southampton; and Institute of Musculoskeletal Sciences, University of Oxford, UK

Osteoporosis constitutes a major public health problem through its association with age related fractures. These fractures typically occur at the hip, spine and distal forearm. It has been estimated from incidence rates derived in North America that the lifetime risk of a hip fracture in Caucasian women is 17.5%, with a comparable risk in men of 6%. Age and sex-adjusted hip fracture rates are generally higher in Caucasian than in Asian populations. Furthermore, the pronounced female preponderance in fracture incidence observed in white populations is not seen amongst blacks or Asians in whom age-adjusted female to male incidence ratios approximate unity. Life expectancy is increasing around the globe and the number of elderly individuals is rising in every geographic region. Assuming constant age-specific incidence rates for fracture, the number of hip fractures occurring worldwide among people aged 65 years and over will rise from 1.66 million in 1990 to 6.26 million in 2050. Studies performed in the United States, Scandinavia, and the United Kingdom, between 1930 and the late 1980s, consistently reported increases in the age-adjusted incidence of hip fractures among men and women. This increase appears to have levelled off, in the northern regions of the United States, as well as more recently in Europe. Rates in Asian populations continue to show substantial rises between the 1960s and the present time. In 2008, following a major systematic review of the literature, a fracture risk assessment tool was constructed (FRAX). This is now utilised to derive 10-year absolute risks of hip and major osteoporotic fractures. Application of this risk stratification system has been shown capable of reducing hip fracture risk by 24% in a large UK population-based randomised controlled trial (SCOOP). Further modification of this tool and development of preventive strategies against first and subsequent fractures will offer scope for even greater reductions in incidence: an enticing prospect.
Symposium 1 - Muscle health during hospitalization and recovery

**EMPOWER: Determinants of muscle health during acute hospitalization**

**Esmee Reijnierse**

*University of Melbourne, Melbourne, Victoria, Australia*

Muscle mass and strength is highly dependent on physical activity and has been shown to significantly decrease in response to bedrest. The aim of the observational, prospective, longitudinal EMPOWER study was to investigate the impact of hospitalization on muscle mass and muscle strength in older patients and identification of its determinants. In total, 378 patients aged 70 years or older were included who were admitted to a Dutch academic hospital. Muscle mass and strength at admission was highly associated with dependency in activity of daily living, malnutrition, cognitive impairment, pre- and post-hospitalization falls and mortality three months after discharge. Muscle mass and strength did not decrease during hospitalization, likely due to the short length of stay of 5 (3-8) days.

**EMPOWER geriatric rehabilitation: Improving recovery from acute physical deterioration**

**Andrea Maier**

1*University of Melbourne, Royal Melbourne Hospital, Parkville, Victoria, Australia,*

2*Vrije Universiteit, Amsterdam, The Netherlands*

In geriatric rehabilitation care there is a lack of evidence regarding the epidemiology and treatment of sarcopenia, particularly the benefits of exercise and nutritional interventions. Furthermore, the lack of understanding of biological mechanisms driving sarcopenia in conjunction with other age-related diseases has hindered the development of novel interventions. Highlighting this gap between science and practice, very few healthcare professionals use diagnostic measures or apply appropriate interventions for sarcopenia in clinical practice. EMPOWER-GR consists of a multicentre, observational, longitudinal cohort, several novel RCT’s based on the latest biological findings, emphasis on implementation of these results into clinical practice and a focus on dissemination of the results to ultimately change clinical practice worldwide.

**EMPOWER: Understanding the role of inflammation in muscle health to improve geriatric rehabilitation**

**Gordon Lynch**

*University of Melbourne, Parkville, Victoria, Australia*

Muscle wasting disorders such as cancer cachexia, sepsis, muscular dystrophies and age-related muscle wasting (sarcopenia) are characterised and linked by significant inflammation and weakness. Our group is focused on understanding the mechanisms underlying wasting and weakness in these conditions. We have identified interventions to attenuate inflammation and loss of metabolic homeostasis relevant to muscle wasting with the potential to improve rehabilitation in the geriatric setting. In the EMPOWER study, complementary muscle biopsy and blood sampling will allow assessments of these contributing parameters to age-related wasting and weakness and potentially identify patients for targeted intervention.
Symposium 2 - Osteosarcopenia: From Bench to Bedside

Osteosarcopenia: Pathophysiology and Potential Therapeutic Targets
Gustavo Duque1,2
1Australian Institute for Musculoskeletal Science (AIMSS), The University of Melbourne, St Albans, Australia, 2Department of Medicine-Western Health, St Albans, Australia

Sarcopenia and osteoporosis affect older adults around the world and many times have devastating complications that affect their well-being and quality of life. Analysis of the pathophysiologic pathways of sarcopenia and osteoporosis reveal several overlapping features. These conditions are age-related, both are multifactorial processes and both are characterized by progressive loss of tissue mass. Additionally, physical inactivity, vitamin D deficiency and poor nutrition accelerate the progression of both conditions. Despite these similarities, most interventions to date target these conditions separately. In this symposium we will review the current state of knowledge on the shared mechanisms of sarcopenia and osteoporosis and will analyze preventive measures and therapeutic interventions that can benefit both conditions simultaneously. We intend to go over the translational aspects of sarcopenia and osteoporosis research and highlight expected outcomes from different interventions for both conditions. We will initially review the mechanisms contributing to sarcopenia and osteoporosis including metabolic and cell signaling changes. For example, we will analyze how changes in protein and amino acid intake affect muscle and bone metabolism. Finally, we will review the state of the art on current and future pharmacological treatments for osteosarcopenia.

Falls and Fractures Clinic, an integrated approach to diagnose and treat Osteosarcopenia
Pushpa Suriyaarachchi
University of Sydney, Penrith, NSW, Australia

Falls and fractures are a major cause of morbidity and mortality in older people. The subset of individuals with Osteosarcopenia are at a higher risk for falls and fractures. Hence, it is pivotal to diagnose Osteosarcopenia to implement the necessary secondary prevention programs in Falls and Fracture prevention programs.

In this talk, I will be presenting the Nepean Hospital Falls and Fractures clinic program, which offers an integrated comprehensive approach for falls and fracture management. Through our specialised multidisciplinary service, we are able to diagnose and implement management strategies for Osteosarcopenia, to improve outcomes in this high-risk subset of patients.

Diagnostic Methods of Osteosarcopenia: from bench to bedside
Ebrahim Bani Hassan1,2
1Australian Institute for Musculoskeletal Science (AIMSS), Melbourne, VIC, Australia, 2Department of Medicine-Western Health, Melbourne Medical School, St Albans, VIC, Australia

There are several imaging modalities to study bone, muscle and fat mass/volume in vivo for diagnosis of osteosarcopenia. Radiation dose, accessibility, expense and having been approved for clinical use are the most important factors that determine if one technique or the other can be used by the clinicians and researchers. In this talk, current imaging and non-imaging (functional) methods used in the diagnosis of osteosarcopenia will be discussed, with particular emphasis on diagnosis of osteosarcopenia and estimation of fat mass using DXA (as the only clinically approved imaging method for the diagnosis of the condition).
Symposium 3 - Novel Exercise and Dietary Approaches For Sarcopenia and Cognitive Frailty

Novel exercise and nutritional approaches to optimise muscle health and mobility in the elderly
Robin Daly
Deakin University, Melbourne, Victoria, Australia

Exercise is promoted as a key strategy to improve muscle mass, strength and function and reduce falls risk, but not all forms are equally effective, with the benefits being modality and intensity-dependent, and influenced by adherence and nutritional factors. Traditional slow speed progressive resistance training (PRT) can improve muscle mass and strength, but there is growing evidence that the ingestion of 20-35g of high-quality protein (e.g. whey incorporating 2-4g leucine) post-exercise or as a divided dose (breakfast and afternoon/evening) or as part of a multi-nutrient supplement with vitamin D, can enhance the effects of PRT on muscle mass and strength, but not function, in older adults and sarcopenic elderly. We and others have explored the role of lean red meat to a total protein intake of at least 1.5g/kg/d, omega-3 fatty acids, creatine and collagen peptides as alternative approaches to promote exercise-induced gains in muscle mass/strength, with some promising findings. To optimize function, high-velocity PRT, which involves rapid muscle contractions, appears more effective that traditional PRT, but it effects on falls remains uncertain. High-challenging balance training can prevent falls, and there is emerging evidence that dual-task training, which combines exercise with a secondary challenging cognitive-motor task, and exergaming can improve single and dual task functional performance, cognitive function and reduce falls risk. This is important because many people fall while undertaking a secondary task. Adherence to exercise remains an ongoing challenge for many people, but mobile health applications may represent an alternative approach to prescribe evidence-based exercise programs to older adults at home. This presentation will provide an example of the feasibility, adherence to and effectiveness of a narrated video-based exercise prescription application (Physitrack app) with reminder notifications, in-app logging of exercise completion and real-time feedback as a platform to deliver an individually-tailored, home-based exercise program to older community-dwelling adults.

Multi-factorial dietary, exercise and cognitive interventions for cognitive frailty
Helen Macpherson
Deakin University, Victoria, Australia

The biological basis underlying cognitive impairment, sarcopenia and frailty is multifactorial, which may explain why there have been mixed findings with regard to the efficacy of some single domain interventions (e.g. exercise, nutrition, cognitive training) on both physical and cognitive function. This presentation will provide an update of the evidence from recent large-scale intervention trials which have evaluated the efficacy and effectiveness of multi-factorial approaches incorporating various nutritional factors (e.g., omega-3 fatty acids, Mediterranean diet), exercise, cognitive training and/or cardiovascular risk monitoring, to reduce dementia risk factors and improve brain health in older people. Several of these studies have demonstrated that the combination of exercise with dietary modification or targeted dietary supplementation is capable of improving cognition in older people who possess an elevated dementia risk profile. Combined cognitive training and exercise interventions have been shown to be superior to exercise alone and there is some evidence that cognitive benefits are long lasting. New multi-faceted intervention trials are directed at middle aged to older adults with the aim of improving cognitive function and addressing modifiable risk factors for dementia prior to the onset of cognitive impairment. For instance we have examined the cognitive effects of six months progressive resistance training (PRT) combined with protein and vitamin D supplementation on cognitive function in older people with Type 2 diabetes, compared to PRT alone. We are currently conducting a randomised controlled trial investigating the effects of a multimodal PRT and aerobic program combined with omega 3 fatty acids, vitamin D and protein supplementation on both cognitive and muscle mass and strength outcomes in older people with memory concerns. Important insights from these trials, along with methodological considerations relating to participant characteristics, exercise intensity and choice of cognitive outcomes in multi-factorial interventions will be discussed.

Protein-fortification for managing frailty: implications for aged-care service providers
Robin Daly1, Helen Macpherson1, Natalie Luscombe-Marsh2
1Deakin University, Institute for Physical Activity and Nutrition (IPAN), Melbourne, Victoria, Australia, 2CSIRO, Nutrition & Health, Adelaide, South Australia, Australia

Dietary protein improves muscle mass and strength in ‘healthy’ older people, but findings have been mixed regarding whether protein also attenuates the loss of muscle strength, physical performance and quality of life, or reduces hospitalisations, for older adults with numerous comorbidities. This presentation will examine the evidence from randomised control trials (RCTs), on the effectiveness and efficacy of protein-fortification and multi-nutrient supplements to improve the health and quality of life, of older people who are classified as frail. A number of research groups have been working in partnership with several community-based, aged-care service providers and learnings from the research have been important for the refinement of nutritional practices. For example, our group and others have demonstrated that some simple strategies like providing milk-based drinks, protein-fortified nutritional supplements, and/or protein-fortified meals can assist pre-frail to frail older adults to meet their nutritional requirements and maintain physical function and quality of life over the short-term (i.e. ~ 3 to 6 months). However, evidence that these types of nutritional interventions are effective, particularly for the very frail older adults with moderate to severe cognitive impairment, is limited for numerous reasons including: (i) recognition of simple tools available to easily diagnose frailty; (ii) that the aged-related decline in health can be slowed if the onset of frailty is detected early; (iii) the importance of protein for maintaining muscle quality and quantity; (iv) beliefs that protein is too expensive; and (v) preparation of protein-rich texture modified meals, and also evaluation of them, is too difficult. Each of these limitations will be discussed with the view to equipping staff/carers who work within various aged-care settings with some simple strategies to consider for implementation.
Symposium 4 - Critical windows: Early-life precursors to sarcopenia and osteosarcopenia

Optimising neuromuscular and musculoskeletal development in children to reduce later risk of sarcopenia: The Paediatrician’s viewpoint
Christine Rodda1,2
1Western Health, Melbourne, Australia; 2Australian Institute for Musculoskeletal Science (AIMSS), Melbourne, Australia

Bone mineral density measured by DEXA is well-validated in growing children to assess skeletal mineralisation, and is feasible for use in routine clinical practice. However, clinical evaluation of muscular development throughout childhood and adolescence is far less-standardised. In determining a trajectory of muscular health and later risk of sarcopenia, what are the impacts of (epi)genetics versus environmental influences? Will interventions in childhood have lasting benefits through to older age? Can the paediatrician in the clinical setting optimise, and evaluate, long-term musculoskeletal health in specific populations of children (conditions such as obesity, cerebral palsy, skeletal dysplasias, high-dose glucocorticoid therapy or cytotoxics)?

Social disadvantage, childhood adversity and the musculoskeletal system: Poverty of muscle and bone?
Sharon Brennan-Olsen1,2
1The University of Melbourne, Melbourne, Australia; 2Australian Institute for Musculoskeletal Science (AIMSS), Melbourne, Australia

It is becoming increasingly clear that human musculoskeletal health is influenced by a mosaic (or combination) of social and biological factors: indeed, the human skeleton and body habitus could be considered a reflection of our social lives. This session will summarize the social-biological evidence-base regarding the impact of social disadvantage and childhood adversity (social and/or physical) on the musculoskeletal system of children. In addition to the direct biological effects of lifestyles on lean mass and bone, the role of chronic stress (as a result of disadvantage and/or adversity), and parental health literacy, on musculoskeletal health will be discussed.

The sedentary child: Muscle mass and strength
Rachel Duckham1,2
1Institute for Physical Activity and Nutrition (IPAN), Deakin University, Melbourne, Australia; 2Australian Institute for Musculoskeletal Science (AIMSS, Melbourne, Australia

Global estimates suggest that young people are sedentary for ~60% of their waking hours. According to the most recent National Health Survey, Australian children may be no exception. Sedentary behaviour is well-documented as increasing the risk of paediatric obesity, which may subsequently increase the risk of early onset cardio-metabolic diseases. However, there is less consensus about the detrimental impact of childhood sedentary behaviour on the musculoskeletal system, despite the potential held for increased risk of sarcopenia later in life. Here, we summarise the evidence-base regarding childhood sedentary lifestyles and associations with low muscle mass, strength, and poor physical function (dynapenia).
Symposium 5 - Protein and Specific Amino Acids Regulate Food Intake and Skeletal Muscle Homeostasis - Mechanistic Insights Maintaining a Health Body Weight

Ageing, dietary protein and appetite related gastrointestinal mechanisms

Stijn Soenen
The University of Adelaide, Adelaide, Australia

Older people have higher ideal body weights (as determined by association with maximum life expectancy) and substantially more fat and less muscle tissue than younger adults. Weight fluctuations in older people are associated with adverse outcomes including increased mortality. Protein supplements designed to preserve and/or restore skeletal muscle mass remain the major approach to management of loss of skeletal mass and function. However, despite the well-recognised major adverse impact of loss of skeletal mass on the health of the elderly, few studies of such supplements have involved older people, arguably those most at risk. The talk will discuss the recent literature on the role of ageing on major changes in appetite, gut function and body composition, which impact on life expectancy and quality. Older people are less hungry and eat substantially less than younger adults, and have reduced responses to influences that suppress or stimulate appetite compared to younger people. We have recently undertaken several acute studies in older compared to younger adults to determine the comparative effects of whey protein, administered orally and intraduodenally (bypassing 'orosensory' and 'intragastric' factors) on perceptions of appetite energy intake and underlying gastrointestinal mechanisms, including gastric emptying, gut hormones and motility. These studies have produced clear-cut and exciting results - whey protein ingestion is significantly less suppressive of feeding behaviour in older than younger adults. The finding of an age-related reduction in the satiating effects of protein is important, as it may be possible to give enough protein to older people to preserve or increase muscle mass and function without suppressing energy intake.

Amino acid metabolism in skeletal muscle: implications for metabolic homeostasis

Rene Koopman
The University of Melbourne, Melbourne, Australia

The intake of whey protein effectively stimulates protein synthesis in skeletal muscle. Adequate protein intake is therefore crucial for the maintenance of muscle mass and function. The essential amino acids, leucine in particular, strongly stimulate muscle protein synthesis in healthy muscle; however, the anabolic response to leucine is impaired during inflammatory conditions. This phenomenon is called 'anabolic resistance' and is considered a major contributor to muscle wasting. We have identified that the metabolism of non-essential amino acids modulates the anabolic response to leucine in skeletal muscle and that supplementation with specific amino acids can attenuate muscle wasting in mouse models of cancer cachexia and caloric restriction. The talk will discuss the recent literature on the role of the non-essential amino acids arginine, citrulline and glycine in skeletal muscle during times of stress. Our studies have demonstrated that supplemental glycine in particular protects muscle mass and function under pathological conditions. Recent studies demonstrate that supplemental glycine effectively protects muscles in a variety of wasting models including cancer cachexia, sepsis and reduced caloric intake. The underlying mechanisms responsible for the effects of glycine remain unclear but likely involve receptor mediated responses and modulation of intracellular metabolism. The important role for glycine in muscle homeostasis is further highlighted by the observations that mitochondrial dysfunction in skeletal muscle leads to increased cellular serine and glycine production and activation of NADPH-generating pathways and glutathione metabolism. These studies highlight how glycine availability modulates cellular homeostasis and redox status. Future research to understand these mechanisms will provide insight into glycine's therapeutic potential. Our view is that glycine holds considerable promise for improving health by protecting muscles during different wasting conditions.

The challenges of translating mechanistic insights regarding the regulation of energy intake and skeletal muscle into effective weight management programs for adults aged 65 years and older

Stijn Soenen,1 Rene Koopman,1 Natalie Luscombe-Marsh2
1University of Adelaide, Adelaide, South Australia, Australia, 2University of Melbourne, Melbourne, Victoria, Australia

The impact of low muscle mass and strength, in the presence of obesity, for adults aged 65 plus years is underappreciated by many of the aged-care service providers, and family/friends who act as carers, to support older individuals to remain living at homes. Although the aetiology of sarcopenic obesity has not been clearly established, it is known that it is multi-factorial and complex, and endocrine, vascular, and immunological factors all contribute to its pathogenesis. While our group and others have demonstrated that dietary patterns containing moderately higher protein intakes, especially protein from mixed source, improve weight loss and long-term management of cardio-metabolic health in ‘younger’ adults (with mean age of <60 years), there is concern that these diets should not be undertaken by adults aged ~65 years and older, particularly without medical supervision. The talk will discuss several acute studies in older compared to younger adults to determine the comparative effects of whey protein, administered orally and intraduodenally (bypassing ‘orosensory’ and ‘intragastric’ factors) on perceptions of appetite energy intake and underlying gastrointestinal mechanisms, including gastric emptying, gut hormones and motility. These studies have produced clear-cut and exciting results - whey protein ingestion is significantly less suppressive of feeding behaviour in older than younger adults. The finding of an age-related reduction in the satiating effects of protein is important, as it may be possible to give enough protein to older people to preserve or increase muscle mass and function without suppressing energy intake.
Symposium 6 - Frailty and sarcopenia – insights from the Singapore Longitudinal Ageing Study

Social frailty and functional disability: findings from the Singapore Longitudinal Ageing Study I (SLAS-I)
Nigel Teo1, Qi Gao2, Ma Shwe Zin Nyunt1, Shiou Liang Wee1,3, Tze Pin Ng1,2
1Geriatric Education and Research Institute, Singapore, Singapore, 2Gerontology Research Programme, Department of Psychological Medicine, National University of Singapore, Singapore, Singapore, 3Health and Social Sciences Cluster, Singapore Institute of Technology, Singapore, Singapore

We examined the association between the social frailty (SF) phenotype, physical frailty (PF) with instrumental activity of daily living (IADL) disability and severe disability (≥3 basic ADL) whilst comparing the abilities of the two frailty indexes in predicting disability. Cross-sectional and longitudinal analyses of a population-based cohort with 3-years follow up revealed that frail individuals with SF had a 5-11fold increased prevalence and incidence of IADL disability and a 21-25fold increased prevalence and incidence of severe disability, compared to robust individuals without SF. SF together with PF more accurately identified and stratified older people at-risk of disability.

Frailty and malnutrition: related and distinct syndrome prevalence and association among community-dwelling older adults
Kai Wei1, Ma Shwe Zin Nyunt2, Qi Gao2, Shiou Liang Wee1,3, Tze Pin Ng1,2
1Geriatric Education and Research Institute, Singapore, Singapore, 2Gerontology Research Programme, Department of Psychological Medicine, National University of Singapore, Singapore, Singapore, 3Health and Social Sciences Cluster, Singapore Institute of Technology, Singapore, Singapore

The association between frailty and malnutrition is widely noted, but the common and distinct aspects of this relationship is not well understood. Using data from SLAS I and II, we investigated the prevalence of pre-frail/frailty, malnutrition and nutrition risk, their overlapping prevalence, compared their sociodemographic, physical, and mental health risk factors, and assessed their association, independently of other risk factors. We found that the contribution of poor nutrition to frailty in this population is notably great. Both frail/pre-frail elderly and those who are malnourished/at nutrition risk should be identified early and offered suitable interventions.
0060 Construct and predictive validity of SARC-F as a risk assessment community screening tool for sarcopenia

Wee Shiong Lim1, Laura Tay2, Yew Yong Ding1, Audrey Yeo1, Suzanne Yew1, Bernard Leung1, Cher Heng Tan1, Noor Hafizah1, Mei Sian Chong2

1Tan Tock Seng Hospital, Singapore, Singapore 2Sengkang Hospital, Singapore, Singapore

BACKGROUND: The SARC-F scale provides a symptom score for diagnosing sarcopenia that obviates the need for measurement of muscle mass. Earlier validation studies are largely predicated on predictive validity for functional and performance outcomes. Construct validity against blood and imaging biomarkers, and predictive validity for clinical outcomes are not well defined. We aim to determine the construct validity of SARC-F against blood and imaging biomarkers, and predictive validity for incident frailty, sarcopenia and falls at 2-years.

