



REFERENCES

- Altigani, M., Murphy, J.F., Newcombe, R.G., & Gray, O.P., 1989. Catch up growth in preterm infants. *Acta Paediatr. Scand. Suppl.* 78: 3–19. doi:10.1111/j.1651-2227.1989.tb11270.x
- Alur, P., 2019. Sex Differences in Nutrition, Growth, and Metabolism in Preterm Infants. *Front. Pediatr.* 7: 22. doi:10.3389/fped.2019.00022
- Anand, P., Sahoo, T., & Gulla, K.M., 2019. Which Growth Charts To Use To Classify Neonates As Small-for-Gestational Age At Birth? *Indian J. Child Health* 06: 636–642. doi:10.32677/ijch.2019.v06.i12.001
- Arenz, S., Ruckerl, R., Koletzko, B., & Von Kries, R., 2004. Breast-feeding and childhood obesity - A systematic review. *Int. J. Obes.* 28: 1247–1256. doi:10.1038/sj.ijo.0802758
- Baird, J., Fisher, D., Lucas, P., Kleijnen, J., Roberts, H., & Law, C., 2005. Being big or growing fast: systematic review of size and growth in infancy and later obesity. *BMJ* 331: 929. doi:10.1136/bmj.38586.411273.E0
- Barker, D.J.P., 2006. Adult consequences of fetal growth restriction. *Clin. Obstet. Gynecol.* 49: 270–283. doi:10.1097/00003081-200606000-00009
- Barker, D.J.P., Eriksson, J.G., Forsen, T., & Osmond, C., 2002. Fetal origins of adult disease: strength of effects and biological basis. *Int. J. Epidemiol.* 31: 1235–1239.
- Bernstein, I.M., Plociennik, K., Stahle, S., Badger, G.J., & Secker-Walker, R., 2000. Impact of maternal cigarette smoking on fetal growth and body composition. *Am. J. Obstet. Gynecol.* 183: 883–886. doi:10.1067/mob.2000.109103
- Boguszewski, M.C.S., Mericq, V., Bergada, I., Damiani, D., Belgorosky, A., Gunczler, P., et al., 2011. Latin American Consensus: Children Born Small for Gestational Age. *BMC Pediatr.* 11: 66. doi:10.1186/1471-2431-11-66
- Brandt, I., Sticker, E.J., & Lentze, M.J., 2003. Catch-up growth of head circumference of very low birth weight, small for gestational age preterm infants and mental development to adulthood. *J. Pediatr.* 142: 463–470. doi:10.1067/mpd.2003.149
- Breij, L.M., Steegers-Theunissen, R.P.M., Briceno, D., & Hokken-Koelega, A.C.S., 2015. Maternal and Fetal Determinants of Neonatal Body Composition. *Horm. Res. Paediatr.* 84: 388–395. doi:10.1159/000441298
- Browner, W.S., Newman, T.B., & Hulley, S.B., 2007. Estimating sample size and power: applications and examples, in: Hulley, S.B., Cumming, S.R., Browner, W.S., Grady, D.G., & Newman, T.B. (Eds.), *Designing Clinical Research*. Lippincott Williams & Wilkins, Philadelphia, pp. 97–107.
- Carlsen, E.M., Renault, K.M., Nørgaard, K., Nilas, L., Jensen, J.E.B., Hyldstrup, L., et al., 2014. Newborn regional body composition is influenced by maternal obesity, gestational weight gain and the birthweight standard score. *Acta Paediatr. Int. J. Paediatr.* 103: 939–945. doi:10.1111/apa.12713
- Carolan-Olah, M., Duarte-Gardea, M., & Lechuga, J., 2015. A critical review: early life nutrition and prenatal programming for adult disease. *J. Clin. Nurs.*



