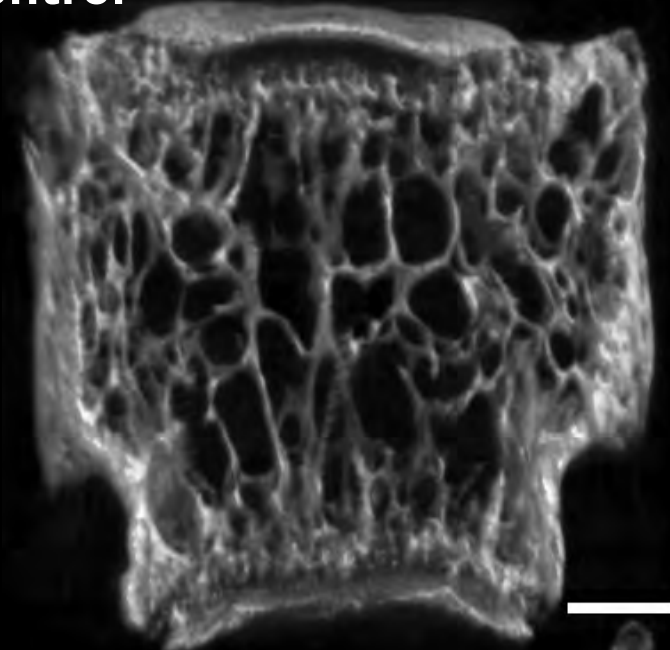
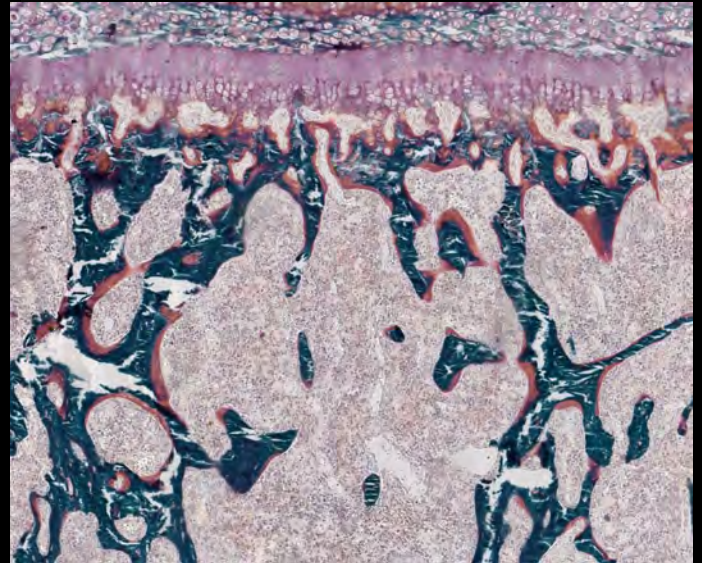
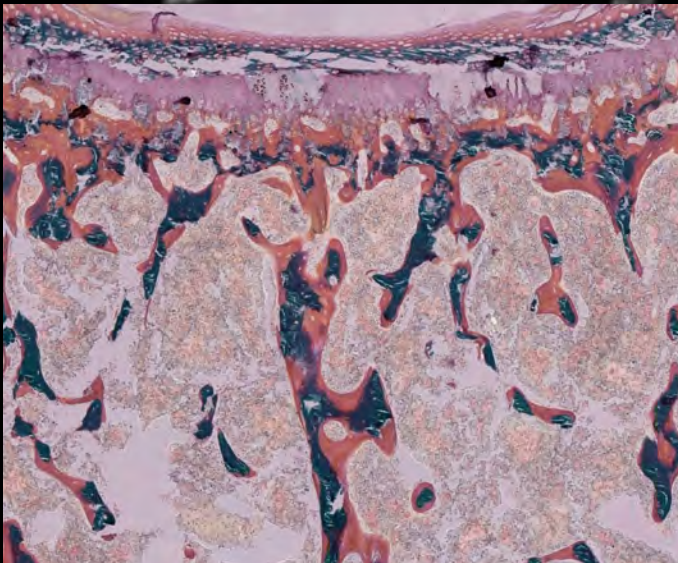
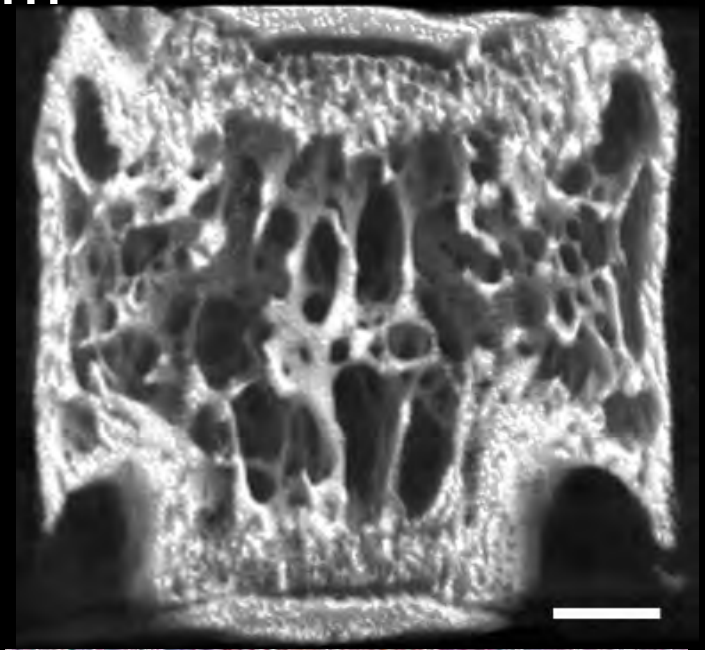


