B”SD

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**ABSI and Inflammation, GI, Pulmonary, Renal, and Others**

**ABSI references to 3/24:**[**https://drjessekrakauer.com/absi.html**](https://drjessekrakauer.com/absi.html)

**https://en.wikipedia.org/wiki/Body\_shape\_index**

**ABSI = WC weight-2/3height5/6 = WC/(BMI2/3height1/2)**

**Inflammation**

**Christakoudi, S., Riboli, E., Evangelou, E. *et al.* Associations of body shape index (ABSI) and hip index with liver, metabolic, and inflammatory biomarkers in the UK Biobank cohort. *Sci Rep* 12, 8812 (2022).** [**https://doi.org/10.1038/s41598-022-12284-4**](https://doi.org/10.1038/s41598-022-12284-4)

# Lee M-R, Jung SM. Serum Folate Related to Five Measurements of Obesity and High-Sensitivity C-Reactive Protein in Korean Adults. Nutrients. 2022; 14(17):3461 “folate level showed a significant inverse association with obesity and inflammatory biomarkers, especially in the middle-aged group”

**Clark DO, Unroe KT, Xu H, Keith NR, Callahan CM, Tu W. Sex and Race Differences in the Relationship between Obesity and C-Reactive Protein. Ethn Dis. 2016 Apr 21;26(2):197-204. doi: 10.18865/ed.26.2.197**

**Christakoudi S, Tsilidis KK, Evangelou E, Riboli E. Sex differences in the associations of body size and body shape with platelets in the UK Biobank cohort. Biol Sex Differ. 2023 Feb 22;14(1):12. doi: 10.1186/s13293-023-00494-y. PMID: 36814334; PMCID: PMC9945692.**

**Mirzababaei A, Abaj F, Khosravinia D, Ghorbani M, Valisoltani N, Clark CCT, Radmehr M, Mirzaei K. The mediatory effect of inflammatory markers on the association between a body shape index and body roundness index with cardiometabolic risk factor in overweight and obese women: a cross-sectional study. Front Nutr. 2023 Jun 9;10:1178829. doi: 10.3389/fnut.2023.1178829. PMID: 37360300; PMCID: PMC10288880.**

# Lee M-R, Jung SM. Serum Folate Related to Five Measurements of Obesity and High-Sensitivity C-Reactive Protein in Korean Adults. Nutrients. 2022; 14(17):3461 “folate level showed a significant inverse association with obesity and inflammatory biomarkers, especially in the middle-aged group”

**Sánchez-Bacaicoa C, Santano-Mogena E, Rico-Martín S, Rey-Sánchez P, Juárez-Vela R, Sánchez Muñoz-Torrero JF, López-Espuela F, Calderón-García JF. Association between Asymptomatic Hyperuricemia with Adiposity Indices: A Cross-Sectional Study in a Spanish Population. Nutrients. 2023 Nov**

**Clark DO, Unroe KT, Xu H, Keith NR, Callahan CM, Tu W. Sex and Race Differences in the Relationship between Obesity and C-Reactive Protein. Ethn Dis. 2016 Apr 21;26(2):197-204. doi: 10.18865/ed.26.2.197**

**Tylutka A, Morawin B, Walas Ł, Zembron-Lacny A. Does excess body weight accelerate immune aging? Exp Gerontol. 2024 Feb 15;187:112377. doi: 10.1016/j.exger.2024.112377. Epub ahead of print. PMID: 38346543**

**GI - Hepatobiliary**

**Eom BW, Joo J, Yoon HM, Ryu KW, Kim YW, Lee JH. A body shape index has a good correlation with postoperative complications in gastric cancer surgery. Ann Surg Oncol. 2014 Apr;21(4):1115-22. doi: 10.1245/s10434-013-3409-4. Epub 2013 Dec 4. PMID: 24306666.**

**Gurecká R, Koborová I, Šebek J, Šebeková K. Presence of Cardiometabolic Risk Factors Is Not Associated with Microalbuminuria in 14-to-20-Years Old Slovak Adolescents: A Cross-Sectional, Population Study. PLoS One. 2015 Jun 5;10(6):e0129311. doi: 10.1371/journal.pone.0129311. PMID: 26046923; PMCID: PMC4489371.**

