

REFERENCES

- Agency of Health Research and Development (Indonesia) (2018) *Agency of Health Research and Development (Indonesia)*.
- Amarya, S., Singh, K. and Sabharwal, M. (2018) "Ageing Process and Physiological Changes," *Gerontology*. InTech. Available at: <https://doi.org/10.5772/intechopen.76249>.
- Badan Pusat Statistik (no date) "statistics-of-aging-population-2025."
- Beard, J.R. *et al.* (2016) "The World report on ageing and health: a policy framework for healthy ageing," *The Lancet*, 387(10033), pp. 2145–2154. Available at: [https://doi.org/10.1016/S0140-6736\(15\)00516-4](https://doi.org/10.1016/S0140-6736(15)00516-4).
- Bloor, I.D. and Symonds, M.E. (2014) "Sexual dimorphism in white and brown adipose tissue with obesity and inflammation," *Hormones and Behavior*. Academic Press Inc., pp. 95–103. Available at: <https://doi.org/10.1016/j.yhbeh.2014.02.007>.
- Chang, S.H. *et al.* (2012a) "A systematic review of body fat distribution and mortality in older people," *Maturitas*, pp. 175–191. Available at: <https://doi.org/10.1016/j.maturitas.2012.04.004>.
- Chang, S.H. *et al.* (2012b) "A systematic review of body fat distribution and mortality in older people," *Maturitas*, pp. 175–191. Available at: <https://doi.org/10.1016/j.maturitas.2012.04.004>.
- Chen, Y. *et al.* (2020) "Sex differences in the association of abdominal adipose tissue and anthropometric data with untreated hypertension in a Chinese population," *Biology of Sex Differences*, 11(1), p. 38. Available at: <https://doi.org/10.1186/s13293-020-00317-4>.
- Ellyas, I.S. *et al.* (2023) "Effect of circuit weight training on aerobic fitness, body fat percentage, muscle mass percentage, and hand grip strength in the elderly," *Jurnal Keolahragaan*, 11(2), pp. 248–255. Available at: <https://doi.org/10.21831/jk.v11i2.65453>.
- Falsarella, G.R. *et al.* (2015) "Body composition as a frailty marker for the elderly community," *Clinical Interventions in Aging*, 10, pp. 1661–1667. Available at: <https://doi.org/10.2147/CIA.S84632>.
- Ferraro, F.R. *et al.* (2008) "Aging, Body Image, and Body Shape," *The Journal of General Psychology*, 135(4), pp. 379–392. Available at: <https://doi.org/10.3200/GENP.135.4.379-392>.

- Frank, A.P. *et al.* (2019) “Determinants of body fat distribution in humans may provide insight about obesity-related health risks,” *Journal of Lipid Research*. American Society for Biochemistry and Molecular Biology Inc., pp. 1710–1719. Available at: <https://doi.org/10.1194/jlr.R086975>.
- Jiang, Y. *et al.* (2020) “Aerobic exercise training at maximal fat oxidation intensity improves body composition, glycemic control, and physical capacity in older people with type 2 diabetes,” *Journal of Exercise Science and Fitness*, 18(1), pp. 7–13. Available at: <https://doi.org/10.1016/j.jesf.2019.08.003>.
- Khalafi, M. *et al.* (2025) “The Effects of Concurrent Training Versus Aerobic or Resistance Training Alone on Body Composition in Middle-Aged and Older Adults: A Systematic Review and Meta-Analysis,” *Healthcare (Switzerland)*. Multidisciplinary Digital Publishing Institute (MDPI). Available at: <https://doi.org/10.3390/healthcare13070776>.
- Kuk, J.L. *et al.* (2009) “Age-related changes in total and regional fat distribution,” *Ageing Research Reviews*, pp. 339–348. Available at: <https://doi.org/10.1016/j.arr.2009.06.001>.
- Lemos, T. and Gallagher, D. (2017) “Current body composition measurement techniques,” *Current Opinion in Endocrinology, Diabetes & Obesity*, 24(5), pp. 310–314. Available at: <https://doi.org/10.1097/MED.0000000000000360>.
- Liochev, S.I. (2015) “Which is the most significant cause of aging?,” *Antioxidants*. MDPI, pp. 793–810. Available at: <https://doi.org/10.3390/antiox4040793>.
- Lopez, P. *et al.* (2022) “Resistance training effectiveness on body composition and body weight outcomes in individuals with overweight and obesity across the lifespan: A systematic review and meta-analysis,” *Obesity Reviews*. John Wiley and Sons Inc. Available at: <https://doi.org/10.1111/obr.13428>.
- MacIntosh, B.R. *et al.* (2021) “What Is Moderate to Vigorous Exercise Intensity?,” *Frontiers in Physiology*, 12. Available at: <https://doi.org/10.3389/fphys.2021.682233>.
- Marra, M. *et al.* (2019) “Assessment of body composition in health and disease using bioelectrical impedance analysis (bia) and dual energy x-ray absorptiometry (dxa): A critical overview,” *Contrast Media and Molecular Imaging*. Hindawi Limited. Available at: <https://doi.org/10.1155/2019/3548284>.
- Meskeel, M. (2010) “Principles of Anatomy and Physiology,” *Journal of Anatomy*, 217(5), pp. 631–631. Available at: <https://doi.org/10.1111/j.1469-7580.2010.01292.x>.