# ANZBMS Newsletter

Control



HYP



*Cover image: Vitamin D supplementation in HYP mice independently increase bone mineral and reduce osteoid. More info on Pg. 9. Courtesy of Kate Barrett and Paul Anderson, University of South Australia.*

## **ANZBMS Bone Health Foundation Grants**

**Meet the 2021 ECIC**

**Member publications**





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- Committee News (4)***
- New Member Spotlights (6)***
- Member Publications (7)***
- Calendar of Events (15)***

***ECI Issue : March 2021***  
***Next Issue: May 2021***

 [newsletter@anzbms.org.au](mailto:newsletter@anzbms.org.au)

 @ANZBMSoc

## **Welcome to ANZBMS newsletter**

Welcome to the February Issue of the ANZBMS newsletter!

2021 here we are! As always, with a new year comes new opportunities. This year, together the ANZBMS and the Bone Health Foundation are offering Grants-in-Aid to mid-career researchers. This is an exciting opportunity and we encourage all eligible ANZBMS members to apply (details on pg.3).

We would like to congratulate ANZBMS members on receiving New Years and Australia Day Honours! Further details on the recipients can be found on pg. 4.

The Early Career Investigator Committee is a very active part of our ANZBMS community that fosters the development of early career researchers. On pg. 5 are the details of these young and enthusiastic members who will be steering the ECIC for 2021.

Our publication section continues to highlight the work of ANZBMS members. This edition features a range of articles from various members emphasising the background, take-home message, future applications of the work and challenges that were faced in the project.

In addition to our focus on ANZBMS activities, in future newsletters, we will be highlighting and providing information about ANZBMS affiliated societies such as ASMR and IFMRS.

Happy reading!

*Newsletter Editorial Board*

## **ANZBMS Newsletter Editorial Board**



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Ansari**



**Cherie  
Chiang**



**Nicolas  
Hart**



**Madhuni  
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**Kiranjit  
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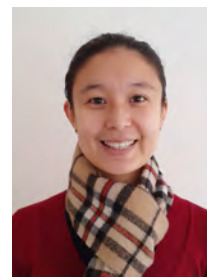
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Leitch**



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Wee**



**Emma  
West**



# ANZBMS Bone Health Foundation Grants

The Australian and New Zealand bone and mineral research community has a proven track record of producing internationally competitive research outcomes which have a meaningful impact on individuals with poor bone health. Together the ANZBMS and the Bone Health Foundation (BHF) are committed to ensuring this track record of excellence and impact continues and thrives in the current climate of complex national funding conditions.

As such, the ANZBMS is delighted to announce a new initiative. Jointly, the ANZBMS and BHF will support high quality unfunded bone and mineral-related research applications. The purpose is to enable mid-career researchers who have been unsuccessful in a major research grant application to continue to generate data to strengthen their application and enhance their competitiveness in subsequent major grant rounds.

## **The Awards:**

ANZBMS and BHF will co-fund up to 2 x one-year Grants-in-Aid of up to AUD\$25,000 (GST exclusive) in 2021.

