Childhood physical activity may help prevent osteoarthritis

Physical activity in childhood is often recommended as a means to improve adult health, but little evidence has existed until now to illustrate that what you do in childhood can have an effect on joint health in later life.

A recent Menzies study has shown that active children may have stronger knees as adults, helping to prevent the onset of osteoarthritis later in life.

The long-term follow-up study of approximately 300 children around Australia found that those who did lots of jumping, running and skipping had more cartilage in their knees than those who were sedentary.

It is estimated about three million Australians will be affected by osteoarthritis by 2050.

Osteoarthritis is still considered an irreversible disease. Factors that increase the risk of knee osteoarthritis include obesity, age, prior injury to the knee, extreme stress to the joints, and family history. Knee osteoarthritis is caused by cartilage breakdown in the knee joint.

Chief investigator, Associate Professor Changhai Ding, said the aim of the study was to determine if physical activity in childhood was associated with more knee cartilage and tibial bone area (the bone that forms the lower part of the knee joint) 25 years later.

Subjects were selected from the Childhood Determinants of Adult Health Study (CDAH) which was a 20-year follow-up of the Australian Schools Health and Fitness Survey (ASHFS) conducted in 1985.

“A number of childhood physical performance measures were found to be significantly associated with increased knee bone area and cartilage in adulthood,” said Associate Professor Ding.

“The findings suggest that physical activity in childhood can independently influence adult knee joint health possibly through adaptive mechanisms of the knee joint during growth.

“We don’t yet know how physical activity may build bone and cartilage years later, but I would suggest that as the bone area gets larger to cope with the extra demands put on it by higher levels of physical activity, this leads to more cartilage, as cartilage covers the end of the bone.”

Senior investigator on the study, Professor Graeme Jones, said high impact activities such as running and jumping were more effective in building strong knees than gentler activities like walking.

“Data from previous studies have shown that children who engaged in vigorous activity in childhood had greater cartilage deposition in their knees compared with less active children,” said Professor Jones.

“The idea would be that if you develop more cartilage in childhood and it lasts until adult life, you can prevent the development of osteoarthritis.

“The findings suggest that childhood exposure to physical activity has a long-term protective effect on knee joint health.

“We need to get children as active as we can.”
Dear friends of Menzies,

Well, the last two months have certainly been an encouraging and exciting time for me as I settle in to my new role as Director of Menzies Research Institute Tasmania. I am thrilled at the opportunity to head up Menzies. I am a person who believes in making things happen. And, as the Director of Menzies, I hope to drive Menzies in a focussed and clear direction.

Menzies will continue to direct its efforts on the major disease burdens of the Tasmanian community, including such diseases as heart disease, diabetes, cancer, multiple sclerosis, arthritis and dementia.

The research skills at Menzies reflect the burden of disease in Tasmania and I am sure that we can continue to make a very strong and meaningful contribution to improving the health of our community and around the globe.

I can think of no greater honour than to help contribute to Menzies outstanding research success and to play a role in ensuring the Institute reaches the great heights it is destined for, and with your support, become one of the world’s leading health and medical research institutes.

Warm regards

Professor Tom Marwick
Director

Women, leadership and lunch

In late August, Associate Professor Tracey Dickson was invited to represent Australian women at a very special luncheon at Government House, Canberra. Hosted by the Governor-General, Ms Quentin Bryce, the luncheon was held in honour of the Under-Secretary-General and Executive Director of UN Women, Ms Michelle Bachelet.

Ms Bachelet was in Australia meeting with key ministers, parliamentarians and representatives from AusAID. As the first Under-Secretary-General and Executive Director of UN Women, Ms Bachelet is committed to ensuring that the lives of women throughout the world are improved, especially in developing countries.

Associate Professor Dickson was chosen as a representative for women at this event because of her contribution to medical research and her special interest in advancing women.

Associate Professor Dickson’s research is focussed on investigating the neuronal response to both trauma and neurodegenerative disease – particularly Alzheimer’s disease, Parkinson’s disease, and motor neuron disease.

Associate Professor Dickson says that the lunch was truly inspirational.

“It was amazing – 50 women leaders from around Australia with an incredibly diverse range of professions and from all states and territories,” she said.