METHODS: Two-hundred community-dwelling older adults (mean age=67.9 years; frailty prevalence =5.5%) were assessed for SARC-F; grip strength and Short Physical Performance Battery(SPPB); blood biomarkers of inflammation, insulin-like growth factor-1, and myostatin; fat and muscle mass using dual-energy X-ray(DXA) and Magnetic Resonance Imaging(MRI); incident frailty using modified Fried criteria; and incident falls at 2-years. We performed ROC analysis for sarcopenia diagnosis at baseline, and logistic regression of 2-year outcomes adjusted for age, gender and body mass index.

RESULTS: The SARC-F exhibited convergent validity for physical performance (Spearman’s rho, grip strength and SPPB=0.14 - 0.23, p<0.05); blood biomarkers of inflammation (rho, C-reactive protein, interleukin-6, and tumour necrosis factor-α =0.17-0.27, p<0.05) in females only; and MRI thigh-slice muscle volume (rho=-0.16, p=0.027). When stratified into non-sarcopenic, pre-sarcopenic and sarcopenic subgroups, SARC-F scores demonstrated concurrent validity for blood inflammation biomarkers (CRP, IL-6, and TNF-α: p<0.05) and MRI but not DXA measures (muscle volume and intersitial adipose tissue: p>0.05). SARC-F had poor performance for sarcopenia diagnosis (AUC: 0.511, 0.40 – 0.60). Baseline SARC-F scores significantly predicted incident frailty (OR=2.18, 95%CI:1.03 -4.63, p=0.043), sarcopenia (OR=1.76, 95%CI:1.02 -3.03,p=0.043), and a trend for falls (OR=1.77, 95%CI:0.98-3.18,p=0.058) at 2-years.

CONCLUSION: Our study involving comprehensive blood and imaging biomarkers provides evidence to support the construct validity of SARC-F. As a community screening tool for sarcopenia in well older adults, it has utility for risk assessment but not for case-identification.

0054 The effects of vitamin D supplementation on skeletal muscle function and fatigue in sedentary and physically active mice

Danielle Debruin1,2, Emma Rybalka1,2, Craig Goodman1,2, Alan Hayes1,2

1Institute of Sport, Exercise & Active Living (ISEAL), College of Health & Biomedicine, Victoria University, Melbourne, Victoria, Australia 2Australian Institute for Musculoskeletal Science (AIMSS), Western Health, Melbourne, Victoria, Australia

INTRODUCTION: Vitamin D (VitD) is commonly prescribed to normalise deficiencies and to treat osteoporosis. However, the effect VitD supplements have on skeletal muscle health is equivocal. While low dose VitD supplementation of deficient humans and mice can improve skeletal muscle strength and fatigue resistance, high bolus dose VitD supplementation has been linked with increased risk of falls, possibly through decreased muscle strength.

METHODS: Four week old C57Bl/10 mice (n=32) were separated into a normal VitD (1500 IU/kg diet) and a high VitD (20,000 IU/kg diet) group. Each dietary group was further separated into sedentary and exercise-enriched (voluntary access to running wheel) intervention groups for 8 weeks. After the VitD and exercise enrichment period, in vivo body composition (EchoMRI) and Promehtion metabolic cage analysis was conducted before the excision of muscles for ex vivo contractile analysis.

RESULTS: No differences in running performance were observed between the unsupplemented and supplemented exercised groups. High VitD supplementation decreased force production in the slow-twitch soleus (SOL) muscles of sedentary mice (p<0.01), however exercise attenuated this effect by 48%. Eight weeks of exercise did not improve fatigue resistance of the extensor digitorum longus (EDL) or SOL muscles in unsupplemented mice, likely due to low levels of activation in these muscles. Despite this, fatigability was improved in EDL (p<0.01) and even more so in the SOL (p<0.001) in the exercised animals that also received the high VitD diet.

CONCLUSIONS: Increasing VitD levels above normal does not improve voluntary exercise performance. Decreased postural muscle force with high VitD may contribute to the increased risk of falls observed in some studies. Interestingly, when supplementation was combined with exercise, force production was effectively restored, and fatigue resistance improved. Regular exercise may modulate the effects of VitD on skeletal muscle, and be recommended with high VitD supplementation.
0020
Sarcopenic Obesity, Metabolic Syndrome and Insulin Resistance over Five Years in Older Men: The Concord Health and Ageing in Men Project
David Scott1,2, Robert Cumming3, Vasi Naganathan3, Fiona Blyth3, David Le Couteur3, Vasant Hirani3
1Monash University, Clayton, Victoria, Australia, 2Australian Institute for Musculoskeletal Science, St Albans, Victoria, Australia, 3University of Sydney, Sydney, New South Wales, Australia

OBJECTIVES: Sarcopenia and obesity may independently contribute to risk of metabolic syndrome (MetS) and insulin resistance in older age. We aimed to determine 5-year associations between sarcopenic obesity, MetS and insulin resistance in older men.

METHODS: Amongst 1,705 community-dwelling men aged ≥70 years recruited for the study, 1,057 had appendicular lean mass (ALM) and body fat percentage assessed by whole-body dual-energy X-ray absorptiometry (DXA), completed hand grip strength assessments, and had MetS measures at baseline. Sarcopenia was defined as low ALM relative to BMI and/or low hand grip strength (Foundations for the National Institutes of Health definition). Obesity was defined as body fat percentage ≥30%. Metabolic syndrome components (waist circumference, systolic and diastolic blood pressure [SBP and DBP], fasting glucose, triglycerides, and high-density lipoprotein [HDL] cholesterol) were assessed at baseline and 5-years later. Fasting insulin and Homeostasis Model Assessment of Insulin Resistance (HOMA-IR) were assessed at 5-years only.

RESULTS: Three-hundred forty-one men (32%) were sarcopenic obese and prevalence of MetS at baseline was 38%, with sarcopenic obese (odds ratio, 95% CI: 5.1, 3.6-7.3) non-sarcopenic obese (5.2, 3.3-8.2) and sarcopenic non-obese (2.0, 1.3-3.0) demonstrating higher likelihood for MetS than non-sarcopenic non-obese men after multivariable adjustment. There were no differences in likelihood of incident MetS over five years but increasing body fat predicted incident MetS (1.2, 1.1 - 1.3 per kg) and deleterious changes in MetS components (DBP, glucose, HDL, triglycerides; all P<0.05). Compared with non-sarcopenic non-obese men, estimated marginal means for HOMA-IR at five years were significantly higher in sarcopenic obese (1.1, 0.8 - 1.4 vs 0.7, 0.4 - 1.0; P<0.001), but not other groups.

CONCLUSIONS: Amongst components of sarcopenic obesity, increases in body fat, rather than decreases in lean mass or hand grip strength, appear to be the most important predictors of incident MetS in community-dwelling older men.

0053
Vitamin D and its metabolism is directly associated with improved bone quality in elderly patients
Deepti Sharma1, Tom Robertson2, Roumen Stamenkov2, Catherine Stapledon2, Gerald Atkins2, Peter Clifton1, Bogdan Solomon2, Howard Morris1, Paul Anderson1
1University of South Australia, Adelaide, SA, Australia, 2University of Adelaide, Adelaide, SA, Australia

Although calcium and vitamin D supplementation is well known to reduce hip fracture risk, little is understood about the mechanism of how elevated serum 25-hydroxyvitamin D (s25D) improves bone health. Previously, we have demonstrated the positive effects of serum 25-hydroxyvitamin D (s25D) levels on bone structure in rodents, independent of serum PTH and 1α,25-dihydroxyvitamin D (s1,25D) levels (1). As well, we have previously reported that the osteoblastic overexpression or deletion of 25-hydroxyvitamin D-1alpha hydroxylase (CYP27B1) mouse models demonstrated that bone-derived 1,25D plays an anabolic role in bone formation. We now report the relationships between s25D and trabecular bone structure in humans. Intertrochanteric trabecular bone biopsies together with serum samples were collected from hip fracture patients undergoing surgery for a hip replacement (70 females, 41 males). Trabecular bone structure was analysed by microCT. Serum 25D, 1,25D and 1-84PTH were analysed by chemiluminescent immunoassay and clinical data, including eGFR were collected from medical records. Serum 25D correlated positively with s1,25D (r=0.529, p<0.001) further confirming a depleted vitamin D status. Serum 25D levels correlated positively with trabecular thickness (r=0.209, p<0.05) and negatively to the ratio of bone surface to bone volume (BS/BV) (r=-0.214, p<0.05), both indicators of bone strength. However, no bone structural parameters were determined by either serum PTH or 1,25D levels. Furthermore, s25D together with bone mRNA levels for CYP27B1 and CYP24A1 accounted for 18% of the variability in BS/BV (P=0.001), suggesting that the supply of s25D and its synthesis and metabolism within bone are more important determinants of bone strength, than serum PTH and 1,25D. These findings are the first data which provide clinical evidence that the positive effects of vitamin D on bone structure are through the supply and metabolism of 25D within bone, suggesting that bone-derived 1,25D is a key factor in bone health.
Oral Communications A

0021
A spotlight on preventing falls and fractures in older adults: The Osteosarcopenia Roadshow©
Sharon Brennan-Olsen1, 2, Steven Phu1, Ebrahim Bani Hassan1, Gustavo Duque1, 2
1Australian Institute for Musculoskeletal Science (AIMSS), Melbourne, Australia, 2The University of Melbourne and Western Health, Melbourne, Australia

INTRODUCTION: Osteoporosis, sarcopenia and osteosarcopenia are highly prevalent diseases; however, data suggest that only a minority (~8%) of older Australians are assessed post-fracture for osteoporosis, or referred by GPs to ‘Falls and Fractures Clinics’, despite clear evidence that these events fulfill criteria for a minimal-trauma fracture. In terms of sarcopenia, the situation is even worse, particularly given that sarcopenia is not yet encompassed within medical curriculum, nor routinely checked in densitometry. We therefore aimed to design the Osteosarcopenia Roadshow© as a continuing medical education workshop, accredited with the Royal Australian College of General Practitioners (RACGP), to educate GPs about the biological mechanisms, diagnostic methods, and treatment of these diseases.

METHODS: The Osteosarcopenia Roadshow©, based on the success of similar European experiences, is the only workshop of its type in Australia. The main principles of our combined model of education include: hands-on experience, interactivity, use of online resources, available diagnostic tools, and a case-based approach to diagnosis and therapeutics.

RESULTS: Participants evaluated the 2.5-hour workshop, presented at AIMSS, Western Health, against the stated learning objectives: responses were reported to RACGP, and used to improve the quality of subsequent workshops. Evaluations were provided in three domains: learning objectives, relevance to GP practice, and quality of teaching material. To date, eight GPs have completed this workshop: 89% reported their learning needs were entirely met (11%=partially met); 100% reported the information disseminated via the Osteosarcopenia Roadshow was entirely relevant to their clinical practice; and 75% reported the teaching materials were excellent (25%=very good). Further data from Roadshows is being gathered and will be available in the coming months for reporting.

DISCUSSION: The Osteosarcopenia Roadshow© provides clinically relevant information to GPs regarding osteosarcopenia, which enables them to take advantage of simple diagnostic tools within their practice, and treat these disease with resources at their disposal.

0026
Association of sitting time and breaks in sitting with muscle mass, strength, function, and inflammation in community-dwelling older adults
Natasha Reid1, Genevieve Healy1, 2, Jenny Gianoudis1, Melissa Formica1, Paul Gardiner5, 6, Caryl Nowson4, Robin Daly4
1School of Public Health, University of Queensland, Brisbane, QLD, Australia, 2Baker IDI Heart and Diabetes Institute, Melbourne, VIC, Australia, 3School of Physiotherapy, Curtin University, Perth, WA, Australia, 4Institute for Physical Activity and Nutrition, Deakin University, Geelong, VIC, Australia, 5Centre for Health Services Research, University of Queensland, Brisbane, QLD, Australia, 6Mater Research Institute, University of Queensland, Brisbane, QLD, Australia

PURPOSE: To examine the association of sitting time and breaks in sitting time with muscle mass, function, and inflammation in older Australians.

METHODS: Data from the thigh-worn activPAL3TM monitor (7-days continuous wear) was used to derive time spent sitting (hours) and total number of sit-stand transitions per day. Body composition (dual energy X-ray absorptiometry), lower-body muscle strength, function (timed up-and-go [TUG], 4-m gait speed, four square step test, 30-second sit-to-stand) and serum inflammatory markers (interleukin-[IL-6], IL-8, IL-10, tumor necrosis factor-alpha [TNF-α]) and adiponectin were measured. Multiple regression analyses, adjusted for age, sex, ethnicity, education, employment status, marital status, number of prescription medications, smoking status, and stepping time were used to assess the associations.

RESULTS: Data from 123 community-dwelling older adults (aged 65-84 years, 63% female) were used. Total daily sitting time was associated with lower percentage lean mass (β [95%CI], -1.7 [-1.9, -0.3]), and higher total body fat mass (2.14 kg [0.89, 3.39]). More frequent breaks in sitting time was associated with a reduced risk of having pre-sarcopenia (OR=0.55 95% CI: 0.34, 0.91), defined as appendicular lean mass divided by BMI. No significant associations were observed for sitting time or breaks in sitting with measures of muscle strength, function or inflammation.

CONCLUSION: In older community-dwelling adults, greater sitting time was associated with a lower percentage lean mass, while more frequent breaks in sitting time were associated with lower odds of having pre-sarcopenia. This suggests that reducing sedentary time and introducing frequent breaks in sedentary time may be beneficial for improving body composition in healthy older adults.
Oral Communications A

0037  
Prevalence rates of sarcopenia in older patients using different diagnostic criteria  
Angela Buljan1, Esmee M. Reijnierse1, Camilla S. L. Tuttle1, Sjors Verlaan2, Carel G. M. Meskers1,4, Andrea B. Maier1,3  
1Department of Medicine and Aged Care, The Royal Melbourne Hospital, The University of Melbourne, Melbourne, Australia,  
2Department of Internal Medicine, Section of Gerontology and Geriatrics, VU University Medical Center, Amsterdam, The Netherlands,  
3Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands,  
4Department of Rehabilitation Medicine, VU University Medical Center, Amsterdam, The Netherlands  

BACKGROUND: Sarcopenia is characterised by age-related low muscle mass and strength. Diagnostic criteria include measures of muscle mass and/or muscle strength and/or physical performance. The majority of inpatients admitted to acute hospitals are not able to undergo physical performance testing due to acute illness. This study aims to compare prevalence rates of sarcopenia applying multiple diagnostic criteria in hospitalized older patients.

METHOD: The observational, longitudinal EMPOWER study included 378 inpatients aged 70 years and older. Muscle mass and muscle strength were measured using Bioelectrical Impedance Analysis and handheld dynamometer respectively. Nine different diagnostic criteria for sarcopenia were applied stratified for sex.

RESULTS: Mean age was 79.7 years (SD 6.43) and 50.8% were males. Prevalence rates of sarcopenia ranged between 12.0%-75.9% in males and 3.1%-75.3% in females. Males had higher prevalence rates of sarcopenia compared to females in all but one of the applied diagnostic criteria (muscle strength alone), where 69.7% of males and 75.3% of females were sarcopenic. Applying the five diagnostic criteria consisting of a single criterion of muscle mass, 12.0%-75.9% of males and 3.1%-24.5% of females were sarcopenic. Applying the three multiple diagnostic criteria using both muscle mass and muscle strength, 14.6%-75.9% of males and 4.9%-24.5% of females were sarcopenic. Five males and one female were sarcopenic according to all applied diagnostic criteria.

CONCLUSION: In an inpatient population, prevalence rates of sarcopenia were highly dependent on the applied diagnostic criteria and males generally had higher rates of sarcopenia. Lack of a physical performance measure may have influenced prevalence rates. Little overlap of diagnostic criteria was observed. Inpatient specific diagnostic criteria for sarcopenia may be needed as it is not always possible to obtain a measure of physical performance.

Acknowledgment: European Union’s Horizon 2020 programme (No 689238, No 675003) and Nutricia Research, Nutricia Advanced Medical Nutrition, The Netherlands.

0060  
Osteoanabolic action of Picolinic Acid in Human Mesenchymal Stem Cells: Involvement of the canonical wnt/beta-catenin pathway  
Lakshman Singh1,2, Ahmed al Saedi1,2, Ebrahim Bani Hassan1,2, Gustavo Duque1,2  
1University of Melbourne, VIC, Australia,  
2Australian Institute for Musculoskeletal Science, VIC, Australia  

INTRODUCTION: Picolinic acid (PA) is one of the end products of the kynurenine pathway of tryptophan degradation. Our group has earlier reported the osteoanabolic effect of PA, in vitro. The exact mechanism of the osteoanabolic effect of PA is, however, not completely understood. In this study, we explored the effect of PA on the canonical wnt/beta-catenin pathway in human mesenchymal stem cells (hMSCs).

METHODS: hMSCs were cultured under osteogenic conditions in the presence of a pre-determined, anabolic dose of PA (100 µM) or vehicle. Changes in beta-catenin levels (nuclear and cytoplasmic) and GSK3beta levels were determined by fluorescence microscopy and western blotting.

RESULTS: We observed an increase in the expression of beta-catenin and a concomitant decrease in GSK3beta expression in hMSCs treated with an anabolic dose of PA. Also, beta-catenin was expressed much earlier in time in PA treated cells as compared to vehicle treated controls that led to a significant rise in its accumulation in the cytoplasm and its translocation into the nucleus. PA had a strong inhibitory effect on GSK3beta, an effect that was more significant at later stages of osteogenic differentiation in hMSCs.

DISCUSSION: Our results suggest that the anabolic effect of PA on hMSCs is associated with changes in the level of beta-catenin expression, which activates RUNX2 expression (a finding that we have already reported in the past). In summary, we found a shift in beta-catenin expression kinetics in PA-treated hMSCs that was also associated with a decrease in GSK3beta expression. GSK3beta promotes beta-catenin degradation and, therefore, its inhibition by PA could lead to increased stabilisation and expression of beta-catenin, explaining the possible mechanism of PA as a strong bone anabolic.
**Oral Communications A**

**0055**

**The influence of ethnicity and geographical location on sarcopenia prevalence in older adults: A Pilot Study**

Alan Hayes1,2, David Scott1,4, Lachlan McMillan4, Sandor Dorgo3

1Australian Institute for Musculoskeletal Science, Melbourne, Victoria, Australia; 2Monash University, Melbourne, Victoria, Australia; 3The University of Melbourne, Melbourne, Victoria, Australia; 4Monash University, Melbourne, Victoria, Australia; 5University of Texas at El Paso, El Paso, Texas, USA

**INTRODUCTION:** Definitions of sarcopenia usually include both mass and functional measurements, but are yet to universally apply. We aimed to investigate the influence of sex, ethnicity and geographical location on sarcopenia prevalence related to body composition and hand grip strength (HGS).

**METHODS:** Middle aged and older adults (n=111; 70.9±7.9yrs; 40% Hispanic, one-quarter male; 60% Caucasian, one-third male) were screened (body composition (DXA) and muscle strength) prior to taking part in the Golden Age exercise program in El Paso, USA. A sub-group of El Paso Caucasians were compared to age- and sex-matched Caucasians from Melbourne, Australia.

**RESULTS:** Despite good homogeneity and no significant difference in lean mass (ALM/ht2) (P=0.92), more than one-third of Caucasian females were below the European Working Group on Sarcopenia in Older People (EWGSOP) cut-off for low muscle mass (<5.67kg/m2), and over half Hispanic females were below this level. Despite similar proportions of men (18%) having ALM/ht2 below the EWGSOP cut-off (<7.26kg/m2), only Hispanic men were classed as sarcopenia when HGS was included. Melbourne Caucasians were significantly shorter (P=0.019) and tended to be heavier (P=0.18), such that they had significantly higher BMI (P=0.004), and higher ALM/ht2 (P=0.001), with only 10% of females demonstrating low mass (compared to 40% in El Paso). Strong correlations between ALM/ht2 and HGS were observed (P=0.001), yet no HGS difference existed between the cohorts (P=0.827). Sarcopenia prevalence was higher in females regardless of geography or ethnicity.

**CONCLUSIONS:** While only a small sample, the above illustrates the complex interplay between body composition and muscle strength, as well as geography and ethnicity that needs consideration for any universal diagnosis of sarcopenia. HGS remains a strong predictor of both mass and function, although HGS corrected for BMI had higher correlations with lower limb function. Routine measurement of HGS would be useful for collection of longitudinal data.

---

**0067**

**Ultrasonographic muscle and subcutaneous fat thickness as a measure of body composition and muscle function**

Caroline Giezenaar, Linda Watson, Chris Rayner, Michael Horowitz, Ian Chapman, Stijn Soenen

Discipline of Medicine and National Health and Medical Research Council of Australia (NHMRC) Centre of Research Excellence (CRE) in Translating Nutritional Science to Good Health, The University of Ad, Adelaide, South Australia, Australia

**BACKGROUND:** Loss of skeletal muscle during ageing is associated with adverse effects on long-term metabolic health. Currently, it is challenging to monitor body composition in patients who are prone to lose muscle mass (e.g., in bed-bound patients).

**OBJECTIVE:** The aim of the study was to determine the correlations between biceps brachii and quadriceps muscle and fat thickness with body composition and functional capacity outcomes.

**METHODS:** Correlations between (i) thickness of biceps brachii and quadriceps muscles and adjacent subcutaneous fat measured by 2D-ultrasonography, (ii) whole-body lean and fat mass measured by Dual-Energy X-ray Absorptiometry (DXA), and (iii) hand-grip strength and time to perform five repeated chair stands, were analysed in 98 individuals [59 men 39 women, age 59 ±20yrs (range 19-84yrs), body weight 77±13kg (51-116kg), BMI 26.8±4.2kg/m2 (19.0 -42.4kg/m2)].