## **Eligibility:**

- The applicant must have been a financial member of the ANZBMS for at least 12 months prior to, and for the duration of the award period.
- The project must be focused on bone and mineral research and must not be currently funded from a major National or International funding body (e.g. NHMRC, ARC, or similar scale funding), or by any other industry-sector funding.
- Applicants must be mid-career researchers, defined as being 5 to 15 years full-time equivalent since first post-graduate research or medical qualification, at the grant application close date.

## **For full details and how to apply:**

<https://www.anzbms.org.au/award-anzbms-bone-health-foundation-grant.asp>

**Application deadline:** 5pm Australian Eastern Daylight Time (AEDT) on March 12.

For further questions, please contact Ivone Johnson [ijohnson@anzbms.org.au](mailto:ijohnson@anzbms.org.au).

To find out more about The Bone Health Foundation, visit [www.bonehealth.org.au](http://www.bonehealth.org.au)

or contact us on [research@bonehealth.org.au](mailto:research@bonehealth.org.au)

To find out more about the Australian and New Zealand Bone and Mineral Society, visit [www.anzbms.org.au](http://www.anzbms.org.au)





# Congratulations to our members!

Congrats to ANZBMS members for New Year's Day and Australia Day Honours



## Professor Susan Davis

Professor of Women's health/Endocrinologist, School of public health and preventive medicine, Monash University

Awarded an officer in the General Division for distinguished service to medicine, to women's health as a clinical endocrinologist and researcher, and to medical education.



## Professor Markus Seibel

Head of the Department of Endocrinology and Metabolism, Concord hospital

Awarded member (AM) in the general division of the Order of Australia for significant service to medical research and endocrinology. Professor's Seibel's research focus is on approaches to osteoporotic fracture prevention.



## Professor Ian Reid

Head of Department of Medicine, University of Auckland

Awarded New Year's honours 2021, Companion of the New Zealand Order of Merit for services to medicine. Professor Reid's research focuses on osteoporosis in older people. He published the first successful trial of bisphosphonates for the treatment of osteoporosis in 1988.

## Opportunities

## Committee Update

### Postdoctoral Scientist - Garvan Institute

We are seeking a dedicated and curious scientist to work with Professor Peter Croucher and Professor Tri Phan at the Garvan Institute of Medical Research. The appointed person will work on better understanding the biology of osteomorphs, which are formed from the fission of osteoclasts. The focus will be on understanding their role in normal skeletal physiology and in disease, and to understand the impact of bone active drugs on their behaviour.

For further details, please see full posting: [here](#)

Let us know about any opportunities at [newsletter@anzbms.org.au](mailto:newsletter@anzbms.org.au)

### Densitometry Committee

In response to the ongoing disruptions from COVID19, the ANZBMS Densitometry Course moved to an online platform from November 2020. Courses include lectures via Zoom and virtual DXA workstations imitating actual DXA controls, and allows simulated scans and analyses of multiple scans in our library. This was a world first with over 80 registrants. **The online course will run again in late February 2021.** If you are interested in attending, please register for this course through the ANZBMS webpage.



# Meet the 2021 ECIC

The Early Career Investigator Committee (ECIC), formed in 2017, aims to help shape future bone and mineral research in Australia and New Zealand by fostering active engagement of early career investigators within ANZBMS, supporting professional development and facilitating interactions between junior and senior members.



**Dr. John Kemp**



**Dr. Melissa Cantley**



**Dr. Alicia Jones**



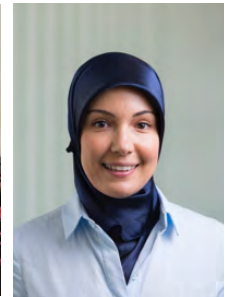
**Dr. Natalie Hyde**



**Dr. Sarah Hosking**



**Dr. Victoria Leitch**



**Dr. Ayse Zengin**

**New  
Members  
2021**



**Dr. Alex Barker**



**Dr. Scott Youtlen**



**Dr. Niloufar Ansari**



**Dr. Nicolas Hart**



**Dr. Jiao Jiao Li**

We would like to thank the outgoing ECIC members **Dr. Sabashini Ramchand, Dr. Eleanor Thong, Dr. Marc Sim and Dr. Laura Laslett** for their timeless effort and commitment to the ECIC.