Other guests included inspirational women such as the Honourable Justice Virginia Bell AC, respected journalist Ms Geraldine Doogue AO, Ms Dee Gibbon, Wing Commander – Royal Australian Air Force, and Australia’s most respected paediatric epidemiologist, Professor Fiona Stanley, AC.

MS2’s environmental design rewarded

The new Medical Science 2 (MS2) building has become the first educational building in Tasmania to achieve a Green Star rating for environmental design.

The project has been awarded a 5 Star Green Star – Education Design v1 rating by the Green Building Council of Australia (GBCA).

MS2 is also only the fifth building in Tasmania to achieve a Green Star rating.

Some of the building’s environmentally friendly attributes include:

• A 80,000-litre rainwater harvesting tank, serving toilets
• Solar hot water
• Energy-efficient lighting units with proximity sensor activation
• Daylight glare controls – external sunshades (the metal ‘squiggles’ that form part of the façade), highly-efficient glass and user-controlled blinds to all office/ lab environments.
• 200 secure bike parking spaces with a shower and storage for staff and students
• Natural rubber-based flooring, recycled timber and recycled content carpets.

MS2 was designed by Lyons Architecture and constructed by a joint venture between John Holland and Fairbrother.

The MS2 building project has been funded by the Australian Government, Tasmanian Government, University of Tasmania, The Atlantic Philanthropies, a USA philanthropic foundation and the UTAS Foundation MS2 capital campaign.

Did you know that you can now make online donations to our vital research with your credit card?

www.menzies.utas.edu.au

Donate to Menzies
World-first MS prevention trial launched

**One of the most important developments in the prevention of multiple sclerosis (MS) is a world-first clinical trial set to take place in Australia and New Zealand. This important study will look at whether vitamin D can prevent MS in those at risk of developing the disease. Tasmania will play a key role in the trial.**

The trial, known as the PrevANZ study, will focus on the possibility of using vitamin D supplementation to prevent a diagnosis of MS following a person’s presentation with the first symptoms that may lead to a diagnosis of MS. It will also test appropriate dosage levels and safety; information that may eventually lead to an effective prevention strategy for MS.

MS is an inflammatory disease that affects the brain and spinal cord. Though the causes of the disease are unknown, a deficiency of vitamin D (which is primarily synthesized in the skin by exposure to UV light from the sun) is now thought to play a major role in some patients.

Australian researchers including Professor Bruce Taylor, senior member at Menzies Research Institute Tasmania and neurologist at the Royal Hobart Hospital, have been pivotal in establishing the link between vitamin D deficiency and MS.

“Tasmania has the highest incidence of MS in Australia, but thanks to research we may be able to beat this debilitating disease,” said Professor Taylor.

“The first trial of its kind in the world, to see whether oral vitamin D supplementation can benefit people who may be in the earliest stages of MS – Australia has a very real opportunity here to help reduce the impact of MS around the world.”

The PrevANZ trial is being funded by MS Research Australia (MSRA), through the support of Australian state-based MS societies, especially from Western Australia, Queensland and Tasmania.

While $2.5 million has been secured to commence the trial, and significant funding has been provided by the Royal Hobart Hospital Research Foundation in its appointment of Professor Taylor as a Research Fellow at Menzies, a further one million is still needed to extend the sample size and achieve a robust and conclusive answer.

**Trial subjects (18-65 years old) will be recruited solely through their neurologist.**

People already diagnosed with MS who are concerned about their vitamin D status should discuss this with their GP or neurologist. The trial will run for four years from 2013 – 2016. Results from the study will be available in 2017.

The link between weight and knee pain

**Carrying excess body weight particularly body fat can cause damage to your knees and set you up for a world of pain.**

A recent Menzies study looking into the link between body composition and increased knee osteoarthritis risk in older adults found that excess body fat increased your risk of knee pain and knee cartilage loss over time.

Lean mass, on the other hand, was shown to be protective against knee pain, and a significant protective association was demonstrated between lean mass and cartilage loss.

“When you carry more weight or fat mass than you should, you’re putting extra metabolic and mechanic stress on your knees. This will accelerate cartilage loss in your knees, causing more knee pain over time,” chief investigator on the study, Associate Professor Changhai Ding says.

