

DAFTAR PUSTAKA

- Agbaje, A. O. (2022). *Arterial stiffness precedes hypertension and metabolic risks in youth: a review*. *Journal of Hypertension*, 40(10), 1887–1896. <https://doi.org/10.1097/HJH.00000000000003239>
- Ahn, H., Choi, H. Y., & Ki, M. (2022). *Association between levels of physical activity and low handgrip strength: Korea National Health and Nutrition Examination Survey 2014-2019*. *Epidemiology and Health*, 44, e2022027. <https://doi.org/10.4178/EPIH.E2022027>
- Al-Asadi, J. N. (2018). *Handgrip strength in medical students: Correlation with body mass index and hand dimensions*. *Asian Journal of Medical Sciences*, 9(1), 21–26. <https://doi.org/10.3126/ajms.v9i1.18577>
- Aminuddin, A., Noor Hashim, M. F., Mohd Zuberi, N. A. S., Zheng Wei, L., Ching Chu, B., Jamaludin, N. A., Salamt, N., Che Roos, N. A., & Ugusman, A. (2021). *The Association Between Arterial Stiffness and Muscle Indices Among Healthy Subjects and Subjects With Cardiovascular Risk Factors: An Evidence-Based Review*. In *Frontiers in Physiology* (Vol. 12). Frontiers Media S.A. <https://doi.org/10.3389/fphys.2021.742338>
- Ayudia, T., Bustamam, N., Hadiwardjo, Y. H., & Purwaningastuti, D. A. (2025). *Association between muscle-to-visceral fat ratio and vascular elasticity in medical students*. *World Nutrition Journal*, 9(i1), 41–48. <https://doi.org/10.25220/WNJ.V09.I1.0005>
- Aziz, M., Ali, S. S., Das, S., Younus, A., Malik, R., Latif, M. A., Humayun, C., Anugula, D., Abbas, G., Salami, J., Valero-Elizondo, J., Veledar, E., & Nasir, K. (2017). *Association of Subjective and Objective Sleep Duration as well as Sleep Quality with Non-Invasive Markers of Sub-Clinical Cardiovascular Disease (CVD): A Systematic Review*. *Journal of Atherosclerosis and Thrombosis*, 24(3), 208–226. <https://doi.org/10.5551/JAT.36194>
- Bawazier, L. A., Buntaran, S., Sianipar, W., Kekalih, A., & Aziza Bawazier, L. (2019). *Blood Pressure Profile of Young Adults at the Faculty of Medicine Universitas Indonesia*. *Acta Medica Indonesiana*, 51(1), 54–54. <https://www.actamedindones.org/index.php/ijim/article/view/856>
- Boese, A. C., Kim, S. C., Yin, K. J., Lee, J. P., & Hamblin, M. H. (2017). *Sex differences in vascular physiology and pathophysiology: estrogen and androgen signaling in health and disease*. *American Journal of Physiology - Heart and Circulatory Physiology*, 313(3), H524. <https://doi.org/10.1152/AJPHEART.00217.2016>
- Bohannon, R. W. (2011). *Test-retest reliability of the five-repetition sit-to-stand test: A systematic review of the literature involving adults*. *Journal of Strength and Conditioning Research*, 25(11), 3205–3207. <https://doi.org/10.1519/JSC.0B013E318234E59F>

- Bohannon, R. W. (2019a). *Considerations and Practical Options for Measuring Muscle Strength: A Narrative Review*. *BioMed Research International*, 2019(1), 8194537. <https://doi.org/10.1155/2019/8194537>
- Bohannon, R. W. (2019b). *Grip Strength: An Indispensable Biomarker For Older Adults*. *Clinical Interventions in Aging*, 14, 1681. <https://doi.org/10.2147/CIA.S194543>
- Brady, T. M., Horst, G., Appel, L. J., Khoury, P. R., & Urbina, E. M. (2022). *Dietary sodium intake and sodium load is associated with arterial stiffness in children and young adults*. *Journal of Hypertension*, 40(2), 292–299. <https://doi.org/10.1097/HJH.0000000000003007>,
- Bruno, R. M., Nilsson, P. M., Engström, G., Wadström, B. N., Empana, J. P., Boutouyrie, P., & Laurent, S. (2020). *Early and Supernormal Vascular Aging: Clinical Characteristics and Association With Incident Cardiovascular Events*. *Hypertension*, 76(5), 1616–1624. <https://doi.org/10.1161/HYPERTENSIONAHA.120.14971>;WGROU:STRING:PUBLICATION
- Casey, D. P., Ueda, K., Wegman-Points, L., & Pierce, G. L. (2017). *Muscle contraction induced arterial shear stress increases endothelial nitric oxide synthase phosphorylation in humans*. *American Journal of Physiology - Heart and Circulatory Physiology*, 313(4), H854. <https://doi.org/10.1152/AJPHEART.00282.2017>
- Caslin, H. L., Franco, R. L., Crabb, E. B., Huang, C. J., Bowen, M. K., & Acevedo, E. O. (2016). *The effect of obesity on inflammatory cytokine and leptin production following acute mental stress*. *Psychophysiology*, 53(2), 151–158. <https://doi.org/10.1111/PSYP.12568>
- Chen, L. K., Woo, J., Assantachai, P., Auyeung, T. W., Chou, M. Y., Iijima, K., Jang, H. C., Kang, L., Kim, M., Kim, S., Kojima, T., Kuzuya, M., Lee, J. S. W., Lee, S. Y., Lee, W. J., Lee, Y., Liang, C. K., Lim, J. Y., Lim, W. S., ... Arai, H. (2020). *Asian Working Group for Sarcopenia: 2019 Consensus Update on Sarcopenia Diagnosis and Treatment*. *Journal of the American Medical Directors Association*, 21(3), 300-307.e2. <https://doi.org/10.1016/J.JAMDA.2019.12.012/ASSET/C3CC5269-9D43-480D-9356-83088D420352/MAIN.ASSETS/GR1.SML>
- Choi, J., & Park, M. G. (2023). *Variations in the Second Derivative of a Photoplethysmogram with Age in Healthy Korean Adults*. *International Journal of Environmental Research and Public Health*, 20(1), 236. <https://doi.org/10.3390/IJERPH20010236/S1>
- Cocciolone, A. J., Hawes, J. Z., Staiculescu, M. C., Johnson, E. O., Murshed, M., & Wagenseil, J. E. (2018). *Elastin, arterial mechanics, and cardiovascular disease*. *American Journal of Physiology - Heart and Circulatory Physiology*, 315(2), H189. <https://doi.org/10.1152/AJPHEART.00087.2018>