**Motamed N, Rabiee B, Hemasi GR, Ajdarkosh H, Khonsari MR, Maadi M, Keyvani H, Zamani F. Body Roundness Index and Waist-to-Height Ratio are Strongly Associated With Non-Alcoholic Fatty Liver Disease: A Population-Based Study. Hepat Mon. 2016 Aug 14;16(9):e39575. doi: 10.5812/hepatmon.39575. PMID: 27822266; PMCID: PMC5091031.(Table 3)**

**Chen S, Guo X, Yu S, Zhou Y, Li Z, Sun Y. Anthropometric Indices in Adults: Which Is the Best Indicator to Identify Alanine Aminotransferase Levels? Int J Environ Res Public Health. 2016 Feb 18;13(2):226. doi: 10.3390/ijerph13020226. PMID: 26901214; PMCID: PMC4772246. (ABSI men = women sic)**

**Ratti F, D'Alessandro V, Cipriani F, Giannone F, Catena M, Aldrighetti L. Influence of body habitus on feasibility and outcome of laparoscopic liver resections: a prospective study. J Hepatobiliary Pancreat Sci. 2016 Jun;23(6):373-81. doi: 10.1002/jhbp.350. Epub 2016 May 3. PMID: 27037539.**

**Park JK, Lim Y, Lee H, Kim TJ, Choi YH, Min YW, Min BH, Lee JH, Rhee PL, Kim JJ. Comparison of anthropometric measurements associated with the risk of endoscopic erosive esophagitis: A cross-sectional study. Obes Res Clin Pract. 2017 Nov-Dec;11(6):694-702. doi: 10.1016/j.orcp.2017.04.005. Epub 2017 Apr 25. PMID: 28455224.**

**Wang H, Zhang Y, Liu Y, Li H, Xu R, Fu H, Yan C, Qu B. Comparison between traditional and new obesity measurement index for screening metabolic associated fatty liver disease. Front Endocrinol (Lausanne). 2023 Apr 21;14:1163682. doi: 10.3389/fendo.2023.1163682. PMID: 37152940; PMCID: PMC10160459.**

# Santos CML, Brito MD, Castro PASV, Vries TP, Viana NL, Coelho MPP, Malheiro OB, Bering T, Gonzalez MC, Teixeira R, Cambraia RD, Rocha GA, Silva LD. Metabolic-associated fatty liver disease is associated with low muscle mass and strength in patients with chronic hepatitis B. World J Hepatol 2022; 14(8): 1652-1666 [DOI: [10.4254/wjh.v14.i8.1652](https://dx.doi.org/10.4254/wjh.v14.i8.1652)] (High ABSI and FattyLD remained positively and independently associated with low HGS in the univariate analysis)

**Boncan DAT, Yu Y, Zhang M, Lian J, Vardhanabhuti V. Machine learning prediction of hepatic steatosis using body composition parameters: A UK Biobank Study. NPJ Aging. 2024 Jan 9;10(1):4. doi: 10.1038/s41514-023-00127-z. PMID: 38195699; PMCID: PMC10776620. Has HI – protective!**

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**Pulmonary**

**Godoroja DD, Cioc DA. Identification of significant obstructive sleep apnoea in the obese patient: development of the novel DX-OSA score. Rom J Anaesth Intensive Care. 2016 Oct;23(2):111-121. doi: 10.21454/rjaic.7518/232.dxo. PMID: 28913484; PMCID: PMC5505384. Annotation (ROC with ABSI weak relationship but could be augmented by BMI- which gave highest association – No referemce)**

# Kolena B, Petrovičová I, Šidlovská M, Hlisníková H, Bystričanová L, Wimmerová S, Trnovec T. Occupational Hazards and Risks Associated with Phthalates among Slovakian Firefighters. Int J Environ Res Public Health. 2020 Apr 5;17(7):2483. doi: 10.3390/ijerph17072483. PMID: 32260494; PMCID: PMC7178246. Annotation “We observed a positive association between phthalate metabolites ) and waist-to-hip ratio (WHR; *p* = 0.003-0.09) and body shape index (ABSI; *p* = 0.039-0.09) …exposure to phthalates could be linked with changing body structure, which subsequently affects values of pulmonary functions in firefighters.”

**Soltanifar M, Karunanayake C, Khadka D, Henderson R, Konehnck N, et al. (2019) Is A Body Shape Index (ABSI) Predictive of Lung Function?. Int J Respir Pulm Med 6:101. doi.org/10.23937/2378-3516/1410101 Annotation; “ABSI may be considered as a key predictor for spirometric lung functions in men and women for Canadian First Nation Populations with more significant results in men.”**

# Zhang RH, Zhou JB, Cai YH, Shu LP, Yang J, Wei W, Lecube A. Non-linear association of anthropometric measurements and pulmonary function. Sci Rep. 2021 Jul 16;11(1):14596. doi: 10.1038/s41598-021-93985-0. PMID: 34272443.

