B”SD

**Jesse Krakauer MD, FACP**

**248-795-0462****jckrakauer@gmail.com**

1. **Corewell Health Wm Beaumont University Hospital**
2. **Royal Oak, MI 48073**

**Nir Y Krakauer, PhD**

**Department of Civil Engineering**

**The City College of New York**

**New York, NY 10031**

**nkrakauer@ccny.cuny.edu**

**4/1/25**

**ABSI and Body Composition and Genetics**

**ABSI references:**[**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)**

**Krakauer, N.Y.; Krakauer, J.C. Association of X-ray Absorptiometry Body Composition Measurements with Basic Anthropometrics and Mortality Hazard. Int. J. Environ. Res. Public Health 2021, 18, 7927.**

**Annotation: This study brings together allometric anthropometrics and body composition.  Remarkably, directly measured body composition parameters such as %fat can be accurately predicted from height, BMI and ABSI, and overall mortality risk is better predicted by anthropometrics than by body composition.  However, both low limb non-fat tissue (skeletal muscle) and high trunk non fat tissue (perhaps a marker of enlarged internal organs) predict mortality.  The allometric methods in this paper allow combination of body composition and anthropometrics to better estimate mortality risk**

**Tay L, Ding YY, Leung BP, Ismail NH, Yeo A, Yew S, Tay KS, Tan CH, Chong MS. Sex-specific differences in risk factors for sarcopenia amongst community-dwelling older adults. Age (Dordr). 2015 Dec;37(6):121. doi: 10.1007/s11357-015-9860-3. Epub 2015 Nov 25. PMID: 26607157; PMCID: PMC5005859.**

**Xia C, Amador C, Huffman J, Trochet H, Campbell A, Porteous D; Generation Scotland; Hastie ND, Hayward C, Vitart V, Navarro P, Haley CS. Pedigree- and SNP-Associated Genetics and Recent Environment are the Major Contributors to Anthropometric and Cardiometabolic Trait Variation. PLoS Genet. 2016 Feb 2;12(2):e1005804. doi: 10.1371/journal.pgen.1005804. Erratum in: PLoS Genet. 2017 Feb 14;13(2):e1006608. PMID: 26836320; PMCID: PMC4737500.**

**Dhana K, Koolhaas CM, Schoufour JD, Rivadeneira F, Hofman A, Kavousi M, Franco OH. Association of anthropometric measures with fat and fat-free mass in the elderly: The Rotterdam study. Maturitas. 2016 Jun;88:96-100. doi: 10.1016/j.maturitas.2016.03.018. Epub 2016 Apr 1. Erratum in: Maturitas. 2017 Jun;100:92. PMID: 27105706.**

**Akbarzadeh M, Moghimbeigi A, Mahjub H, Soltanian AR, Daneshpour M, Morris N. Trajectories of Change in Obesity among Tehranian Families: Multilevel Latent Growth Curve Modeling. Int J Family Med. 2016;2016:2639624. doi: 10.1155/2016/2639624. Epub 2016 Mar 3. PMID: 27042349; PMCID: PMC4794597**

**Löffler-Wirth H, Willscher E, Ahnert P, Wirkner K, Engel C, Loeffler M, Binder H. Novel Anthropometry Based on 3D-Bodyscans Applied to a Large Population Based Cohort. PLoS One. 2016 Jul 28;11(7):e0159887. doi: 10.1371/journal.pone.0159887. PMID: 27467550; PMCID: PMC4965021.**

**Krakauer NY, Krakauer JC. Association of Body Shape Index (ABSI) with Hand Grip Strength. Int J Environ Res Public Health. 2020 Sep 17;17(18):E6797. doi: 10.3390/ijerph17186797. PMID: 32957738.**

**Santos DA, Silva AM, Matias CN, Magalhães JP, Minderico CS, Thomas DM, Sardinha LB. Utility of novel body indices in predicting fat mass in elite athletes. Nutrition. 2015 Jul-Aug;31(7-8):948-54. doi: 10.1016/j.nut.2015.02.003. Epub 2015 Feb 19. PMID: 26059366**.