- 24: 3716–3729. doi:10.1111/jocn.12951
- Catalano, P.M., & Kirwan, J.P., 2001. Maternal factors that determine neonatal size and body fat. *Curr. Diab. Rep.* 1: 71–77. doi:10.1007/s11892-001-0013-y
- Chawanpaiboon, S., Vogel, J.P., Moller, A.B., Lumbiganon, P., Petzold, M., Hogan, D., et al., 2019. Global, regional, and national estimates of levels of preterm birth in 2014: a systematic review and modelling analysis. *Lancet Glob. Heal.* 7: e37–e46. doi:10.1016/S2214-109X(18)30451-0
- Cho, W.K., & Suh, B.-K., 2016. Catch-up growth and catch-up fat in children born small for gestational age. *Korean J Pediatr* 59: 1–7. doi:10.3345/kjp.2016.59.1.1
- Chou, J.H., Roumiantsev, S., & Singh, R., 2020. PediTools electronic growth chart calculators: Applications in clinical care, research, and quality improvement. *J. Med. Internet Res.* 22. doi:10.2196/16204
- Clapp, J.F., Kim, H., Burciu, B., Schmidt, S., Petry, K., & Lopez, B., 2002. Continuing regular exercise during pregnancy: Effect of exercise volume on fetoplacental growth. *Am. J. Obstet. Gynecol.* 186: 142–147. doi:10.1067/mob.2002.119109
- Cnattingius, S., Bergström, R., Lipworth, L., & Kramer, M.S., 1998. Prepregnancy weight and the risk of adverse pregnancy outcomes. *N. Engl. J. Med.* 338: 147–152.
- Cooperstock, M., & Campbell, J., 1996. Excess males in preterm birth: Interactions with gestational age, race, and multiple birth. *Obstet. Gynecol.* 88: 189–193. doi:10.1016/0029-7844(96)00106-8
- Crume, T.L., Brinton, J.T., & Kaar, J., 2017. composition : The Healthy Start Study. *Am. J. Obstet. Gynecol.* 215: 1–18. doi:10.1016/j.ajog.2016.06.035.Maternal
- Dahly, D.L., Li, X., Smith, H.A., Khashan, A.S., Murray, D.M., Kiely, M.E., et al., 2018. Associations between maternal lifestyle factors and neonatal body composition in the screening for pregnancy endpoints (Cork) cohort study. *Int. J. Epidemiol.* 47: 131–145. doi:10.1093/ije/dyx221
- De Onis, M., 2006. WHO Child Growth Standards based on length/height, weight and age. *Acta Paediatr. Int. J. Paediatr.* 95: 76–85. doi:10.1080/08035320500495548
- Demerath, E.W., Johnson, W., Davern, B.A., Anderson, C.G., Shenberger, J.S., Misra, S., et al., 2017. New body composition reference charts for preterm infants. *Am. J. Clin. Nutr.* 105: 70–77. doi:10.3945/ajcn.116.138248
- Di Renzo, G.C., Rosati, A., Sarti, R.D., Cruciani, L., & Cutuli, A.M., 2007. Does fetal sex affect pregnancy outcome? *Gend. Med.* 4: 19–30. doi:10.1016/S1550-8579(07)80004-0
- Dubowitz, L., Ricci, D., & Mercuri, E., 2005. The Dubowitz neurological examination of the full-term newborn. *Ment. Retard. Dev. Disabil. Res. Rev.* 11: 52–60. doi:10.1002/mrdd.20048
- Dubowitz, L.M.S., Dubowitz, V., & Goldberg, C., 1970. Clinical assessment of gestational age in the newborn infant. *J. Pediatr.* 77: 1–10. doi:10.1016/S0022-3476(70)80038-5