A total of 395 adults aged between 51 – 81 were randomly selected for the study. Body fat mass and lean mass were measured by a bone mineral density machine.

Subjects were re-evaluated at three and five years for assessment of cartilage loss using MRI and knee pain experienced while walking on a flat surface, going up or down stairs, during sleep, sitting or lying, and standing upright.

At three years, researchers observed a decrease in cartilage loss of around 2 per cent to 2.7 per cent yearly at different sites.

“Overall the study found that body fat adversely affects cartilage loss over time, whereas lean mass is protective,” Associate Professor Ding says.

“Strategies aimed at reducing body fat but increasing lean mass may reduce knee cartilage loss in older people. This will also have symptom relieving effects on osteoarthritis.

“Fifty per cent of older adults have osteoarthritis, and weight loss is the intervention that could most benefit them in terms of pain reduction.”

“Losing body fat and increasing lean mass is an important part of keeping your knees healthy and reducing knee pain.”

Maintaining a healthy body weight is important for keeping your knees healthy and reducing knee pain
Thank you to all of our donors for your ongoing financial support and commitment to Menzies.

Listed below are new individual and community supporters of Menzies for August to October 2012.

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Listed below are our Everyday Angels – our supporters who make regular gifts to Menzies.

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The Menzies Research Institute Tasmania is deeply indebted to ALL our generous supporters who kindly donated in 2012.

A full list of all our supporters for 2012 is available on our website under www.menzies.utas.edu.au/our-supporters.

Thank you.
new way to treat the disease. We are currently testing some of these glycans to see if any are suitable candidates for drug development. A cure based on this idea is still a long way off, so we will just have to see how this line of research pans out.

What is the biggest challenge in your area of research?

Well, I think that the biggest challenge for any fundamental research scientist is Nature herself. To do good research, you need to have a hypothesis. The trouble is that Nature doesn’t always agree with your hypothesis and she will often provide you with a result that is entirely unexpected. You see, Nature doesn’t seem to understand the enormous pressures that researchers are under to publish! You always feel that she is reluctant to reveal her most important secrets. She gives you the least important bits free of charge, and you sometimes have to make do with those.

What is the most interesting aspect about your work?

Undoubtedly the best part of my work is the interaction with colleagues. The intellectual stimulation provided by discussions with students and more senior colleagues about ideas is invaluable. The exploration of new concepts is what being a scientist is all about, but it is also part of what makes us human.

What do you enjoy doing in your spare time?

I am a total “geek”, so my hobbies tend to be more indoor, rather than outdoor. I enjoy playing chess (I was ranked as a chess Master years ago, when I lived in the United States), playing the piano, learning foreign languages and reading about geeky things. Right now, for example, I am reading a book entitled “The Grand Design” by Stephen Hawking and Leonard Mlodinow.

Volunteers needed for blood pressure study

Menzies is conducting a new blood pressure study to determine the potential clinical relevance of new blood pressure measurements. We are currently looking for volunteers to take part in this new research study. Participants will undergo comprehensive cardiovascular testing at rest and during light exercise.

Information on blood pressure control will be provided to all study participants. If you are healthy (aged 18-75 years) and are interested in participating in this study please contact Dean Picone on Dean.Picone@utas.edu.au or call 03 6226 4729.
National funding success

Menzies was highly successful in attracting $10.3 million in federal research grants through the National Health and Research Council (NHMRC) and the Australian Research Council (ARC) this year.

The new funding will enable successful researchers to continue their careers in Tasmania and further their work on diseases such as cancer, osteoarthritis, traumatic brain injury, glaucoma, type-2 diabetes, multiple sclerosis and blood pressure.

NHMRC Funding:

Project Grants

Dr Jac Charlesworth was awarded $671,331 (3 years) for research into glaucoma. This study will look at the entire coding component of the human genome (exome) in 271 individuals from large glaucoma families. The aim is to identify the genetic variants in these families that increase disease risk.

Associate Professor Peter Dargaville received $1,172,978 (5 years) for a therapy trial for pre-term babies with breathing difficulties. The project involves a randomised controlled trial of minimally-invasive surfactant therapy in preterm infants 25-28 weeks gestation on continuous positive airway pressure.