**Gomez-Peralta F, Abreu C, Cruz-Bravo M, Alcarria E, Gutierrez-Buey G, Krakauer NY, Krakauer JC. Relationship between "a body shape index (ABSI)" and body composition in obese patients with type 2 diabetes. Diabetol Metab Syndr. 2018 Mar 20;10:21. doi: 10.1186/s13098-018-0323-8. PMID: 29568333; PMCID: PMC5859756**

 **Hoermann R, Fui MNT, Krakauer JC, Krakauer NY, Grossmann M. A body shape index (ABSI) reflects body composition changes in response to testosterone treatment in obese men. Int J Obes (Lond). 2019 Nov;43(11):2210-2216. doi: 10.1038/s41366-018-0311-y. Epub 2019 Jan 8. PMID: 30622310**

**Anoop S, Krakauer J, Krakauer N, Misra A. A Body shape index significantly predicts MRI-defined abdominal adipose tissue depots in non-obese Asian Indians with type 2 diabetes mellitus. BMJ Open Diabetes Res Care. 2020 Oct;8(1):e001324. doi: 10.1136/bmjdrc-2020-001324. PMID: 33051279; PMCID: PMC7554502.**

**Bellafronte NT, Sizoto GR, Vega-Piris L, Chiarello PG, Cuadrado GB. Bed-side measures for diagnosis of low muscle mass, sarcopenia, obesity, and sarcopenic obesity in patients with chronic kidney disease under non-dialysis-dependent, dialysis dependent and kidney transplant therapy. PLoS One. 2020 Nov 20;15(11):e0242671. doi: 10.1371/journal.pone.0242671. Erratum in: PLoS One. 2021 Apr 8;16(4):e0250186. PMID: 33216775; PMCID: PMC7679152. (ABSI NS)**

**Parente EB, Mutter S, Harjutsalo V, Ahola AJ, Forsblom C, Groop PH. Waist-height ratio and waist are the best estimators of visceral fat in type 1 diabetes. Sci Rep. 2020 Oct 29;10(1):18575. doi: 10.1038/s41598-020-75667-5. PMID: 33122731; PMCID: PMC7596092. (albuminuria, visceral fat by DXA?)**

**Biolo G, Di Girolamo FG, Breglia A, Chiuc M, Baglio V, Vinci P, Toigo G, Lucchin L, Jurdana M, Pražnikar ZJ, Petelin A, Mazzucco S, Situlin R. Inverse relationship between "a body shape index" (ABSI) and fat-free mass in women and men: Insights into mechanisms of sarcopenic obesity. Clin Nutr. 2015 Apr;34(2):323-7. doi: 10.1016/j.clnu.2014.03.015. Epub 2014 Apr 13. PMID: 24814384.**

**da Cunha de Sá-Caputo D, Sonza A, Coelho-Oliveira AC, Pessanha-Freitas J, Reis AS, Francisca-Santos A, Dos Anjos EM, Paineiras-Domingos LL, de Rezende Bessa Guerra T, da Silva Franco A, Xavier VL, Barbosa E Silva CJ, Moura-Fernandes MC, Mendonça VA, Rodrigues Lacerda AC, da Rocha Pinheiro Mulder A, Seixas A, Sartorio A, Taiar R, Bernardo-Filho M. Evaluation of the Relationships between Simple Anthropometric Measures and Bioelectrical Impedance Assessment Variables with Multivariate Linear Regression Models to Estimate Body Composition and Fat Distribution in Adults: Preliminary Results. Biology (Basel). 2021 Nov 19;10(11):1209. doi: 10.3390/biology10111209. PMID: 34827202; PMCID: PMC8614749.**

**MaddodiS, GautamSK. Visceral obesity assessment in type 2 diabetes mellitus using a body shape index may be better as compared to body mass index. Int J Adv Med 2022;9:642-6. not in pub med**

**Tomažič A, Žvanut B, Grbac LV, Jurdana M. Identification of sarcopenic obesity in adults undergoing orthopaedic surgery: Relationship between "a body shape index" (ABSI) and fat-free mass. A cross -sectional study. PLoS One. 2022 Jun 22;17(6):e0269956. doi: 10.1371/journal.pone.0269956. PMID: 35731798; PMCID: PMC9216617.**