- Dulloo, A.G., Jacquet, J., Seydoux, J., & Montani, J.P., 2006. The thrifty 'catch-up fat' phenotype: Its impact on insulin sensitivity during growth trajectories to obesity and metabolic syndrome. *Int. J. Obes.* 30: S23–S35.
doi:10.1038/sj.ijo.0803516
- El-Khairi, L., Vollset, S.E., Refsum, H., & Ueland, P.M., 2003. Plasma total cysteine, pregnancy complications, and adverse pregnancy outcomes: The Hordaland Homocysteine Study. *Am. J. Clin. Nutr.* 77: 467–472.
doi:10.1097/00006254-200010000-00002
- Ellis, K.J., 2007. Evaluation of body composition in neonates and infants. *Semin. Fetal Neonatal Med.* 12: 87–91. doi:10.1016/j.siny.2006.10.011
- Estampador, A.C., Pomeroy, J., Renström, F., Nelson, S.M., Mogren, I., Persson, M., et al., 2014. Infant body composition and adipokine concentrations in relation to maternal gestational weight gain. *Diabetes Care* 37: 1432–1438.
doi:10.2337/dc13-2265
- Fenton, T.R., & Kim, J.H., 2013. A systematic review and meta-analysis to revise the Fenton growth chart for preterm infants. *BMC Pediatr.* 13: 59.
doi:10.1186/1471-2431-13-59
- Ferreira, H.D.S., Xavier Júnior, A.F.S., De Assunção, M.L., Dos Santos, E.A., & Horta, B.L., 2013. Effect of breastfeeding on head circumference of children from impoverished communities. *Breastfeed. Med.* 8: 294–301.
doi:10.1089/bfm.2012.0105
- Friis, C.M., Qvigstad, E., Paasche Roland, M.C., Godang, K., Voldner, N., Bollerslev, J., et al., 2013. Newborn Body Fat: Associations with Maternal Metabolic State and Placental Size. *PLoS One* 8.
doi:10.1371/journal.pone.0057467
- Gallagher, D., Rosenn, B., Toro-Ramos, T., Paley, C., Gidwani, S., Horowitz, M., et al., 2018. Greater Neonatal Fat-Free Mass and Similar Fat Mass Following a Randomized Trial to Control Excess Gestational Weight Gain. *Obesity* 26: 578–587. doi:10.1002/oby.22079
- Ghods, E., Kreissl, A., Brandstetter, S., Fuiko, R., & Widhalm, K., 2011. Head circumference catch-up growth among preterm very low birth weight infants: Effect on neurodevelopmental outcome. *J. Perinat. Med.* 39: 579–586.
doi:10.1515/JPM.2011.049
- Giannì, M.L., Roggero, P., Liotto, N., Amato, O., Piemontese, P., Morniroli, D., et al., 2012. Postnatal catch-up fat after late preterm birth. *Pediatr. Res.* 72: 637–640. doi:10.1038/pr.2012.128
- Gianni, M.L., Roggero, P., Taroni, F., Liotto, N., Piemontese, P., & Mosca, F., 2009. Adiposity in small for gestational age preterm infants assessed at term equivalent age. *Arch. Dis. Child. - Fetal Neonatal Ed.* 94: F368–F372.
doi:10.1136/adc.2008.153163
- Godang, K., Qvigstad, E., Voldner, N., Isaksen, G.A., Frøslie, K.F., Nøtthellen, J., et al., 2010. Assessing Body Composition in Healthy Newborn Infants: Reliability of Dual-Energy X-Ray Absorptiometry. *J. Clin. Densitom.* 13: 151–160. doi:10.1016/j.jocd.2010.01.121
- Goldstein, R.F., Abell, S.K., Ranasinha, S., Misso, M., Boyle, J.A., Black, M.H., et al., 2017. Association of gestational weight gain with maternal and infant



- outcomes: A systematic review and meta-analysis. *JAMA - J. Am. Med. Assoc.* 317: 2207–2225. doi:10.1001/jama.2017.3635
- Gurruci, S., Hartriyanti, Y., Hautvast, J.G., & Deurenberg, P., 1998. Relationship between body fat and body mass index: differences between Indonesians and Dutch Caucasians. *Eur. J. Clin. Nutr.* 52: 779–783. doi:10.1038/sj.ejcn.1600637
- Haksari, E.L., Lafeber, H.N., Hakimi, M., Pawirohartono, E.P., & Nyström, L., 2016. Reference curves of birth weight, length, and head circumference for gestational ages in Yogyakarta, Indonesia. *BMC Pediatr.* 16: 188. doi:10.1186/s12887-016-0728-1
- Hamaguchi, Y., Kondo, T., Nakai, R., Ochi, Y., Okazaki, T., Uchihashi, K., et al., 2015. Introduction of Products Over view and Features of the Automated Hematology Analyzer XN-L Series. *Sysmex J. Int.* 25.
- Han, Z., Mulla, S., Beyene, J., Liao, G., & McDonald, S.D., 2011. Maternal underweight and the risk of preterm birth and low birth weight: A systematic review and meta-analyses. *Int. J. Epidemiol.* 40: 65–101. doi:10.1093/ije/dyq195
- Harder, T., Rodekamp, E., Schellong, K., Dudenhausen, J.W., & Plagemann, A., 2007. Birth weight and subsequent risk of type 2 diabetes: A meta-analysis. *Am. J. Epidemiol.* 165: 849–857. doi:10.1093/aje/kwk071
- Harrod, C.S., Reynolds, R.M., Chasan-Taber, L., Fingerlin, T.E., Glueck, D.H., Brinton, J.T., et al., 2014. Quantity and timing of maternal prenatal smoking on neonatal body composition: the Healthy Start study. *J. Pediatr.* 165: 707–712. doi:10.1016/j.jpeds.2014.06.031
- Hassold, T., Quillen, S.D., & Yamane, J.A., 1983. Sex ratio in spontaneous abortions. *Ann. Hum. Genet.* 47: 39–47. doi:10.1111/j.1469-1809.1983.tb00968.x
- Hélène, D., 2002. Programming of chronic disease by impaired fetal nutrition Evidence and implications for policy and intervention strategies, Who.
- Henriksson, P., Eriksson, B., Forsum, E., & Löf, M., 2015. Gestational weight gain according to Institute of Medicine recommendations in relation to infant size and body composition. *Pediatr. Obes.* 10: 388–394. doi:10.1111/ijpo.276
- Herrera, E., & Amusquivar, E., 2000. Lipid metabolism in the fetus and the newborn. *Diabetes. Metab. Res. Rev.* 16: 202–210. doi:10.1002/1520-7560(200005/06)16:3<202::aid-dmrr116>3.0.co;2-%23
- Hopkins, S.A., & Cutfield, W.S., 2011. Exercise in pregnancy: Weighing up the long-term impact on the next generation. *Exerc. Sport Sci. Rev.* 39: 120–127. doi:10.1097/JES.0b013e31821a5527
- Hull, H.R., Dinger, M.K., Knehans, A.W., Thompson, D.M., & Fields, D.A., 2008. Impact of maternal body mass index on neonate birthweight and body composition. *Am. J. Obstet. Gynecol.* 198: 416.e1-416.e6. doi:10.1016/j.ajog.2007.10.796
- Hull, H.R., Thornton, J.C., Ji, Y., Paley, C., Rosenn, B., Mathews, P., et al., 2011. Higher infant body fat with excessive gestational weight gain in overweight women. *Am. J. Obstet. Gynecol.* 205: 211.e1-211.e7.