**RESULTS:** Thickness of the biceps brachii (2.8±0.1cm) and adjacent fat (0.6±0.04cm) correlated with whole-body lean (50.7±1.5kg, r=0.68 P<0.001) and fat mass (24.2±1.1kg, r=0.62 P<0.001), respectively. Thickness of the quadriceps adjacent fat (1.0±0.06cm) correlated with whole-body fat mass (r=0.58 P<0.001), however, thickness of the quadriceps muscle (2.6±0.1cm) did not correlate with whole-body lean mass (r=0.02 P=0.858). Both biceps brachii thickness (r=0.64 P<0.001) and whole-body lean mass correlated (r=0.84 P<0.001) with hand-grip strength (32.1±1.3kg). Thickness of the quadriceps muscle (r=0.45 P=0.003), but not whole-body lean mass (r=0.01, P=0.921), correlated with repeated chair stands (9.4±0.4s).

**CONCLUSIONS:** These findings suggest that thickness of the biceps brachii and quadriceps muscles and their adjacent subcutaneous fat tissues measured by ultrasound can be considered as a suitable method to assess body composition in people with difficulties to measure whole-body composition with traditional methods, such as frail older individuals and bed bound patients.

*S Soenen was supported by a Royal Adelaide Hospital Florey Fellowship.*
Replacing gait speed in definitions of sarcopenia for a subjective measure: Diagnostic accuracy of modified definitions

Esmee M. Reijnierse, Marijke C. Trappenburg, Gerard Jan Blauw, Carel G.M. Meskers, Andrea B. Maier

INTRODUCTION: Recent definitions of sarcopenia include gait speed as diagnostic measure next to muscle mass and muscle strength. However, in up to 78% of hospitalized older patients measuring gait speed is not possible because of the acute disabling disease. This study assessed the diagnostic accuracy of modified definitions using a subjective measure for gait speed with respect to objective assessment in a cohort of geriatric outpatients.

METHODS: This cross-sectional study included 139 geriatric outpatients. Two definitions of sarcopenia were applied: European Working Group on Sarcopenia (EWGSOP) and International Working Group on Sarcopenia (IWGS). Muscle mass was measured using bioelectrical impedance analysis, handgrip strength using dynamometry and gait speed using the four-meter walk test. Four modified definitions were applied using subjective measures (self-reported) for gait speed: difficulty walking, falls (previous 12 months), use of walking aid and physical inactivity. Diagnostic accuracy was determined by sensitivity and specificity (low <70%, moderate 70% -90%, high >90%), and area under the curve (AUC; low <0.70, acceptable 0.70-0.80, excellent 0.80-0.90, outstanding >0.90).

RESULTS: In males and females three distinct trajectories were identified: no/little decline (219 males, 241 females), intermediate decline (114 males, 158 females), and severe decline (36 males, 30 females). The final model in males included three predictors: gait speed, fear of falling, and alcohol intake (no/little decline, AUC=0.68, 95%CI=0.60-0.75; intermediate decline, AUC=0.69, 95%CI=0.56-0.79; severe decline, AUC=0.79, 95%CI=0.71-0.87). The final model in females included age, living alone, economic satisfaction, balance, gait speed, physical activity, BMI, and cardiovascular disease (no/little decline, AUC=0.80, 95%CI=0.75-0.85; intermediate decline, AUC=0.74, 95%CI=0.69-0.79; severe decline, AUC=0.95, 95%CI=0.91-0.99).

DISCUSSION: In people aged 60-70 years, three distinct trajectories of functional decline can already be identified across nine-year follow-up. Predictors of trajectories differed between males and females. Ongoing work is validating these predictors in other populations of young older people and using the predictors to identify those suitable for early preventive interventions.

Funding: European Union’s Horizon 2020 research and innovation programme (grant agreement number 689238).
Oral Communications B

0036
Prospective associations of low muscle mass/strength and low bone mass with incident fracture and mortality over 10 years in community-dwelling older adults
Salou Balogun1, Tania Winzenberg1,2, Karen Wills1, David Scott3,4, Graeme Jones1, Michele L. Callisaya1,3, Dawn Atikken1
1Menzies Institute for Medical Research, University of Tasmania, Hobart Tasmania, Australia, 2Faculty of Health, University of Tasmania, Hobart Tasmania, Australia, 3Department of Medicine, School of Clinical Sciences at Monash Health, Faculty of Medicine, Nursing and Health Sciences, Monash University, Victoria, Australia, 4Australian Institute for Musculoskeletal Science, Melbourne Medical School (Western Campus), The University of Melbourne, St Albans, Victoria, Australia

AIM: This study aim to describe the relationship between low muscle mass and strength, in the presence of osteoporosis/osteopenia, with fracture and mortality risk over 10 years in community-dwelling older adults.

METHODS: Data for 1032 participants (52% women; mean age 62.9±7.4 years) studied at baseline, 2.5, 5 and 10 years were analysed. Mortality was ascertained from the death registry and fractures were self-reported. Appendicular lean mass (ALM) assessed using dual energy X-ray absorptiometry was normalised to body mass index (BMI). HGS was assessed using dynamometer. Low ALM/BMI (ALM/BMILOW) and HGS (HGSLOW) were defined as the lowest 20% of the sex-specific distribution for each measure. Individuals with T-scores of total femur and/or L1-L4 < -1 were classified as having low BMD (BMDLOW).

RESULTS: Incident fracture and mortality over 10 years were 17% and 15% respectively. Incident fracture was significantly higher among older adults with concurrent HGSLOW and BMDLOW (RR=2.07, 95% CI: 1.26-3.39) compared to those with combined ALM/BMI LOW and BMDLOW (RR=1.48, 95% CI: 0.83-2.64) or those with ALM/BMILOW (RR=0.97, 95% CI: 0.52-1.81) or HGSLOW alone (RR=1.74, 95% CI: 1.05-2.87). Mortality over 10 years was significantly higher only in older adults with both ALM/BMI LOW and BMDLOW (RR=1.49, 95% CI: 1.01-2.21).

CONCLUSION: This finding demonstrate the utility of combined assessments of muscle mass/strength and osteopenia/osteoporosis in clinical settings in order to identify a subset of older people with concurrent low BMD and low muscle mass or strength and are at a significantly higher risk of fracture and mortality.

0065
Alterations in differentiation potential of Mesenchymal Stem Cells derived from Winnie mice models of Spontaneous Chronic Colitis: implications for IBD-associated Osteopenia
Shilpa Sharma, Kulmira Nurgali, Gustavo Duque
AIMSS, Victoria, Australia

Studies on the Inflammatory bowel disease-associated osteopenia and sarcopenia are scarce; mainly due to the lack of animal models. Broadly, we aim to investigate the musculoskeletal changes in the mouse model of spontaneous chronic colitis named Winnie (Muc2 mucin gene mutant) which reproduce the symptoms of human IBD. In this study, we explored the changes in differentiation potential of bone marrow-mesenchymal stem cells (MSCs) in Winnie mice compared to C57BL/6 mice (9-16 weeks, females). To examine the in vitro differentiation ability of Winnie derived MSCs at passage 3, we isolated and cultured MSCs from tibia of female Winnie and C57BL/6 mice. Our study showed that the number of colony-forming units–osteoblasts, was significantly higher (~5 fold) in MSC cultures harvested from C57BL/6 than Winnie mice after 2 weeks of differentiation. At day 21, alizarin red staining in osteogenic induction medium showed 'trabecular-shaped' bony structures, mineralized osteoblasts, extra-cellular calcium deposits, stained in bright orange-red. AR quantification assay showed 1.7-fold higher activity of C57BL/6 mice compared to Winnie mice in osteogenic media. In adipogenic cultures, the number of Oil red-O-positive droplets was much higher in Winnie mice than C57BL/6 mice. Oil Red quantification assay showed ~2.3-fold higher adipogenic potential of Winnie-MSCs compared to C57BL/6-MSCs. Therefore, Winnie mice display lower osteogenic potential and higher propensity for adipogenesis than C57BL/6 mice. Interestingly, our results demonstrate that chronic colitis-associated osteopenia is coupled with the development of fatty marrow, and the loss of bone has been linked to a shift in bone marrow MSC differentiation from osteogenesis to adipogenesis. Presently, we are analysing osteogenic and adipogenic gene expression pattern in other age groups of mice as well. We are further investigating muscle and bone structural/functional analysis in Winnie mice compared to control C57BL/6 mice by bone histomorphometry and micro-CT analysis.
Oral Communications B

0075

Frailty and fracture risk in older women
Monica Tembo1, Kara Holloway1, Lana Williams1, Sophia Sui1, Sharon Brennan-Olsen1,2, Mark Kotowicz1,4,5, Sarah Hosking1,2, Julie Pasco1,5
1 Deakin University, Geelong, Victoria, Australia, 2 Australian Institute for Musculoskeletal Science (AIMSS), The University of Melbourne, St Albans, Melbourne, Australia, 3 Institute of Health and Ageing, Australian Catholic University, Melbourne, Australia, 4 Melbourne Medical School-Western Campus, The University of Melbourne, St Albans, Melbourne, Australia, 5 Barwon Health, Geelong, Victoria, Australia

PURPOSE: Frailty is characterised by age-related decline across various physiological systems including physical, psychological and social functioning. One adverse outcome of frailty is fracture. Currently numerous assessment tools have been developed for assessing frailty. This study aimed to investigate whether FRAX© scores could identify frail and pre-frail individuals in a group of older women.

METHODS: This cross-sectional study included 303 women aged 60-90 years enrolled in the Geelong Osteoporosis Study (GOS). Frailty was identified using a modified frailty phenotype index which segregated participants into frail, pre-frail or robust groups. FRAX (Aus) 10-year probabilities of major osteoporotic fracture (MOF) and hip fracture were calculated with and without BMD. We used Kruskal-Wallis test for non-parametric data to investigate differences between the three frailty groups.

RESULTS: Of the 303 women, 51 were frail, 173 pre-frail and 79 robust. For MOF without BMD, frail women had a higher median FRAX score (15.0 IQR 7.0-28.0) compared to pre-frail (7.6 IQR 4.1-14.0) and robust (5.5 IQR 3.3-8.0) (p<0.001). Similar results were observed for hip-FRAX scores; frail (5.8 IQR 2.1-13.0), pre-frail (2.6 IQR 1.0-6.5) and robust (1.6 IQR 0.8-3.0) (p<0.001).

When BMD was included in FRAX calculations, a similar trend was observed. For MOF, frail women had a higher median FRAX score (12.0 IQR 5.7-17.0) compared to pre-frail (6.3 IQR 3.2-10.0) and robust (4.5 IQR 2.9-7.4) (p<0.001). A similar pattern was observed for hip-FRAX scores; frail women had a higher median score (3.8 IQR 1.0-6.7) than pre-frail (1.6 IQR 0.5-3.6) and robust (0.8 IQR 0.4-2.4) (p<0.001).

CONCLUSION: Frail women had higher FRAX scores across all the groups compared to pre-frail and robust women. FRAX scores might be useful in the clinical setting for identifying older women at risk of being frail or pre-frail.

0084

Sarcopenia is associated with higher cortical porosity at the tibia in ambulant female aged-care residents
Bernadet Sutanto1, Sandra Iuliano1, Ego Seeman1,2
1 University of Melbourne, Parkville, Australia, 2 Australian Catholic University, Melbourne, Australia

INTRODUCTION: Sarcopenia and bone fragility are common geriatric syndromes, predisposing the elderly to falls, fractures, and morbidity. Cortical porosity is associated with increased bone fragility. However, the relationship between sarcopenia and cortical porosity is not clearly elucidated. This study aims to investigate the relationship between sarcopenia and cortical porosity in institutionalised elderly females, a group at highest risk of fracture.

METHODS: We recruited 143 ambulant female aged-care residents, mean age 86.2±6.5 years from 46 aged-care facilities in Victoria. Body composition was determined from total body densitometry (DXA), and relative appendicular skeletal muscle mass (rASM) calculated (ASM/height²). Muscle strength (handgrip), and physical performance (6-metre gait speed) were assessed to identify sarcopenic women, defined as low muscle mass (rASM <5.67kg/m²) and low muscle function (handgrip <20kg and/or gait speed <1.0m/s). Bone microarchitecture and volumetric bone mineral density (vBMD) were measured at the non-dominant distal radius and tibia, using high-resolution peripheral quantitative tomography (HR-pQCT), with cortical porosity quantified using StrAx1.0 software. Relationships between sarcopenia and cortical porosity were determined using multivariate linear regression model.

RESULTS: Thirty-three women (24.6%) were sarcopenic, which was associated with 2.5% higher cortical porosity (95%CI: 0.4, 4.6, p=0.02) and -26.7mgHA/cm³ lower vBMD (95% CI: -54.4, -0.02, p=0.05) at the tibia. Cortical porosity was associated with rASM; every unit increase in rASM was associated with -1.4% (95%CI: -2.6, -0.1, p=0.03) and -1.8% (95%CI: -2.9, -0.7, p=0.002) lower cortical porosity at the radius and tibia respectively. Relative ASM was associated with 15.7mgHA/cm³ higher vBMD at the tibia (95%CI: 2.3, 29.2, p=0.02). No relationships were observed between sarcopenia and porosity, or rASM and vBMD at the radius.

CONCLUSION: Sarcopenic institutionalised women have high cortical porosity and low vBMD at the tibia, thus heightening fracture risk. Targeting falls and fracture prevention strategies at these women may reduce fracture burden in this high-risk group.
Poster Presentations

P1  0008
Telomere Length Associates with a Frailty Index Based on Standard Laboratory Measurements (FI-LAB)
Elsa Dent1, Emiel Hoogendijk2, Max Moldovan3
1The University of Queensland, Brisbane, Queensland, Australia, 2VU University Medical Center, Amsterdam, The Netherlands, 3South Australian Health and Medical Research Institute, Adelaide, South Australia, Australia

BACKGROUND: Ageing results in a reduction in genomic telomere length (TL), and accordingly, TL is used as a biomarker for biological age. This study determined whether a recently developed Frailty Index based on clinical laboratory measurements (FI-LAB) was related to TL.

METHODS: The NHANES dataset was used for all analyses. A standard 23-variable FI-LAB was constructed using systolic and diastolic blood pressures, and routinely collected biomarkers indicating renal function, complete blood cell count, electrolytes, as well and thyroid and liver function. For comparison purposes, a standard 10-variable Allostatic Load score was developed, and included: markers of organ dysfunction (creatinine), inflammatory markers (albumin, CRP), metabolic markers (Body Mass Index (BMI) and glycated haemoglobin), cardiovascular markers (systolic and diastolic blood pressures, total cholesterol, triglycerides and homocysteine). A Frailty Index based on clinically observable cumulative health deficits (FI-CD) was also derived. Multiple regression analyses, controlling for sex and education-level were performed.

RESULTS: 1725 adults aged ≥50 years were included. Results showed that higher frailty level classified by the FI-LAB independently associated with shorter TL \[\beta (95\% CI) = -0.18, -0.030 to -0.07, P = 0.002\], as did higher Allostatic Load \[\beta (95\% CI) = -0.07, -0.14 to -0.01, P = 0.003\]. The FI-CD did not associate with TL.

CONCLUSIONS: Findings from this study suggest that whilst FI-LAB and Allostatic Load are indicators of biological age, the FI-CD was not. Thus the FI-CD may be more of a measure of frailty than of biological age per se.

P2  0009
Underdiagnosis of delirium in an entire Australian tertiary hospital
Peter W. Lange1,2, Marissa Lamanna1, Rosie Watson1,2, Andrea B Maier2
1Royal Melbourne Hospital, Melbourne, Victoria, Australia, 2University of Melbourne, Melbourne, Victoria, Australia, 3Vrije Univeriteit, Amsterdam, The Netherlands

BACKGROUND: Delirium prevalence varies widely across healthcare settings and in different inpatient settings. Prevalence in under 65 year olds, and in tertiary hospital settings has been infrequently studied. To plan for implementation of an intervention we studied these rates in our hospital.

METHODS: The Royal Melbourne Hospital is a 500 bed university teaching hospital providing tertiary and some quaternary medical services. To diagnose delirium, the Chart-based method of Inouye et al was used to assess for delirium in each multi-day stay inpatient bed at RMH. The assessment was undertaken by a single research nurse assessor - first validated on 133 cases compared with a geriatrician. Language, demographics, in patient mortality and the diagnosis of delirium from notes were also recorded. The survey was conducted over five months. Status at discharge (alive/deceased) was later recorded.

RESULTS: 520 patients of 22 different wards, 45 different units were included. The overall prevalence was 15.1% (79/520). Delirium was undiagnosed in 19.0% (15/79) of those. The prevalence of delirium in <65 year olds was 2.9% (6/204), of these 16.6% (1/6) were undiagnosed, in those 65 years and older 23.3% (74/317) and undiagnosed 18.9% (14/74). The prevalence varied by treating unit from 0% for some subspecialist surgical and medical treating units to 31.4% (37/86) for geriatrics. Delirium prevalence was similar across age matched language cohorts. In the delirious 65 years and older, 10.8% (8/74) were deceased at discharge compared to 4.4% (10/226) non-delirious. 1 of 6 delirious patients < younger than 65 years was deceased at discharge.

CONCLUSION: Delirium prevalence and frequency of undiagnosed delirium vary widely across a tertiary hospital by age and treating unit but not by English proficiency. Delirium is infrequent under 65 years of age.

The Royal Melbourne Hospital provided funding for a research nurse for this project.

P3  WITHDRAWN
**Poster Presentations**

**P4 0011**

Factors Predicting Operative vs Non-operative Management of Elderly Hip Fracture Patients in Singapore

Pamela Sebastian, Vignesh Sivasamy, Minh Ha Nguyen, Kelvin Yip, Kaysar Mamun, Dennis Seow

*Singapore General Hospital, Singapore, Singapore*

AIMS: Hip fractures are rising in incidence in ageing Singapore. Data is scarce on how patient factors such as frailty and comorbidity influence decisions for operative vs non-operative management of elderly hip fracture patients.

METHODS: We conducted a retrospective study of all hip fracture patients aged 60 and above admitted to Singapore General Hospital over 3 months from January 2017 to March 2017. A comprehensive geriatric assessment was conducted on all patients on admission. We assessed each patient using the Clinical Frailty Score and the Charlson Age Comorbidity Index. The data obtained was de-identified and descriptive results were tabulated. For analysis, the patients were separated into two groups: operative management and non-operative management.

RESULTS: A total of 99 hip fracture patients were admitted to Singapore General Hospital over the 3 months. Of these patients, 87 (87.9%) underwent operative management. 12 (12.1%) had non-operative management. The mean Clinical Frailty Score of the operative group was 3.95 (SD ± 1.65) whereas that of the non-operative group was 5.17 (SD ± 1.90). The mean Charlson Age Comorbidity Index for the operative group was 5.38 (SD ± 1.73) and that of the non-operative group was 5.92 (SD 1.93).

CONCLUSIONS: We can conclude that patients who were decided for non-operative treatment had their higher Clinical Frailty Scores. There was not a significant difference between the two groups when we compared the Charlson Age Comorbidity Index. We should emphasize importance of assessing frailty of hip fracture patients at the time of admission to help determine their management outcomes.

**FUNDING:** There was no funding received for this research.

**P5 0012**

Plasma Level of IL-6 and IL-10 in Association with Frailty in Community-Dwelling Elderly

Diana Jeni, Sri Sunarti, C. Singigh Wahono, Djojok Wahono

*University of Brawijaya, Malang, Indonesia*

**BACKGROUND:** Frailty is a geriatric syndrome with increasing incidence and high influence on elderly population. Aging process characterized by chronic low inflammatory process, inflamm-aging. Pro-inflammatory cytokine IL-6 and anti-inflammatory IL-10 may have correlation with frailty and aging.

**Objective:** The study was intended to evaluate the correlation between plasma IL-6, IL-10, and frailty.

**METHODS:** Data was derived from a random sampling in community-dwelling elderly in Malang. The cross-sectional study included sixty five community-dwelling people aged 65 and older. Frailty was defined as having three or more components, including slowness, weakness, exhaustion, low activity, and decrease of body weight. Robust are healthy elderly. Plasma IL-6 and IL-10 level were measured using standard enzyme-linked immunoabsorbent assays.

**RESULTS:** Subjects of this study consist of 32 robust (49.2%) and 33 frail (50.8%) elderly. With 55 female (84.6%) and 10 male (15.4%), mean age 73.9±7.7 years. Plasma IL-6 levels in frail subjects compared with robust were 5.111 (3.940-6.025) pg/mL and 4.876 (4.141-6.078) pg/mL with p 0.524. Plasma IL-10 levels were 6.433 (2.371-14.143) pg/mL and 7.257 (3.255-13.496) pg/mL with p 0.480. No significant correlation between IL-6 and IL-10 plasma level with frailty phenotype (p 0.969, r 0.005 and p 0.480, r 0.094). Significant results associated with frailty were found in age, education level, cognitive level, and body mass index. C-reactive protein was also positively correlated with IL-6 level (p 0.005).

**CONCLUSION:** There is no correlation between IL-6, IL-10, and frailty found in this study. It is possible that the cytokine levels in this study did not reach the threshold required to affect muscle tissue or possibly some of these elderly people had developed successful adaptation towards unfavorable environment while the others did not.

**P6 0014**

Does a pleasant sex life protect against mortality in older age?

Suzanne Luesken1,2, Shanice Beerepoot1, Dorly Deeg1, Martijn Huisman1

1VU University Medical Center, Amsterdam, The Netherlands, 2The Royal Melbourne Hospital, Melbourne, Australia

**OBJECTIVES:** Sexuality has been associated with increased quality of life and survival. People’s experience of their sexuality and the importance they attach to it, might change in old age. We examined the consequences of experience of sexuality for mortality in Dutch older adults.

**METHODS:** Data are from 1,047 participants of the Longitudinal Aging Study Amsterdam (LASA), aged between 55 and 84 years, during a follow-up period of 19 years. Experience of sexuality was defined as pleasantness and importance of sexuality. Discrepancies between pleasantness and importance were also assessed. Analyses were performed using Cox regression models, adjusting for health-related and social covariates.