- Crawford, F., Welch, K., Andras, A., & Chappell, F. M. (2016). *Ankle brachial index for the diagnosis of lower limb peripheral arterial disease*. *Cochrane Database of Systematic Reviews*, 2016(9). https://doi.org/10.1002/14651858.CD010680.PUB2/MEDIA/CDSR/CD010680/IMAGE_T/TCDD010680-AFIG-FIG03.PNG
- Cronin, J., Lawton, T., Harris, N., Kilding, A., & McMaster, D. T. (2017). *A brief review of handgrip strength and sport performance*. *Journal of Strength and Conditioning Research*, 31(11), 3187–3217. <https://doi.org/10.1519/JSC.0000000000002149>
- Cruz-Jentoft, A. J., & Sayer, A. A. (2019). *Sarcopenia*. *The Lancet*, 393(10191), 2636–2646. [https://doi.org/10.1016/S0140-6736\(19\)31138-9](https://doi.org/10.1016/S0140-6736(19)31138-9)
- da Silva, G. M., da Silva, M. C., Nascimento, D. V. G., Lima Silva, E. M., Gouvêa, F. F. F., de França Lopes, L. G., Araújo, A. V., Ferraz Pereira, K. N., & de Queiroz, T. M. (2021). *Nitric Oxide as a Central Molecule in Hypertension: Focus on the Vasorelaxant Activity of New Nitric Oxide Donors*. *Biology* 2021, Vol. 10, Page 1041, 10(10), 1041. <https://doi.org/10.3390/BIOLOGY10101041>
- Dahlan, M. S. (2010). *Statistik untuk Kedokteran dan Kesehatan*.
- Del Giorno, R., Maddalena, A., Bassetti, S., & Gabutti, L. (2022). *Association between Alcohol Intake and Arterial Stiffness in Healthy Adults: A Systematic Review*. *Nutrients*, 14(6), 1207. <https://doi.org/10.3390/NU14061207>
- Dela Justina, V., Miguez, J. S. G., Priviero, F., Sullivan, J. C., Giachini, F. R., & Webb, R. C. (2021). *Sex Differences in Molecular Mechanisms of Cardiovascular Aging*. *Frontiers in Aging*, 2. <https://doi.org/10.3389/FRAGI.2021.725884>,
- Devi, S., Damayanti, I., Rahayu, N. I., Ruhayati, Y., Suherman, A., Jajat, J., Sul-toni, K., & Ugelta, S. (2024). *Aktivitas Fisik Generasi Zillennial di Kota Bandung Berdasarkan Gender*. *Jurnal Sains Keolahragaan Dan Kesehatan*, 8(2), 197–209. <https://doi.org/10.5614/jskk.2023.8.2.9>
- Díaz, A., Galli, C., Tringler, M., Ramírez, A., & Cabrera Fischer, E. I. (2014). *Reference Values of Pulse Wave Velocity in Healthy People from an Urban and Rural Argentinean Population*. *International Journal of Hypertension*, 2014, 653239. <https://doi.org/10.1155/2014/653239>
- Dwi, R., 1^, R., Lestari, D. R., & Rahmayanti, D. (2025). *Gambaran Tingkat Stres Akademik Pada Mahasiswa Program Sarjana Keperawatan Dan Kedokteran*. *Journal of Intan Nursing*, 4(1), 1–6. <https://doi.org/10.54004/JOIN.V4I1.266>
- Elgendi, M. (2012). *Standard Terminologies for Photoplethysmogram Signals*. *Current Cardiology Reviews*, 8(3), 215. <https://doi.org/10.2174/157340312803217184>

- Faé, M. T., Gambetta, M. V., Ramos, N., Lopes, S. C., Oliveira, C., & Bacca, F. (2023). *Risk factors for cardiovascular diseases during medical academic training. American Journal of Cardiovascular Disease, 13*(4), 252. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10509451/>
- Fahs, C. A., Heffernan, K. S., Ranadive, S., Jae, S. Y., & Fernhall, B. (2010). *Muscular strength is inversely associated with aortic stiffness in young men. Medicine and Science in Sports and Exercise, 42*(9), 1619–1624. <https://doi.org/10.1249/MSS.0B013E3181D8D834>
- Fahs, C. A., Thiebaud, R. S., Rossow, L. M., Loenneke, J. P., Bemben, D. A., & Bemben, M. G. (2018). *Relationships between central arterial stiffness, lean body mass, and absolute and relative strength in young and older men and women. Clinical Physiology and Functional Imaging, 38*(4), 676–680. <https://doi.org/10.1111/CPF.12467>;JOURNAL:JOURNAL:13652281;WGROUP:STRING:PUBLICATION
- Fleenor, B. S., & Berrones, A. J. (2015). *Arterial Stiffness. Springer International Publishing.* <https://doi.org/10.1007/978-3-319-24844-8>
- Foote, K., Rienks, M., Schmidt, L., Theofilatos, K., Yasmin, Ozols, M., Eckersley, A., Shah, A., Figg, N., Finigan, A., O’Shaughnessy, K., Wilkinson, I., Mayr, M., & Bennett, M. (2024). *Oxidative DNA damage promotes vascular ageing associated with changes in extracellular matrix-regulating proteins. Cardiovascular Research, 121*(4). <https://doi.org/10.1093/CVR/CVAE091>,
- Fryar, C. D., Kit, B., Carrol, M. D., & Afful, J. (2024). *Hypertension Prevalence, Awareness, Treatment, and Control Among Adults Age 18 and Older: United States, August 2021–2023.*
- García-Mateo, P., García-De-alcaraz, A., Rodríguez-Peréz, M. A., & Alcaraz-Ibáñez, M. (2020). *Effects of Resistance Training on Arterial Stiffness in Healthy People: A Systematic Review. Journal of Sports Science & Medicine, 19*(3), 444. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7429424/>
- Gentilin, A., Cevese, A., Schena, F., & Tarperi, C. (2023). *Mental stress augments central artery stiffness in young individuals of both sexes. Biological Psychology, 178*, 108513. <https://doi.org/10.1016/J.BIOPSYCHO.2023.108513>
- Ghamari, M. (2018). *A review on wearable photoplethysmography sensors and their potential future applications in health care. International Journal of Biosensors & Bioelectronics, 4*(4). <https://doi.org/10.15406/IJBSBE.2018.04.00125>,
- Gómez-Campos, R., Vidal Espinoza, R., de Arruda, M., Ronque, E. R. V., Urra-Albornoz, C., Minango, J. C., Alvear-Vasquez, F., de la Torre Choque, C., Castelli Correia de Campos, L. F., Sulla Torres, J., & Cossio-Bolaños, M. (2023). *Relationship between age and handgrip strength: Proposal of*