doi:10.1016/j.ajog.2011.04.004

Ibáñez, L., Jiménez, R., & de Zegher, F., 2006a. Early Puberty-Menarche After Precocious Pubarche: Relation to Prenatal Growth. *Pediatrics* 117: 117 LP – 121.

Ibáñez, L., Ong, K., Dunger, D.B., & de Zegher, F., 2006b. Early Development of Adiposity and Insulin Resistance after Catch-Up Weight Gain in Small-for-Gestational-Age Children. *J. Clin. Endocrinol. Metab.* 91: 2153–2158. doi:10.1210/jc.2005-2778

Ibáñez, L., Ong, K., Valls, C., Marcos, M.V., Dunger, D.B., & De Zegher, F., 2006c. Metformin treatment to prevent early puberty in girls with precocious pubarche. *J. Clin. Endocrinol. Metab.* 91: 2888–2891. doi:10.1210/jc.2006-0336

Institute of medicine and National Research Council, 2009. Weight Gain During Pregnancy: Reexamining the guidelines, The National Academies Press. National Academies Press, Washington, D.C. doi:10.17226/12584

Jackson, M.R., Gott, P., Lye, S.J., Knox Ritchie, J.W., & Clapp, J.F., 1995. The effects of maternal aerobic exercise on human placental development: Placental volumetric composition and surface areas. *Placenta* 16: 179–191. doi:10.1016/0143-4004(95)90007-1

Johnson, M.J., Wootton, S.A., Leaf, A.A., & Jackson, A.A., 2012. Preterm birth and body composition at term equivalent age: A systematic review and meta-analysis. *Pediatrics* 130: e640–e649. doi:10.1542/peds.2011-3379

Kind, K.L., Moore, V.M., & Davies, M.J., 2006. Diet around conception and during pregnancy - Effects on fetal and neonatal outcomes. *Reprod. Biomed. Online* 12: 532–541. doi:10.1016/S1472-6483(10)61178-9

Koo, W.W.K., Hammami, M., & Hockman, E.M., 2002. Use of Fan Beam Dual Energy X-Ray Absorptiometry to Measure Body Composition of Piglets. *J. Nutr.* 132: 1380–1383. doi:10.1093/jn/132.6.1380

Kwon, E.J., & Kim, Y.J., 2017. What is fetal programming?: A lifetime health is under the control of in utero health. *Obstet. Gynecol. Sci.* 60: 506–519. doi:10.5468/ogs.2017.60.6.506

Lampl, M., Lee, W., Koo, W., Frongillo, E.A., Barker, D.J.P., & Romero, R., 2012. Ethnic differences in the accumulation of fat and lean mass in late gestation. *Am. J. Hum. Biol.* 24: 640–647. doi:10.1002/ajhb.22285

Landau-Crangle, E., Rochow, N., Fenton, T.R., Liu, K., Ali, A., So, H.Y., et al., 2018. Individualized Postnatal Growth Trajectories for Preterm Infants. *J. Parenter. Enter. Nutr.* 42: 1084–1092. doi:10.1002/jpen.1138

Landau, D., 2019. Differences in Body Composition Between Appropriate Gestational Age and Small Gestational Age Infants at Term. *Obstet. Gynecol.* 133: 2019.

