

Progress report 2022

Department of Preventive Medicine for Locomotive Organ Disorders

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● Brief Summary

The department of Preventive Medicine for Locomotive Organ Disorders in 22nd Century Medical and Research Center, The University of Tokyo Hospital, on April 1st, 2020, which is a social collaboration department with NIPPON TELEGRAPH AND TELEPHONE CORPORATION (NTT), Suntory Wellness Ltd., ASAHI KASEI PHARMA CORPORATION, ALCARE Co., Ltd. and Fujifilm Corporation, and in close collaboration with departments of Orthopaedic Surgery and Rehabilitation Medicine in the hospital. Our department has been established to clarify the epidemiological profiles of locomotive organ disorders, such as, osteoarthritis (OA), osteoporosis (OP) and sarcopenia (SP). Further, we also try to elucidate the frequencied and risk factors for locomotive syndrome, which was defined by the Japanese Orthopaedic Association (JOA) in 2014.

● Research activities

Although locomotive organ disorders are major causes of disability and require support, little information is available regarding their epidemiology. The Research on Osteoarthritis/Osteoporosis Against Disability (ROAD) study, which started in 2005-7, is a prospective cohort study that aims to elucidate the environmental and genetic background for bone and joint diseases. It was designed to examine the extent to which risk factors for these diseases are related to clinical features, laboratory and radiographic findings, bone mass and geometry, lifestyle, nutritional factors, anthropometric and neuromuscular measures, and fall propensity. In addition, the study's aim was also to determine how these diseases affect activities of daily living and quality of life in Japanese men and women.

We have completed the baseline study in 2005-2007, then, 2nd, 3rd, 4th and 5th follow-ups were completed in 2008-2010, 2012-2013, 2015-2016 and 2018-2019, respectively. We have been conducting further follow-up surveys.

● Publication

Original Articles

1. Vandenput L, Johansson H, McCloskey EV, Liu E, Åkesson KE, Anderson FA, Azagra R, Bager CL, Beaudart C, Bischoff-Ferrari HA, Biver E, Bruyère O, Cauley JA, Center JR, Chapurlat R, Christiansen C, Cooper C, Crandall CJ, Cummings SR, da Silva JAP, Dawson-Hughes B, Diez-Perez A, Dufour AB, Eisman JA, Elders PJM, Ferrari S, Fujita Y, Fujiwara S, Glüer CC, Goldshtein I, Goltzman D, Gudnason V, Hall J, Hans D, Hoff M, Hollick RJ, Huisman M, Iki M,

Ish-Shalom S, Jones G, Karlsson MK, Khosla S, Kiel DP, Koh WP, Koromani F, Kotowicz MA, Kröger H, Kwok T, Lamy O, Langhammer A, Larijani B, Lippuner K, Mellström D, Merlijn T, Nordström A, Nordström P, O'Neill TW, Obermayer-Pietsch B, Ohlsson C, Orwoll ES, Pasco JA, Rivadeneira F, Schei B, Schott AM, Shiroma EJ, Siggeirsdottir K, Simonsick EM, Sornay-Rendu E, Sund R, Swart KMA, Szulc P, Tamaki J, Torgerson DJ, van Schoor NM, van Staa TP, Vila J, Wareham NJ, Wright NC, Yoshimura N, Zillikens MC, Zwart M, Harvey NC, Lorentzon M, Leslie WD, Kanis JA: Update of the fracture risk prediction tool FRAX: a systematic review of potential cohorts and analysis plan. *Osteoporos Int* 33(10): 2103-2136, 2022, doi: 10.1007/s00198-022-06435-6.