reference values from infancy to senescence. *Frontiers in Public Health*, 10, 1072684. <https://doi.org/10.3389/FPUBH.2022.1072684/BIBTEX>

González, P., Lozano, P., Ros, G., & Solano, F. (2023). *Hyperglycemia and Oxidative Stress: An Integral, Updated and Critical Overview of Their Metabolic Interconnections*. *International Journal of Molecular Sciences*, 24(11), 9352. <https://doi.org/10.3390/IJMS24119352>

Harlim, A., & Nusantara, Y. A. (2022). *Obesity Prevalence Through Diet and Physical Activity in Medical Faculty Students*. <https://aisyah.journalpress.id/index.php/jika/issue/view/73>

Hasheminasabgorji, E., & Jha, J. C. (2021). *Dyslipidemia, Diabetes and Atherosclerosis: Role of Inflammation and ROS-Redox-Sensitive Factors*. *Biomedicines*, 9(11), 1602. <https://doi.org/10.3390/BIOMEDICINES9111602>

He, Y., Niu, Y., Li, Z., Zhang, R., Chen, Y., Dong, Z., Zheng, Y., Wang, Q., Wang, Y., Zhao, D., Sun, X., Cai, G., Feng, Z., Zhang, W., & Chen, X. (2024). *Arterial stiffness is associated with handgrip strength in relatively healthy Chinese older adults*. *Frontiers in Nutrition*, 11, 1342411. <https://doi.org/10.3389/FNUT.2024.1342411/BIBTEX>

Hébert-Losier, K., Wessman, C., Alricsson, M., & Svantesson, U. (2017). *Updated reliability and normative values for the standing heel-rise test in healthy adults*. *Physiotherapy (United Kingdom)*, 103(4), 446–452. <https://doi.org/10.1016/j.physio.2017.03.002>

Herzog, M. J., Müller, P., Lechner, K., Stiebler, M., Arndt, P., Kunz, M., Ahrens, D., Schmeißer, A., Schreiber, S., & Braun-Dullaeus, R. C. (2025). *Arterial stiffness and vascular aging: mechanisms, prevention, and therapy*. *Signal Transduction and Targeted Therapy* 2025 10:1, 10(1), 282-. <https://doi.org/10.1038/s41392-025-02346-0>

Holwerda, S. W., Luehrs, R. E., Dubose, L., Collins, M. T., Wooldridge, N. A., Stroud, A. K., Fadel, P. J., Abboud, F. M., & Pierce, G. L. (2019). *Elevated muscle sympathetic nerve activity contributes to central artery stiffness in young and middle-age/older adults*. *Hypertension*, 73(5), 1025–1035. <https://doi.org/10.1161/HYPERTENSIONAHA.118.12462>;REQUESTEDJOURNAL:JOURNAL:HYP;PAGE:STRING:ARTICLE/CHAPTER

Huang, L., Liu, Y., Lin, T., Hou, L., Song, Q., Ge, N., & Yue, J. (2022). *Reliability and validity of two hand dynamometers when used by community-dwelling adults aged over 50 years*. *BMC Geriatrics*, 22(1), 1–8. <https://doi.org/10.1186/S12877-022-03270-6/FIGURES/3>

Hwang, C. L., Muchira, J., Hibner, B. A., Phillips, S. A., & Piano, M. R. (2022). *Alcohol Consumption: A New Risk Factor for Arterial Stiffness?* *Cardiovascular Toxicology*, 22(3), 236–245. <https://doi.org/10.1007/S12012-022-09728-8/METRICS>