Lapillonne, A, Braillon, P., Claris, O., Chatelain, P.G., Delmas, P.D., & Salle, B.L., 1997. Body composition in appropriate and in small for gestational age infants. *Acta Paediatr.* 86: 196–200.

Lapillonne, Alexander, M Braillon, P., D Delmas, P., & L Salle, B., 1997. Dual-energy X-ray absorptiometry in early life. *Horm Res* 48: 43–49.

Lindsay, C.A., Thomas, A.J., & Catalano, P.M., 1997. The effect of smoking



- tobacco on neonatal body composition. *Am. J. Obstet. Gynecol.* 177: 1124–1128. doi:10.1016/S0002-9378(97)70027-9
- Liu, L., Johnson, H.L., Cousens, S., Perin, J., Scott, S., Lawn, J.E., et al., 2012. Global, regional, and national causes of child mortality: An updated systematic analysis for 2010 with time trends since 2000. *Lancet* 379: 2151–2161. doi:10.1016/S0140-6736(12)60560-1
- Lorente Ramos, R.M., Azpeitia Armán, J., Arévalo Galeano, N., Muñoz Hernández, A., García Gómez, J.M., & Gredilla Molinero, J., 2012. Absorciometría con rayos X de doble energía. Fundamentos, metodología y aplicaciones clínicas. *Radiología* 54: 410–423. doi:10.1016/j.rx.2011.09.023
- Lubchenco, L.O., Hansman, C., Dressler, M., & Boyd, E., 1963. Intrauterine growth as estimated from liveborn birth-weight data at 24 to 42 weeks of gestation. *Pediatrics* 32: 793–800.
- Lundgren, E.M., Cnattingius, S., Jonsson, B., & Tuvemo, T., 2001. Intellectual and Psychological Performance in Males Born Small for Gestational Age With and Without Catch-Up Growth. *Pediatr. Res.* 50: 91. doi:10.1203/00006450-200107000-00017
- McCarthy, F.P., Khashan, A.S., Murray, D., Kiely, M., Hourihane, J.O., Pasupathy, D., et al., 2016. Parental physical and lifestyle factors and their association with newborn body composition. *BJOG An Int. J. Obstet. & Gynaecol.* 123: 1824–1829. doi:10.1111/1471-0528.14042
- Mericq, V., Ong, K.K., Bazaes, R., Peña, V., Avila, A., Salazar, T., et al., 2005. Longitudinal changes in insulin sensitivity and secretion from birth to age three years in small- and appropriate-for-gestational-age children. *Diabetologia* 48: 2609–2614. doi:10.1007/s00125-005-0036-z
- Mickey, R.M., & Greenland, S., 1989. The impact of confounder selection criteria on effect estimation. *Am. J. Epidemiol.* 130: 1066. doi:10.1093/oxfordjournals.aje.a115409
- Mitanchez, D., Jacqueminet, S., Nizard, J., Tanguy, M.L., Ciangura, C., Lacorte, J.M., et al., 2017. Effect of maternal obesity on birthweight and neonatal fat mass: A prospective clinical trial. *PLoS One* 12: 1–15. doi:10.1371/journal.pone.0181307
- Modi, N., Murgasova, D., Ruager-Martin, R., Thomas, E.L., Hyde, M.J., Gale, C., et al., 2011. The influence of maternal body mass index on infant adiposity and hepatic lipid content. *Pediatr. Res.* 70: 287–291. doi:10.1203/PDR.0b013e318225f9b1
- Monteiro, P.O.A., & Victora, C.G., 2005. Rapid growth in infancy and childhood and obesity in later life - a systematic review. *Obes. Rev.* 6: 143–154. doi:10.1111/j.1467-789X.2005.00183.x
- Morley, R., 2006. Fetal origins of adult disease. *Semin. Fetal Neonatal Med.* 11: 73–78. doi:10.1016/j.siny.2005.11.001
- Mu, M., Wang, S.F., Sheng, J., Zhao, Y., Li, H.Z., Hu, C.L., et al., 2012. Birth weight and subsequent blood pressure: A meta-analysis. *Arch. Cardiovasc. Dis.* 105: 99–113. doi:10.1016/j.acvd.2011.10.006
- Nehab, S.R.G., Villela, L.D., Abranches, A.D., Rocha, D.M., Silva, L.M.L. d., Amaral, Y.N.V., et al., 2019. Influence of gestational and perinatal factors on