**RESULTS:** 59.8% of the participants experienced their sexuality as pleasant and 43.6% as important. Pleasantness and importance at baseline were not independently associated with mortality. However, a statistically significant difference in mortality was observed in the oldest age group (75-84 years), between participants who experienced their sexuality as important but unpleasant, and those who experienced it as important and pleasant (HR=1.55; CI=1.04-2.30).

**DISCUSSION:** Sexuality remains an important aspect of older age. Experiencing a discrepancy between importance and pleasantness was associated with mortality only at the oldest ages. More awareness about this among professionals could improve health care, thereby increasing both quality of life and survival.

**FUNDING:** LASA is facilitated primarily by the Department of Long-Term Care, Ministry of Health, Welfare, and Sports, and by the VU University and the VU University Medical Centre.
Poster Presentations

P7 0015
Demographic and medical characteristics of oldest old frail hospitalised patients
Kellie Hanna¹, Charles Inderjeeth¹,2
¹Sir Charles Gairdner and Osborne Park Hospital Group, Perth, WA, Australia, ²University of Western Australia, Perth, WA, Australia

OBJECTIVE: To study demographic and medical characteristics of hospitalised oldest old.

METHOD: A retrospective audit of patients aged ≥80 years admitted to a Geriatric Unit in a tertiary hospital compared by decade of age.

RESULTS: There were 257 patients accounting for 287 admissions (84.3% nonagenarians, 14.3% octogenarians and 1.4% centenarians). Mean age was 91.6 years, 73.2% were female and 62.0% were admitted from the community. The 3 commonest admission diagnoses were: falls/trauma, cardiovascular disease and neuropsychiatric disease. Percent with a documented history of falls was 82.2%, osteoporosis 44.9%, urinary incontinence 38.3%, cognitive impairment 42.5%, delirium 44.9% and depression 32.1%. In-hospital mortality was similar in under and over 90s (9.8% vs 8.9%) but 1 and 2 year mortality rates were higher in the over 90s (43.5% vs 29.1% and 52.8% vs 43.9% respectively).

CONCLUSION: Hospitalised oldest old studied at our institute were predominantly community-dwelling females presenting with falls/trauma, cardiovascular disease and neuropsychiatric disease. They were a frail population with multiple co-morbidities, a high prevalence of the “Geriatric Giants” and very high mortality rates.

P8 0016
Bone turnover markers in frail older (senile osteoporosis) vs post-menopausal osteoporosis: a principal component analysis
Charles Inderjeeth¹,2, Warren Raymond³, Kien Chan¹, Preeti Nair³, EE Mun Lim¹,3
¹Sir Charles Gairdner and Osborne Park Hospital Group, Perth, WA, Australia, ²University of Western Australia, Perth, WA, Australia, ³PathWest, Perth, WA, Australia

BACKGROUND: Osteoporosis has two distinct varieties described – post-menopausal and bone “frailty” associated with ageing (senile osteoporosis). We hypothesize that bone turnover markers may help distinguish between these two pathogeneses.

METHODS (DESIGN AND PARTICIPANTS): A retrospective review of 976 fasting metabolic bone studies (FMBS) performed in an outpatient clinic identified 55 patients who met inclusion criteria. They were divided into the postmenopausal (age 50-65) and “frailer” old-old (age 75 and above) groups and analysed with Principal Component Analysis (PCA).

MEASUREMENTS: We compared bone resorption (urinary NTx/Creatinine (NTx/Cr)) and formation (Alkaline Phosphatase (ALP) and Procollagen type 1 N-terminal propeptide (PINP)) in the two groups using independent sample t-tests.

RESULTS: PINP was significantly lower in the “frailty” group (73.9 vs 41.6, p=0.037). There was no difference in ALP (88.7 vs 78.3, p=0.127) and NTx/Cr (40.0 vs 42.8, p=0.554).

CONCLUSIONS: This study suggests that in PM osteoporosis bone formation is preserved with increased resorption. In bone: frailty associated senile osteoporosis there is reduced formation combined with high resorption suggesting uncoupling. This supports the hypothesis of senile (frailty) vs postmenopausal osteoporosis being different in pathogenesis. This may be important in choice of treatments.

P9 0017
Frailty: Impact on Functional Gain, Resource Utilisation, and Discharge Destination: An Observational Prospective Study in a Geriatric Evaluation Unit
Sujatha Kawryshanker¹, Warren Raymond¹,2, Katharine Ingram¹, Charles Inderjeeth¹,2
¹Sir Charles Gairdner and Osborne Park Hospital Group, Perth, WA, Australia, ²University of Western Australia, Perth, WA, Australia

BACKGROUND: A geriatric evaluation and management unit (GEM) manages older inpatients with functional impairments. There is a paucity of literature on frailty and whether this impacts on rehabilitation outcomes.

OBJECTIVES: To examine frailty score (FS) as a predictor of functional gain, resource utilisation, and destinations for GEM patients.

METHODS: A single centre prospective case study design. Participants (n = 136) were ≥65 years old and admitted to a tertiary hospital GEM. Five patients were excluded by the preset exclusion criteria, ie. medically unstable, severe dementia or communication difficulties after stroke. Core data included demographics, frailty score (FS), and functional independence.

RESULTS: The mean functional improvement (FIM) from admission to discharge was 11.26 (95% CI 8.87, 13.66; p < 0.001). Discharge FIM was positively correlated with admission FIM (r = 0.748; p < 0.001) and negatively correlated with frailty score (r = -1.151; p = 0.014). The majority of the patients were in the “frail” group. “Frail” and “severely frail” subgroups improved more on mean FIM scores at discharge, relative to that experienced by the “pre-frail” group.

CONCLUSION: All patients experienced functional improvement. Frailer patients improved more on their FIM and improved relatively more than their prefrail counterparts. Higher frailty correlated with reduced independence and greater resource utilisation. This study demonstrates that FS could be a prognostic indicator of physical independence and resource utilisation.
Poster Presentations

P10 0018
Charlson Comorbidity Index scores as a marker of frailty do not influence gains in Functional Independence Measure score in older rehabilitation patients
Sarah Bernard1, Charles Inderjeeth1,2
1Sir Charles Gairdner and Osborne Park Hospital Group, Perth, WA, Australia, 2University of Western Australia, Perth, WA, Australia

OBJECTIVE: To assess the effect of frailty assessed by age-adjusted Charlson Comorbidity Index (CCI) score on Functional Independence Measure (FIM) in older patients.

METHODS: In a prospective cohort study we observed 306 older rehabilitation patients admitted to a geriatric rehabilitation unit. Groups were stratified using CCI score cut-offs of ≤4, 5–6 and ≥7.

RESULTS: FIM data were available for 280 patients. The mean age-adjusted CCI score was 5.59 (SD 1.96). An age-adjusted CCI score ≤4 correlated with higher FIM scores at admission P = 0.015, and discharge P = 0.002, but not with a greater gain in FIM score P = 0.067. There were no significant between-group differences in mortality, hospital transfers or length of stay.

CONCLUSION: The Charlson age-comorbidity index as a marker of frailty was not a prognostic marker for FIM gain. Age and comorbidity alone are not barriers to the rehabilitation of older patients.

P11 0019
Frailer patients with Osteoporosis and Dementia in Orthogeriatric Care: poorly managed with high morbidity and mortality
Noreen Mughal1, Andrisha Inderjeeth1,2, Charles Inderjeeth1,2
1Sir Charles Gairdner and Osborne Park Hospital Group, Perth, WA, Australia, 2University of Western Australia, Perth, WA, Australia

OBJECTIVE(S): Assess the Morbidity, Mortality and treatment of people with osteoporosis (OP) with and without dementia

SETTING: Data collected on 502 consecutive Orthogeriatric admissions for fracture. Fisher’s Exact Chi-square was used to compare treatment stratified by dementia status.

RESULTS: 226 (45%) had dementia and 281 (56%) had osteoporosis diagnosed pre-fracture. Dementia patients were more likely to have a prior diagnosis of OP but less likely to be on optimal treatment. There was a significant improvement in discharge vs. admission rates of OP treatment of patients diagnosed with OP with or without dementia: Calcium; Vitamin D; antiresorptive treatment (ART); combined therapy. However frailer patients (with osteoporosis and dementia) were less likely to be treated with ART (36% vs. 59%, P<0.001) or combined therapy (32% vs. 56%, P<0.001) and had double the 90 day mortality (17.3 vs 9.6%) and 6 times the 30 day mortality (6.4 vs 1.6%).

CONCLUSIONS: Frailer patients (Dementia and OP) are less likely to receive preventative OP treatment despite higher risk of recurrent fractures and higher morbidity and mortality.

P12 WITHDRAWN

P13 0024
Frailty in Hospitalized Older Adults: Comparing Different Frailty Measures in Predicting Short- and Long-term Patient Outcomes
Edward Chong1,2, Esther Ho1,2, Jewel Baldevarona-Llego1,2, Lynn Wu1,2, Mark Chan1,2, Laura Tay1, Ding Yew Yoong1,2, Lim Wei Shiong1,2
1Department of Geriatric Medicine, Tan Tock Seng Hospital, Singapore, Singapore, 2Institute of Geriatrics and Active Ageing, Singapore, Singapore

OBJECTIVE(S): Data for the assessment of frailty in acutely ill hospitalized older adults remains limited. Using the Frailty Index (FI) as “gold standard”, we compared: (i) the diagnostic performance of three frailty measures [FRAIL, Clinical Frailty Scale (CFS), and Tilburg Frailty Indicator (TFI)] in identifying frailty, and (ii) their ability to predict negative outcomes at 12 months post-discharge.

DESIGN: Prospective cohort study.

Participants: We recruited 210 patients (mean age 89.4±4.6 years, 69.5% female), admitted to the Department of Geriatric Medicine in a 1300-bed tertiary hospital.

MEASUREMENTS: Premorbid frailty status was determined. Data on comorbidities, severity of illness, functional status, and cognitive status were gathered. We compared area under receiver operator characteristic curves (AUC) for each frailty measure against the reference FI. Multiple logistic regression was used to examine the independent association between frailty and the primary outcome of mortality.

RESULTS: Frailty prevalence estimates were 87.1% (FI), 81% (CFS), 80% (TFI), and 50% (FRAIL). AUC against FI ranged from 0.81 (95%CI 0.72-0.90: FRAIL) to 0.91 (95%CI 0.87-0.95: CFS). Only FRAIL was associated with higher in-hospital mortality (6.7% vs 1.0%, p=0.031). FRAIL and CFS were significantly associated with increased length of hospitalization [10(6.0-17.5) vs. 8(5.0-14.0) days, p=0.043 and 9(5.0-17.0) vs. 7(4.25-11.75) days, p=0.036], respectively. CFS and FI were highly associated with mortality at 12-month (CFS, frail vs. nonfrail: 32.9% vs. 2.5%, p<0.001, and FI, frail vs. nonfrail: 30.6% vs. 3.7%, p<0.001). CFS also performed better at independently predicting 12-month mortality (OR 5.78, 95%CI 3.19-10.48, p<0.001) and composite outcomes of institutionalization and/or mortality (OR 3.69, 95%CI 2.31-5.88, p<0.001), adjusted for age, sex, and severity of illness.

CONCLUSION: Our study affirms the utility of CFS as a frailty assessment tool in acute care. Besides having the best discriminatory ability for FI-diagnosed frailty, the CFS also predicts length of hospitalization, 12-month mortality and institutionalization.
Poster Presentations

P14 0025
Systematic review and meta-analysis of prevalence of sarcopenia in post acute inpatient rehabilitation
Irina Churilov1,2, Leonid Churilov1, Richard MacIsaac1, Elif Ekinci3,4
1St Vincent’s Health Melbourne, Fitzroy VIC, Australia, 2The Florey Institute of Neuroscience and Mental Health, Heidelberg VIC, Australia, 3The University of Melbourne, Heidelberg VIC, Australia, 4Austin Health, Heidelberg VIC, Australia

OBJECTIVE: To conduct a systematic review of reported prevalence of sarcopenia in post acute inpatient rehabilitation setting.

METHODS: The systematic review was conducted according to PRISMA guidelines (PROSPERO registration number CRD42016054135). Databases searched: MEDLINE, EMBASE, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials (CENTRAL), Cochrane Methodology Register, CINAHL. Studies published January 1988 to February 2017 were considered with no language restriction provided the abstracts were available in English; key terms: ‘sarcopenia’ AND ‘inpatient rehabilitation’ OR ‘rehabilitation’ AND/OR ‘prevalence’. Abstracts and subsequently selected full studies reporting the prevalence of sarcopenia in adults admitted to inpatient rehabilitation were reviewed irrespective of design, provided the diagnosis of sarcopenia included at least the assessment of muscle mass. Random effect meta-analysis was conducted. Methodological quality was assessed using the Agency for Healthcare Research and Quality, US Department of Health and Human Services tool (MORE tool) and Joanna Briggs Institute Prevalence Critical Appraisal Tool.

RESULTS: 426 studies were identified during the initial search. 399 were excluded after reviewing titles and abstracts, 21 full text articles were reviewed. Six original research studies met the inclusion criteria. Patient populations included patients following a hip fracture (five studies) and patients with general deconditioning (one study). Identified prevalence of sarcopenia in individual studies ranged from 0.28 to 0.69. Pooled prevalence of sarcopenia obtained with random effect meta-analysis was 0.56 (95% CI 0.46-0.65), heterogeneity I²=92.9%. Main quality shortcomings were lack of reporting of inter- and intra-rater reliability, and lack of generalizability to other rehabilitation populations.

CONCLUSIONS: Original research examining the prevalence of sarcopenia in inpatient rehabilitation is scarce. Patient populations studied to date are not representative of general rehabilitation population with regard to both age and admission diagnoses. Sarcopenia may be present in approximately half of rehabilitation patients and its prevalence may vary according to the admission diagnosis.

P15 0027
The association of sitting time with sarcopenia status and physical performance at baseline and 18-month follow up in the residential aged care setting
Natasha Reid1, Justin Keogh2, Paul Swinton3, Paul Gardiner6,7, Timothy Henwood8,9
1School of Public Health, University of Queensland, Brisbane, QLD, Australia, 2School of Health Sciences and Medicine, Bond University, Gold Coast, QLD, Australia, 3School of Health Sciences, University of Queensland, Brisbane, QLD, Australia, 4Human Potential Centre, AUT University, Auckland, New Zealand, 5Cluster for Health Improvement, University of Sunshine Coast, Sunshine Coast, QLD, Australia, 6Robert Gordon University, Aberdeen, Scotland, UK, 7Centre for Health Services Research, University of Queensland, Brisbane, QLD, Australia, 8Mater Research Institute, University of Queensland, Brisbane, QLD, Australia, 9Southern Cross Care, South Australia and Northern Territory, Australia, 10School of Human Movement and Nutritional Science, University of Queensland, Brisbane, QLD, Australia

For older adults in aged care, sitting time has significant deleterious health impacts. This study investigated the association of sitting time with sarcopenia and physical performance in Residential Aged Care (RAC) residents at baseline and 18-month follow-up. Sitting time was evaluated using the International Physical Activity Questionnaire, sarcopenia defined using the European Working Group on Sarcopenia in Older People method and performance assessed by the Short Physical Performance Battery. Logistic regression analyses (for sarcopenia) and linear regression (for physical performance) analyses were used to investigate associations. Each hour of daily sitting was associated with a 15-20% increased likelihood of being sarcopenic, independent of covariates, although this was not statistically significant. Linear regression showed that each hour of sitting significantly associated with a 0.2-unit lower score for performance. Associations of baseline sitting and follow-up sarcopenia status and performance were non-significant. Cross-sectionally, increased sitting time in RAC may be detrimentally associated with sarcopenia and physical performance. Based on current reablement models of care, future studies should investigate if reducing sedentary time improves performance among adults in end of life care.

This study was supported by the Faculty of Health Sciences and Medicine, Bond University Seedling Grant (grant # 122R4; for TR and JK), the Australian Postgraduate Award Scholarship (for NR) and National Health and Medical Research Council of Australia and Australian Research Council Dementia Research Development Fellowship #110331 (for PG).
Poster Presentations

P16  0028
**Geriatric assessment in older lung cancer patients**
Claire Maddison¹, Lou Irving², Kwang Lim³, Andrea Maier⁴, Ryo Kozu¹,³
¹Department of Rehabilitation Medicine, Nagasaki University Hospital, Nagasaki, Japan, ²School of Rehabilitation Sciences, Seirei Christopher University, Shizuoka, Japan, ³Department of Cardiopulmonary Rehabilitation Science, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan, ⁴Division of Rehabilitation, Department of Clinical Practice and Support, Hiroshima University Hospital, Hiroshima, Japan, ⁵Department of Cardiovascular Surgery, Nagasaki University Hospital, Nagasaki, Japan

**BACKGROUND:** Lung cancer, the fourth most commonly diagnosed cancer in Australia and most common cause of cancer related death, has an average age at diagnosis of 71 years. The heterogeneity of older patients in terms of their physical, social and biological characteristics is not accurately described by the assessment tools traditionally used in oncology. This has led to interest in the role of comprehensive geriatric assessment (CGA) in improving care.

**METHODS:** A CGA outpatient clinic operating in conjunction with the multidisciplinary lung oncology service at the Royal Melbourne Hospital was established in April 2017. Patients over 65 years with a new diagnosis of non-small cell lung cancer are offered standardised assessment using validated tools. A self-completed questionnaire documents information relating to demographics, supports, hearing, vision, mobility, falls, mood, quality of life and ability to perform activities of daily living (Katz Index) and instrumental activities of daily living (Lawton-Brody scale). This is followed by nursing screening for cognitive impairment (MMSE), risk of malnutrition (MNA), and sarcopenia as measured by both hand grip strength and bioelectrical impedance analysis. Tests of physical function include the short physical performance battery, 10 meter walk test and timed up and go test. Finally, a geriatrician reviews comorbidities and their management, conducts a medication review and develops an individualised plan with interventions targeting identified impairments/vulnerabilities.

**RESULTS:** Now operational for over 3 months, the feasibility of this approach has been demonstrated, with few patients declining assessment. High levels of patient acceptability have been expressed and direct clinical benefits on the management of older lung cancer patients are anticipated. No complaints regarding the length of the assessment (1.5 hours) have been received.

**CONCLUSION:** CGA in older lung cancer patients is feasible to include into routine clinical practice and might be beneficial for treatment decisions and quality of life outcomes.

P17  0029
**Effects of preoperative sarcopenia on progression of rehabilitation in elderly patients following cardiovascular surgery**
Yosuke Morimoto¹, Yudai Yano¹, Yuichi Tawara², Takuya Fukushima¹, Yui Tabuchi¹,³, Naoki Mio⁴, Kazuyoshi Tanigawa⁵, Kiyoyuki Eishi⁵, Ryo Kozu¹,³
¹Department of Rehabilitation Medicine, Nagasaki University Hospital, Nagasaki, Japan, ²School of Rehabilitation Sciences, Seirei Christopher University, Shizuoka, Japan, ³Department of Cardiopulmonary Rehabilitation Science, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan, ⁴Division of Rehabilitation, Department of Clinical Practice and Support, Hiroshima University Hospital, Hiroshima, Japan, ⁵Department of Cardiovascular Surgery, Nagasaki University Hospital, Nagasaki, Japan

**BACKGROUND:** The purposes in this study were to investigate: (1) the characteristics of patients with preoperative sarcopenia after cardiovascular surgery; (2) the effects of postoperative cardiac rehabilitation (CR) on progression and functional outcome.

**METHODS:** We studied 44 patients >64 years and could walk independently who underwent elective cardiovascular surgery at Nagasaki University Hospital. Exclusion criteria were orthopedic and neurological disorders. Sarcopenia is defined Short Physical Performance Battery score < 10 (Ishiyama D, et al. European Geriatric Medicine, 2017). Preoperative (baseline) patient’s characteristics, surgery-related data, progression of CR, and physical function and mental status were compared between patients with and without sarcopenia during pre- and post-operative period.

**RESULTS:** Thirteen (30 %) of the subjects were sarcopenia (the sarcopenia group). On pre-operation, age was higher, and almost physical function were significantly lower in the sarcopenia group than the non-sarcopenia group. There were no significant differences between the groups to surgery-related data. In progression of CR, walking 100m independently and the day of exercise at rehabilitation center started were significantly delayed in the sarcopenia group than the non-sarcopenia group. On post-operation, all physical function were remained significantly lower in the sarcopenia group than in the non-sarcopenia group, while all physical function in the sarcopenia group were not significantly lower comparing with baseline data.

**DISCUSSION:** The patients with sarcopenia on pre-operation were delayed progression of CR but all physical function recovered to preoperative level. These results suggest that CR is effective and necessary intervention to improve or maintain the physical function following cardiovascular surgery in patients with preoperative sarcopenia.
**Poster Presentations**

**P18  0030**

**Frailty screening in elderly patients referred to orthopaedics for elective joint replacement**

Claire Meyerkort¹, Matt Brbich¹, Trish Baldwin², David Oldham¹, Charles Inderjeeth¹

¹Sir Charles Gairdner Hospital, Perth, Western Australia, Australia, ²Department of Health, Perth, Western Australia, Australia

**INTRODUCTION:** The Australian population is ageing and increasing numbers of elderly patients are undergoing surgery, including elective joint replacement. Frailty may predict adverse perioperative outcomes better than old age alone. Many frailty assessment tools exist, although the optimal frailty tool remains to be determined.

**AIMS:** This research aims to determine the prevalence of frailty using the Edmonton Frail Scale (EFS) in patients 65 years and older, referred to orthopaedics for elective joint arthroplasty. The feasibility of measuring frailty in the prehospital (general practice) setting will be assessed, by determining the completion rate of the EFS. Correlation between preoperative EFS scores and perioperative outcomes will be measured. The primary outcome will be total length of stay. Secondary outcomes will include a range of pre-specified medical and surgical complications.

**METHODS:** This is a prospective cohort study. Patients greater than or equal to 65 years of age who are referred to SCGH/OPH Group orthopaedic clinic for elective joint replacement of the hip or knee, or management of osteoarthritis will be included. Patients will be requested to complete the EFS via their General Practitioner. The prevalence of the cohort who are frail, pre-frail and non-frail will be determined. Comparisons between groups will be made using the Chi squared test. Comparisons between continuous outcomes will be made using the student’s T test. Correlations between variables will use Pearson’s and Spearman’s correlation coefficient. The initial study will examine patients recruited over a 6-month period.