# Annotation “Furthermore, the associations between BMI and FEV1, as well as FVC, were reversed U-shape in both males and females. Similar non-linear association shape occurred in WC, PBF, BRI and ABSI. “

**Davis TME, Drinkwater JJ, Davis WA. Pulmonary Function Trajectories Over 6 Years and Their Determinants in Type 2 Diabetes: The Fremantle Diabetes Study Phase II. Diabetes Care. 2024 Jan 11:dc231726. doi: 10.2337/dc23-1726. Epub ahead of print. PMID: 38211617. See supplement for BMI, ABSI and PFT**

**Mona El-Awady, Neveen Abed, A Body Shape Index Versus Body Mass Index in the Assessment of Nutritional Status Among Egyptian Primary School Children Infected with Intestinal Helminthiasis, *Science Journal of Public Health*. Special Issue:Malnutrition in Developing Countries. Vol. 5, No. 5-1, 2017, pp. 13-18. doi: 10.11648/j.sjph.s.2017050501.13**

**Hatami H, Montazeri SA, Hashemi N, Ramezani Tehrani F. Optimal Cutoff Points for Anthropometric Variables to Predict Insulin Resistance in Polycystic Ovary Syndrome. Int J Endocrinol Metab. 2017 Jul 30;15(4):e12353. doi: 10.5812/ijem.12353. PMID: 29344030; PMCID: PMC5750677.**

**Amador C, Xia C, Nagy R, Campbell A, Porteous D, Smith BH, Hastie N, Vitart V, Hayward C, Navarro P, Haley CS. Regional variation in health is predominantly driven by lifestyle rather than genetics. Nat Commun. 2017 Oct 6;8(1):801. doi: 10.1038/s41467-017-00497-5. PMID: 28986520; PMCID: PMC5630587.**

**Cansanção K, Silva Monteiro L, Carvalho Leite N, Dávalos A, Tavares do Carmo MDG, Arantes Ferreira Peres W. Advanced Liver Fibrosis Is Independently Associated with Palmitic Acid and Insulin Levels in Patients with Non-Alcoholic Fatty Liver Disease. Nutrients. 2018 Oct 29;10(11):1586. doi: 10.3390/nu10111586. PMID: 30380656; PMCID: PMC6266910. (absi ns)**

**Davis TME, Peters KE, Chubb SAP, Adams LA, Jeffrey GP, Davis WA. Changes in the Epidemiology of Hepatobiliary Disease Complicating Type 2 Diabetes over 25 Years: The Fremantle Diabetes Study. J Clin Med. 2020 Oct 24;9(11):3409. doi: 10.3390/jcm9113409. PMID: 33114323; PMCID: PMC7690874. (table 5)**

**Zhang Y, Li B, Liu N, Wang P, He J. Evaluation of Different Anthropometric Indicators for Screening for Nonalcoholic Fatty Liver Disease in Elderly Individuals. Int J Endocrinol. 2021 Jan 27;2021:6678755. doi: 10.1155/2021/6678755. PMID: 33574841; PMCID: PMC7861948. (nil for absi?)**

**Renal**

**Su W-Y, Chen I-H, Gau Y-C, Wu P-Y, Huang J-C, Tsai Y-C, Chen S-C, Chang J-M, Hwang S-J, Chen H-C. Metabolic Syndrome and Obesity-Related Indices Are Associated with Rapid Renal Function Decline in a Large Taiwanese Population Follow-Up Study. Biomedicines. 2022; 10(7):1744.**

**Zhang Y, Gao W, Li B, Liu Y, Chen K, Wang A, Tang X, Yan L, Luo Z, Qin G, Chen L, Wan Q, Gao Z, Wang W, Ning G, Mu Y. The association between a body shape index and elevated urinary albumin-creatinine ratio in Chinese community adults. Front Endocrinol (Lausanne). 2022 Jul 28;13:955241. doi: 10.3389/fendo.2022.955241. PMID: 35966103; PMCID: PMC9365939.**

# Sun Y, Yan Y, Liao Y, Chu C, Guo T, Ma Q, Wang Y, Wang D, Jia H, Mu J. The new visceral adiposity index outperforms traditional obesity indices as a predictor of subclinical renal damage in Chinese individuals: a cross-sectional study. BMC Endocr Disord. 2023 Apr 7;23(1):78. doi: 10.1186/s12902-023-01330-5. PMID: 37029402; PMCID: PMC10080835.

