Response to 'Infrapatellar fat pad maximal area and changes in knee symptoms: gender-related difference or gender difference in reporting?' by Bai *et al*

We would like to thank Bai *et al* for their interest in and comments on our paper titled 'A longitudinal study of the association between infrapatellar fat pad maximal area and changes in knee symptoms and structure in older adults'.[1]

First, we agree that the overall response rate was not high (57%). We identified the participants randomly from the local community using the electoral roll, and the reasons for not participating in this study were not being eligible, not being contactable and refusing to participate. The response rate is comparable to those (52–58%) from studies with equivalent response burdens conducted around the same time period.[2 3] The moderate response rate can be offset by the high rate of retention at follow-up. Bai *et al* assumed that people with pain to start with were more likely to respond, and those with significant changes in pain symptoms over the study interval were more likely to follow-up. Unfortunately, we did not have knee pain data for those who did not respond, so we cannot comment on the first assumption; however, there were actually no significant differences in change in pain symptoms between those who were and were not lost to follow-up (−0.51 vs −0.48, p=0.95). There were also no significant differences in baseline characteristics including age (62.3 vs 63.0 years, p=0.27), female sex (50% vs 54%, p=0.40) and body mass index (27.7 vs 27.8 kg/m^2, p=0.841) between those who were followed-up and those who were not, but those who were followed-up had a lower baseline pain score than those who were not (3.3 vs 5.0, p=0.003).

Second, we agree that women can report pain more frequently than men, and, consistently, we found that women were more likely to have knee pain than men (54% vs 49%, p=0.07), although the total pain score was similar (3.8 vs 3.3, p=0.24) in our cohort. However, changes in pain score over time, which were the outcomes in this study, were not different between men and women (total knee pain score: −0.47 vs −0.51, p=0.90). Women's lower threshold for reporting pain would not affect the changes in knee pain, thus would not be related to the difference in results between genders. We acknowledge that the associations between infrapatellar fat pad area and changes in cartilage measures at different sites were not all consistent. The reasons are unclear. We observed the most consistent associations in the medial tibiofemoral compartment, suggesting that the infrapatellar fat pad largely has a shock-absorbing role in this compartment, which has greater load distribution in the knee joint.[4]

Third, we agree that this is not enough evidence to support preservation of the infrapatellar fat pad during open total knee arthroplasty (TKA) for osteoarthritis at a very late stage, which we did not suggest in our paper. The systematic review performed by Van Beeck *et al* was based on five low-quality articles which had high bias risks and varying outcome measures, follow-up periods, and number and type of participants.[5] The findings from this review were actually inconclusive rather than 'for OA, there was no difference in function, range of motion, and anterior knee pain between patients who underwent TKA with IPFP (infrapatellar fat pad) resection and those without'. We acknowledge that our study was observational, and, along with the findings from our recent reports,[6 7] we conjecture that the infrapatellar fat pad would have biphasic effects in knee OA: it may have a beneficial role physiologically through increased size, but could be detrimental when pathological changes are observed as signal intensity alteration on MRI. Therefore, we proposed that the infrapatellar fat pad with normal qualities, rather than abnormal qualities, should be preserved or not damaged during knee surgery. It will certainly require well-designed randomised controlled trials to test this hypothesis, particularly in those with functional infrapatellar fat pad who undergo knee surgery such as arthroscopy for osteoarthritis at earlier stages.

In summary, the moderate initial response rate in this study can be offset by the high retention rate at follow-up. Well-designed randomised controlled trials are needed to determine if partial or total infrapatellar fat pad resection has a detrimental or beneficial effect on osteoarthritic outcomes in patients undergoing different knee surgeries such as arthroscopy and TKA.

Faming Pan,[1,2,3] Weiyu Han,[1,4] Xia Wang,[1] Zhenhua Liu,[1,4] Xingzhong Jin,[1] Benny Antony,[1] Flavia Cicuttini,[5] Graeme Jones,[1] Changhai Ding[1,3,5]

[1]Menzies Institute for Medical Research, University of Tasmania, Hobart, Tasmania, Australia
[2]Department of Epidemiology and Biostatistics, School of Public Health, Anhui Medical University, Hefei, Anhui, China
[3]Arthritis Research Institute, 1st Affiliated Hospital, Anhui Medical University, Hefei, Anhui, China
[4]Department of Orthopedics, 3rd Affiliated Hospital of Southern Medical University, Guangzhou, China
[5]Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Victoria, Australia

Correspondence to Professor Changhai Ding, Menzies Institute for Medical Research, University of Tasmania, Private Bag 23, Hobart, Tasmania 7000, Australia; Changhai.Ding@utas.edu.au

Contributors All authors contributed to this article.

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