2. Yoshimura N, Iidaka T, Horii C, Muraki S, Oka H, Kawaguchi H, Nakamura K, Akune T, Tanaka S: Trends in osteoporosis prevalence over a 10-year period in Japan: The ROAD study 2005–2015. *J Bone Miner Metab* 40(5): 829-838, 2022, doi: 10.1007/s00774-022-01352-4.
3. Chotiyarnwong P, McCloskey EV, Harvey NC, Lorentzon M, Prieto-Alhambra D, Abrahamsen B, Adachi JD, Borgström F, Bruyere O, Carey JJ, Clark P, Cooper C, Curtis EM, Dennison E, Diaz-Curiel M, Dimai HP, Grigorie D, Hiligsmann M, Khashayar P, Lewiecki EM, Lips P, Lorenc RS, Ortolani S, Papaioannou A, Silverman S, Sosa M, Szulc P, Ward KA, Yoshimura N, Kanis JA: Is it time to consider population screening for fracture risk in postmenopausal women? A position paper from the International Osteoporosis Foundation Epidemiology/Quality of Life Working Group. *Arch Osteoporos* 17(1): 87, 2022, doi: 10.1007/s11657-022-01117-6.
4. Teraguchi M, Hashizume H, Oka H, Cheung JPY, Samartzis D, Tamai H, Muraki S, Akune T, Tanaka S, Yoshida M, Yoshimura N, Yamada H: Detailed subphenotyping of lumbar modic changes and their association with low back pain in a large population-based study: The Wakayama Spine Study. *Pain Ther* 11(1): 57-71, 2022, doi: 10.1007/s40122-021-00337-x.
5. Horii C, Iidaka T, Muraki S, Oka H, Asai Y, Tsutsui S, Hashizume H, Yamada H, Yoshida M, Kawaguchi H, Nakamura K, Akune T, Oshima Y, Tanaka S, Yoshimura N: The cumulative incidence of and risk factors for morphometric severe vertebral fractures in Japanese men and women: the ROAD study third and fourth surveys. *Osteoporos Int* 33(4): 889-899, 2022, doi: 10.1007/s00198-021-06143-7.
6. Shoji A, Gao Z, Arai K, Yoshimura N: 30-year trends of hip and vertebral fracture incidence in Japan: a systematic review and meta-analysis. *J Bone Miner Metab* 40(2): 327-336, 2022, doi: 10.1007/s00774-021-01288-1.
7. Asai Y, Tsutsui S, Yoshimura N, Hashizume H, Oka H, Muraki S, Iidaka T, Horii C, Kawaguchi H, Nakamura K, Tanaka S, Yoshida M, Yamada H: Relationship between age-related spinopelvic sagittal alignment and low back pain in adults of population-based cohorts: The ROAD Study. *J Pain Res* 15: 33-38, 2022, doi: 10.2147/JPR.S339712.
8. Matsumoto T, Higuchi J, Maenohara Y, Chang Song Ho, Iidaka T, Horii C, Oka H, Muraki S, Hashizume H, Yamada H, Yoshida M, Nakamura K, Tanaka S, Yoshimura N: The discrepancy

between radiographically-assessed and self-recognized hallux valgus in a large population-based cohort. *BMC Musculoskelet Disord* 23(1): 31, 2022, doi: 10.1186/s12891-021-04978-z.

9. Yoshimura N, lidaka T, Horii C, Mure K, Muraki S, Oka H, Kawaguchi H, Akune T, Ishibashi H, Ohe T, Hashizume H, Yamada H, Yoshida M, Nakamura K, Tanaka S: Epidemiology of locomotive syndrome using updated clinical decision limits: 6-year follow-ups of the ROAD study. *J Bone Miner Metab* 40(4): 623-635, 2022, doi: 10.1007/s00774-022-01324-8.
10. Harada T, Hashizume H, Taniguchi T, lidaka T, Asai Y, Oka H, Muraki S, Akune T, Kawaguchi H, Nakamura K, Yoshida M, Tanaka S, Yoshimura N, Yamada H. Association between acetabular dysplasia and sagittal spino-pelvic alignment in a population-based cohort in Japan. *Scientific Reports* 12(1): 12686, 2022, doi: 10.1038/s41598-022-16865-1.
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12. Uehara M, Wada-Hiraike O, Hirano M, Koga K, Yoshimura N, Tanaka S, Osuga Y: Relationship between bone mineral density and ovarian function and thyroid function in perimenopausal women with endometriosis: a prospective study. *BMC Womens Health* 22(1):134, 2022, doi: 10.1186/s12905-022-01711-3.
13. Tamai H, Teraguchi M, Hashizume H, Oka H, Cheung JPY, Samartzis D, Muraki S, Akune T, Kawaguchi H, Nakamura K, Tanaka S, Yoshida M, Yoshimura N, Yamada H. A Prospective, 3-year Longitudinal Study of Modic Changes of the Lumbar Spine in a Population-based Cohort: The Wakayama Spine Study. *Spine* 47(6):490-497, 2022, doi: 10.1097/BRS.0000000000004301.
14. lidaka T, Horii C, Muraki S, Oka H, Kawaguchi H, Nakamura K, Akune T, Tanaka S, Yoshimura N. Trends in prevalence of hip osteoarthritis over a 10-year period in Japan: The ROAD study 2005–2015. *Osteoarthr Cartil Open* 4(3):100285, 2022, doi: 10.1016/j.ocarto.2022.100285.
15. Uehara M, Wada-Hiraike O, Hirano M, Harada M, Koga K, Yoshimura N, Tanaka S, Osuga Y: Evaluation of Atherosclerosis-Related Biomarkers during Perimenopause: A Prospective Cohort Study in Women with Endometriosis. *J Obstet Gynaecol Res* 48(12): 3160-3170, 2022, doi: 10.1111/jog.15447.