- Michel, J.-P. and Sadana, R. (2017) “‘Healthy Aging’ Concepts and Measures,” *Journal of the American Medical Directors Association*, 18(6), pp. 460–464. Available at: <https://doi.org/10.1016/j.jamda.2017.03.008>.
- Mittal, B. (2019) “Subcutaneous adipose tissue & visceral adipose tissue,” *Indian Journal of Medical Research*, 149(5), pp. 571–573. Available at: https://doi.org/10.4103/ijmr.IJMR_1910_18.
- Muscella, A. *et al.* (2020) “The regulation of fat metabolism during aerobic exercise,” *Biomolecules*. MDPI AG, pp. 1–29. Available at: <https://doi.org/10.3390/biom10121699>.
- Newberry, C. and Dakin, G. (2021) “Nutrition and Weight Management in the Elderly,” *Clinics in Geriatric Medicine*. W.B. Saunders, pp. 131–140. Available at: <https://doi.org/10.1016/j.cger.2020.08.010>.
- North, B.J. and Sinclair, D.A. (2012) “The Intersection Between Aging and Cardiovascular Disease,” *Circulation Research*, 110(8), pp. 1097–1108. Available at: <https://doi.org/10.1161/CIRCRESAHA.111.246876>.
- Nuttall, F.Q. (2015) “Body mass index: Obesity, BMI, and health: A critical review,” *Nutrition Today*. Lippincott Williams and Wilkins, pp. 117–128. Available at: <https://doi.org/10.1097/NT.0000000000000092>.
- Ponti, F. *et al.* (2020) “Aging and Imaging Assessment of Body Composition: From Fat to Facts,” *Frontiers in Endocrinology*. Frontiers Media S.A. Available at: <https://doi.org/10.3389/fendo.2019.00861>.
- Potter, A.W. and Friedl, K.E. (2025) “Cross-sectional analysis of visceral adipose tissue associations with obesity-related disease,” *American Journal of Clinical Nutrition*, 122(5), pp. 1489–1497. Available at: <https://doi.org/10.1016/j.ajcnut.2025.07.023>.
- Powell-Wiley, T.M. *et al.* (2021) “Obesity and Cardiovascular Disease A Scientific Statement From the American Heart Association,” *Circulation*. Lippincott Williams and Wilkins, pp. E984–E1010. Available at: <https://doi.org/10.1161/CIR.0000000000000973>.
- Rebello-Marques, A. *et al.* (2018) “Aging hallmarks: The benefits of physical exercise,” *Frontiers in Endocrinology*. Frontiers Media S.A. Available at: <https://doi.org/10.3389/fendo.2018.00258>.
- Reinders, I., Visser, M. and Schaap, L. (2017) “Body weight and body composition in old age and their relationship with frailty,” *Current Opinion in Clinical Nutrition & Metabolic Care*, 20(1), pp. 11–15. Available at: <https://doi.org/10.1097/MCO.0000000000000332>.
- Richard, A.J. *et al.* (2020) *Adipose Tissue: Physiology to Metabolic Dysfunction*.