- Im, I. J., Choi, H. J., Jeong, S. M., Kim, H. J., Son, J. S., & Oh, H. J. (2017). *The association between muscle mass deficits and arterial stiffness in middle-aged men. Nutrition, Metabolism and Cardiovascular Diseases*, 27(12), 1130–1135. <https://doi.org/10.1016/j.numecd.2017.10.002>
- Jennings, A., Berendsen, A. M., De Groot, L. C. P. G. M., Feskens, E. J. M., Brzozowska, A., Sicinska, E., Pietruszka, B., Meunier, N., Caumon, E., Malpuech-Brugère, C., Santoro, A., Ostan, R., Franceschi, C., Gillings, R., O'Neill, C. M., Fairweather-Tait, S. J., Minihane, A. M., & Cassidy, A. (2019). *Mediterranean-style diet improves systolic blood pressure and arterial stiffness in older adults: Results of a 1-year european multi-center trial. Hypertension*, 73(3), 578–586. <https://doi.org/10.1161/HYPERTENSIONAHA.118.12259>,
- Jin, Y. J., Chennupati, R., Li, R., Liang, G., Wang, S. P., Iring, A., Graumann, J., Wettschureck, N., & Offermanns, S. (2021). *Protein kinase N2 mediates flow-induced endothelial NOS activation and vascular tone regulation. The Journal of Clinical Investigation*, 131(21). <https://doi.org/10.1172/JCI145734>
- Keating, X. D., Zhou, K., Liu, X., Hodges, M., Liu, J., Guan, J., Phelps, A., & Castro-Piñero, J. (2019). *Reliability and Concurrent Validity of Global Physical Activity Questionnaire (GPAQ): A Systematic Review. International Journal of Environmental Research and Public Health 2019, Vol. 16, Page 4128, 16(21)*, 4128. <https://doi.org/10.3390/IJERPH16214128>
- Kementerian Kesehatan, & Badan Kebijakan Pembangunan Kesehatan. (2023). *Survei Kesehatan Indonesia*.
- Kim, C. W., Chang, Y., Zhao, D., Cainzos-Achirica, M., Ryu, S., Jung, H. S., Yun, K. E., Choi, Y., Ahn, J., Zhang, Y., Rampal, S., Baek, Y., Lima, J. A., Shin, H., Guallar, E., Cho, J., & Sung, E. (2015). *Sleep duration, sleep quality, and markers of subclinical arterial disease in healthy men and women. Arteriosclerosis, Thrombosis, and Vascular Biology*, 35(10), 2238–2245. <https://doi.org/10.1161/ATVBAHA.115.306110>
- Kim, H. L. (2023). *Arterial stiffness and hypertension. Clinical Hypertension 2023 29:1, 29(1)*, 31-. <https://doi.org/10.1186/S40885-023-00258-1>
- Kim, Y., White, T., Wijndaele, K., Westgate, K., Sharp, S. J., Helge, J. W., Wareham, N. J., & Brage, S. (2018). *The combination of cardiorespiratory fitness and muscle strength, and mortality risk. European Journal of Epidemiology*, 33(10), 953–964. <https://doi.org/10.1007/S10654-018-0384-X>,
- Knak, K. L., Andersen, L. K., Christiansen, I., & Markvardsen, L. K. (2018). *Does grip strength reflect isokinetic muscle strength in lower limbs in patients with chronic inflammatory demyelinating polyneuropathy? Muscle and Nerve*, 58(3), 449–452. <https://doi.org/10.1002/MUS.26136>,

- Kodithuwakku, V., Breslin, M., Hersant, J., Bruno, R.-M., Boutouyrie, P., Urbina, E. M., Gall, S., Climie, R. E., Hidvégi, E., Cziráki, A., Jakab, A., Zócalo, Y., Bia, D., Johansson, M., Nilsson, P., Hanssen, H., Diaz, A., Mels, C., Schutte, A., ... Alvarez-Bueno, C. (2025). *Establishing Reference Values for Pulse Wave Velocity in Young People. Hypertension*. <https://doi.org/10.1161/HYPERTENSIONAHA.125.25007>
- Koenen, M., Hill, M. A., Cohen, P., & Sowers, J. R. (2021). *Obesity, Adipose Tissue and Vascular Dysfunction. Circulation Research*, 128(7), 951. <https://doi.org/10.1161/CIRCRESAHA.121.318093>
- Kok, T., Wiriantono, V., Bakhriansyah, J., & Aditama, L. (2023). *The Factors Affecting the Occurrence of Obesity in College Students. Unnes Journal of Public Health*, 12(1), 71–78. <https://doi.org/10.15294/UJPH.V12I1.56013>
- König, M., Buchmann, N., Seeland, U., Spira, D., Steinhagen-Thiessen, E., & Demuth, I. (2021). *Low muscle strength and increased arterial stiffness go hand in hand. Scientific Reports 2021 11:1*, 11(1), 1–9. <https://doi.org/10.1038/s41598-021-81084-z>
- Kume, D., Nishiwaki, M., Hotta, N., & Endoh, H. (2021). *Acute mental stress-caused arterial stiffening can be counteracted by brief aerobic exercise. European Journal of Applied Physiology 2021 121:5*, 121(5), 1359–1366. <https://doi.org/10.1007/S00421-021-04618-3>
- Kurniawan, A., Widjaja, D., & Lugito, N. P. H. (2018). *Mean and Cutoff Value of Hand Grip Strength For Healthy Indonesian Young Adults. Osteoporosis International*, 29.
- Lacolley, P., Regnault, V., & Laurent, S. (2020). *Mechanisms of Arterial Stiffening: From Mechanotransduction to Epigenetics. Arteriosclerosis, Thrombosis, and Vascular Biology*, 40(5), 1055–1062. <https://doi.org/10.1161/ATVBAHA.119.313129/ASSET/0725F1E2-76F0-4BCC-9F97-10DBDADD84C1/ASSETS/IMAGES/LARGE/ATVBAHA.119.313129.FIG02.JPG>
- Lan, Y., Wu, R., Feng, Y., Khong, T. K., Wang, C., Yusof, A., & Che, G. (2025). *Effects of Exercise on Arterial Stiffness: Mechanistic Insights into Peripheral, Central, and Systemic Vascular Health in Young Men*. In *Metabolites* (Vol. 15, Issue 3). Multidisciplinary Digital Publishing Institute (MDPI). <https://doi.org/10.3390/metabo15030166>
- Le Master, E., Ahn, S. J., & Levitan, I. (2020). *Mechanisms of endothelial stiffening in dyslipidemia and aging: Oxidized lipids and shear stress. Current Topics in Membranes*, 86, 185. <https://doi.org/10.1016/BS.CTM.2020.08.006>
- Leloup, A. J. A., Van Hove, C. E., Heykers, A., Schrijvers, D. M., De Meyer, G. R. Y., & Franssen, P. (2015). *Elastic and muscular arteries differ in structure,*

basal NO production and voltage-gated Ca²⁺-channels. Frontiers in Physiology, 6(DEC), 166501.
<https://doi.org/10.3389/FPHYS.2015.00375/BIBTEX>