**Kjaergaard AD, Krakauer J, Krakauer N, Teumer A, Winkler TW, Ellervik C. Allometric body shape indices, T2D and kidney function: A two-sample Mendelian randomization study. Diabetes Obes Metab. 2023 Feb 28. doi: 10.1111/dom.15037. Epub ahead of print. PMID: 36855799.**

# Ryu K, Suliman ME, Qureshi AR, Chen Z, Avesani CM, Brismar TB, Ripsweden J, Barany P, Heimbürger O, Stenvinkel P, Lindholm B. Central obesity as assessed by conicity index and a-body shape index associates with cardiovascular risk factors and mortality in kidney failure patients. Front Nutr. 2023 Mar 1;10:1035343. doi: 10.3389/fnut.2023.1035343. PMID: 36937338; PMCID: PMC10016612.

**Zhu B, Shi Y, Song N, Zhao S, Shen B, Wang J, Zhang W, Lu Y, Fang Y, Ding X, Li Y. Associations between metabolic profiles and incident CKD in the Chinese population aged 45-85 years. Int Urol Nephrol. 2024 Feb 17. doi: 10.1007/s11255-023-03916-3. Epub ahead of print. PMID: 38367131.**

**Hu X, Li X, Ye N, Zhou Z, Li G, Jiang F. Association of novel anthropometric indices with prevalence of kidney stone disease: a population-based cross-sectional study. Eur J Med Res. 2024 Mar 27;29(1):204. doi: 10.1186/s40001-024-01743-5. PMID: 38539239; PMCID: PMC10967179.**

**Thyroid**

**Demir Ş, Kara Y, Melikoğlu M, Aydın K, Özderya A, Subaşı HE, Dabak MR, Temizkan Ş. New Anthropometric Measurements: Relationship to Thyroid Functions in Euthyroid Obese Subjects. Cureus. 2021 Dec 15;13(12):e20435. doi: 10.7759/cureus.20435. PMID: 35047272; PMCID: PMC8759458.**

# Abstract: ..TSH was found to be negatively correlated with ABSI (p = 0.006) .. Free T4 was not associated with any of the anthropometric measurements.While fT3 was determined to be positively correlated with ABSI (p = 0.008) and negatively correlated with PBF and BAI (p = 0.001, p = 0.002, respectively),…

**Ob-Gyn**

**Loy SL, Cheung YB, Soh SE, Ng S, Tint MT, Aris IM, Bernard JY, Chong YS, Godfrey KM, Shek LP, Tan KH, Lee YS, Tan HH, Chern BSM, Lek N, Yap F, Chan SY, Chi C, Chan JKY. Female adiposity and time-to-pregnancy: a multiethnic prospective cohort. Hum Reprod. 2018 Nov 1;33(11):2141-2149. doi: 10.1093/humrep/dey300. PMID: 30285230; PMCID: PMC6201836. (ABSI ns)**

## **Farahmand M, Ramezani Tehrani F, Rahmati M, Azizi F. Anthropometric Indices and Age at Natural Menopause: A 15-Year Follow-up Population-Based Study. Int J Endocrinol Metab. 2021 Aug 5;19(4):e109285. doi: 10.5812/ijem.109285. PMID: 35043051; PMCID: PMC8761485.**

**Kiremitli T, Kiremitli S, Ulug P, Dinc K, Uzel K, Arslan YK. Are the body shape index, the body roundness index and waist-to-hip ratio better than BMI to predict recurrent pregnancy loss? Reprod Med Biol. 2021 May 21;20(3):327-333. doi: 10.1002/rmb2.12388. PMID: 34262401; PMCID: PMC8254164.**

**Amiri M, Mousavi M, Azizi F, Ramezani Tehrani F. The relationship of reproductive factors with adiposity and body shape indices changes overtime: findings from a community-based study. J Transl Med. 2023 Feb 22;21(1):137. doi: 10.1186/s12967-023-04000-1. PMID: 36814308; PMCID: PMC9948339.**