- body composition of full-term newborns. *J. Pediatr. (Rio. J.)*. doi:10.1016/j.jpmed.2019.09.006
- Nohr, E.A., Bech, B.H., Vaeth, M., Rasmussen, K.M., Henriksen, T.B., & Olsen, J., 2007. Obesity, gestational weight gain and preterm birth: A study within the Danish National Birth Cohort. *Paediatr. Perinat. Epidemiol.* 21: 5–14. doi:10.1111/j.1365-3016.2007.00762.x
- Norris, T., McCarthy, F.P., Khashan, A.S., Murray, D.M., Kiely, M., Hourihane, J.O., et al., 2017. Do changing levels of maternal exercise during pregnancy affect neonatal adiposity? Secondary analysis of the babies after SCOPE: evaluating the longitudinal impact using neurological and nutritional endpoints (BASELINE) birth cohort (Cork, Ireland). *BMJ Open* 7: e017987. doi:10.1136/bmjopen-2017-017987
- Ochiai, M., Nakayama, H., Sato, K., Iida, K., Hikino, S., Ohga, S., et al., 2008. Head circumference and long-term outcome in small-for-gestational age infants. *J. Perinat. Med.* 36: 341–347. doi:10.1515/JPM.2008.042
- Okada, T., Takahashi, S., Nagano, N., Yoshikawa, K., Usukura, Y., & Hosono, S., 2015. Early postnatal alteration of body composition in preterm and small-for-gestational-age infants: Implications of catch-up fat. *Pediatr. Res.* 77: 136–142. doi:10.1038/pr.2014.164
- Ong, K.E.N.K., & Loos, R.J.F., 2006. Rapid infancy weight gain and subsequent obesity : Systematic reviews and hopeful suggestions. *Acta Paediatr Scand* 95: 904–908. doi:10.1080/08035250600719754
- Ong, K.K., 2007. Catch-up growth in small for gestational age babies: Good or bad? *Curr. Opin. Endocrinol. Diabetes Obes.* 14: 30–34. doi:10.1097/MED.0b013e328013da6c
- Ornoy, A., 2011. Prenatal origin of obesity and their complications: Gestational diabetes, maternal overweight and the paradoxical effects of fetal growth restriction and macrosomia. *Reprod. Toxicol.* 32: 205–212. doi:10.1016/j.reprotox.2011.05.002
- Owen, C.G., 2005. Effect of Infant Feeding on the Risk of Obesity Across the Life Course: A Quantitative Review of Published Evidence. *Pediatrics* 115: 1367–1377. doi:10.1542/peds.2004-1176
- Parker, L., Reilly, J.J., Slater, C., Wells, J.C.K., & Pitsiladis, Y., 2003. Validity of six field and laboratory methods for measurement of body composition in boys. *Obes. Res.* 11: 852–8. doi:10.1038/oby.2003.117
- Parkinson, J.R.C., Hyde, M.J., Gale, C., Santhakumaran, S., & Modi, N., 2013. Preterm Birth and the Metabolic Syndrome in Adult Life: A Systematic Review and Meta-analysis. *Pediatrics* 131: e1240–e1263. doi:10.1542/peds.2012-2177
- Pitkin, R.M., 1976. Nutritional support in obstetrics and gynecology. *Clin. Obstet. Gynecol.* doi:10.1097/00003081-197609000-00002
- Pözlberger, E., Hartmann, B., Hafner, E., Stümpflein, I., & Kirchengast, S., 2017. MATERNAL HEIGHT and PRE-PREGNANCY WEIGHT STATUS ARE ASSOCIATED with FETAL GROWTH PATTERNS and NEWBORN SIZE. *J. Biosoc. Sci.* 49: 392–407. doi:10.1017/S0021932016000493
- Ratnasingham, A., Eiby, Y.A., Dekker Nitert, M., Donovan, T., & Lingwood,