A warm welcome to our new ECIC members - **Dr. Alex Barker, Dr. Scott Youtlen, Dr. Niloufar Ansari, Dr. Nicolas Hart, and Dr. Jiao Jiao Li.**

**Dr. Alex Barker**, from University of South Australia, is currently leading and managing the preclinical phase of an industry/CRC funded project, alongside other researchers, to develop antimicrobial orthopaedic devices. Prior to this project which began in 2018, Dr. Barker completed her Ph.D. in Medicine at the University of Adelaide, where she investigated novel bone agents that could improve the rate of bone repair. *Dr. Barker will replace Dr. Cantley on the Communications sub-committee.*

**Dr. Scott Youtlen**, from Garvan Institute of Medical Research, obtained his honors degree in molecular biology before diving into the world of computation biology during his Ph.D. This ignited his passion for skeletal genetics, big beautiful datasets and coffee - he can be seen with a smile on his face whenever these three things coincide. Scott's research is focused on using a system-level understanding of the molecular mechanisms driving skeletal disease to reveal novel therapeutic avenues. *Dr. Youtlen will replace Dr. Laslett on the Career Development sub-committee.*

**Dr. Niloufar Ansari** is a postdoctoral researcher at The Nanomaterials for Biology Group, Monash Institute of Pharmaceutical Sciences. Currently, she works on using nanoparticles for targeted delivery of drugs, and studies the interaction of nanoparticles with cells. *Dr. Ansari will replace Dr. Sim on the Events sub-committee.*

**Dr. Nicolas Hart** is a Senior Research Fellow, and Deputy Lead of the Cancer Survivorship Program at the Cancer and Palliative Care Outcomes Centre (Queensland University of Technology). He researches the mechanobiological basis of exercise medicine to suppress tumour growth and preserve musculoskeletal mass. Dr Hart also researches the pathogenesis of stress fractures in elite athletes and tactical operators and musculoskeletal health in other clinical populations through the Western Australian Bone Research Collaboration. *Dr. Hart will join the Career Development sub-committee.*

**Dr. Jiao Jiao Li (JJ)** is a biomedical engineer, Lecturer and NHMRC Early Career Fellow at the UTS School of Biomedical Engineering, and a chief investigator on the ARC Training Centre for Innovative BioEngineering. She is also an Honorary Associate at the Kolling Institute, University of Sydney. JJ is researching regenerative medicine approaches to treat chronic musculoskeletal conditions such as osteoarthritis and bone loss. She has particular interest in developing stem cell-based therapeutics, as well as biomaterials for tissue engineering of bones and joints. *Dr. Li will replace Dr. Thong on the Clinical Training sub-committee.*

**Dr. Ayse Zengin** has completed her term as Co-Chair. She will replace Dr. Ramchand and remain on the committee as Past Co-Chair and ECIC Representative on the ANZBMS Program Organising Committee.



# Meet our newest ANZBMS members

## Dr Emma Buckels, Research Fellow



**Affiliation:** School of Medical Science, University of Auckland

**Research category:** Basic

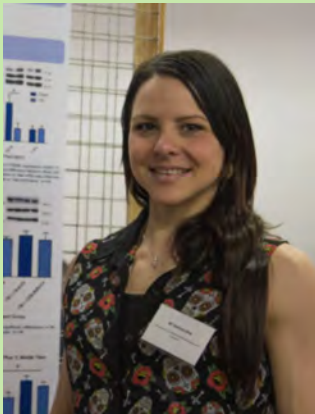
**Research interests:** I am interested in the relationship between type 2 diabetes mellitus and fracture. My research background is in glucose metabolism. Currently, I am exploring the effect of the metabolically active peptide preptin on the skeleton using a knockout mouse.

**What you hope to gain from joining ANZBMS?** My favourite part of academia is the friendships. As I'm relatively new to the field, I'm looking forward to connecting with other members of the society and forming new networks within the ANZBMS.



**@EmmaBuckels**

## Stefanie Bird, Research Assistant



**Affiliation:** Australian Institute for Musculoskeletal Science, The University of Melbourne

**Research category:** Clinical

**Research interests:** Developing strategies for implementation in Australian healthcare to identify and treat osteosarcopenia and fracture risk; the role of socioeconomic factors and inflammation in bone and muscle health; associations between musculoskeletal conditions and cognition/behaviour.

**What you hope to gain from joining ANZBMS?** Being part of a respected community of colleagues in the field of bone and mineral metabolism research; keeping up-to-date with opportunities in this field of research.