**Minetto MA, Pietrobelli A, Busso C, Bennett JP, Ferraris A, Shepherd JA, Heymsfield SB. Digital Anthropometry for Body Circumference Measurements: European Phenotypic Variations throughout the Decades. Journal of Personalized Medicine. 2022; 12(6):906. https://doi.org/10.3390/jpm12060906**

**Alghannam AF, Almasud AA, Alghnam SA, Alharbi DS, Aljubairi MS, Altalhi AS, Jan AM, Alothman SA. Prevalence of sarcopenia among Saudis and its association with lifestyle behaviors: Protocol for cross-sectional study. PLoS One. 2022 Aug 2;17(8):e0271672. doi: 10.1371/journal.pone.0271672. PMID: 35917305; PMCID: PMC9345358.**

**Iłowiecka K, Glibowski P, Libera J, Koch W. Changes in Novel Anthropometric Indices of Abdominal Obesity during Weight Loss with Selected Obesity-Associated Single-Nucleotide Polymorphisms: A Small One-Year Pilot Study. International Journal of Environmental Research and Public Health. 2022; 19(18):11837. (N =36)**

**Gažarová M, Bihari M, Šoltís J. Fat and fat-free mass as important determinants of body composition assessment in relation to sarcopenic obesity. Rocz Panstw Zakl Hig. 2023;74(1):59-69. doi: 10.32394/rpzh.2023.0243. PMID: 37010407.**

**Eslami, M., Fakhrzadeh, H., Pourghazi, F. *et al.* The association between frailty and body composition among the elderly: Birjand Longitudinal Aging Study (BLAS). *J Diabetes Metab Disord* (2023).** [**https://doi.org/10.1007/s40200-023-01373-4**](https://doi.org/10.1007/s40200-023-01373-4) **ABSI not associated with frailty in this crossectional study.**

**Christakoudi S, Asimakopoulos AG, Riboli E, Tsilidis KK. Links between the genetic determinants of morning plasma cortisol and body shape: a two-sample Mendelian randomisation study. Sci Rep. 2024 Feb 8;14(1):3230. doi: 10.1038/s41598-024-53727-4. PMID: 38332183; PMCID: PMC10853188.**

**Pi Q, Xu J, Sha M, Liu X. Relationship between a body shape index and muscle strength index in Chinese university students: a cross-sectional survey. BMC Sports Sci Med Rehabil. 2024 Feb 15;16(1):48. doi: 10.1186/s13102-024-00837-1. PMID: 38360702; PMCID: PMC10870512.**

**Pi Q, Xu J, Sha M, Liu X. Relationship between a body shape index and muscle strength index in Chinese university students: a cross-sectional survey. BMC Sports Sci Med Rehabil. 2024 Feb 15;16(1):48. doi: 10.1186/s13102-024-00837-1. PMID: 38360702; PMCID: PMC10870512.**

**Torun C, Ankaralı H, Caştur L, Uzunlulu M, Erbakan AN, Akbaş MM, Gündüz N, Doğan MB, Bahadır MA and Oğuz A (2024) Prediction of visceral adipose tissue magnitude using a new model based on simple clinical measurements. *Front. Endocrinol.* 15:1411678. doi: 10.3389/fendo.2024.1411678 [PDF]**

**Carvalho, M.d.O.; Duque, A.P.; Huguenin, G.V.B.; Felix Mediano, M.F.; Rodrigues Júnior, L.F. Increased Cardiometabolic Risk in Dynapenic Obesity: Results from the Study of Workers’ Health (ESAT). *Life* 2024, *14*, 1174.** [**https://doi.org/10.3390/life14091174**](https://doi.org/10.3390/life14091174)

**Ishibashi, C., Nakanishi, K., Nishida, M. *et al.* Myostatin as a plausible biomarker for early stage of sarcopenic obesity. *Sci Rep* 14, 28629 (2024).** [**https://doi.org/10.1038/s41598-024-79534-5**](https://doi.org/10.1038/s41598-024-79534-5)

**Mahanty S, Sinha NK, Chakrabortty K, SamantaS, Molla M, MahantiB, Mahapatra M, Patsa MK, Majumder S. Double burden of malnutrition among the college students: a cross-sectional study in Bankura, India. Euras J Fam Med 2024;13(4):195-208. doi:10.33880/ejfm.2024130407  email absi result inconsistencies**