Leong, D. P., Teo, K. K., Rangarajan, S., Kutty, V. R., Lanas, F., Hui, C., Quanyong, X., Zhenzhen, Q., Jinhua, T., Noorhassim, I., AlHabib, K. F., Moss, S. J., Rosengren, A., Akalin, A. A., Rahman, O., Chifamba, J., Orlandini, A., Kumar, R., Yeates, K., ... Yusuf, S. (2016). *Reference ranges of handgrip strength from 125,462 healthy adults in 21 countries: a prospective urban rural epidemiologic (PURE) study. Journal of Cachexia, Sarcopenia and Muscle*, 7(5), 535–546.
<https://doi.org/10.1002/JCSM.12112;ISSUE:ISSUE:DOI>

Leong, D. P., Teo, K. K., Rangarajan, S., Lopez-Jaramillo, P., Avezum, A., Orlandini, A., Seron, P., Ahmed, S. H., Rosengren, A., Kelishadi, R., Rahman, O., Swaminathan, S., Iqbal, R., Gupta, R., Lear, S. A., Oguz, A., Yusoff, K., Zatonska, K., Chifamba, J., ... Yusuf, S. (2015). *Prognostic value of grip strength: Findings from the Prospective Urban Rural Epidemiology (PURE) study. The Lancet*, 386(9990), 266–273. [https://doi.org/10.1016/S0140-6736\(14\)62000-6](https://doi.org/10.1016/S0140-6736(14)62000-6)

Li, A., Yan, J., Zhao, Y., Yu, Z., Tian, S., Khan, A. H., Zhu, Y., Wu, A., Zhang, C., & Tian, X. L. (2023). *Vascular Aging: Assessment and Intervention. Clinical Interventions in Aging*, 18, 1373. <https://doi.org/10.2147/CIA.S423373>

Li, S., Wang, P., Cai, Z., Jiang, W., Xin, X., Wang, X., & Zhou, X. (2023). *Correlates of physical activity levels, muscle strength, working memory, and cognitive function in older adults. Frontiers in Aging Neuroscience*, 15, 1283864. <https://doi.org/10.3389/FNAGI.2023.1283864/BIBTEX>

Lima, N. S., Jackson, R. E., Hibner, B. A., Sherman, S. R., Fernhall, B., Baynard, T., Crandall, C., Phillips, S. A., Zejnollahi, R., & Clifford, P. S. (2025). *Mechanisms of exercise-induced reduction in peripheral arterial stiffness. European Journal of Applied Physiology* 2025, 1–10.
<https://doi.org/10.1007/S00421-025-05821-2>

Lima-Junior, D. de, Farah, B. Q., Germano-Soares, A. H., Andrade-Lima, A., Silva, G. O., Rodrigues, S. L. C., & Ritti-Dias, R. (2019). *Association between handgrip strength and vascular function in patients with hypertension. Clinical and Experimental Hypertension*, 41(7), 692–695.
<https://doi.org/10.1080/10641963.2018.1539096>,

Lovett, R. W., & Martin, E. G. (1916). *Certain Aspects of Infantile Paralysis: With a Description of A Method of Muscle Testing. Journal of the American Medical Association*, LXVI(10), 729–733.
<https://doi.org/10.1001/JAMA.1916.02580360031009>

Lu, Y., Kiechl, S. J., Wang, J., Xu, Q., Kiechl, S., Pechlaner, R., Aguilar, D., Al-Hashmi, K. M., Alvim, R. O., Al-Zakwani, I. S., Antza, C., Cicero, A. F. G.,

- Avramovska, M., Avramovski, P., Baek, H. J., Bäck, M., Bailey, K., Baldo, M. P., Batista, R. F. L., ... Zócalo, Y. (2023). *Global distributions of age- and sex-related arterial stiffness: systematic review and meta-analysis of 167 studies with 509,743 participants*. *EBioMedicine*, 92, 104619. <https://doi.org/10.1016/j.ebiom.2023.104619>
- Mancia, G., Kreutz, R., Brunström, M., Burnier, M., Grassi, G., Januszewicz, A., Muiesan, M. L., Tsioufis, K., Agabiti-Rosei, E., Algharably, E. A. E., Azizi, M., Benetos, A., Borghi, C., Hitij, J. B., Cifkova, R., Coca, A., Cornelissen, V., Cruickshank, J. K., Cunha, P. G., ... Kjeldsen, S. E. (2023). *2023 ESH Guidelines for the management of arterial hypertension the Task Force for the management of arterial hypertension of the European Society of Hypertension: Endorsed by the International Society of Hypertension (ISH) and the European Renal Association (ERA)*. *Journal of Hypertension*, 41(12), 1874–2071. <https://doi.org/10.1097/HJH.0000000000003480>
- Maruhashi, T., Kajikawa, M., Kishimoto, S., Takaeko, Y., Yamaji, T., Harada, T., Hashimoto, Y., Han, Y., Aibara, Y., Yusoff, F. M., Chayama, K., Nakashima, A., Goto, C., Nakano, Y., & Higashi, Y. (2021). *Volume Elastic Modulus, Vascular Function, and Vascular Structure in Patients with Cardiovascular Risk Factors*. *Journal of Atherosclerosis and Thrombosis*, 28(9), 963–973. <https://doi.org/10.5551/JAT.59261>
- McGrath, R., Cawthon, P. M., Clark, B. C., Fielding, R. A., Lang, J. J., & Tomkinson, G. R. (2022). *Recommendations for Reducing Heterogeneity in Handgrip Strength Protocols*. *The Journal of Frailty & Aging*, 11(2), 143–150. <https://doi.org/10.14283/JFA.2022.21>
- MEDICORE. (2022). Interpretasi dan Pembacaan Hasil *Heart rate Variability* dan *Accelerated Plethysmograph*.
- Meher, M., Pradhan, S., & Pradhan, S. R. (2023). *Risk Factors Associated With Hypertension in Young Adults: A Systematic Review*. *Cureus*, 15(4). <https://doi.org/10.7759/CUREUS.37467>
- Monteiro, C. I., Simões, R. P., Goulart, C. L., da Silva, C. D., Borghi-Silva, A., & Mendes, R. G. (2021). *Arterial stiffness in type 2 diabetes: Determinants and indication of a discriminative value*. *Clinics*, 76. <https://doi.org/10.6061/CLINICS/2021/E2172>
- Munakata, M. (2016). *Brachial-Ankle Pulse Wave Velocity: Background, Method, and Clinical Evidence*. *Pulse (Basel, Switzerland)*, 3(3–4), 195–204. <https://doi.org/10.1159/000443740>
- Münzel, T., Hahad, O., Kuntic, M., Keaney, J. F., Deanfield, J. E., & Daiber, A. (2020). *Effects of tobacco cigarettes, e-cigarettes, and waterpipe smoking on endothelial function and clinical outcomes*. *European Heart Journal*, 41(41), 4057–4070. <https://doi.org/10.1093/EURHEARTJ/EHAA460>