- B.E., 2017. Review: Is rapid fat accumulation in early life associated with adverse later health outcomes? *Placenta*. doi:10.1016/j.placenta.2017.01.101
- Reichman, O., Srebnik, N., Calderon-Margalit, R., & Samueloff, A., 2015. 855: The association of maternal age with preterm delivery. *Am. J. Obstet. Gynecol.* 212: S410. doi:10.1016/j.ajog.2014.10.1061
- Renault, K.M., Carlsen, E.M., Nørgaard, K., Nilas, L., Pryds, O., Secher, N.J., et al., 2015. Intake of carbohydrates during pregnancy in obese women is associated with fat mass in the newborn offspring. *Am. J. Clin. Nutr.* 102. doi:10.3945/ajcn.115.110551
- Rich-Edwards, J.W., Colditz, G.A., Stampfer, M.J., Willett, W.C., Gillman, M.W., Hennekens, C.H., et al., 1999. Birthweight and the risk for type 2 diabetes mellitus in adult women. *Ann. Intern. Med.* 130: 278–84. doi:199902160-00005 [pii]
- Rigo, J., Nyamugabo, K., Picaud, J.C., Gerard, P., Pieltain, C., & De Curtis, M., 1998. Reference Values of Body Composition Obtained by Dual Energy X-Ray Absorptiometry in Preterm and Term Neonates. *J. Pediatr. Gastroenterol. Nutr.* 27.
- Rodríguez, G., Samper, M.P., Ventura, P., Moreno, L.A., Olivares, J.L., & Pérez-González, J.M., 2004. Gender differences in newborn subcutaneous fat distribution. *Eur. J. Pediatr.* 163: 457–461. doi:10.1007/s00431-004-1468-z
- Roggero, P., Gianni, M.L., Amato, O., Orsi, A., Piemontese, P., Morlacchi, L., et al., 2009. Is term newborn body composition being achieved postnatally in preterm infants? *Early Hum. Dev.* 85: 349–352. doi:10.1016/j.earlhumdev.2008.12.011
- Roggero, P., Gianni, M.L., Liotto, N., Taroni, F., Orsi, A., Amato, O., et al., 2011. Rapid recovery of fat mass in small for gestational age preterm infants after term. *PLoS One* 6: 1–7. doi:10.1371/journal.pone.0014489
- Russo, L.M., Nobles, C., Ertel, K.A., Chasan-Taber, L., & Whitcomb, B.W., 2015. Physical activity interventions in pregnancy and risk of gestational diabetes mellitus a systematic review and meta-analysis. *Obstet. Gynecol.* 125: 576–582. doi:10.1097/AOG.0000000000000691
- Shrestha, S., Thakur, A., Goyal, S., Garg, P., & Kler, N., 2016. Growth charts in neonates. *Curr. Med. Res. Pract.* 6: 79–84. doi:10.1016/j.cmrp.2016.03.009
- Silliman, K., & Kretchmer, N., 1995. Maternal obesity and body composition of the neonate. *Biol. Neonate* 68: 384–393. doi:10.1159/000244260
- Simon, L., Borrego, P., Darmaun, D., Legrand, A., Rozé, J.C., & Chauty-Fronidas, A., 2013. Effect of sex and gestational age on neonatal body composition. *Br. J. Nutr.* 109: 1105–1108. doi:10.1017/S0007114512002991
- Singhal, A., Fewtrell, M., Cole, T.J., & Lucas, A., 2003. Low nutrient intake and early growth for later insulin resistance in adolescents born preterm. *Lancet* 361: 1089–1097. doi:10.1016/S0140-6736(03)12895-4
- Sletner, L., Jenum, A.K., Mørkrid, K., Vangen, S., Holme, I.M., Birkeland, K.I., et al., 2014. Maternal life course socio-economic position and offspring body composition at birth in a multi-ethnic population. *Paediatr. Perinat. Epidemiol.* 28: 445–454. doi:10.1111/ppe.12137
- Starling, A.P., Brinton, J.T., Glueck, D.H., Shapiro, A.L., Harrod, C.S., Lynch,