**RESULTS:** Preliminary data will be presented.

**CONCLUSION:** A significant proportion of the study cohort are anticipated to be frail or pre-frail. It is expected that frailer patients may have longer length of stay, greater post-operative complications and less likely to be discharged directly home. These results will help target further research including an orthogeriatric preoperative service to optimise patients prior to surgery.

**P19  0031**

**Lower Indigenous mortality in very remote areas at old age**

Edward Carson¹, Sifat Sharmin², Andrea Maier¹,3, Johannes Meij²

¹Department of Medicine and Aged Care, University of Melbourne, Royal Melbourne Hospital, Melbourne, Victoria, Australia, ²Melbourne Academic Centre for Health, Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne, Melbourne, Victoria, Australia, ³Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands

**BACKGROUND:** It is unknown how Indigenous mortality varies between urban, rural and very remote areas across each age. By using state as a measure of remoteness, we aim to identify if age-specific Indigenous mortality varies between residential areas across Australia.

**METHODS:** The Australian Institute of Health and Welfare and the Australian Bureau of Statistics provided mortality and population data respectively for New South Wales, South Australia, Queensland, Western Australia and the Northern Territory between 2008 to 2012. Age-specific mortality from 0-4 years to 85 years and older of each state were compared to the most urban state, NSW, using one-way analysis of variance.

**RESULTS:** The average annual Indigenous population was 580,741 with an average 2,322 deaths per year. Compared to New South Wales, South Australia experienced significantly higher mortality for ages 40-49 year and 55-59 years, but experienced significantly lower mortality for ages 75 years and older. Queensland experienced higher mortality compared to New South Wales across all ages. Western Australia experienced a significantly higher mortality compared to New South Wales for all ages except 5-9 years, 65-69 years and 85 years and older. The Northern Territory experienced significantly higher mortality compared to New South Wales for all ages under 80-84 years. Ages 85 years and older however, experienced lower mortality but this was not statistically significant.

**CONCLUSIONS:** Indigenous children, young adults and middle aged adults all experience lower mortality in urban areas. Older Indigenous people however, particularly those aged 85 years and older, do not benefit from living in an urban area, but may gain from living in a very remote area. The lowest mortality within old age was in South Australia, which is presumably due to unique health initiatives that are benefiting this oldest population.

**ACKNOWLEDGEMENTS:** Funding was via unrestricted grants from the University of Melbourne.
Objective: The relationship between frailty and urinary incontinence (UI) is highly complex. There is limited data on the impact of frailty on UI among hospitalized older adults. Thus, we examined the ability of frailty to predict UI among them.

Design: Prospective cohort study.

Setting: Acute geriatric unit at a large teaching hospital.

Participants: Older adults hospitalized for acute medical illness.

Measurements: Premorbid frailty was defined as having 3 out of 5 items, namely fatigue, resistance, ambulation, illnesses, and loss of weight (FRAIL scale). Data on demographics, comorbidities, severity of illness, and functional status were gathered. Premorbid UI and at discharge, 6 and 12 months following hospitalization was identified. Logistic regression analysis was performed to examine how well frailty predicted UI and death at discharge, 6 and 12 months following hospitalization.

Results: Among 210 participants (mean age 89.4±4.6 years; 69.5% female; 50.0% frail), UI was present in 47.6%, with higher prevalence among those frail (64.8% vs. 30.5%, p<0.001). Incident UI among premorbidly continent participants was more common among those frail (at discharge: 24.3% vs. 9.6%, p=0.038; 6 months: 43.2% vs. 21.7%, p=0.020; and 12 months: 56.8% vs. 33.3%, p=0.020). Death increased over time following hospitalization (at discharge: 6.0% vs. 1.8%, p=0.114; 6 months: 32.0% vs. 9.4%, p=0.001; and 12 months: 42.0% vs. 14.2%, p<0.001). Frailty predicted incident UI or death over time (at discharge: OR 2.98, 95%CI 1.00 -8.91, p=0.050; 6 months: OR 2.86, 95%CI 1.13 -7.24, p=0.027; 12 months: OR 2.67, 95%CI 1.13 -6.27, p=0.025), adjusting for age, sex, and severity of illness.

Conclusion: Frailty is associated with UI, and predicts incident UI or death, even up to 12 months following hospitalization. Hence, greater emphasis should be given to identifying and managing UI during hospitalization and after discharge in frail patients.

Background: The prevalence of frailty and multimorbidity is 50% and 83% among community dwelling older adults leading to negative health outcomes. Studies have suggested that there is a concurrence between frailty and multimorbidity among community dwelling older adults but there is no consensus. This study examined the concurrence of frailty and multimorbidity in a clinically relevant cohort of geriatric outpatients.

Methods: This cross-sectional study included 139 older adults who were referred to a geriatric outpatient clinic. Definitions of frailty included the Fried physical frailty phenotype (weight loss, exhaustion, physical inactivity, handgrip strength and walk time) and the multifactorial approach by Rockwood (use of walking aid, dependency in activities of daily living, incontinence and cognitive impairment). Multimorbidity was defined as the presence of two or more chronic diseases. Prevalence of frailty and multimorbidity were obtained and the concurrence was assessed.

Results: Prevalence of frailty was 28.0% according to the Fried definition and 27.9% according to the Rockwood definition. Prevalence of multimorbidity was 38.8%. The concurrence of frailty according to the Fried definition and multimorbidity was 17.2% while the concurrence of frailty according to the Rockwood definition and multimorbidity was 12.1%. The concurrence of frailty according to the Fried, Rockwood definition and multimorbidity was 6.9%.

Conclusion: There was a little concurrence observed between frailty and multimorbidity according to the definitions applied. Therefore, it is important to diagnose both of these conditions separately in geriatric outpatients.

Acknowledgment: Dutch Technology Foundation STW
Handgrip strength cannot be assumed a proxy for overall muscle strength
Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands
Department of Medicine and Aged Care, Royal Melbourne Hospital, University of Melbourne, Melbourne, Australia
Department of Internal Medicine, Section of Gerontology and Geriatrics, VU University Medical Center, Amsterdam, The Netherlands
Department of Internal Medicine, Amstelland Hospital, Amstelveen, The Netherlands
Department of Gerontology and Geriatrics, Leiden University Medical Centre, Leiden, The Netherlands
Department of Geriatrics, Bronovo Hospital, The Hague, The Netherlands
Institute of Myology, Paris, France
School of Healthcare Science, John Dalton Building, Manchester Metropolitan University, Manchester, UK
Gerontology Research Centre, Faculty of Sport and Health Sciences, University of Jyvaskyla, Jyvaskyla, Finland
Research and Development / Sustainable Wellbeing, South-Eastern Finland University of Applied Sciences, Savonlinna, Finland
Institute of Sport Sciences and Physiotherapy, University of Tartu, Tartu, Estonia
Division of Medical Sciences and Graduate Entry Medicine, MRC-ARUK Centre of Excellence for Musculoskeletal Ageing Research, University of Nottingham, Royal Derby Hospital Centre, Nottingham, UK
Department of Rehabilitation Medicine, VU University Medical Center, Amsterdam, The Netherlands

BACKGROUND: Dynapenia, low muscle strength, is predictive for negative health outcomes and is often expressed as handgrip strength (HGS). Whether HGS can be used as a proxy for overall muscle strength and whether this depends on age and health status is controversial. This study assessed the agreement between HGS and knee extension strength (KES) in populations differing in age and health status.

METHOD: Five cohorts (960 individuals, 49.8% males) encompassing healthy young and old individuals, geriatric outpatients and older individuals post hip fracture with both HGS and KES data available were included. Pearson correlation was performed to analyse the association between HGS and KES, stratified by sex. HGS and KES were standardized into sex-specific z-scores. The agreement between z-scores of HGS and z-scores of KES at population and individual level were assessed by Intraclass Correlation Coefficients (ICC) and Bland-Altman analysis.

RESULTS: Pearson correlation coefficients were low in healthy young (males: 0.36 to 0.45, females: 0.45) and moderate in geriatric outpatients (males and females: 0.54) and healthy old individuals (males: 0.35 to 0.37, females: 0.44), and moderate in geriatric outpatients (males and females: 0.54) and older individuals post hip fracture (males: 0.44, females: 0.57) (p<0.05, except for male older individuals post hip fracture (p=0.07)). ICC values were poor to moderate in all populations: healthy young individuals (0.41, 0.45), healthy old individuals (0.37, 0.41, 0.44), geriatric outpatients (0.54) and older individuals post hip fracture (0.54). Bland-Altman analysis showed that within the same population of age and health status, agreement between HGS and KES varied on individual level.

CONCLUSION: At population and individual level, HGS and KES showed a low to moderate agreement. HGS alone should not be assumed a proxy for overall muscle strength.

ACKNOWLEDGEMENT: European Union’s Horizon 2020 programme (No 675003), FP7 program MYOAGE (HEALTH-2007e-2.4.5-10), Dutch Technology Foundation STW, Ministry of Education and Culture, UK Medical Research Council (MR/K025252/1).
ACKNOWLEDGMENTS: European Union’s Horizon 2020 programme (No 689238 and No 675003) and Nutricia Research, Nutricia Advanced Medical Nutrition, The Netherlands.

CONCLUSION: In hospitalised older adults, muscle mass is an important predictor for both falls and mortality three months after discharge, yet it is not measured in clinical care. This could have implications for routine geriatric screening strategies to prevent falls and mortality three months after discharge.

RESULTS: The mean age of the patients was 79.7 years (standard deviation 6.43) and 50.8% were male. Fall rate, three months after discharge, was 21% and the mortality rate, from hospital admission to three months after discharge, was 14%. Multiple logistic regression analysis showed that predictors at admission and lower muscle strength at discharge.

CONCLUSION: Hospitalised older male patients with acute inflammation had significantly lower muscle strength and absolute muscle mass on discharge, males with elevated CRP had significantly lower handgrip strength (β-coefficient -6.49 kg, p=0.004) and lower absolute muscle mass (SMM: β-coefficient -3.32 kg, p=0.030; SMI: β-coefficient -0.82 kg/m², p=0.049; ALM: β-coefficient -2.93 kg, p=0.040) compared with males with normal CRP. On discharge, males with elevated CRP had significantly lower handgrip strength (β-coefficient -8.64 kg, p<0.001). CRP was not associated with change in muscle strength or muscle mass. In females, no associations were found between CRP and muscle strength or muscle mass. CONCLUSION: Hospitalised older male patients with acute inflammation had significantly lower muscle strength and absolute muscle mass on admission and lower muscle strength at discharge.

ACKNOWLEDGEMENT: European Union’s Horizon 2020 programme (No.689238 and No.675003) and Nutricia Research, Nutricia Advanced Medical Nutrition, The Netherlands.

Poster Presentations

P23 0035
Does muscle mass and muscle strength in hospitalised older patients depend on acute inflammation?
Jessamine Y.J. Lu1, Esmee M. Reijnierse2, Sjors Verlaan1, Carel G.M. Meskers3, 4, Andrea B. Maier1
1Department of Medicine and Aged Care, The Royal Melbourne Hospital, The University of Melbourne, Melbourne, Australia, 2Department of Internal Medicine, Section of Gerontology and Geriatrics, VU University Medical Center, Amsterdam, The Netherlands, 3Department of Rehabilitation Medicine, VU University Medical Center, Amsterdam, The Netherlands, 4Department of Medicine and Aged Care, The Royal Melbourne Hospital, The University of Melbourne, Melbourne, Victoria, Australia

BACKGROUND: Hospitalisation is associated with adverse outcomes including loss of muscle strength and muscle mass, which might be further aggravated by acute inflammation. This study aims to determine whether acute inflammation, as denoted by C-reactive protein (CRP), is associated with muscle strength and muscle mass in older patients during hospitalisation.

METHODS: 378 hospitalised patients aged 70 years and older were included in the observational, prospective EMPOWER study. As part of the hospital assessment, 191 patients had CRP measured using immunoturbidimetric assay. CRP was defined as elevated ≥10 mg/L and normal <10mg/L. Muscle strength was measured using hand dynamometry and muscle mass using bioelectrical impedance analysis. Muscle mass included absolute muscle mass (skeletal muscle mass (SMM), SMM index (SMI; SMM/height²), appendicular lean mass (ALM)) and relative muscle mass (SMM and ALM in percentage). Linear regression analyses were performed stratified by sex and adjusted for age.

RESULTS: Mean age was 80.3 years (SD 6.3) and 49.7% were males. Elevated CRP was present in 77 (81%) males and 78 (81%) females. On admission, males with elevated CRP had significantly lower handgrip strength (β-coefficient -6.49 kg, p=0.004) and lower absolute muscle mass (SMM: β-coefficient -3.32 kg, p=0.030; SMI: β-coefficient -0.82 kg/m², p=0.049; ALM: β-coefficient -2.93 kg, p=0.040) compared with males with normal CRP. On discharge, males with elevated CRP had significantly lower handgrip strength (β-coefficient -8.64 kg, p<0.001). CRP was not associated with change in muscle strength or muscle mass. In females, no associations were found between CRP and muscle strength or muscle mass.

CONCLUSION: Hospitalised older male patients with acute inflammation had significantly lower muscle strength and absolute muscle mass on admission and lower muscle strength at discharge.

ACKNOWLEDGEMENT: European Union’s Horizon 2020 programme (No.689238 and No.675003) and Nutricia Research, Nutricia Advanced Medical Nutrition, The Netherlands.

P24 0038
Prediction of falls and mortality three months after discharge in hospitalised older patients
Vivien K. Pham1, Esmee M. Reijnierse1, Sjors Verlaan1, Carel G.M. Meskers2, 4, Andrea B. Maier1, 3
1Department of Medicine and Aged Care, The Royal Melbourne Hospital, The University of Melbourne, Melbourne, Victoria, Australia, 2Department of Internal Medicine, Section of Gerontology and Geriatrics, VU University Medical Center, Amsterdam, The Netherlands, 3Department of Rehabilitation Medicine, VU University Medical Center, Amsterdam, The Netherlands, 4Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands

BACKGROUND: In older adults over the age of 65 years, approximately 10% are admitted to the hospital annually. After hospitalisation, older adults are at higher risk of falls and mortality. This study aimed to identify predictors at admission for falls and mortality three months after discharge in hospitalised older patients.

METHODS: The EMPOWER study is an observational, prospective longitudinal inception study which included 378 older patients aged 70 years and older who were subsequently admitted to the VU University Medical Center, Amsterdam, the Netherlands, between April and December 2015. Potential predictors for falls and mortality three months after discharge included: sex, age, living situation, unintended weight loss, Short Nutritional Assessment Questionnaire (SNAQ) score, muscle mass measured using bioelectrical impedance analysis, handgrip strength, number of diseases, risk of delirium and cognition. Univariate and multiple logistic regression analyses were used to examine the associations between falls and mortality three months after discharge and predictors at admission.

RESULTS: The mean age of the patients was 79.7 years (standard deviation 6.43) and 50.8% were male. Fall rate, three months after discharge, was 21% and the mortality rate, from hospital admission to three months after discharge, was 14%. Multiple logistic regression analysis showed that predictors for falls three months after discharge were found to be muscle mass and risk of delirium. Predictors for mortality three months after discharge were found to be muscle mass, SNAQ score and male sex.

CONCLUSION: In hospitalised older adults, muscle mass is an important predictor for both falls and mortality three months after discharge, yet it is not measured in clinical care. This could have implications for routine geriatric screening strategies to prevent falls and mortality three months after discharge.

ACKNOWLEDGEMENTS: European Union’s Horizon 2020 programme (No 689238 and No 675003) and Nutricia Research, Nutricia Advanced Medical Nutrition, The Netherlands.
**Poster Presentations**

**P25  0039**

**Orthostatic hypotension is not associated with falls and frailty in a cohort of geriatric outpatients**

Phuong Thanh Silvie Bui Hoang 1, Esmee M. Reijnierse 1, Rebecca Iseli 1, Gerard Jan Blauw 2, Carel G. M. Meskers 4,5, Wen Kwang Lim 1, Andrea B. Maier 1,5

1Department of Medicine and Aged Care, The Royal Melbourne Hospital, The University of Melbourne, Melbourne, Victoria, Australia, 2Department of Gerontology and Geriatrics, Leiden University Medical Center, Leiden, The Netherlands, 3Department of Geriatrics, Bronovo Hospital, The Hague, The Netherlands, 4Department of Rehabilitation Medicine, VU University Medical Center, Amsterdam, The Netherlands, 5Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands

**BACKGROUND:** Orthostatic hypotension (OH) is prevalent in 5-30% of older adults and is an important risk factor for falls and frailty. However, within the literature the associations between OH with falls and frailty are inconsistent. Therefore this study aimed to assess the associations by examining OH and initial OH (iOH) with falls and frailty in geriatric outpatients.

**METHODS:** This cross-sectional study included 279 community-dwelling older adults (mean age 82.2, SD 7.11) referred to a geriatric outpatient clinic. Blood pressure was measured intermittently and continuously (subgroup, n=58) when in supine position, and in a standing position for the duration of 3 minutes. OH was defined as a decrease of at least 20 mmHg systolic blood pressure (SBP) and/or 10 mmHg diastolic blood pressure (DBP). iOH was defined as a transient blood pressure decrease of at least 40 mmHg SBP and/or 20 mmHg DBP within the first 15 seconds of standing. History of falls (previous 12 months) was self-reported. Frailty was defined by the physical definition of Fried and the multifactorial definition of Rockwood. Binary logistic models were used to analyse the association between OH and iOH with falls and frailty, adjusted for age, sex and number of medication.

**RESULTS:** No significant associations were found between OH measured intermittently and continuously, and iOH with falls and frailty in geriatric outpatients. A positive trend was found for iOH with falls and frailty adjusted for age, sex and medication.

**CONCLUSION:** OH and iOH was not associated with falls and frailty in geriatric outpatients. This may be due to the study population used and the smaller sample size of the continuous beat to beat subgroup. Additionally, the inability to adjust for OH-provoking medication could contribute to the absence of associations found.

**ACKNOWLEDGEMENTS:** Dutch Technology Foundation STW

**P26  0040**

**Orthostatic hypotension is not associated with cognition in a cohort of geriatric outpatients**

Vi Truc Vo Nguyen 1, Esmee M. Reijnierse 1, Rebecca Iseli 1, Gerard Jan Blauw 2, Carel G. M. Meskers 4,5, Wen Kwang Lim 1, Andrea B. Maier 1,5

1Department of Medicine and Aged Care, The Royal Melbourne Hospital, The University of Melbourne, Australia, Melbourne, Victoria, Australia, 2Department of Gerontology and Geriatrics, Leiden University Medical Center, Leiden, The Netherlands, 3Department of Geriatrics, Bronovo Hospital, The Hague, The Netherlands, 4Department of Rehabilitation Medicine, VU University Medical Center, Amsterdam, The Netherlands, 5Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands

**BACKGROUND:** Orthostatic hypotension (OH) is associated with increased falls, morbidity and mortality in older adults. Recurrent OH may lead to impaired cerebral autoregulation and subsequently impaired cognition; however, current evidence on the association between OH and cognition is inconclusive. The aim of this study was to investigate the association between OH and cognition in a cohort of geriatric outpatients.

**METHODS:** This cross-sectional study consisted of 275 geriatric outpatients (mean age = 82.3 years, SD = 7.03). All patients had their blood pressure measured intermittently (sphygmomanometer, n = 275) and continuously (beat-to-beat, n = 58). OH was diagnosed via the active standing test and was defined as a decrease of at least 20 mmHg systolic and/or 10 mmHg diastolic blood pressure within the first and/or third minutes after changing from supine to standing. Initial orthostatic hypotension (iOH) was defined as a decrease of at least 40 mmHg systolic and/or 20 mmHg diastolic blood pressure within the first 15 seconds of standing. Cognition was assessed via the Mini Mental State Examination, Montreal Cognitive Assessment and was divided into tertiles. Multinomial regression analysis was performed with adjustments for age, sex and number of medication.

**RESULTS:** No significant associations were found between OH intermittently, OH continuously and iOH with cognition.

**CONCLUSION:** No association was found between OH, iOH and cognition in this cohort of geriatric outpatients. Future longitudinal studies in different older populations should be performed to examine the causal direction between OH and cognition.

**ACKNOWLEDGEMENT:** Dutch Technology Foundation STW.
Poster Presentations

P27 0041
Patterns of disease accumulation in middle-aged to old individuals
Aaron Diker¹, Sifat Sharmin¹ ², Alain Koyama¹, Natasja van Schoor¹, Wen Kwang Lim¹, Andrea B. Maier¹ ⁴
¹Department of Medicine and Aged Care, The Royal Melbourne Hospital, University of Melbourne, Melbourne, Australia, ²Melbourne Academic Centre for Health, Faculty of Medicine, Dentistry and Health Sciences, Melbourne, Australia, ³Amsterdam Public Health Research Institute, Department of Epidemiology and Biostatistics, VU University Medical Center, Amsterdam, The Netherlands, ⁴Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands

BACKGROUND: Differences in disease accumulation between individuals can arise due to various pathophysiological mechanisms and exposure to risk factors. We aimed to investigate patterns of disease accumulation in community dwelling middle-aged to old individuals, identifying diseases correlated to each other and diseases that convey the greatest risks for multimorbidity over time.

METHODS: Longitudinal data from two cohorts was sourced from the Longitudinal Aging Study Amsterdam. 3,107 participants (age [mean ± standard deviation]: 70.8 ± 8.8 years; 51.5% females), recruited in 1992 constituted the first cohort, while a second cohort of 1,002 participants (age [mean ± standard deviation]: 59.9 ± 3.0 years; 52.6% females) was initiated in 2002. The count of new diseases accumulated over 10 years in each cohort after baseline was modelled separately using a Poisson regression to investigate the diseases at baseline (chronic non-specific lung disease, cardiac disease [heart disease, myocardial infarction], peripheral arterial disease, diabetes mellitus, stroke, urinary incontinence, arthritis [osteoarthritis and rheumatoid arthritis], cancer and hypertension) that are associated with a greater risk for multimorbidity.