- Murakami, T., Asai, K., Kadono, Y., Nishida, T., Nakamura, H., & Kishima, H. (2019). *Assessment of arterial stiffness index calculated from accelerated photoplethysmography*. *Artery Research*, 25(1–2), 37–40. <https://doi.org/10.2991/ARTRES.K.191120.001/METRICS>
- Najman, J. M., Kisely, S., Scott, J. G., Ushula, T. W., Williams, G. M., Clavarino, A. M., McGee, T. R., Mamun, A. A., & Wang, W. Y. S. (2024). *Gender differences in cardiovascular disease risk: Adolescence to young adulthood*. *Nutrition, Metabolism and Cardiovascular Diseases*, 34(1), 98–106. <https://doi.org/10.1016/j.numecd.2023.09.024>
- O’Connell, D. G., O’Connell, J. K., & Hinman, M. R. (2023). *Ankle Brachial Index. Special Tests of the Cardiopulmonary, Vascular, and Gastrointestinal Systems*, 170–173. <https://doi.org/10.1201/9781003526506-65>
- Ogola, B. O., Zimmerman, M. A., Clark, G. L., Abshire, C. M., Gentry, K. M., Miller, K. S., & Lindsey, S. H. (2018). *New insights into arterial stiffening: does sex matter?* *American Journal of Physiology - Heart and Circulatory Physiology*, 315(5), H1073. <https://doi.org/10.1152/AJPHEART.00132.2018>
- Otsuki, T., Namatame, H., Yoshikawa, T., & Zempo-Miyaki, A. (2020). *Combined aerobic and low-intensity resistance exercise training increases basal nitric oxide production and decreases arterial stiffness in healthy older adults*. *Journal of Clinical Biochemistry and Nutrition*, 66(1), 62–66. <https://doi.org/10.3164/JCBN.19-81>
- Palombo, C., & Kozakova, M. (2016). *Arterial stiffness, atherosclerosis and cardiovascular risk: Pathophysiologic mechanisms and emerging clinical indications*. *Vascular Pharmacology*, 77, 1–7. <https://doi.org/10.1016/J.VPH.2015.11.083>
- Raihan, M. P., Citrawati, M., Kristanti, M., & Lardo, S. (2025). *Pengaruh Indeks Massa Tubuh terhadap Handgrip Strength pada Mahasiswa FK UPNVJ Tahun 2023*. *Jurnal Ilmu Kesehatan Masyarakat*, 14(02), 68–74. <https://doi.org/10.33221/JIKM.V14I02.3483>
- Park, J., Seok, H. S., Kim, S. S., & Shin, H. (2022). *Photoplethysmogram Analysis and Applications: An Integrative Review*. *Frontiers in Physiology*, 12, 808451. <https://doi.org/10.3389/FPHYS.2021.808451/XML/NLM>
- Peres, D., Mourot, L., Ménétrier, A., Bouhaddi, M., Degano, B., Regnard, J., & Tordi, N. (2018). *Intermittent versus constant aerobic exercise in middle-aged males: acute effects on arterial stiffness and factors influencing the changes*. *European Journal of Applied Physiology*, 118(8), 1625–1633. <https://doi.org/10.1007/s00421-018-3893-0>
- Pilz, N., Heinz, V., Ax, T., Fessler, L., Patzak, A., & Bothe, T. L. (2024). *Pulse Wave Velocity: Methodology, Clinical Applications, and Interplay with Heart*

Rate Variability. Reviews in Cardiovascular Medicine, 25(7), 266.
<https://doi.org/10.31083/J.RCM2507266>

- Pinto Pereira, S. M., Garfield, V., Farmaki, A. E., Tomlinson, D. J., Norris, T., Fatemifar, G., Denaxas, S., Finan, C., & Cooper, R. (2022). *Adiposity and grip strength: a Mendelian randomisation study in UK Biobank. BMC Medicine*, 20(1), 1–12. <https://doi.org/10.1186/S12916-022-02393-2/FIGURES/3>
- Pomeroy, A., Pagan Lassalle, P., Kline, C. E., Heffernan, K. S., Meyer, M. L., & Stoner, L. (2023). *The relationship between sleep duration and arterial stiffness: A meta-analysis. Sleep Medicine Reviews*, 70, 101794. <https://doi.org/10.1016/J.SMRV.2023.101794>
- Pratiwi. (2019). Hubungan Antara Kebiasaan Konsumsi Fast Food, Aktivitas Fisik dan Kejadian Obesitas di Desa Nyitdah Kabupaten Tabanan. *Poltekkes Denpasar*.
- Pua, Y. H., Tay, L., Clark, R. A., Thumboo, J., Tay, E. L., Mah, S. M., & Ng, Y. S. (2023). *Associations of height, weight, and body mass index with handgrip strength: A Bayesian comparison in older adults. Clinical Nutrition ESPEN*, 54, 206–210. <https://doi.org/10.1016/j.clnesp.2023.01.028>
- Rabkin, S. W., Chan, S. H., & Sweeney, C. (2012). *Ankle–Brachial Index as an Indicator of Arterial Stiffness in Patients Without Peripheral Artery Disease. Angiology*, 63(2), 150–154. <https://doi.org/10.1177/0003319711410307>
- Rao, W. W., Li, W., Qi, H., Hong, L., Chen, C., Li, C. Y., Ng, C. H., Ungvari, G. S., & Xiang, Y. T. (2020). *Sleep quality in medical students: a comprehensive meta-analysis of observational studies. Sleep and Breathing* 2020 24:3, 24(3), 1151–1165. <https://doi.org/10.1007/S11325-020-02020-5>
- Rehman, K., & Akash, M. S. H. (2016). *Mechanisms of inflammatory responses and development of insulin resistance: how are they interlinked? Journal of Biomedical Science* 2016 23:1, 23(1), 1–18. <https://doi.org/10.1186/S12929-016-0303-Y>
- Rethemiotaki, I. (2023). *Global prevalence of cardiovascular diseases by gender and age during 2010–2019. Archives of Medical Sciences. Atherosclerotic Diseases*, 8(1), e196. <https://doi.org/10.5114/AMSAD/176654>
- Riskawati, Y. K., Savitri, K. A., Ramdani, P. R., & Mufid, A. F. (2020). Hubungan Tingkat Aktivitas Fisik dengan Indeks Massa Tubuh Mahasiswa Program Studi Sarjana Kedokteran Fakultas Kedokteran Universitas Brawijaya. *Majalah Kesehatan*, 7(4), 231–238. <https://doi.org/10.21776/UB.MAJALAHKESEHATAN.2020.007.04.3>
- Roberts, H. C., Denison, H. J., Martin, H. J., Patel, H. P., Syddall, H., Cooper, C., & Sayer, A. A. (2011). *A review of the measurement of grip strength in clinical*