## Dr Kiranjit Joshi, FRACP, MD Pediatric Endocrinologist



**Affiliation:** Perth Children's Hospital; University of Western Australia (currently pursuing PhD)

**Research category:** Clinical

**Research interests:** My research is broadly in the field of genetic and environmental determinants of children's bone health. My specific area of current research is bone fragility disorders, especially osteogenesis imperfecta.

**What you hope to gain from joining ANZBMS?** I am looking forward to networking and learning about current research in the field of bone densitometry from members of ANZBMS. Being a Paediatric Endocrinologist, I would like to contribute my knowledge from my research and clinical experience to the forum.



## Member publications

Ng CA, Scott D, Seibel MJ, Cumming RG, Naganathan V, Blyth FM, Le Couteur DG, Waite LM, Handelsman DJ and Hirani V. **Higher-Impact Physical Activity Is Associated With Maintenance of Bone Mineral Density But Not Reduced Incident Falls or Fractures in Older Men: The Concord Health and Aging in Men Project.** *J Bone Miner Res.* 2020.

### What is the background of the study?

Physical activities involving high and rapid impact have the most significant effects on bone health. However, in determining the skeletal benefits of physical activity, studies have commonly utilised instruments like pedometers or questionnaires that assess metabolic equivalents (METs). These measures fail to capture mechanical loading intensity or rate, possibly explaining their inconsistent associations with bone mineral density (BMD) and fracture risk. To better evaluate the effectiveness of bone-targeted exercises, questionnaire-assessed physical activities need to be quantified by the intensity and frequency of the ground reaction forces they generate based on principles of the evidence-based osteogenic index described by Turner and Robling (2003). This approach has been adopted in the Bone-specific Physical Activity Questionnaire (BPAQ) by Weeks and Beck (2008).

This study aimed to investigate the longitudinal associations between changes in bone loading, estimated from a self-reported physical activity questionnaire, with BMD changes over five years, and with long-term incident falls and fractures in community-dwelling older men who were participants in the Concord Health and Ageing in Men Project (CHAMP).

### What did you find and what message do you want readers to take away?

We estimated bone loading scores over the past week from the METs-based Physical Activity Scale for the Elderly (PASE) questionnaire based on load ratings used in the BPAQ. Compared to the METs-based PASE scores, loading scores demonstrated a greater standardised effect size for BMD maintenance at the spine, total hip and femoral neck after adjustment for covariates, including PASE components. Conversely, only PASE scores were significantly associated with reduced falls risk. Both loading scores and PASE scores were significantly associated with reduced incident fractures in univariate analyses, but no

associations remained significant after multivariable adjustments. Thus, older men who engaged in physical activity of high and rapid impact maintained higher BMD over five years, while higher energy expenditure was associated with reduced falls risk over two years.

### What is an application of your finding?

Our approach of adapting an energy expenditure-based physical activity questionnaire to output loading scores can support retrospective re-analyses of existing cohort studies where self-reported physical activity has been assessed and effects on bone health are of interest. We also hope that these findings serve as impetus for investigators to utilise estimates of loading scores, as can be obtained via the validated BPAQ, in future cohort studies and trials. Obtaining these measures can help further elucidate the long-term effects of activity involving high and rapid impact on musculoskeletal outcomes in young and older populations.

### Did you face any challenges during the study?

One of the biggest challenges was the data cleaning of the PASE questionnaire and calculating loading scores from the responses. Participants were required to list in free text form the activities they had performed in the past week, and each activity had to be assigned a load rating. This was a time-consuming task given the large population of 1,599 men and the number of activities that many were participating in (eg. playing golf, dancing, gardening). Related to this issue, the format of the PASE questionnaire differs substantially from the BPAQ, and so we had to make some challenging decisions on how to appropriately attribute load ratings to certain activities. As such, there are some assumptions which apply to our method, but we believe that the observed associations support this approach for estimating loading from METs-based physical activity questionnaires.



## Member publications

Feleke M, Bennett S, Chen J, Hu X, Williams D, Xu J. **New physiological insights into the phenomena of deer antler: A unique model for skeletal tissue regeneration.** *Journal of Orthopaedic Translation.* 2021;27:57-66.

### What is the background of the study?

Australia has a deer farming industry. Deer produce a unique biological structure – the Deer Velvet Antler. The velvet consists of specialised skin, nerves, vessels and cartilage material, and is produced annually growing rapidly up to 2 cms per day in the period October to November each year. This unique organ is produced by a mammalian species.