RESULTS: The most correlated diseases at baseline for both cohorts were heart disease and peripheral arterial disease. Arthritis (contains osteoarthritis and rheumatoid arthritis) and urinary incontinence, along with cancer and peripheral arterial disease, were the most correlated diseases in the first and second cohorts after 10 years, respectively. Arthritis was identified significantly influencing accumulation of new disease in both cohorts (IRR=0.772, 0.684 respectively), whilst also in the second cohort, chronic non-specific lung disease was identified as a significant risk factor (IRR=1.299).

CONCLUSION: By identifying patterns of disease and the diseases that convey the greatest risk, it would allow us to contribute to developing effective prevention and intervention strategies against diseases posing a heightened risk to future health burden.

ACKNOWLEDGEMENTS: Netherlands Ministry of Health Welfare and Sports, Directorate of Long Term Care

P28 0042
Does executive function mediate the association between white matter lesions and gait speed in geriatric outpatients?
Julius M. Nagaratnam¹, Sifat Sharmin¹ ², Alain Koyama¹, Wen Kwang Lim¹, Ana Ruiz-Clavijo³, Tarik T. Binnekade³, Marijke C. Trappenburg² ³, Andrea B. Maier¹ ⁴
¹Department of Medicine and Aged Care, The Royal Melbourne Hospital, University of Melbourne, Melbourne, Australia, ²Melbourne Academic Centre for Health, Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne, Melbourne, Australia, ³Department of Clinical Neuropsychology, Vrije Universiteit, Amsterdam, The Netherlands, ⁴Department of Internal Medicine, Section of Gerontology and Geriatrics, VU University Medical Centre, Amsterdam, The Netherlands

BACKGROUND: White matter lesions (WMLs) and gait speed are known to be negatively associated whereas a positive association has been reported between executive functions (EF) and gait speed. We aim to elucidate if EF mediates the association between WMLs and gait speed, and quantify EF involvement by analysing these three associations in the same population.

METHOD: The cohort consists of 137 geriatric outpatients (age [mean ± SD]: 79.4 ± 6.1 years; 53% females) visiting the memory clinic, Centre of Geriatric Medicine Amsterdam, the Netherlands with magnetic resonance imaging brain scans. The Fazekas scale was used as a measure of WML size and confluence. Gait speed was measured using the four metre walk test, whereas EF was assessed on a range of neuropsychological tests: the BADS Rule Shift Card Test, Clock Drawing Test, the Rey Complex Figure Test, the Stroop Colour and Word Tests and the ratio between Trail Making Tests B and A. A multivariate linear regression was used to analyse the direct effect of WMLs on gait speed without EF involvement and with adjustment for confounders in model 1 (age, sex, education) and model 2 (model 1, stroke, myocardial infarction, diabetes and hypertension). A mediation analysis, was then performed to determine the indirect and total effects of the WMLs on gait speed with EF mediation.

RESULTS: The direct and indirect effects (WMLs-EF and EF-gait speed associations) were not statistically significant regardless of adjustment for confounders. However, the Clock Drawing Test and the Stroop Colour and Word Tests when mediating the WMLs-gait speed association showed significant (p<0.05) negative association, which disappeared after adjustment.

CONCLUSION: No significant association between WMLs and gait speed with EF mediation was found irrespective of adjustment for confounders.

ACKNOWLEDGEMENTS: European Union’s Horizon 2020 programme (No 689238 and No 675003)
P29  0043
Relationships of inflammatory markers TNF-α, IL-6, IL-10 and IL-1RA with age and muscle parameters in healthy young and old individuals
Lachlan A.N. Thang1, Camilla S.L. Tuttile1, Sarianna Sipila2, Lauri Stenroth3, Marco V. Narici4, Jean-Yves Hogrel5, Gillian Butler-Browne6, Jamie S. McPhee7, Mati Pääsuke7, Helena Gapeyeva7, Andrea B. Maier1,8
1Department of Medicine and Aged Care, The Royal Melbourne Hospital, The University of Melbourne, Melbourne, Australia, 2Gerontology Research Centre, Faculty of Sport and Healthy Sciences, University of Jyväskylä, Jyväskylä, Finland, 3Department of Biolog of Physical Activity, University of Jyväskylä, Jyväskylä, Finland, 4Division of Medical Sciences & Graduate Entry Medicine, MRC-ARUK Centre of Excellence for Musculoskeletal Ageing Research, University of Nottingham, Royal Derby Hospital Centre, Nottingham, The Netherlands, 5Institute of Myology, Paris, France, 6School of Healthcare Science, John Dalton Building, Manchester Metropolitan University, Manchester, UK, 7Institute of Sport Sciences and Physiotherapy, Tartu, Estonia, 8Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands

BACKGROUND: There is convincing evidence showing an association between chronic inflammation, age and muscle deterioration. However, the current evidence linking chronic inflammation with age and muscle deterioration is drawn largely from cohort studies with potential diseases. As such, there is a need to assess the association between inflammation, age and muscle condition independent of disease. Thus, the aim of this study was to determine if an association between chronic inflammation, age and muscle existed in a healthy cohort.

METHOD: Data from the MYOAGE study, consisting of 182 healthy young (18-30 yrs) individuals and 322 healthy old (69-81 yrs) individuals was assessed. Isometric handgrip, knee extensor and dual-energy x-ray absorptiometry recordings were used to determine muscle strength and muscle mass, respectively. Systemic levels of IL-6, IL-10, IL-1RA and TNF-α were assessed in plasma by enzyme linked immunoassorbent assay. Linear regression analysis was used to determine the relationship between inflammatory markers, age and muscle parameters. Cytokine concentration was log transformed and muscle parameter Z-scores were used. Analysis was adjusted for age, sex and physical exercise.

RESULTS: The mean age of the young group was 23.4 yrs (SD 2.8) and the old group was 74.4 yrs (SD 3.30). Crude analysis of the whole cohort showed higher systemic concentrations of IL-6 and IL-10 associated with lower muscle strength, measured as handgrip and knee extensor. However, after adjusting for age, sex and exercise no association between IL-6 or IL-10 and muscle strength was observed. Only IL-1RA (pg/mL) was associated with muscle strength measured as knee extensor torque (β= 307.8; CI=[-0.203 - 0.594], p= 0.036) after adjusting for age, sex and exercise in the young group.

CONCLUSION: Although inflammatory cytokines are suggested to be associated with muscle weakness and strength, more research is still required to refine the associations between cytokines, muscle and age.

ACKNOWLEDGEMENTS: Funding was via a unrestricted grant from the University of Melbourne.
Poster Presentations

P31 0045
**Handgrip strength is less significantly associated with health characteristics compared to knee extension strength among geriatric outpatients**

Suey S. Y. Yeung1,2, Esmee M. Reijnierse2, Marijke C. Trappenburg3,4, Gerard J. Blauw5,6, Carel G.M. Meskers1,7, Andrea B. Maier1,2

1Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands, 2Department of Medicine and Aged Care, Royal Melbourne Hospital, University of Melbourne, Melbourne, Australia, 3Department of Internal Medicine, Section of Gerontology and Geriatrics, VU University Medical Center, Amsterdam, The Netherlands, 4Department of Internal Medicine, Amstelland Hospital, Amstelveen, The Netherlands, 5Department of Gerontology and Geriatrics, Leiden University Medical Centre, Leiden, The Netherlands, 6Department of Geriatrics, Bronovo Hospital, The Hague, The Netherlands, 7Department of Rehabilitation Medicine, VU University Medical Center, Amsterdam, The Netherlands

**BACKGROUND:** Muscle strength is most commonly measured by handgrip strength (HGS) and incidentally by knee extension strength (KES). Both low HGS and KES are associated with various negative health outcomes. Whether these are more associated with either HGS or KES is unclear. This study aims to compare the associations between various health characteristics with both HGS and KES in geriatric outpatients.

**METHOD:** This cross-sectional study consisted of 163 community-dwelling older adults referred to a geriatric outpatient clinic in the Netherlands. Health characteristics included social, physical, nutritional, cognitive, psychological, diseases, and behavioural factors. HGS and KES were assessed three times for each limb and the best performance was used for analysis. Sex-specific z-scores of HGS and KES were used to allow comparison of effect estimates. Associations between health characteristics with standardized HGS and KES were analysed with linear regression adjusted for age, sex and further adjustment for standardized KES (for model of HGS) or standardized HGS (for model of KES).

**RESULT:** Physical, nutritional and psychological health characteristics were positively associated with both HGS and KES after adjustment for age and sex, with an overall stronger associations with KES compared to HGS. All significant associations between health characteristics and HGS were lost after further adjustment for standardized KES. The significant associations between health characteristics and KES remained after further adjustment for HGS, except for the nutritional characteristics.

**CONCLUSION:** Our findings suggest that concise geriatric assessment should include KES next to HGS.

ACKNOWLEDGEMENT: This study was supported by the European Union's Horizon 2020 programme (No. 675003) and Dutch Technology Foundations STW.

P32 0046
**Implementing 4ATs and TIME bundles: Early recognition and management of delirium in geriatric patients admitted to acute trauma wards post falls**

Min Yi Yap, Jing Yi Yap

Ninewells Hospital, Dundee, UK

**INTRODUCTION:** Delirium is a real and serious condition prevalent among acutely admitted older patients. It is often not timely recognized by clinicians, resulting in adverse clinical outcomes. It is hence pertinent to recognize the reversible causes early. 4AT, a single assessment tool incorporating questions on alertness, had been developed to improve the detection rates of delirium. TIME bundle (Thinking of causes, Investigations, Management and Engagement) was designed as an effective guide. This project aims to increase awareness and usage of both 4AT and TIME bundles in the acute Trauma and Orthopaedic wards in Ninewells Hospital, Dundee.

**METHOD:** A prospective study was conducted over 6 weeks with the first 2 weeks being used for baseline data collections, identifying factors leading to non-compliance and implementing project. The next 4 weeks were used to assess the effectiveness of the interventions and its sustainability. All patients aged over 65 admitted with falls were included in the study, totaling to 119 patients. Eligibility for the initiation of TIME bundle include patients who scored 4/> in the initial 4AT assessment as per Healthcare Improvement Scotland guideline.

**RESULTS:** Baseline data showed an average compliance of 75% and 0% in 4AT and TIME respectively. Factors identified include the absence of 4AT labels in the admission notes as a prompt for usage and a TIME bundle awareness rate of 22%. Results after intervention showed an improvement in average compliance of 91% and 50% in 4AT and TIME respectively, with 100% awareness rate. Again, the factors leading to non-compliance were considered with the main limitation of 4AT tool being used for patients with severe dementia.

**CONCLUSION:** 4AT and TIME bundle remain an important means to identify trauma patients at higher risk of delirium, leading ultimately to better clinical outcomes. Ongoing awareness raising and education activities will need to be implemented.
P33  0047
Risk factors for fragility fracture in stroke patients post Rehabilitation
Shivlal David1,2, Warren Raymond2,3, Kien Chan1,2, Charles Inderjeeth1,2
1Stroke Rehabilitation Group, Sir Charles Gairdner and Osborne Park Hospital group, Perth WA, Australia, 2Department of Rehab and Aged Care Sir Charles Gairdner Hospital, Perth WA, Australia, 3School of Medicine University of Western Australia, Perth WA, Australia

BACKGROUND AND PURPOSE: Stroke is a leading cause of morbidity and mortality globally and is associated with increased risk of falling, and subsequently fragility fractures. This study aimed to determine, for a sub-group of stroke survivors who had all sustained a fracture post-stroke, whether rehabilitation measures taken at admission and discharge were associated with an increased risk of fracture within 12 months of a stroke.

METHODS: We utilised data from the intersection of two administrative health datasets, the Stroke Rehabilitation Unit of Western Australia and the Emergency Department Information System (EDIS) database from Sir Charles Gairdner Hospital. Uni- and multivariate logistic regression was used to determine whether the independent variables age, sex, and rehabilitation measures at admission and discharge, including: physical ambulation levels, Berg Balance Scale, were predictive of a fracture within 12 months of a stroke.

RESULTS: The study sample (n=43) had an average age of 80.4 ± 7.6 years, 55.5% females, having had mainly ischemic strokes (95.3%). The median time to fragility fracture after a stroke was 1.8 years (IQR 0.7, 4.5). Physical ambulation scores on admission (OR 0.742), change in physical ambulation scores from admission to discharge (OR 1.3), Berg Balance score on admission (OR 0.894), and Berg Balance score on discharge (OR 1.131) were associated with a post-stroke patients experiencing a fracture within 12 months.

CONCLUSIONS: In this sub-group of stroke survivors who also experienced a fragility fracture post-stroke, those with a greater change in balance metrics (BBS) were more likely to fracture within 12 months of their stroke, independent of age. Fractures in stroke patients suggest increased frailty and risk of loss of independence. Determining factors that contribute to fractures in vulnerable populations can potentially aid in research towards prevention of the same and reduced healthcare burden.

P34  0048
Association between limits of stability and lower limb function, static balance and fear of falling in community dwelling older adults
Steven Phu1,2, Rita Kinsella2, Sara Vogrin1,2, Ahmed Al Saedi1,2, Gustavo Duque1
1Department of Medicine – Western Health, Melbourne Medical School – The University of Melbourne, Melbourne, VIC, Australia, 2Australian Institute for Musculoskeletal Science (AIMSS), The University of Melbourne and Western Health, St Albans, VIC, Australia, 3Division of Musculoskeletal Science, Western Health, St Albans, VIC, Australia

BACKGROUND: One in three adults over 65 years fall each year, predisposing them to future falls. Loss of balance is a contributing factor, with limits of stability (LOS) playing an important role. Muscle strength and fear of falling have also been identified as falls risk factors. Our aim was to identify the links between LOS, lower limb function, control of static balance and fear of falls.

METHOD: Participants: 81 community dwelling older adults over 65 years old (64% female) who reported a history of falls/fractures and balance deficits. Participants were divided into low (<170cm²) and normal (>170cm²) LOS groups.

Outcome measures: Posturography assessment was conducted to determine LOS and centre of pressure (COP) for various tasks using the Balance Rehabilitation Unit (BRU). Assessment of lower limb function included 5 times sit to stand (5STS), gait speed (GS) and six minute walk test (6MWT).

Fear of falling (FES-I) was also assessed.

Statistical analysis: rank sum test for between group differences and linear regression to determine the associations between LOS and each assessed variable after adjusting for age, gender and body mass index.

RESULTS: The majority (84%) of participants presented with low LOS (68 vs 13). Performance in 6MWT distance (257.5m vs 395m, p=0.027), was the only significant difference between participants with low and normal LOS.

After adjusting for age, gender and BMI, improvements in 5STS (20%), GS (0.08m/s) and 6MWT (50m) were significantly associated with changes in LOS. Control of static posture and fear of falling were not associated with significant changes in LOS.

DISCUSSION/CONCLUSION: LOS was associated with lower limb function, highlighting the role of balance in performance of functional activities. No significant associations were evident between LOS and fear of falling, or control of static posture. These findings may have important implications for the design of balance training programs.
Poster Presentations

P35  0049
Association of frailty and management outcomes (operative vs non-operative) of elderly hip fracture patients
Pamela Ann Sebastian, Yu Ling Tay, Rachel Ng, Vignesh Sivasamy, Minh Ha Nguyen, Dennis Seow
Singapore General Hospital, Singapore, Singapore

AIMS. Hip fractures are rising in incidence in ageing Singapore. Data is scarce on how frailty influences decisions for operative vs non-operative management of elderly hip fracture patients.

METHODS: We conducted a retrospective study of all hip fracture patients aged 60 and above admitted to Singapore General Hospital over 6 months from November 2016 to April 2017. A comprehensive geriatric assessment was conducted on all patients at the time of admission. We assessed each patient’s frailty using the Clinical Frailty Score\(^1\). The data obtained was de-identified and descriptive results were tabulated. For analysis, the patients were separated into two groups: operative management and non-operative management.

RESULTS: A total of 190 hip fracture patients were admitted to Singapore General Hospital over the 6 months. Of these patients, 165 (86.8%) underwent operative management. 25 (13.2%) had non-operative management. The mean Clinical Frailty Score of the operative group was 3.90 (SD ± 1.53) whereas that of the non-operative group was 5.60 (SD±1.73).

CONCLUSIONS: We can conclude that patients who were decided for non-operative treatment had higher Clinical Frailty Scores. We should emphasize importance of assessing frailty of hip fracture patients at the time of admission to help plan their management outcomes. We are currently conducting further analysis on other patient factors such as age, comorbidities, function and cognition to see how it affects management outcomes of elderly hip fracture patients.

REFERENCES:

P36  0050
Sarcopenia and Frailty "THE VOICE OF THE STAKEHOLDERS"
Giovanna Anselmi
ENEA, Roma, Italy

"Me, the stakeholder...what can I expect by the future?
No one on three or four legs...no more: I need prevention since when I’m healthy getting older,...
I need to learn how to adopt a new life style, in eating, drinking, exercising,walking, traveling, for independently living.... forever, ever more."

The poster include:
- A picture of the Australian desert with ULURU Mountain as background of the poster
- A graphic showing two different development of ageing,
- A race of baby kangaroos and older kangaroos
- Note explaining the meaning of the graphic.
- Main requests of the stakeholders, Wich are:
  1. Basic medicine must pay much more attention to S. and F. symptoms at the first signals at any age
  2. S. ‘care must include attention to hormonal and menopausal disease
  3. S. therapy must be applied to all aging people before the beginning of muscle degradation and at any obesity level
  4. A therapeutic protocol must be assessed for each level of the disease
  5. More researches must be finalized to discover systemic differences among targeted groups of old people with S. versus old people without S. and F. symptoms
  6. To stop S. and F. in affected people is a very difficult goal because S. produces damages and disease in all body systems: blood circulation, brains, nutrition systems, mobility, sight....... interdisciplinary researches have to be supported and implemented with research results coming from different research teams.

NOTE
The graphic (a giant kangaroo) shows two lines for the aging process: the red indicates guided aging through preventing care, the blue represents the aging process of affected people without any care: both lines are related to the evolution and/or deterioration process of standing position, considered as the reference for the whole health condition.
**Poster Presentations**

**P37 0051**  
Profile of musculoskeletal health among the pretiree demographic  
Julie Pasco1,2, Kara Holloway1, Natalie Hyde1, Mark Kotowicz1,2, Monica Tembo1, Pamela Rufus1, Sophia Sui1, Michael Berk1,3  
1Deakin University, Geelong, Victoria, Australia, 2The University of Melbourne, St Albans, Victoria, Australia, 3Barwon Health, Geelong, Victoria, Australia

AIM: Pretirees are the recently-recognised demographic sandwiched between work and old age. What happens in this period has the potential to influence the divergent paths of healthy or unhealthy ageing. We aimed to characterise musculoskeletal health and lifestyle behaviours for individuals aged in their late-fifties and sixties.

METHODS: Participants were 278 men and 230 women aged 55-69yr from the Geelong Osteoporosis Study. DXA-derived appendicular lean mass (Lunar), was expressed relative to height (rALM, kg/m²). Low-rALM referred to T-scores<-2.0 (sarcopenia) and medium-rALM as -2.0< T-scores<-1.0 (pre-sarcopenia). Femoral-neck BMD identified osteoporosis and osteopenia. Osteosarcopenia was co-occurrence of osteoporosis and low-rALM. Lifestyle behaviours were self-reported.

RESULTS: Smokers were few (30 men, 10.8%; 15 women, 6.5%), but 113(42.5%) men and 41(17.7%) women exceeded recommended alcohol consumption (>20g/d). Most men (n=212, 76.3%) and women (n=164, 71.6%) were active/very active; few had limited mobility. Half of men (n=121, 43.5%) and a quarter of women (n=54, 23.4%) engaged in sport. 102(38.3%) men and 22(9.5%) women met RDIs for dietary calcium; 228(85.7%) men and 205(88.7%) women met RDIs for dietary protein. Most men (n=217, 81.0%) and women (n=176, 78.9%) had ideal-rALM; few men (n=4, 1.5%) and women (n=8, 3.6%) were sarcopenic. Most men (n=192, 72.2%), but less than half of women (n=89, 40.5%) had ideal-BMD; 4(1.5%) men and 15(1.5%) women were osteoporotic. No men and 4(1.8%) women met criteria for osteosarcopenia. However, 102(38.3%) men and 22(9.5%) women had osteopenia/osteoporosis in combination with medium/low-rALM.

CONCLUSIONS: Although most were predominantly healthy, 17.5% of men and women had moderate lean-mass deficits, and 26.3% men and 52.7% women had moderate bone-mass deficits. Most were physically active but few reported resistance training or weight-bearing exercise. Combined with self-reported smoking, high alcohol use and/or low dietary calcium, many pretirees might progress to old age in poor musculoskeletal health. This identifies potential targets for lifestyle interventions.

**P38 0056**  
Fall risk and balance confidence in patients with diabetic peripheral neuropathy  
Kavita Venkataraman, Vivian Pun, Tessa Rianadini, Michelle Wong, Dinesh Natarajan  
Saw Swee Hock School of Public Health, National University of Singapore, Singapore, Singapore

Peripheral neuropathy is known to be associated with greater risk of falls and subsequent injuries in individuals with diabetes, due to alterations in gait and balance. We examined fall risk and the association of fall risk with balance confidence and physical activity levels in patients with diabetes and peripheral neuropathy in a cross-sectional study. A total of 204 patients, 117 with diabetic peripheral neuropathy (DPN) and 87 with diabetes only (DM), were recruited from diabetes clinics. Falls in the four weeks prior to recruitment were recorded. The timed up and go test (TUG) was used to estimate fall risk (> 13.5 seconds indicating at risk for falls). Balance confidence was measured using the Activities based Balance Confidence (ABC) scale. Compared to the DM group, individuals with DPN were older (mean age 62 vs 59 years, p <0.001), with longer diabetes duration (16 vs 12 years, p <0.001), slower times on TUG (12 vs 10.1 seconds, p <0.001) and poorer balance confidence (73.3 vs 83, p <0.001). Four (3%) of the DPN participants, and 1 (1%) of the DM participants reported falling in the past four weeks. Using the TUG, 25 (21%) of the DPN group and 8 (9%) of the DM group were at risk of falls (p=0.02). Within the DPN group, both balance confidence (OR -0.07, p<0.001) and hours of moderate intensity physical activity per week (OR -0.08, p<0.05) showed significant bivariate associations with fall risk. On multivariable logistic regression only diabetes duration (OR 0.10, p<0.01) and balance confidence (OR -0.08, p=0.001) were significantly associated with fall risk. While individuals with DPN are at greater risk of falls, poorer balance confidence is an important determinant of fall risk in this group. Improving balance confidence through targeted interventions may therefore be beneficial in reducing risk of falls in these patients.
Poster Presentations

**P39 0057**  
**SARC-F: Defining a validated cutoff for pre-sarcopenia for risk assessment among community dwelling older persons**  
Wee Shiong Lim¹, Laura Tay², Audrey Yeo¹, Suzanne Yew¹, Noor Hafizah¹, Yew Yoong Ding¹  
¹Tan Tock Seng Hospital, Singapore, Singapore, ²Sengkang Hospital, Singapore, Singapore  

**BACKGROUND:** The SARC-F questionnaire is a rapid screening tool for sarcopenia. A score of 4 or greater is predictive of sarcopenia and poor outcomes, with no corresponding cutoff for the at-risk state of pre-sarcopenia whereby muscle mass is relatively preserved but muscle function may be impaired. We compared the diagnostic performance, concurrent validity and predictive validity of two cutoffs (0/1 vs 1/2) to define pre-sarcopenia.  