- Rosen, E.D. and Spiegelman, B.M. (2014) “What we talk about when we talk about fat,” *Cell*. Elsevier B.V., pp. 20–44. Available at: <https://doi.org/10.1016/j.cell.2013.12.012>.
- Ross, R. *et al.* (2020) “Waist circumference as a vital sign in clinical practice: a Consensus Statement from the IAS and ICCR Working Group on Visceral Obesity,” *Nature Reviews Endocrinology*, 16(3), pp. 177–189. Available at: <https://doi.org/10.1038/s41574-019-0310-7>.
- Sinclair, A., Siqueira, I. and Abdelhafiz, A. (2025) “The Effect of Frailty on Body Composition and Its Impact on the Use of SGLT-2 Inhibitors and GLP-1RA in Older Persons with Diabetes,” *Metabolites*. Multidisciplinary Digital Publishing Institute (MDPI). Available at: <https://doi.org/10.3390/metabo15060381>.
- Sousa, N. *et al.* (2013) “A randomized 9-month study of blood pressure and body fat responses to aerobic training versus combined aerobic and resistance training in older men,” *Experimental Gerontology*, 48(8), pp. 727–733. Available at: <https://doi.org/10.1016/j.exger.2013.04.008>.
- Sruthi, K.G., John, S.M. and Marconi David, S. (2023) “Assessment of obesity in the Indian setting: A clinical review,” *Clinical Epidemiology and Global Health*. Elsevier B.V. Available at: <https://doi.org/10.1016/j.cegh.2023.101348>.
- Tanaka, M. (2020) “Improving obesity and blood pressure,” *Hypertension Research*. Springer Nature, pp. 79–89. Available at: <https://doi.org/10.1038/s41440-019-0348-x>.
- Vážná, A. *et al.* (2024) “Adiposity and body fat distribution based on skinfold thicknesses and body circumferences in Czech preschool children, secular changes,” *PeerJ*, 12(12). Available at: <https://doi.org/10.7717/peerj.18695>.
- Vincent, H.K. and Mathews, A. (2013) “Obesity and Mobility in Advancing Age: Mechanisms and Interventions to Preserve Independent Mobility,” *Current Obesity Reports*. Current Medicine Group LLC 1, pp. 275–283. Available at: <https://doi.org/10.1007/s13679-013-0059-6>.
- Wang, H. *et al.* (2025) “Inflammatory markers mediate the association between weight-adjusted waist circumference and mortality in patients with cardiometabolic syndrome,” *Scientific Reports*, 15(1), p. 8505. Available at: <https://doi.org/10.1038/s41598-025-92733-y>.
- Waters, D.L. *et al.* (2022) “Effect of Aerobic or Resistance Exercise, or Both, on Intermuscular and Visceral Fat and Physical and Metabolic Function in Older Adults With Obesity While Dieting,” *The Journals of Gerontology*:

Series A, 77(1), pp. 131–139. Available at:
<https://doi.org/10.1093/gerona/qlab111>.

Watson, R.R.. (2014) *Nutrition in the prevention and treatment of abdominal obesity*. Elsevier Science.

Westcott, W.L. (2012) *Resistance Training is Medicine: Effects of Strength Training on Health*. Available at: www.acsm-csmr.org.

Wewege, M.A. *et al.* (2022) “The Effect of Resistance Training in Healthy Adults on Body Fat Percentage, Fat Mass and Visceral Fat: A Systematic Review and Meta-Analysis,” *Sports Medicine*. Springer Science and Business Media Deutschland GmbH, pp. 287–300. Available at: <https://doi.org/10.1007/s40279-021-01562-2>.

WHO (2020) *WHO Guidelines on Physical Activity and Sedentary Behaviour*. Geneva: World Health Organization.

WHO (2025) *Ageing and health*.