### What did you find and what message do you want readers to take away?

Deer velvet Antler is a unique mammalian research model. The rapid growth of the velvet antler involves a range of tissues – cartilage, nerves, blood vessels and the specialised velvet skin. The velvet antler represents controlled tissue growth compared to a tumour being uncontrolled tissue growth.

The question arises – what are the “Active Factors” involved in this controlled tissue/organ growth.

### What is an application of your finding?

As a unique stem cell-based organ regeneration process in mammals, the deer antler represents a prime model system for investigating mechanisms of regeneration in mammalian tissues. Novel antler stem cells (ASCs), together with the reserve mesenchymal cells (RMCs) pedicle periosteal cells (PPCs), and antlerogenic periosteal cells (APCs) could provide cell-based therapies for regenerative medicine for clinical application, such as large bone defects, delayed spinal fusion, and unhealed bone fracture. These could be potentially achieved, for instance, via tissue or organ co-cultures between antler stem cells and human cells to rapidly generate growth of human cells or tissues in demand for surgical translation.

### Did you face any challenges during the study?

The study has been carried out as a review, which summaries what we have known about Deer antlers and future directions of research, including how we might overcome challenges or obstacles on translating our basic findings to human application.

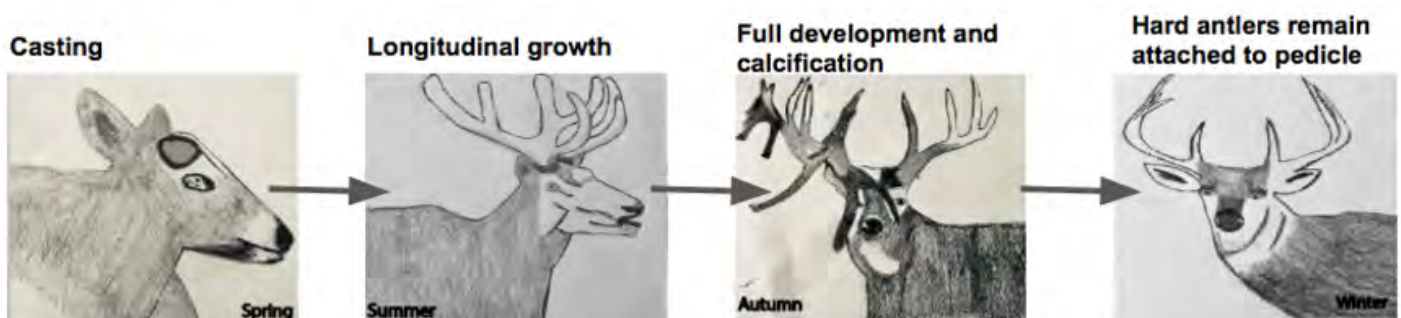


Figure: Timeline of the different stages of deer antler regeneration

Kistler-Fischbacher M, Weeks BK, Beck BR: **The effect of exercise intensity on bone in postmenopausal women (part 1): A systematic review,** *Bone* 143, 2021

Kistler-Fischbacher M, Weeks BK, Beck BR: **The effect of exercise intensity on bone in postmenopausal women (part 2): A meta-analysis,** *Bone* 143, 2021

### What is the background of these studies?

Previous meta-analyses on the effect of exercise on BMD in postmenopausal women have reported modest effect sizes. In light of the strong relationship between load magnitude and bone adaptation detected in animal studies, we hypothesised that meta-analytic pooling of

exercise interventions independent of their intensity and load applied, may dilute the ability to detect efficacy of specific training regimens. We therefore conducted an intensity-based systematic review and meta-analysis and classified each exercise intervention into low, moderate or high intensity, based on





## Member publications

based on pre-specified criteria. Furthermore, we examined the effect of different exercise types and the influence of antiresorptive medication on exercise efficacy.

### **What did you find and what message you want readers to take away from your papers?**

There is a positive association between exercise intensity and bone response at the lumbar spine and total hip.

The majority of trials (95%) have applied exercise loading of insufficient intensity to stimulate a significant osteogenic response, leading many to (incorrectly) conclude that exercise per se is an ineffective stimulus for bone.

Resistance training alone or combined with impact activities is the most effective form of exercise for bone. Impact exercise alone does not appear to be an effective stimulus, irrespective of intensity.