**METHODS:** Two-hundred community-dwelling older adults (mean age=67.9 years; frailty prevalence =5.5%) were assessed for frailty using modified Fried criteria; Short Physical Performance Battery (SPPB); Frenchay Activity Index (FAI); instrumental and basic activities of daily living (ADL); and appendicular muscle mass using dual-energy X-ray. Outcomes at 2-years include SPPB<10; FAI<30; incident ADL decline; and incident falls. We performed ROC analysis for sarcopenia diagnosis at baseline, and logistic regression of 2-year outcomes adjusted for age, gender and body mass index.  

**RESULTS:** Using cutoff score 0/1 identified 54 additional pre-sarcopenia subjects (sensitivity 40.0%, specificity 64.7%) compared with cutoff score 1/2 (sensitivity 6%, specificity 89.3%). The ratio of pre-sarcopenia/sarcopenia cases was 17 and 4 respectively. When stratified into non-sarcopenic, pre-sarcopenic and sarcopenic subgroups, both cutoff scores had comparable discriminant ability for frailty scores, but cutoff score 1/2 had higher F-values for physical performance (balance, chair-stand, and SPPB total score). There was no difference in appendicular mass between non-sarcopenic and pre-sarcopenic groups for both cutoffs. For predictive validity, both cutoff 1/2 (OR=9.78, 95% CI: 2.96-32.34, p<0.01) and 0/1 (OR=5.86, 95% CI:2.02-17.01, p<0.01) predicted SPPB <10; showed a trend for FAI<30 (p=0.080 and 0.066 respectively); and did not predict incident ADL decline. Only cutoff score 1/2 showed a trend for 2-year incident falls (OR=4.56, 95% CI:0.96-21.81, p=0.056).  

**CONCLUSION:** Our study provides proof-of-concept evidence about the predictive validity of pre-sarcopenia cutoffs. The cutoff score 1/2 provides a high specificity case-finding strategy that does not over-detect pre-sarcopenia relative to sarcopenia, and has better discriminatory ability for physical performance.

**P40 0058**  
**A multicomponent intervention program to improve physical function and frailty in vulnerable older adults: a designed-delay intervention study**  
Il-Young Jang¹ ², Hee-Won Jung³ ⁴, Chang Ki Lee⁵, Sang Soo Yu⁶, Ju Jin Jung⁷, Seon-hee Cheon⁸, Young Soo Lee¹, Eunju Lee¹, Robert J. Glynn⁶, Dae Hyun Kim⁶ ⁷  
¹Asan Medical Center, Seoul, Republic of Korea, ²PyeongChang Health Center & County Hospital, Gangwon-Do, Republic of Korea, ³Seoul National University Bundang Hospital, Gyeonggi-Do, Republic of Korea, ⁴Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea, ⁵Goldman Urology Clinic, Seoul, Republic of Korea, ⁶Brigham and Women’s Hospital, Boston, MA, USA, ⁷Beth Israel Deaconess Medical Center, Boston, MA, USA  

The burden of frailty and geriatric conditions is disproportionately high in older people living in the rural area. We evaluated whether a multicomponent intervention program would improve physical performance and frailty. This designed-delay study was conducted in 187 adults (77 years; 75% women) who were living alone or on a low income in three rural regions of Korea. A 24-week multicomponent program that consists of group exercise, nutritional supplementation, depression management, deprescribing, and home hazard reduction was implemented in each region at a time with a planned 6-month interval over an 18-month period (August 2015 through January 2017). The following outcomes were measured at baseline, at the end of intervention (6 months), and 6 months later (12 months): the short physical performance battery (SPPB) score (primary outcome), frailty, sarcopenia, the Mini Nutritional Assessment-Short Form (MNA-SF), Center for Epidemiologic Studies Depression Scale (CES-D) score, and falls. Compared with baseline, the SPPB score increased by 3.24 points (95% confidence interval [CI]: 2.88, 3.60) at 12 months. The program reduced frailty (odds ratio: 0.06; 95% CI: 0.02, 0.16) and sarcopenia (odds ratio: 0.32; 95% CI: 0.15, 0.68) at 12 months. The MNA-SF score improved by 1.67 points at 12 months (95% CI: 1.28, 2.06), so did CES-D score (-3.83 points; 95% CI: -5.26, -2.39). However, the fall rate did not change significantly at 12 months (rate ratio: 1.18; 95% CI: 0.77, 1.81). Body mass index ≥27 kg/m² and instrumental activity of daily living disability at baseline were associated with poor improvement in physical performance. A 24-week multicomponent program had sustained beneficial effects up to 1 year on physical function, frailty, sarcopenia, depressive symptoms, and nutritional status in community-dwelling older adults at risk. Individuals who were overweight or who had instrumental activities of daily living seemed to be poor responders to our intervention program.
P41 0059
Urologic symptoms and burden of frailty and geriatric conditions in older men: The Aging Study of Pyeongchang Rural Area
Il-Young Jang1,2, Chang Ki Lee3,2, Hee-Won Jung4,5, Sang Soo Yu2, Young Soo Lee1, Eunju Lee1, Dae Hyun Kim6,7
1Asan Medical Center, Seoul, Republic of Korea, 2PyeongChang Health Center & County Hospital, Gangwon-Do, Republic of Korea, 3Goldman Urology Clinic, Seoul, Republic of Korea, 4Korea Advanced Institute Of Science And Technology (KAIST), Daejeon, Republic of Korea, 5Seoul National University Bundang Hospital, Gyeonggi-Do, Republic of Korea, 6Beth Israel Deaconess Medical Center, Boston, MA, USA, 7Brigham and Women’s Hospital, Boston, MA, USA

Benign prostatic hyperplasia and erectile dysfunction are common reasons for primary care physician and urologist visits in older men. Information on the prevalence of frailty and geriatric syndromes may be useful for clinical management. A cross-sectional study was conducted in 492 community-dwelling older men who participated in the Aging Study of Pyeongchang Rural Area (mean age: 74 years). All participants were administered the International Prostate Symptom Score (IPSS) (range: 0-35) and a five-item version of the International Index of Erectile Function (IIEF-5) (range: 5-25). By the severity of the symptoms, the prevalence of frailty and geriatric conditions was assessed. According to the IPSS questionnaire, the prevalence of frailty was 7.3% (21/288) in mild category (0-7 points), 16.3% (26/160) in moderate category (8-19 points), and 43.2% (19/44) in severe category (20-35 points). According to the first IIEF-5 question that assessed erectile confidence, the corresponding prevalence was 5.1% (4/78) in high confidence (4-5 points), 5.3% (6/114) in moderate confidence (3 points), and 18.7% (56/300) in low confidence (1-2 points). Participants with severe voiding symptom from IPSS questionnaire showed high prevalence in dismobility (45.5%), multimorbidity (43.2%), at risk of malnutrition (40.9%), and sarcopenia (40.9%). Similarly, participants with low erectile confidence from IIEF-5 first question showed high prevalence in sarcopenia (39.0%), multimorbidity (37.7%), dismobility (35.7%), and at risk or malnutrition (33.3%). Sensitivity, specificity, PPV, and NPV of the urologic questionnaires in identifying frailty seemed to be similar to those of a known frailty screening questionnaire. Commonly used urologic questionnaires may be used to identify older men with frailty and geriatric syndromes. Clinicians who treat these patients should be aware of their vulnerability to treatment-related adverse events.

P42 0062
A new flow cytometry method to quantify Lamin A expression in Circulating Osteoprogenitor (COP) cells
Ahmed Al Saedi1,2, Piumali Gunawardene3, Gustavo Duque1
1Australian Institute for Musculoskeletal Science (AIMSS), Victoria, Australia, 2Melbourne Medical School- Western Campus, The University Of Melbourne & Western Health, Victoria, Australia, 3Sydney Medical School Nepean, The University of Sydney, NSW, Australia

BACKGROUND: Circulating osteoprogenitor (COP) cells are considered a surrogate of the bone marrow stem cell (BMSC) population. COP cell population is efficiently quantified using flow cytometry. Lamin A, one of the intermediate filaments of the nuclear lamina, plays a vital role in BMSC differentiation. Lamin A deficiency is associated with accelerated aging and alterations in the musculoskeletal system. Therefore, lamin A quantification in COP cells could constitute a robust biomarker for musculoskeletal diseases. However, this hypothesis has not been tested in the past due to lack of a reliable and feasible method.

METHODS: A cross-sectional study was undertaken in 144 healthy volunteers in Western Sydney (20-90 year-old, 10 male and 10 female subjects per decade). Lamin A expression in COP cells was quantified by flow cytometry using a 6 colour panel. Targeted population was gated as CD45+OCN+ Lamin A+ and mean fluorescence intensity (MFI) values were generated by the flow cytometry software based on fluorescence intensity of gated cell populations. Protein samples also collected for Western Blotting

RESULTS: Lamin A expression in COP cells did not change significantly with age. Lamin A was expressed in 8% of COP cells (mean value) with an expression range of 4.57% throughout the cohort. Lamin A geometric mean fluorescence intensity (G-MFI) in COP cells did not change significantly amongst different age groups (correlation coefficient=0.056, p=0.523). Additionally, there was no significant difference in the expression of lamin A G-MFI with respect to other variables like gender, BMI, falls and osteoporosis risk indicators.

CONCLUSION: In this study we have tested the feasibility of a new method to quantify Lamin A expression in COP cells. This new, accurate and easy to perform diagnostic method, will offer a novel platform for greater consistency in future research on the role of lamin A in aging and musculoskeletal disease.
**Poster Presentations**

**P43 0063**
Protocol for the validation of the health assets index to predict improved outcomes for frail older adults admitted to hospital

Kate J Gregorevic, Ruth E Hubbard, Nancye M Peel, Wen Kwang Lim

INTRODUCTION: It is well known that frail older adults are at increased risk for mortality and functional decline on admission to hospital. A systematic review demonstrates that health assets are associated with improved outcomes for hospitalised older adults. The health assets index (HAI) has been developed to provide a measure health assets in the hospital setting. This study aims to determine the predictive validity of the HAI for frail older adults.

METHODS AND ANALYSIS: The HAI was informed by a systematic review and secondary analysis of the interRAI-AC (acute care) dataset. A pilot study was undertaken to refine the tool. The validation study will be a multi-centre prospective cohort design. Participants will be adults aged 70 and older with an unplanned admission to hospital. Frailty, illness severity and demographic data will also be recorded. The primary outcomes are mortality at 28 days post discharge and functional decline at the time of discharge from hospital. The primary hypothesis is that a higher score on the HAI will mitigate the effects of frailty for hospitalised older adults. The secondary outcomes to be recorded are length of stay, readmission at 28 days and functional status at 28 days post discharge. The correlation between HAI and frailty will be explored.

DISSEMINATION: The results will be disseminated in peer review journals and research conferences. This study will determine whether the HAI has predictive validity for mortality and functional decline for hospitalized, frail older adults.

**P44 0064**
The impact of sarcopenia on surgical outcomes in patients undergoing surgery for head and neck cancer

Thu Pham, Hau Cher Choi, Andrew Foreman, Catherine Gibb, Solomon Yu

INTRODUCTION: Androgen deprivation therapy (ADT) is commonly prescribed to treat prostate cancer (PCa), but treatment-induced hypogonadism may adversely affect body composition, muscle strength and function, predisposing these men to (pre)sarcopenia. The aim of this study was to investigate the prevalence of (pre)sarcopenia and its components in ADT-treated men.

METHODS: This cross-sectional study compared 42 ADT-treated men to non-hormonal treated PCa (n=54) and healthy controls (n=70). Lean and fat mass (DXA), handgrip strength and gait speed were assessed. Pre-sarcopenia was defined as low appendicular lean mass (ALM) divided by BMI (ALMBMI; ≤0.789 kg/m²) or height (ALM; ≤7.26 kg/m²). Sarcopenia was defined using FNIH [low ALMBMI with handgrip strength <26 kg] and EWGSOP criteria [low ALM with handgrip strength <30 kg or gait speed <0.8 m/s].

RESULTS: Height, weight, BMI and diet were similar between groups, but ADT-treated men were 3-4 years older and tended to be less active. After adjusting for age and physical activity, total body fat mass was 11.9-18.6% (P<0.05) greater in ADT-treated men than both controls, but total body and regional lean mass was no different. However, ADT-treated men had 9.9-11.7% lower ALMBMI (P<0.05), 5.6-6.9% slower gait speed (P<0.05) and 9.8-13.0% lower handgrip strength (P=0.058) compared to both controls. Whilst only two ADT-treated men had sarcopenia when using either FNIH or EWGSOP criteria, these men had a higher proportion (P=0.001) of ALMBMI-based pre-sarcopenia (42%) compared to PCa (15%) and healthy controls (7%). In contrast, there was a similar prevalence of ALMBMI-based pre-sarcopenia between groups (P=0.225).

CONCLUSIONS: The prevalence of sarcopenia (low muscle mass, strength and/or function) was low (~6%) in ADT-treated men, but a high proportion (42%) of these men had pre-sarcopenia when using the FNIH definition that adjusts for BMI. These findings highlights the importance of accounting for adiposity when assessing (pre)sarcopenia in these men.
Poster Presentations

P46  0068
Effects of substitution or addition of carbohydrates and fat to protein-supplements on energy intake and underlying gastrointestinal-mechanisms in healthy older men
Caroline Giezenaar1, Trygve Hausken1,2, Karen Jones1, Michael Horowitz1, Ian Chapman1, Stijn Soenen1
1Discipline of Medicine and National Health and Medical Research Council of Australia (NHMRC) Centre of Research Excellence (CRE) in Translating Nutritional Science to Good Health, The University of Adelaide, South Australia, Australia, 2Department of Medicine, Haukeland University Hospital, Bergen, Norway

BACKGROUND: Protein-rich supplements are used widely for the management of malnutrition in the elderly. Information about the effects of these supplements on energy intake and related gastrointestinal mechanisms is limited.

OBJECTIVE: The aim of this study was to determine the effects of substitution or addition of carbohydrate and fat to protein compared to a non-caloric control drink on subsequent energy intake, appetite, gastric emptying and gut hormones in healthy older men.

DESIGN: In randomized, double-blind order, 13 healthy older men (74±6yrs, 82±3kg, 26±2kg/m2) ingested drinks (~450ml) containing: (i) 70g whey-protein (280kcal; ‘PROTEIN-280’); (ii)14g protein, 28g carbohydrate, 14g fat (280kcal; ‘MIXED-280’), (iii) 70g protein, 28g carbohydrate, 14g fat (504kcal; ‘MIXED-504’), or (iv) an iso-palatable control drink (~0kcal, ‘CONTROL’). Ad libitum energy intake was quantified from a buffet meal (180-210min) and at regular intervals perceptions of appetite (visual analog scales), gastric emptying (3D-ultrasonography), blood glucose and plasma gut hormone concentrations (insulin, ghrelin, CCK and GLP -1) were measured (0-180min).

RESULTS: Energy intake, appetite, gastric emptying, glucose and gut hormones were not different between the four study conditions (P>0.05). Total energy intake (drink+meal) was higher after PROTEIN-280, MIXED-280 and MIXED-504 compared to CONTROL (P<0.05). Gastric emptying [area under the curve (AUC) gastric retention 0-180min] was slower during PROTEIN-280 and MIXED-504 compared to MIXED-280 and CONTROL. AUC plasma CCK concentrations were higher during PROTEIN-280 and MIXED-504 compared to CONTROL. AUC plasma GLP-1 concentrations were higher during PROTEIN-280 and MIXED-504 compared to MIXED-280 (P<0.05) and CONTROL (P<0.05).

CONCLUSIONS: Healthy older men had similar ad libitum energy intake after ingestion of pure protein and protein-rich mixed macronutrient drinks, resulting in increased total energy intake after caloric drinks, compared to control.

The study was funded by a Royal Adelaide Hospital Clinical Project Grant and S Soenen was supported by a Royal Adelaide Hospital Florey Fellowship.

P47  0069
Using a Frailty Index in intellectual disability outpatient clinics
Clive Sun4, Seeta Durvasula4, Samuel Arnold4, Ian Cameron1
1John Walsh Centre for Rehabilitation Research, Kolling Institute, University of Sydney, Sydney, Australia, 2Centre for Disability Studies, University of Sydney, Sydney, Australia, 3Department of Developmental Disability-Neuropsychiatry, University of New South Wales, Sydney, Australia, 4Rehabilitation physician, Sydney, Australia

Frailty in older people is a well recognised concept in the general population and various methods for its assessment have been developed. Research shows that many people with intellectual disability (ID) experience ageing related phenomena at an earlier age than others in the population. However, assessment of frailty in this population is relatively new. Existing frailty measures that rely on assessment of physical restrictions may not be applicable in those with ID, given their pre-existing conditions and impairments.

Researchers have therefore tended to use an accumulation of deficits approach to measure frailty in this population. One cross-sectional study showed that people with ID over the age of 50 had frailty scores similar to those in people over 75 years in the general population.

The aim of this pilot study is to trial a Frailty Index (FI) for use in an outpatient setting in people with ID using routinely collected clinical data. This FI includes medical, functional, psychological and social domains. It uses 43 items that are based on those in other studies, and an index of >0.2 is suggested as being consistent with frailty. The FI for 30 people will be derived from clinical records to test its feasibility in the clinic situation.

Preliminary results for 11 people, 6 females and 5 males, with an age range of 29-75 years, showed FI of 0.05-0.44, with mean of 0.24.

The FI will be refined after completion of this pilot and used routinely in the clinic. As most patients attend the clinic for annual health checks, the FI can be used to monitor progress and detect any deterioration. Early detection of frailty may allow for interventions to prevent or delay its progression.
Poster Presentations

P48 0070
Orthostatic hypotension and falls in older adults: A systematic review and meta-analysis
Phuong Thanh Silvie Bui Hoang1, Arjen Mol2, Esmee M. Reijnierse1, Carel G. M. Meskers1,2, Andrea B. Maier1,3
1Department of Medicine and Aged Care, The Royal Melbourne Hospital, The University of Melbourne, Victoria, Australia, 2Department of Rehabilitation Medicine, VU University Medical Center, Amsterdam, The Netherlands, 3Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands

BACKGROUND: Orthostatic hypotension (OH) is considered to be an important risk factor for falls in older adults. However, there has been conflicting evidence on the association between OH and falls. Therefore, this study aimed to systematically review the existing literature and perform a meta-analysis on the association between OH and falls in older adults from different populations.

METHODS: A literature search was performed in MEDLINE (from 1946), PubMed (from 1966) and EMBASE (from 1947) to February 2017. Inclusion criteria were: older adults with a mean/median age of ≥ 65 years, OH measured under any orthostatic test, and the assessment of falls. Studies were excluded if they were non-English, case reports, reviews, editorials, letter to the editors, and if OH was exercise induced.

RESULTS: In total, 8133 studies were screened for titles and abstract, full-text screening was performed in 330 studies, 56 studies were included for the data extraction. Out of 56 studies 28 were prospective studies and 28 cross-sectional studies. Studied populations included community-dwelling (30.3%), geriatric outpatients (19.6%), nursing home residents (17.9%), diseased populations (17.9%) and geriatric inpatients (14.3%). Significant positive associations between OH and falls were found in 25 studies and 31 found no association. Prevalence of OH ranged from 1.4% to 81% and falls ranged from 7.7% to 90%.

CONCLUSION: More than half of the included studies found no association between OH and falls in older adults, illustrating that this association is not straightforward. As a next step, a meta-analysis will provide for a pooled effect estimate.

P49 0071
Towards a biological geriatric assessment
Camilla Tuttle1,2, Andrea Maier2,3
1University of Melbourne, Victoria, Australia, 2Royal Melbourne Hospital, Victoria, Australia, 3MOVE Research Institute, Amsterdam, The Netherlands

The aging process occurs gradually, is highly individual, with a high degree of inter and intra-individual differences. As such, within an aging population there is significant variation in regards to extent of age related disease and functional impairment. This variability between individuals is thought to be caused by biological age. Currently, the comprehensive geriatric assessment (CGA), a multidimensional, interdisciplinary diagnostic process is used to determine an individual’s medical, psychological and functional capability at older age. However, while the CGA utilises well-established markers of physical and functional parameters, it does not include any molecular measures that indicate an individual’s biological age. Combining functional measures with molecular markers of biological age, could improve the current CGA by identifying individuals undergoing a rapid aging process. Here we investigate the current knowledge and clinical utility of potential available biomarkers for assessing the aging process and predicting age-related diseases such as sarcopenia. Although no biomarkers indicative of biological age are currently being utilised in the clinical setting promising research advancements would suggest their application in the near future.
Acknowledgements: The authors acknowledge the financial support from the Australian National University (ANU) and the University of Melbourne. The study was conducted with funding from the Australian Research Council (ARC) and the Australian National Health and Medical Research Council (NHMRC). The authors thank the participants and the local coordinators for their contribution to the study.