Associate Professor Tracey Dickson was awarded $490,420 (3 years) for her research project on microtubule stabilisation: promoting adaptive plasticity, brain healing and functional recovery after traumatic brain injury.

Professor Graeme Jones received $652,772 (3 years) for a 10 year follow up of the Tasmanian Older Adult Cohort (TASOAC). The TASOAC study is a population-based study looking at the causes and course of osteoarthritis using state of the art techniques.

Professor Graeme Jones and Dr Dawn Doré received $954,597 (4 years) to undertake a randomised trial of zoledronic acid for osteoarthritis of the knee.

Professor Graeme Jones and Dr Tania Winzenberg received $376,284 (2 years) for the T Bone Study: 25 year follow-up. This study will follow up a birth cohort for 25 years with the aim of looking at critical periods for bone development including the role of in utero exposures, early infancy, age 8 and 16 years old.

Professor Steve Rattigan, Dr Michelle Keske and Dr Stephen Richards received $576,533 (3 years) for their research project on the role of microvascular flow motion in skeletal muscle glucose metabolism. Outcomes from the study may lead to diagnostic tools and treatments for cardiovascular disease associated with obesity, hypertension and type-2 diabetes.

Dr James Sharman was awarded $1,384,302 (4 years) for research on lowering central blood pressure in patients with hypertension: a randomised controlled trial (the low CBP study). Findings are expected to lead to a change in the way that people with high BP are diagnosed and managed by doctors.

Professor Bruce Taylor, Dr Ingrid van der Mei and Associate Professor Leigh Blizzard, received $945,085 (4 years) for their research on the role of environmental and genetic factors in progression of multiple sclerosis (MS). This project aims to define potentially modifiable risk factors for MS progression.

Fellowships

Professor Steve Rattigan received $118,157 as a top-up to his current NHMRC fellowship (1 year) to continue his research on microvascular involvement in cardiovascular disease. The study aims to provide new insights into the regulation of microvessel blood flow in muscle, fat and skin.

Dr Dawn Doré received $299,563 (4 years) to continue her research into using magnetic resonance imaging (MRI) to improve understanding of knee osteoarthritis and develop effective therapeutic treatments.

Dr James Sharman received $439,920 (4 years) for a career development fellowship for his research on central blood pressure: physiology and clinical application.

Dr Kaylene Young received $439,920 (4 years) for a career development fellowship for her research that investigates adding new cells to the mature central nervous system – their role in plasticity, maintenance and repair.

ARC Funding:

Fellowship

Associate Professor Jo Dickinson received an ARC Future Fellowship and was awarded $644,028 (3 years) to investigate how a family history of cancer influences the course of the disease and the outcomes.

Discovery Grants

Associate Professor Greg Woods was awarded $380,000 (3 years) through the Discovery Projects scheme for his research into the Tasmanian Devil Facial Tumour Disease.

Dr Fay Johnston received a Discovery Early Career Researcher Award (DECRA) that will provide $375,000 (3 years) for her research into the community health impacts of smoke pollution.

Art of Christmas 2012

The Art of Christmas 2012 event was a great success thanks to the generosity of 30 talented Tasmanian artists, our sponsors, volunteers and over 300 guests who attended the event. Over $58,000 was raised this year. Menzies is truly grateful for the contributions made by all of those involved.

Artists:

Max Angus, Bert Aperloo, Raymond Arnold, Deborah Asma Mather, Lorraine Biggs, Lucy Bleach, Keith Climpson, Stuart Clues, Katherine Cooper, Nathan Dunn, Katina Gavalas, Jane Giblin, Nick Glade-Wright, Patrick Grieve, Todd Jenkins, Richard Klekociuk, Jon Kudeika, Nigel Lazenby, Cathy McAuliffe, Mish Meijers, Simone Pfister, Kate Piekutowski, Troy Ruffels, Michael Schiltz, John Vella, Michael Weitnauer, Tricky Walsh, Katy Woodroffe and Marlon Zarin.

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There are seven unique Tasmanian designs to choose from, plus a variety pack.

Price: $10 per pack of 12 cards.

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To purchase your cards by phone, call (03) 6226 7700.

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Cathy McAuliffe’s Christmas card – Not a creature was stirring
In Memoriam
August 2012 – October 2012

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Thank you!