**Barratt KR, Sawyer RK, Atkins GJ, St-Arnaud R, Anderson PH. Vitamin D supplementation improves bone mineralisation independent of dietary phosphate in male X-linked hypophosphatemic (Hyp) mice. Bone, 2021; 143:115767** (Picture on front cover of Newsletter)

### **What is the background of this study?**

X-linked hypophosphatemia (XLH) is a debilitating, rare genetic disorder which gives rise to rickets during childhood and has been difficult to treat effectively without also causing medical complications. This disorder gives rise to elevated serum fibroblast growth factor-23 (FGF-23) levels which then causes renal phosphate wasting and hypophosphatemia, as well as abnormally low renal calcitriol (1,25D) levels. In recent times, we have come to realise that other tissues, including bone can synthesise 1,25D and that the supply of the precursor for 1,25D, 25-Hydroxyvitamin D (25(OH)D), plays a role in vitamin D-mediated mechanisms that directly regulates bone mineral homeostasis. This led to us to revisit the role of vitamin D-supplementation in XLH by examining the role that elevating serum 25(OH)D levels has in treating rickets in Hyp mice.

More data is needed on the effect of exercise on bone structure and bone turnover markers

Participants on bone medications are often excluded from exercise trials to the extent that further studies on the interaction of bone medications and exercise are indicated.

### **What is an application of your finding?**

Exercise prescription to improve bone health in postmenopausal women should involve moderate to high intensity progressive resistance training, potentially in combination with weight bearing impact loading.

### **Did you face any challenges during the study?**

The comprehensive nature of the 2 reviews (systematic review -100 trials; meta-analysis - 63 interventions) was logistically challenging but also a major strength of the two reviews. We followed our pre-specified protocols closely, including the classification of intensity, and did

### **What did you find and what message you want readers to take away from your paper?**

We found that feeding young Hyp mice with high levels of vitamin D in the diet was able to modestly elevate serum 25(OH)D levels to approximately 80 nmol/L and this resulted in significantly improved bone mineralisation and reduced presence of rickets. Importantly, the improvement in bone health occurred independently of the persistent hypophosphatemia and without elevation in serum 1,25D levels, suggesting that 25(OH)D is involved in non-renal activity which gives rise to good bone health. The improvement in bone health in these mice also occurred without a change to blood calcium and without pathologies that is typically linked with 1,25D and phosphate replacement therapy side-effects.



## Member publications

### What is an application of your finding?

It is a little too early to suggest that the role of vitamin D supplementation therapy should be revisited for people who suffer XLH. There is also a FGF23 neutralising antibody therapy that being rolled out which is quite effective for people who suffer XLH. However, we are very interested in continuing to examine the mechanistic role of why modestly elevated serum 25(OH)D levels are able to improve bone health in disorders of FGF23 excess. Numerous sufferers of XLH may not be able to receive, or cannot tolerate existing therapies, and so a thorough understanding of the independent roles that vitamin D supplementation plays in safely improving bone health may lead to alternative and adjunct therapies for XLH. We also believe targeting CYP24A1 activity to reduce vitamin D catabolism

in Hyp mice will provide additional understanding of the role of vitamin D in bone health under these circumstances and is part of our ongoing investigations.

### Did you face any challenges during the study?

There are always challenges, but probably the main one is being able to explain to other researchers and clinicians that revisiting old stories for XLH is worth doing. Studies in the 70's and 80's were done without a view of the extensive roles that vitamin D plays in human biology that we now know to be the case. While the emphasis is to give FGF23 neutralising antibody therapy to restore bone health in young XLH kids, we believe this shouldn't stifle other lines of investigation that may lead to additional therapies for sufferers of XLH.

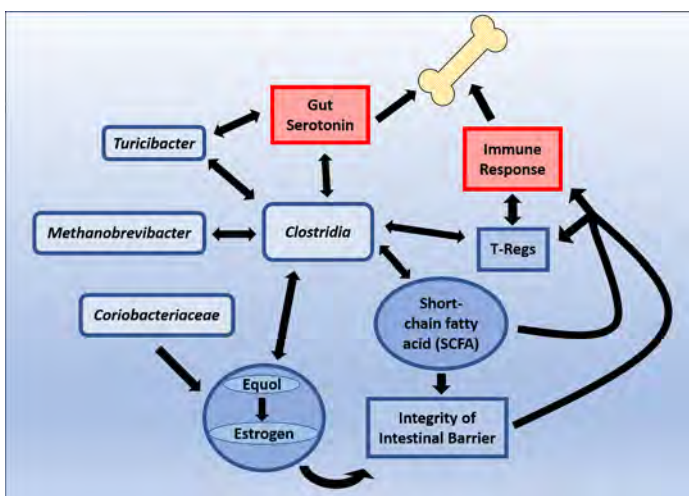
**Rettedal EA, Ilesanmi-Oyelere BL, Roy NC, Coad J, Kruger MC. [The Gut Microbiome Is Altered in Postmenopausal Women With Osteoporosis and Osteopenia](#). JBMR Plus.e10452.**