**Gao H, Zhang Y, Chen LW, Gan H, Lu MJ, Huang B, Tong J, Geng ML, Huang K, Zhang C, Zhu BB, Shao SS, Zhu P, Tao FB. Associating phthalate exposure during pregnancy with preschooler's FMI, ABSI and BRI trajectories via putative mechanism pathways. Chemosphere. 2023 Jun 28:139300. doi: 10.1016/j.chemosphere.2023.139300. Epub ahead of print. PMID: 37391081.**

# Abubakar, S. M., Shehu, A., & Gadanya, A. M. (2023). Comparison Between Urban and Rural of Anthropometry Indices in Women of Reproductive Age in Kano, Nigeria State. *Malaysian Journal of Applied Sciences*, *8*(1), 12-21. <https://doi.org/10.37231/myjas.2023.8.1.336>

**Keles E, Kaya L, Yakşi N, Kaya Z, Tosun Ö. Impact of anthro-metabolic indices and gestational weight gain on maternal and neonatal outcomes: a prospective observational study. Rev Assoc Med Bras (1992). 2024 Mar 25;70(4):e20231101. doi: 10.1590/1806-9282.20231101. PMID: 38537008; PMCID: PMC10962266.**

**Does Physical Activity Level Affect Homocysteine and Obesity Variables in Women with Cardiovascular Disease? July 2021,** [**Medical Laboratory Journal**](https://www.researchgate.net/journal/Medical-Laboratory-Journal-2538-4449)**15(4):21-27 DOI:**[**10.52547/mlj.15.4.21**](http://dx.doi.org/10.52547/mlj.15.4.21) **(Physical activity and ABSI)**

**Ortho**

**Mondelli M, Farioli A, Mattioli S, Aretini A, Ginanneschi F, Greco G, Curti S. Severity of Carpal Tunnel Syndrome and Diagnostic Accuracy of Hand and Body Anthropometric Measures. PLoS One. 2016 Oct 21;11(10):e0164715. doi: 10.1371/journal.pone.0164715. PMID: 27768728; PMCID: PMC5074522**

**Wang YJ, Zhang JC, Zhang YZ, Liu YH. Assessment of functional prognosis of anterior cruciate ligament reconstruction in athletes based on a body shape index. World J Clin Cases 2023; 11(19): 4567-4578 [DOI:** [**10.12998/wjcc.v11.i19.4567**](https://dx.doi.org/10.12998/wjcc.v11.i19.4567)**]**

**Others**

**Christakoudi S, Riboli E, Evangelou E, Tsilidis KK. Associations of body shape phenotypes with sex steroids and their binding proteins in the UK Biobank cohort. Sci Rep. 2022 Jun 24;12(1):10774. doi: 10.1038/s41598-022-14439-9. PMID: 35750890; PMCID: PMC9232606.**

# Ingleman J, Parker C, Coyer F. Exploring body morphology, sacral skin microclimate and pressure injury development and risk among patients admitted to an intensive care unit: A prospective, observational study. Intensive Crit Care Nurs. 2023 Dec 27:103604. doi: 10.1016/j.iccn.2023.103604. Epub ahead of print. PMID: 38155050.

# Nam Lyong Kang. New Obesity Index Associated with Fitness Among Korean Adults. International Journal of Clinical and Experimental Medical Sciences. Vol. 7, No. 1, 2021, pp. 5-12. doi: 10.11648/j.ijcems.20210701.12

**Neuro-Psych**

# Lotfi K, Hassanzadeh Keshteli A, Saneei P, Afshar H, Esmaillzadeh A and Adibi P (2022) A Body Shape Index and Body Roundness Index in Relation to Anxiety, Depression, and Psychological Distress in Adults. *Front. Nutr.* 9:843155. doi: 10.3389/fnut.2022.843155

**Wang Y, Zhang X, Li Y, Gui J, Mei Y, Yang X, Liu H, Guo LL, Li J, Lei Y, Li X, Sun L, Yang L, Yuan T, Wang C, Zhang D, Li J, Liu M, Hua Y, Zhang L. Predicting depressive symptom by cardiometabolic indicators in mid-aged and older adults in China: a population-based cross-sectional study. Front Psychiatry. 2023 Jun 7;14:1153316. doi: 10.3389/fpsyt.2023.1153316. PMID: 37351000; PMCID: PMC10282944.**

# \Nam KW, Kwon HM, Jeong HY, Park JH, Kwon H. Association of Body Shape Index with Cerebral Small Vessel Disease. Obes Facts. 2023;16(2):204-211. doi: 10.1159/000528701. Epub 2022 Dec 19. PMID: 36535265; PMCID: PMC10028365.