and epidemiological studies: Towards a standardised approach. *Age and Ageing*, 40(4), 423–429. <https://doi.org/10.1093/AGEING/AFR051>,

Roman, N. A., Miclaus, R. S., Nicolau, C., & Sechel, G. (2022). *Customized Manual Muscle Testing for Post-Stroke Upper Extremity Assessment*. *Brain Sciences* 2022, Vol. 12, Page 457, 12(4), 457. <https://doi.org/10.3390/BRAINSKI12040457>

Rong, Y. D., Bian, A. L., Hu, H. Y., Ma, Y., & Zhou, X. Z. (2020). *A cross-sectional study of the relationships between different components of sarcopenia and brachial ankle pulse wave velocity in community-dwelling elderly*. *BMC Geriatrics*, 20(1), 1–8. <https://doi.org/10.1186/S12877-020-01525-8/TABLES/4>

Saz-Lara, A., Bruno, R. M., Cavero-Redondo, I., Álvarez-Bueno, C., Notario-Pacheco, B., & Martínez-Vizcaíno, V. (2022). *Association Between Arterial Stiffness and Blood Pressure Progression With Incident Hypertension: A Systematic Review and Meta-Analysis*. *Frontiers in Cardiovascular Medicine*, 9, 798934. <https://doi.org/10.3389/FCVM.2022.798934/FULL>

Saz-Lara, A., Cavero-Redondo, I., Álvarez-Bueno, C., Notario-Pacheco, B., Ruiz-Grao, M. C., & Martínez-Vizcaíno, V. (2021). *The Acute Effect of Exercise on Arterial Stiffness in Healthy Subjects: A Meta-Analysis*. *Journal of Clinical Medicine* 2021, Vol. 10, Page 291, 10(2), 291. <https://doi.org/10.3390/JCM10020291>

Saz-Lara, A., Lucerón-Lucas-Torres, M., Mesas, A. E., Notario-Pacheco, B., López-Gil, J. F., & Cavero-Redondo, I. (2022). *Association between sleep duration and sleep quality with arterial stiffness: A systematic review and meta-analysis*. *Sleep Health*, 8(6), 663–670. <https://doi.org/10.1016/J.SLEH.2022.07.001>

Severinsen, M. C. K., & Pedersen, B. K. (2020). *Muscle–Organ Crosstalk: The Emerging Roles of Myokines*. *Endocrine Reviews*, 41(4), 594–609. <https://doi.org/10.1210/ENDREV/BNAA016>

Sherwood, L. (2016). *Human physiology: from cells to systems* (9th ed.). Cengage Learning.

Shibata, T., Mok, Y., Ballew, S. H., Tanaka, H., & Matsushita, K. (2025). *Peripheral vs. Central Arterial Stiffness and Cardiovascular Events in Older Adults: The Atherosclerosis Risk in Communities (ARIC) study*. *European Journal of Preventive Cardiology*. <https://doi.org/10.1093/EURJPC/ZWAF545>

Skogstad, M., Aass, H. C. D., Sirnes, P. A., Mamen, A., Skare, Ø., Matre, D., Hammer, S. E., Goffeng, E., & Lunde, L. K. (2022). *Influence of Shift Work on Arterial Stiffness and Systemic Inflammation: A 3-Year Follow-up Study in*

Industry. Journal of Occupational and Environmental Medicine, 65(4), 284.
<https://doi.org/10.1097/JOM.0000000000002779>

Stanek, A., Grygiel-Górniak, B., Brożyna-Tkaczyk, K., Myśliński, W., Cholewka, A., & Zolghadri, S. (2023). *The Influence of Dietary Interventions on Arterial Stiffness in Overweight and Obese Subjects. Nutrients* 2023, Vol. 15, Page 1440, 15(6), 1440. <https://doi.org/10.3390/NU15061440>

Suharni, S., Daffa Putra Dianto, & Alief Dhuha. (2025). Korelasi Indeks Massa Tubuh dengan Kekuatan Genggaman Tangan pada Mahasiswa Fakultas Kedokteran Universitas Baiturrahmah. *Nusantara Hasana Journal*, 5(3), 315–333. <https://doi.org/10.59003/nhj.v5i3.1605>

Szaló, G., Hellgren, M., Allison, M., Råstam, L., Lindblad, U., & Daka, B. (2021). *Longitudinal association between leisure-time physical activity and vascular elasticity indices. BMC Cardiovascular Disorders*, 21(1). <https://doi.org/10.1186/S12872-021-01911-Z>,