### What is the background of the study?

This study formed the basis of a PhD. We are aware of the significant effects prebiotics and to a lesser extent probiotics have on mineral absorption and balance. Therefore the gut does play an extremely important role in maintenance of mineral balance. We decided to expand on the knowledge regarding diversity and included metagenome data.

### What did you find and what message do you want readers to take away? What is an application of your finding?

Since this is the first published shotgun metagenome data looking at the microbiome as associated with osteopenia/osteoporosis in postmenopausal women there is still a need for more studies as it is well known that there are large variations in human gut microbiomes across populations. It is also important to distinguish between observed associations and evidence of causation when it comes to linking the microbiome to disease. While there have been many associations between disease and the microbiome there are few studies that demonstrate causation. Some of the taxonomic groups we identified in our study have been previously linked to bone health, so it would be interesting to more closely examine these taxa and try to establish a causal link to bone health. Designing experiments that clearly demonstrate if specific microbes or groups of microbes can influence bone health may help lead to potentially useful therapies to prevent or treat osteopenia and osteoporosis.



*Potential mechanisms by which microbes identified in this study and particular members of Clostridia, may influence bone metabolism.*



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**On pages 7-10 are additional detailed features of ANZBMS member publications.**

**In the future, we will be distributing this information between both the email updates and the newsletter.**

**If we have missed your publication please let us know at [newsletter@anzbms.org.au](mailto:newsletter@anzbms.org.au)**



# Calendar of Events and Webinars

## AUSTRALIAN

### ANZBMS Virtual Clinical Densitometry Course

20-21 February

More information [here](#)

### Australian Skin and Skin Cancer Research Centre 'Sun Exposure Summit'

15-16 March 2021

More information [here](#)

### Australasian Paediatric Endocrine Group - Bone and Mineral Working Group 2021 Inaugural Bone Day

27 March 2021

More information [here](#)

## INTERNATIONAL

### ASBMR 2021 Webinar Series

Details on topics and registration available [here](#)

### ASBMR ESI Clinical Case Workshop on Glucocorticoid Induced Osteoporosis

16 February 2021

Registration [here](#)

### ECTS Webinar Series

More information [here](#)

### IFMRS - H Fleish Workshops

15, 17 & 19 March 2021

Free registration for ANZBMS members

More information [here](#)

### IO - ASBMR Rare Bone Disease TeleECHO

Delivered virtually the first Thursday of each month 1500 EST

More information [here](#)

### OI Foundation Osteogenesis Imperfecta TeleECHO clinic series

Delivered virtually the second Wednesday of each month 1500 hours EST

More information [here](#)

### Orthopaedic Research Society 2021 Annual Meeting - Virtual

13-16 February 2021

More information [here](#)

### Bone Research Society Clinical Training Course: Osteoporosis and Other Metabolic Bone Diseases 2021 - Virtual

22 March 2021

More information [here](#)

### Bone Research Society Virtual Seminars

Held monthly

More information [here](#)

### Bone Research Society (UK) 2021 Annual Meeting - Virtual

28-30 June 2021

More information [here](#)



Joint Action is a podcast hosted by Professor David Hunter. The podcast was launched during the COVID-19 pandemic to share informative and evidence-based knowledge during a time where it may have not been as accessible. On each episode, we interview a leading expert in osteoarthritis (OA) on various topics related to OA management.

Professor David Hunter is a rheumatology clinician researcher whose main research focus has been clinical and translational research in OA. He is the Florence and Cope Chair of Rheumatology and Professor of Medicine at University of Sydney and the Royal North Shore Hospital, Sydney, Australia. He is ranked as the world's leading expert in OA on [Expertscape.com](https://www.expertscape.com) since 2014.

You can find the Joint Action podcast at [www.jointaction.info/podcast](http://www.jointaction.info/podcast), or search "Joint Action" on Apple Podcasts, Google Podcasts or Spotify.