- A.M., et al., 2015. Associations of maternal BMI and gestational weight gain with neonatal adiposity in the Healthy Start study. *Am. J. Clin. Nutr.* 101: 302–309. doi:10.3945/ajcn.114.094946
- Starling, A.P., Shapiro, A.L.B., Sauder, K.A., Kaar, J.L., Ringham, B.M., Glueck, D.H., et al., 2017. Blood pressure during pregnancy, neonatal size and altered body composition: the Healthy Start study. *J. Perinatol.* 37: 502.
- Stettler, N., Stallings, V.A., Troxel, A.B., Zhao, J., Schinnar, R., Nelson, S.E., et al., 2005. Weight gain in the first week of life and overweight in adulthood: A cohort study of European American subjects fed infant formula. *Circulation* 111: 1897–1903. doi:10.1161/01.CIR.0000161797.67671.A7
- Su, B.H., 2014. Optimizing nutrition in preterm infants. *Pediatr. Neonatol.* 55: 5–13. doi:10.1016/j.pedneo.2013.07.003
- Tanner, J.M., & Whitehouse, R.H., 1975. Revised standards for triceps and subscapular skinfolds in British children. *Arch. Dis. Child.* 50: 142–145.
- Toschke, A.M., Martin, R.M., von Kries, R., Wells, J., Smith, G.D., & Ness, A.R., 2007. Infant feeding method and obesity: body mass index and dual-energy X-ray absorptiometry measurements at 9–10 y of age from the Avon Longitudinal Study of Parents and Children (ALSPAC). *Am. J. Clin. Nutr.* 85: 1578–85.
- Villar, J., Ismail, L.C., Victora, C.G., Ohuma, E.O., Bertino, E., Altman, D.G., et al., 2014. International standards for newborn weight, length, and head circumference by gestational age and sex: The Newborn Cross-Sectional Study of the INTERGROWTH-21st Project. *Lancet* 384. doi:10.1016/s0140-6736(14)60932-6
- Villar, J., Puglia, F.A., Fenton, T.R., Cheikh Ismail, L., Staines-Urias, E., Giuliani, F., et al., 2017. Body composition at birth and its relationship with neonatal anthropometric ratios: The newborn body composition study of the INTERGROWTH-21 st project. *Pediatr. Res.* 82: 305–316. doi:10.1038/pr.2017.52
- Wang, Z.-M., Pierson, R.N., & Heymsfield, S., 1992. The five-level model : a new approach to organizing. *Am. J. Clin. Nutr.* 56: 19–28.
- Wells, J., Chomtho, S., & Fewtrell, M.S., 2007. Programming of body composition by early growth and nutrition. *Proc. Nutr. Soc.* 66: 423–434. doi:10.1017/S0029665107005691
- Wells, J.C.K., 2007. The thrifty phenotype as an adaptive maternal effect. *Biol. Rev.* 82: 143–172. doi:10.1111/j.1469-185X.2006.00007.x
- Wells, J.C.K., 2005. Measuring body composition. *Arch. Dis. Child.* 91: 612–617. doi:10.1136/adc.2005.085522
- Wells, J.C.K., Fuller, N.J., Dewit, O., Fewtrell, M.S., Elia, M., & Cole, T.J., 1999. Four-component model of body composition in children: Density and hydration of fat-free mass and comparison with simpler models. *Am. J. Clin. Nutr.* 69: 904–912.
- WHO, UNICEF, & UNU, 2001. Iron deficiency anaemia: Assessment, Prevention, and control, A guide for programme manager, World Health Organization. Geneva. doi:10.7748/ns2013.02.27.23.59.p10441
- Wulan, S.N., Westerterp, K.R., & Plasqui, G., 2010. Ethnic differences in body



composition and the associated metabolic profile: A comparative study between Asians and Caucasians. *Maturitas* 65: 315–319.

doi:10.1016/j.maturitas.2009.12.012

Xinxo, S., Bimbashi, A., Kakarriqi, E., & Zaimi, E., 2013. Association Between Maternal Nutritional Status of Pre Pregnancy, Gestational Weight Gain and Preterm Birth. *Mater. Socio Medica* 25: 6. doi:10.5455/msm.2013.25.6-8

Yan, J., Liu, L., Zhu, Y., Huang, G., & Wang, P.P., 2016. The association between breastfeeding and childhood obesity: A meta-analysis. *World Rev. Nutr. Diet.* 114: 110–111. doi:10.1159/000441820

Yau, K.I., & Chang, M.H., 1993. Growth and body composition of preterm, small-for-gestational-age infants at a postmenstrual age of 37-40 weeks. *Early Hum. Dev.* 33: 117–31. doi:http://dx.doi.org/10.1016/0378-3782(93)90207-B

Zheng, J.S., Liu, H., Ong, K.K., Huang, T., Guan, Y., Huang, Y., et al., 2017. Maternal blood pressure rise during pregnancy and offspring obesity risk at 4 to 7 years old: The Jiaying birth cohort. *J. Clin. Endocrinol. Metab.* 102: 4315–4322. doi:10.1210/jc.2017-01500

Zimmermann, E., Gamborg, M., Sørensen, T.I.A., & Baker, J.L., 2015. Sex differences in the association between birth weight and adult type 2 diabetes. *Diabetes* 64: 4220–4225. doi:10.2337/db15-0494