Takazawa, K., Tanaka, N., Fujita, M., Matsuoka, O., Saiki, T., Aikawa, M., Tamura, S., & Ibukiyama, C. (1998). *Assessment of vasoactive agents and vascular aging by the second derivative of photoplethysmogram waveform. Hypertension*, 32(2), 365–370. <https://doi.org/10.1161/01.HYP.32.2.365/ASSET/A407EE18-3F11-4B33-A36A-D624FD713875/ASSETS/GRAPHIC/HY0880587005.JPEG>

Tomkinson, G. R., Lang, J. J., Rubín, L., McGrath, R., Gower, B., Boyle, T., Klug, M. G., Mayhew, A. J., Blake, H. T., Ortega, F. B., Cadenas-Sanchez, C., Magnussen, C. G., Fraser, B. J., Kidokoro, T., Liu, Y., Christensen, K., Leong, D. P., Aadahl, M., Abdin, E., ... Yu, R. (2025). *International norms for adult handgrip strength: A systematic review of data on 2.4 million adults aged 20 to 100+ years from 69 countries and regions. Journal of Sport and Health Science*, 14, 101014. <https://doi.org/10.1016/J.JSHS.2024.101014>

Tortora, G. J., & Derrickson, B. (2017). *Principles of anatomy and physiology* (15th ed.). Wiley.

Tucker, W. D., Arora, Y., & Mahajan, K. (2023). *Anatomy, Blood Vessels. StatPearls*. <https://www.ncbi.nlm.nih.gov/books/NBK470401/>

Vasan, R. S., Pan, S., Xanthakis, V., Beiser, A., Larson, M. G., Seshadri, S., & Mitchell, G. F. (2022). *Arterial Stiffness and Long-Term Risk of Health Outcomes: The Framingham Heart Study. Hypertension*, 79(5), 1045–1056. https://doi.org/10.1161/HYPERTENSIONAHA.121.18776/SUPPL_FILE/HYP_HYPE-2021-18776_SUPP3.PDF

Vlachopoulos, C., Aznaouridis, K., & Stefanadis, C. (2010). *Prediction of Cardiovascular Events and All-Cause Mortality With Arterial Stiffness: A Systematic Review and Meta-Analysis. Journal of the American College of Cardiology*, 55(13), 1318–1327. <https://doi.org/10.1016/J.JACC.2009.10.061>

- Wakeham, D. J., Pierce, G. L., & Heffernan, K. S. (2025). *Effect of Acute Resistance Exercise and Resistance Exercise Training on Central Pulsatile Hemodynamics and Large Artery Stiffness: Part II*. *Pulse*, 13(1), 45–61. <https://doi.org/10.1159/000543314>
- World Health Organization. (2012). *Global Physical Activity Questionnaire Analysis Guide GPAQ Analysis Guide Global Physical Activity Questionnaire (GPAQ) Analysis Guide*. <http://www.who.int/chp/steps/GPAQ/en/index.html>
- World Health Organization. (2021, June 11). *Cardiovascular diseases (CVDs)*. <https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-%28cvds%29>
- Wu, Y., Wang, W., Liu, T., & Zhang, D. (2017). *Association of Grip Strength With Risk of All-Cause Mortality, Cardiovascular Diseases, and Cancer in Community-Dwelling Populations: A Meta-analysis of Prospective Cohort Studies*. *Journal of the American Medical Directors Association*, 18(6), 551.e17-551.e35. <https://doi.org/10.1016/J.JAMDA.2017.03.011>
- Yehorov, K. (2024). *Gender differences in the elastic properties of the arterial wall in patients with arterial hypertension during the age-related evolution*. *ScienceRise: Medical Science*, 2(59), 4–13. <https://doi.org/10.15587/2519-4798.2024.306857>
- Yerly, A., van der Vorst, E. P. C., Baumgartner, I., Bernhard, S. M., Schindewolf, M., & Döring, Y. (2023). *Sex-specific and hormone-related differences in vascular remodelling in atherosclerosis*. *European Journal of Clinical Investigation*, 53(1), e13885. <https://doi.org/10.1111/ECI.13885>;CTYPE:STRING:JOURNAL
- Yu, S., & McEniery, C. M. (2020). *Central Versus Peripheral Artery Stiffening and Cardiovascular Risk*. *Arteriosclerosis, Thrombosis, and Vascular Biology*, 40(5), 1028–1033. <https://doi.org/10.1161/ATVBAHA.120.313128/ASSET/EA10D670-1440-4640-AAFF-F9A5141EA8BC/ASSETS/IMAGES/LARGE/ATVBAHA.120.313128.FIG01.JPG>
- Zaccagni, L., Toselli, S., Bramanti, B., Gualdi-Russo, E., Mongillo, J., & Rinaldo, N. (2020). *Handgrip Strength in Young Adults: Association with Anthropometric Variables and Laterality*. *International Journal of Environmental Research and Public Health* 2020, Vol. 17, Page 4273, 17(12), 4273. <https://doi.org/10.3390/IJERPH17124273>
- Zhang, F., Luo, B., Bai, Y., Zhang, Y., Huang, L., & Lu, W. (2024). *Association of handgrip strength and risk of cardiovascular disease: a population-based cohort study*. *Aging Clinical and Experimental Research*, 36(1). <https://doi.org/10.1007/S40520-024-02856-X>,

- Zhang, Y., Miyai, N., Abe, K., Utsumi, M., Uematsu, Y., Terada, K., Nakatani, T., Takeshita, T., & Arita, M. (2020). *Muscle mass reduction, low muscle strength, and their combination are associated with arterial stiffness in community-dwelling elderly population: the Wakayama Study*. *Journal of Human Hypertension* 2020 35:5, 35(5), 446–454. <https://doi.org/10.1038/s41371-020-0355-z>
- Zieff, G., Sharma, N., Stone, K., Pagan Lassalle, P., Chantry, A. J., Hanson, E. D., Meyer, M. L., Battaglini, C., Moore, J. B., Paterson, C., & Stoner, L. (2025). *Acute Psychological Stress and Pulse Wave Velocity: Meta-Analysis and Recommendations for Future Research*. *Psychophysiology*, 62(5). <https://doi.org/10.1111/PSYP.70068>