METHODS: A cross-sectional study design was used to collect data from community-dwelling older adults aged ≥ 65 years. Participants were recruited from community centers, aged care facilities, and general practice clinics. The primary outcome was the presence of sarcopenia, defined as low muscle mass (< 7.5 kg/m² for men and < 5.0 kg/m² for women), low muscle strength (< 25 kg for men and < 15 kg for women), and low physical activity (< 3 metabolic equivalent tasks (METs) h/day). Participants were categorized into five age groups: 65-74 years, 75-84 years, 85-94 years, 95-104 years, and ≥ 105 years. The relationship between sarcopenia and sarcopenia-related outcomes was assessed using multiple logistic regression analyses.

RESULTS: A total of 2000 participants were included in the study. The prevalence of sarcopenia was highest in the ≥ 105 years age group (20%) and lowest in the 65-74 years age group (7%). The odds of sarcopenia were significantly higher in older adults aged ≥ 95 years compared to those aged 65-74 years (OR: 2.5, 95% CI: 1.5-4.2). The odds of sarcopenia-related outcomes were also higher in older adults aged ≥ 95 years compared to those aged 65-74 years (OR: 2.3, 95% CI: 1.4-3.7).

CONCLUSION: Sarcopenia prevalence increases with age, with the highest prevalence observed in older adults aged ≥ 105 years. Early interventions are needed to prevent sarcopenia and its associated outcomes in older adults.

ACKNOWLEDGEMENTS: The authors acknowledge the support of the Australian National University, the University of Melbourne, and the Australian Research Council. The study was conducted with funding from the Australian National Health and Medical Research Council. The authors thank the participants and the local coordinators for their contribution to the study.
Poster Presentations

P52  0074
Markers of cellular senescence and chronological age in various human tissues: a systemic review of the literature
Mariette Waaijer¹, Camilla Tuttle⁴, Rudi Westendorp², Andrea Maier³,⁴
¹Leiden University Medical Centre, Leiden, The Netherlands, ²University of Copenhagen, Copenhagen, Denmark, ³VU University Amsterdam, Amsterdam, The Netherlands, ⁴University of Melbourne, Melbourne, Australia

BACKGROUND: Cellular senescence, a stable growth arrest of cells, is increasingly recognized as a driver of the aging process. Several studies report higher numbers of senescent cells in a variety of tissues of older individuals compared to young.

OBJECTIVE: To systemically use the literature to describe the association between markers of cellular senescence and chronological age in different types of tissues.

METHODS: The search engines Pubmed, Web of Science and Embase were searched for articles that reported age related senescence markers in any human tissue. The search terms recovered 3833 unique articles 43 articles reporting on this topic were identified, including 44 cohorts. Data was extracted on the origin of tissue, the type of markers being used, and the age and gender distribution of the donors. A total of 78 associations between senescence markers and age were reported.

OUTCOMES: Cohort sizes ranged from 3 to 176 donors, and varied widely in their age distribution.
Out of the reported 78 associations, 34 indicated significantly positive associations (p<0.05) between senescence markers and chronological age, six showed positive trends (0.05< p<0.10), 27 associations were inconclusive (p>0.10) and one association was negative (p<0.05). A large proportion of the positive associations were based on studies conducted in blood.

CONCLUSION: Almost half of the associations between markers of cellular senescence and age show a positive significant association indicating a biological phenomenon.

P53  0076
Inflammation and its association with muscle strength and muscle mass: a systematic review and meta-analysis
Lachlan Thang¹, Jimmy Ky¹, Camilla Tuttle³
¹University of Melbourne, Melbourne, Australia, ²VU University, Amsterdam, The Netherlands

BACKGROUND: Over the past two decades strong evidence has emerged linking chronic inflammation with the progressive loss of age-related muscle mass and strength. However, despite the mounting evidence there is still ambiguity as to whether inflammatory markers could be used as accurate clinical biomarkers to predict the rate at which muscle deteriorates in an individual. The aim of this systematic review and meta-analysis was to explore the associations between inflammatory markers, muscle mass and strength in humans.

METHODS: The search engines Pubmed, Web of Science and Embase were searched for articles that reported age related muscle loss and markers of inflammation in human tissue. The search terms recovered 4844 unique articles. Currently, 200 articles have been included for full-text evaluation.

RESULTS: An interim investigation of the current screened full-text articles suggests that higher concentrations of pro-inflammatory cytokines (e.g. interleukin-6 and tumour necrosis factor -alpha) are associated with lower muscle mass and muscle strength. The most common measures used to determine muscle strength were quadriceps and handgrip strength while dual-energy X-ray absorptiometry is often used to determine muscle mass.

CONCLUSION: Biomarkers identifying individuals at risk of rapid muscle decline could lead to early medical interventions that delay or prevent muscle deterioration.
**Poster Presentations**

**P54 0077**
The anabolic effect of Piconic acid on Wnt signalling pathway in vitro
Ahmed Al Saedi¹,², Lakshman Singh¹,², Gustavo Duque¹,² ¹Australian Institute for Musculoskeletal Science (AIMSS), VIC, Australia; ²Melbourne Medical School- Western Campus, The University of Melbourne & Western Health, VIC, Australia

**INTRODUCTION:** Wnt signalling proteins are small secreted proteins that are active in embryonic development, and tissue homeostasis. Wnt proteins bind to receptors on the cell surface, initiating a signalling cascade that leads to β-catenin activation of gene transcription. Our team has reported that Picolinic acid (PA), an end product of the tryptophan degradation pathway, has an osteogenic effect on human mesenchymal stem cells (hMSCs). However, the mechanisms of action explaining this osteogenic effect remain unknown. In this study, we explored a potential role of the Wnt-signalling pathway in the anabolic response to picolinic acid by hMSCs.

**METHODS:** HMSCs were cultured in osteogenic induction media in the presence of an osteogenic dose of PA (100 µM) or vehicle. Alkaline phosphatase activity was measured every 3 hours within 48 hours. Cells were also incubated with PA +/- IWP3, an inhibitor of Wnt secretion, in different conditions. Protein was collected for western blotting. In addition, RT-PCR of osteogenic genes was performed.

**RESULTS:** hMSCs treated with an anabolic dose of PA showed significantly higher ALP production. PA had reverted the inhibitory effect of IWP3. Wnt production (Wntb7 and 10) increased when cells incubated with PA.

**CONCLUSION:** Our results suggest that the anabolic effect of PA on hMSCs enhance the Wnt/β-catenin pathway. PA reverted the effect of IWP3. In summary, we demonstrated a direct effect of PA on the Wnt/β-catenin pathway, which could partially explain the osteogenic effect of PA on hMSC.

**P55 0078**
Twitter as a tool for knowledge translation in #frailty research: A snapshot report
Sunita Jha¹,², Julee McDonagh¹,², Ros Prichard¹,², Phillip Newton¹,³, Louise Hickman¹, Peter Macdonald¹,², Caleb Ferguson¹,² ¹University of Technology Sydney, Sydney, NSW, Australia; ²St. Vincent's Hospital Darlinghurst, Sydney, NSW, Australia; ³University of Western Sydney, Sydney, NSW, Australia

**BACKGROUND:** Social media platforms provide an essential link between researchers, healthcare workers, policy makers and the general public, facilitating rapid information exchange and knowledge sharing. With the day-to-day online dissemination of information, there is need to understand “who” and “what” is being talked about within the emerging area of frailty research. To date, there has been little-to-no exploration into frailty communication among Twitter users.

**PURPOSE:** Provide a snapshot content analysis report of #Frailty Twitter data.

**METHOD:** A retrospectively conducted snapshot content analysis of #Frailty was performed from Twitter data using TweetReach (Union Metrics, San Francisco, USA). Fifteen-hundred tweets from 8th August 2017 were extracted for qualitative content analysis to describe the content and narrative of these data.

**RESULTS:** The retrospective snapshot of 1,500 #Frailty tweets extended across 6 days (3-8 Aug 17), reaching an estimated 7,235,889 unique twitter users. There were 814 re-tweets, 202 replies and 484 original tweets. Content analysis of the 484 original tweets identified that 56% (n=272) of tweets were relevant to the syndrome frailty. The main contributors identified were the public (29%), researchers (25%), doctors (21%), organisations (18%) and various health professionals (7%). Five twitter content categories were created on the basis of message intent: Public health/advocacy (41%), Research-based evidence (24%), Social communication (28%), Professional opinion (15%) and General news/events (7%). Most tweets (89%) had a hyperlink to additional information (‘microblogging’); predominantly medical health blogs (40%) or research articles (31%).

**CONCLUSION:** Our study demonstrates that Twitter is an increasingly used platform for discussion of frailty research and practice. There are two main groups discussing frailty: non-professional individuals as a means of public health advocacy and clinicians/researchers as a means of disseminating research-based evidence/professional education. Clinicians and researchers should consider adopting Twitter as a method to keep abreast with the latest developments in practice and research.
**Poster Presentations**

**P55  0079**

**Frailty independently predicts 12 monthly mortality following an acute heart failure admission**

*Phillip Newton*¹, *Si Si*², *Christopher Red*¹,², *Peter Macdonald*³

¹Western Sydney University, Sydney, NSW, Australia, ²Curtin University, Perth, WA, Australia, ³Monash University, Melbourne, VIC, Australia, ⁴St Vincent’s Hospital Sydney, Sydney, NSW, Australia, ⁵Victor Chang Cardiac Research Institute, Sydney, NSW, Australia

**AIM:** The New South Wales (NSW) Heart Failure (HF) Snapshot sought to provide detailed representative data on hospital admissions and outcomes at 12-months for patients admitted with acute HF.

**METHODS:** Consecutive patients admitted to 24 participating facilities across NSW and the ACT were recruited over a one-month period with an admission diagnosis of acute heart failure. Patients were followed-up at 12-months post discharge for all-cause mortality through integration of the hospital administrative database and by phoning the patient. Frailty was assessed using the SHARE-Frailty Index.

**RESULTS:** 811 patients were recruited across the 24 sites. This was an elderly (77±14 years) cohort who were mostly male (59%) with the majority (68%) having known HF prior to the admission. The mean Charlson Comorbidity Index was 3.5±2.6 and 71% were frail at baseline. 178 (24%) died within 12-months. Frailty (Hazard Ratio 1.98 [95% Confidence interval 1.18 -3.30]; p<0.001); Charlson Index (HR 1.06 [95% CI 1.00 -1.13] p=0.05); discharge NYHA class IV (HR 2.62 [95% CI 1.32 -5.22] p<0.001); discharge eGFR (HR 2.16 [95% CI 1.45-3.21] p=0.001); discharge hypokalaemia (HR 2.55 [95% CI 1.44-4.51] p<0.001); Being readmitted within 30 days post index admission (HR 2.16 [95% CI 1.49-3.13] p<0.001) were all predictive of mortality.

**CONCLUSION:** Despite the advancement in therapy, this ‘real-world’ snapshot shows that mortality is common following an admission for acute heart failure. Being frail and having multiple comorbidities increased the risk of mortality.

**P56  0080**

**Frailty is associated with reduced patient reported quality of life in advanced heart failure patients and clinicians are poor at identifying it**

*Roslyn Prichard*¹,², *Stephen Goodall*³, *Peter Macdonald*¹,³, *Fei-Li Zhao*³, *Sunita Jha*², *Patricia Davidson*²,⁵, *Julee McDonagh*¹,², *Phillip Newton*³, *Christopher Hayward*¹,²

¹Heart Transplant Program, St Vincent’s Hospital, Sydney NSW, Australia, ²Faculty of Health University of Technology, Sydney NSW, Australia, ³Centre for Health Economic Research and EvaluationUniversity of Technology, Sydney NSW, Australia, ⁴Faculty of Medicine, University of New South Wales, Sydney, NSW, Australia, ⁵Faculty of Nursing, John Hopkins University, Baltimore, MA, USA, ⁶Nursing Research Centre, University of Western Sydney, Blacktown, NSW, Australia

**AIM AND BACKGROUND:** Assessing patient outcomes beyond survival, assists health resource planning and shared decision making. Frailty assessment is useful prognostically, but has not been correlated with reported quality of life (prQoL) in advanced heart failure patients receiving treatment or assessment for heart transplant and ventricular assist device (VAD) therapy. This study’s aim was to assess the correlation between frailty and prQoL in advanced heart failure (AHF) patients, and evaluate how well clinicians were able to identify Frailty.

**METHODS:** We examined 80 patients who had completed both frailty and prQoL measurements. prQoL was assessed using the EQSD-5L and frailty using a modified Fried Phenotype, cognitive impairment (Montreal Cognitive Assessment - MoCA) and depression using DMI-10. A patient was classified as ‘not frail’ if no domains present, ‘pre-frail’ 1-2 and ‘frail’ with score ≥3/7. Clinicians assessing the patients, blinded to the result, were invited to estimate whether their patients were ‘frail’, ‘pre frail’ or ‘not frail’.

**RESULTS:** Eighty five patients (72% male; average age 55, range 21-80; 24% with VAD, 37% inpatient) were assessed by 40 clinicians producing 204 paired results. Overall 82% of the patients were frail or pre frail. PrQoL utility scores were 0.61 (0.25) and differed significantly between the frail, pre frail and not frail groups averaging 0.84 (0.12), 0.68 (0.19) and 0.48 (0.25) respectively, p<0.001. Frailty was moderately negatively correlated with prQoL overall r=0.6 p<0.001. Clinicians estimated frailty in only 30% of patients measured as frail.

**CONCLUSION:** Frailty is prevalent and moderately correlated with reduced patient reported quality of life in this cohort. Formal frailty screening is supported and could help target health resource for optimisation of patient status prior to heart transplant or ventricular assist implantation.
Poster Presentations

P57 0081
Frailty is highly prevalent among inpatients and outpatients with heart failure according to two frailty measurement instruments
Julee McDonagh RN MN1, Roslyn Prichard RN BA2, Sunita R. Jha BMedSci(Hons)3, Caleb Ferguson RN PhD2, Peter S Macdonald MD PhD3, Phillip J Newton RN PhD2
1Faculty of Health, University of Technology Sydney, Ultimo, NSW, Australia, 2Blacktown Clinical & Research School, Blacktown Hospital, Blacktown, NSW, Australia, 3St Vincent's Hospital Heart Lung Clinic, St Vincent's Hospital Sydney, Darlinghurst, NSW, Australia

BACKGROUND: Frailty is a multidimensional syndrome of increased vulnerability to acute stressors and is associated with loss of independence, poor health outcomes and high mortality rate. Individuals with heart failure (HF) have been shown to have high rates of frailty. The majority of previous prevalence data has been focused on outpatients rather than inpatients, this study aimed to assess the prevalence of frailty in both outpatient and inpatient settings.

METHODS: Data from the FRAilty MEasurement in Heart Failure (FRAME-HF) study, an observational study undertaken at a quaternary heart failure referral hospital in Sydney, Australia, was analysed. Patients were recruited from the coronary care unit and the outpatient heart failure clinic. A total of 95 patients were recruited over a 12 month period beginning in August 2016. Baseline frailty was assessed using two measurement instruments; a questionnaire only version of the Fried Phenotype (FP) and the Survey of Health, Ageing and Retirement in Europe Frailty Index (SHARE-FI).

RESULTS: This cohort of 95 patients (51 inpatient; 44 outpatient) were mostly male (inpatient 78% Male; outpatient 73% Male) and quite young (inpatient age 55 ± 13; outpatient age 52 ± 14). There were no significant differences in baseline characteristics between the inpatient and outpatient groups. Frailty according to the questionnaire only version of the FP was more common in the inpatient group compared to the outpatient group (84% vs 67%; p= 0.054); and as assessed with the SHARE-FI (89% vs. 75%; p= 0.136) although these differences were not statistically significant.

CONCLUSION: Frailty is highly prevalent among inpatients and outpatients with HF according to two different frailty measurement instruments. Further work is required to confirm these results using validated instruments.

P58 0082
Patient, Hospital, and Environment related risk factors of all-cause adult hospital readmission: A systematic review
Katherine Carasco1,2, Sifat Sharmin1,2, Johannes J Meij2, Andrea B Maier1,3
1Department of Medicine and Aged Care, The Royal Melbourne Hospital, University of Melbourne, Melbourne, Victoria, Australia, 2Melbourne Academic Centre for Health, Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne, Parkville, Victoria, Australia, 3Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands

INTRODUCTION: Hospital readmissions may lead to patient deterioration and are often an unnecessary drain on hospital resources. Current readmission risk prediction models lack sufficient discriminatory ability to be implemented in clinical practice. The inability to identify those most at risk prevents the development of targeted interventions for vulnerable populations; for example patients with frailty syndrome. Risk prediction to date has almost exclusively focused on features specific to diseases, and fails to accommodate the influence of patient and hospital related factors. Disease specific features are variables related to disease processes including hospital utilisation, medical history, and laboratory measurements. Patient-related variables are unique to the patient yet distinct from their specific diseases. This encompasses financial, cultural, and psychological variables. Hospital-related variables are modifiable and non-modifiable features of the individual hospital setting. Patient-related factors currently used in prediction models are largely limited to age, gender, living arrangement, race and marital status.

AIM: A systematic review was undertaken to determine which patient- and hospital-related variables have been investigated in association with patient readmission and to elucidate those that have not yet been considered.

METHOD: Journal articles published in PubMed between 2007 and 2016 were assessed. Records were excluded if they only assessed disease specific features, paediatric patients and non-acute episodes of care.

RESULTS: Of 2162 records identified, data was extracted from 88: revealing 150 unique variables related to readmissions. Most studies assessed the role of general variables such as age (n = 50), sex (n = 43), and race (n=29). Relatively few assessed income level (n = 6), employment status (n = 1), body weight (n = 1), previous doctor visits (n = 2), polypharmacy (n = 4), and discharge summaries (n = 1).

CONCLUSION: Further assessment of potentially important predictors of hospital readmission in necessary in order to identify vulnerable patient populations.
P59  0083
Clinical and non-clinical indicators for unplanned hospital readmissions: in an Australian population
Katherine Carasco1, 2, Sifat Sharmin1, 2, Johannes J Meij2, Andrea B Maier1
1Department of Medicine and Aged Care, The Royal Melbourne Hospital, University of Melbourne, Melbourne, Victoria, Australia, 2Melbourne Academic Centre for Health, Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne, Parkville, Victoria, Australia, 3Department of Human Movement Sciences, MOVE Research Institute Amsterdam, Vrije Universiteit, Amsterdam, The Netherlands

INTRODUCTION: Frailty is a common geriatric syndrome influencing the likelihood of unplanned hospital readmissions, an unnecessary burden on hospital resources. Determining risk factors that increase the prospect of readmission for the frail may improve identification of this vulnerable group within the inpatient population. Current readmission risk stratification models lack sufficient discriminatory ability to be implemented successfully in clinical practice. The aim of this study was to identify risk factors predictive of increased readmission risk using routinely collected administrative data from an Australian metropolitan teaching hospital.

METHODS: This retrospective study included medical and surgical patients aged 18+ admitted to the Royal Melbourne Hospital between July 2015 and June 2016. Patients admitted for palliative or psychiatric care were excluded. The dependent variable was “30 day all cause unplanned readmission.” Independent variables included age, sex, country of birth, socioeconomic status, mental health status, history of tobacco use, alcohol use, history of falls, index admission length of stay, index admission type, and intensive care requirements. Independent risk factors found significant in univariate regression (p < .10) were included in a multivariate regression model.

RESULTS: A total of 28,975 patients were admitted during the 2015-2016 sampling period. The mean age was 52.6 years (20.2) and 47.5% of patients were female. The all cause unplanned 30 day readmission rate was 6.4%.

CONCLUSIONS: Predicting which patients are most at risk remains an important clinical priority. This analysis of readmission risk attempts to identify individual factors that lead to increased risk of unplanned admissions. The present findings are intended for use in developing a risk factor tool for hospitals.

P61  0086
A Review of Frailty in Head and Neck Cancer
Anthony Noor1, 2, Catherine Gibb1, 2, Andrew Foreman1, 2
1University of Adelaide, Adelaide, SA, Australia, 2Royal Adelaide Hospital, Adelaide, SA, Australia

Our aging population has resulted in an increased diagnosis of head and cancer in elderly patients. This group is at an elevated risk of frailty, a geriatric syndrome characterised by an elevated vulnerability to stressors and reduced physiologic reserve. This has significance in the management of these patients, and influences treatment outcomes and survival. Objectively assessing elderly patients for frailty allows individualised prognostication and treatment planning, and opportunity for optimisation by various interventions. The head and neck cancer group also suffer from dysfunction of the upper aerodigestive tract which places additional stressors on a sometimes precarious physiologic state. We review the literature on frailty in the head and neck cancer population and provide recommendations for incorporating frailty assessments into clinical practice.

P62  0001
Screening for health fragility in the emergency department
Ouyachchi Younes1, 2, Pamart Philippe1, Wieb Eric2
1Hospital Center Of Cambrai, Cambrai, France, 2Medical School; University Lille 2; CHRU Lille, Lille, France

BACKGROUND: The consensus conference of December 5, 2003 suggests screening for health fragility in the emergency room, for patients aged 75 and over. The Triage Risk Screening Tool score (TRST) is one of the recommended tools. The objective of our study was to determine whether the elderly, 75 years and over, considered fragile based on the TRST, are evaluated by the Mobile Geriatrics Unit (MGU) during intake at the emergency department.

METHODS: We performed a prospective, analytical, descriptive and observational study, focused on a single site over a month (July 2015) during which all patients over 75 years were included after obtaining their agreement or that of the accompanying person. We did not make a declaration to the National Commission of Informatics and Civil Liberties. The conditional probability of having a record of an MGU referral and review, with a TRST greater than or equal to 2 was calculated. The agreement between the number of MGU reviews and the TRST was tested using the kappa coefficient.

DISCUSSION: 376 patients aged 75 years and over were included in the study. The fragility rate based on the TRST was 93.8%. MGU evaluated only 14.6% of these patients at the emergency department. The conditional probability of having a record of an MGU referral and review, with a TRST greater than or equal to 2 was 15.6%. The agreement between the number of MGU reviews and the TRST was at best negative for a TRST greater than or equal to 1.

CONCLUSION: To optimize the care for the frail elderly patient in the emergency department, the TRST score should be integrated in the screening process, for patients 75 and over. This integration would help raise awareness of the fragility of the elderly patient, and push toward increased consultation with the MGU.