



PRESS RELEASE

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Drinking coffee or tea may be beneficial for physical function in ageing

Singapore, 3 October 2023 – Drinking coffee and tea at midlife may be associated with a reduced likelihood of physical frailty in late life.

A Singapore study has shown that adults, who consumed higher intake of caffeine via the drinking of coffee or tea, had significantly better physical function at late life. This study, led by Professor Koh Woon Puay from the Healthy Longevity Translational Research Programme at the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine), was conducted based on information collected from over 12,000 participants, aged 45 to 74 years old, in the Singapore Chinese Health Study, over a follow-up period of 20 years.

Participants were interviewed for the first time at midlife, at average age of 53 years, using a structured questionnaire (1993-1998). During these baseline interviews, the participants were asked about their habit of drinking caffeine-containing beverages (such as coffee, tea and soft drinks) and food (such as chocolate) in terms of frequency and portion size. They also provided information on their sociodemographic characteristics, medical history, height and weight, dietary habit, physical activities and sleep duration.

During the second follow-up interviews (2006-2010), participants were asked to report their weight, amongst other questions. In the third and follow up interviews conducted from 2014 to 2017, when the participants of average age of 73 years, they were interviewed and asked, amongst other things, their weight, and a specific question, "Do you feel full of energy?" They were also examined for handgrip strength, and time taken to complete the timed up-and-go (TUG) test. Physical frailty was defined as having at least two of the four components of 1) weight loss (more than 10% loss in weight between follow-up 2 and follow-up 3), 2) exhaustion (yes to the question), 3) slowness (slowest sex-specific quintile in TUG), and 4) weakness (weakest sex-specific quintile in handgrip strength).

Coffee and tea were the main sources of caffeine intake in this cohort, accounting for 84% and 12% of total caffeine, respectively. A total of 68.5% of the participants drank coffee daily. In this group, 52.9% of them drank one cup a day, 42.2% consumed two to three cups per day while the remaining 4.9% drank four or more cups per day. Study participants were therefore classified into four categories based on their coffee intake – non-daily drinkers, a cup per day, two to three cups per day and four or more cups per day. Tea drinkers were classified into four categories according to their frequencies: never, at least once a month, at least once a week, and daily drinkers.

Our results showed that drinking coffee, black tea or green tea at midlife were independently associated with significantly reduced likelihood of physical frailty at late life. Participants who drank four or more cups of coffee per day had significantly reduced odds of physical frailty at

late life, compared to participants who did not drink coffee daily. Participants who drank black tea, green tea daily also had significantly reduced odds of physical frailty, compared to non-tea drinkers.

The researchers further evaluated the association between caffeine intake and the odds of physical frailty in late life. Higher caffeine intake was associated with lower odds of physical frailty, regardless of the source of caffeine. Amongst the four components of physical frailty, the associations were stronger for the measured tests of handgrip strength and TUG, than for the self-reported measures of weight loss and exhaustion.

Interestingly, in other experimental research, caffeine has been shown to increase proliferation in muscle cells and improve muscle weight in mice. In addition to caffeine, coffee and tea also contain rich bioactive polyphenols, which possess antioxidant and anti-inflammatory properties, and have been associated with reduced risk for diseases that increase frailty, such as diabetes, cardiovascular diseases, obesity and neurodegenerative diseases. However, further research is necessary to identify the actual ingredients and mechanisms underlying the association between coffee/tea and physical function in human.

“Coffee and tea are mainstay beverages in many societies around the world, including Singapore. Our studies show that consumption of these caffeinated drinks at midlife may be associated with a reduced likelihood of physical frailty in late life. However, further studies are still needed to confirm these longitudinal associations, and to investigate if these effects on physical frailty are mediated by caffeine or other chemical compounds.” Prof Koh added.

This study was published on 21 July 2023 in the [Journal of the American Medical Directors Association \(JAMDA\)](#).

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The School is the oldest institution of higher learning in the National University of Singapore and a founding institutional member of the National University Health System. It is one of Asia's leading medical schools and ranks among the best in the world (Times Higher Education World University Rankings 2023 by subject and the Quacquarelli Symonds (QS) World University Rankings by subject 2023).

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