12/2018

Waist-to-hip ratio (Lotta, 2018)

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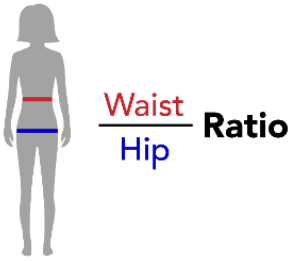
JAMA

Obesity

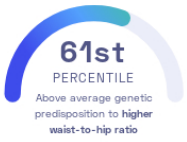


A high waist-to-hip ratio is considered unhealthy.

STUDY SUMMARY

Identification of 202 genetic variants associated with waist-to-hip ratio.

YOUR RESULT



STUDY DESCRIPTION

Increased body fat is commonly associated with an increased risk of various cardiovascular and metabolic diseases, including coronary artery disease and type 2 diabetes. The waist-to-hip ratio (WHR) is a common measurement of the distribution of fat around the body. It is obtained by dividing the circumference (or distance around) the waist by the circumference of the hips. A healthy WHR is below 0.9 for men and below 0.85 for women. A WHR above 1.0 may signal an increased risk of disease. This genome-wide association study examined over 636,000 individuals of European ancestry and found over 202 variants associated with WHR. The polygenic score calculated from these variants was found to to correlate with the incidence of type 2 diabetes and coronary artery disease.

DID YOU KNOW?

A diet rich in fruits, vegetables, and dairy and low in white bread, processed meat, margarine, and soft drinks may help reduce abdominal fat.

YOUR DETAILED RESULTS

To calculate your genetic predisposition to higher waist-to-hip ratio we summed up the effects of genetic variants that were linked to higher waist-to-hip ratio in the study that this report is based on. These variants can be found in the table below. The variants highlighted in green have **positive effect sizes** and increase your genetic predisposition to higher waist-to-hip ratio. The variants highlighted in blue have **negative effects sizes** and decrease your genetic predisposition to higher waist-to-hip ratio. Variants that are not highlighted are not found in your genome and do not affect your genetic predisposition to higher waist-to-hip ratio. By adding up the effect sizes of the highlighted variants **we calculated your polygenic score for higher waist-to-hip ratio to be 3.82**. To determine whether your score is high or low, we compared it to the scores of 5,000 other Nebula Genomics users. We found that your polygenic score for higher waist-to-hip ratio is in the **61st percentile**. This means that it is higher than the polygenic scores 61% of people. We consider this to be an **above average genetic predisposition to higher waist-to-hip ratio**. However, please note that genetic predispositions do not account for important non-genetic factors like lifestyle. Furthermore, the genetics of most traits has not been fully understood yet and many associations between traits and genetic variants remain unknown. For additional explanations, click on the column titles in the table below and visit our Nebula Library tutorial.

VARIANT	YOUR GENOTYPE	EFFECT SIZE	VARIANT FREQUENCY	SIGNIFICANCE
rs998584_A	C / C	0.05 (-)	48%	3.30×10^{-168}
rs1936805_T	C / C	0.04 (-)	53%	2.00×10^{-120}
rs7133378_G	G / G	0.04 (↑)	67%	1.50×10^{-95}
rs2371767_G	G / G	0.04 (↑)	74%	6.00×10^{-92}
rs2791550_G	G / G	0.04 (↑)	67%	4.30×10^{-88}
rs10923724_T	C / T	0.04 (↑)	56%	1.30×10^{-87}
rs10195252_T	T / T	0.03 (↑)	59%	9.10×10^{-69}
rs1294410_C	C / C	0.03 (↑)	62%	1.10×10^{-68}
rs718314_G	A / A	0.03 (-)	23%	7.20×10^{-64}
rs3786897_G	G / G	0.03 (↑)	42%	4.50×10^{-63}
rs10919388_C	C / C	0.03 (↑)	73%	1.90×10^{-62}
rs714515_G	G / A	0.03 (↑)	44%	1.10×10^{-56}
rs17451107_T	T / T	0.03 (↑)	62%	2.20×10^{-56}
rs2236519_A	G / G	0.03 (-)	37%	2.70×10^{-55}
rs6861681_A	A / A	0.03 (↑)	30%	2.70×10^{-52}
rs1443512_A	C / C	0.03 (-)	21%	3.40×10^{-51}
rs9837325_C	C / C	0.03 (↑)	81%	1.40×10^{-49}
rs459193_A	G / G	0.03 (-)	24%	3.20×10^{-49}
rs2167750_T	C / T	0.03 (↑)	47%	5.70×10^{-49}
rs12608504_A	G / G	0.03 (-)	36%	1.90×10^{-46}
rs2145272_G	G / A	0.03 (↑)	36%	1.70×10^{-45}
rs2294239_A	A / A	0.03 (↑)	57%	4.70×10^{-44}
rs797486_A NEW	C / C	0.04 (-)	90%	7.10×10^{-44}
rs1055144_T	C / T	0.03 (↑)	19%	7.80×10^{-44}
rs605203_A	C / A	0.03 (↑)	62%	3.90×10^{-43}
rs12214804_C	T / T	0.04 (-)	9%	7.50×10^{-43}
rs4738141_G	A / A	0.03 (-)	24%	8.10×10^{-42}
rs2276824_C	C / G	0.02 (↑)	46%	1.30×10^{-41}
rs17819328_G	T / G	0.02 (↑)	43%	1.20×10^{-38}
rs634869_T NEW	C / C	0.02 (-)	42%	1.30×10^{-37}
rs2925979_T	C / C	0.02 (-)	30%	2.40×10^{-37}
rs905938_T	T / T	0.03 (↑)	72%	1.90×10^{-36}
rs8066985_A	A / G	0.02 (↑)	49%	9.90×10^{-36}
rs10502148_C NEW	C / T	0.02 (↑)	64%	8.50×10^{-34}
rs1569135_A	A / A	0.02 (↑)	54%	1.20×10^{-33}
rs7492628_G NEW	C / G	0.02 (↑)	32%	3.70×10^{-32}
rs6556301_T	G / G	0.02 (-)	37%	3.80×10^{-32}
rs9792666_A	A / A	0.06 (↑)	96%	9.50×10^{-32}
rs2845885_C	T / T	0.04 (-)	5%	1.20×10^{-31}

rs3810068_T	T / C	0.02 (↑)	61%	4.90×10^{-31}
rs7801581_T	C / C	0.02 (-)	25%	7.10×10^{-29}
rs12936587_G	G / A	0.02 (↑)	51%	8.20×10^{-29}
rs3747577_C	G / G	0.02 (-)	26%	3.00×10^{-28}
rs757608_A	A / G	0.02 (↑)	32%	4.20×10^{-28}
rs143384_A	G / A	0.02 (↑)	60%	1.90×10^{-27}
rs951252_G	G / G	0.02 (↑)	54%	4.00×10^{-27}
rs2428549_G	A / A	0.02 (-)	37%	4.10×10^{-27}
rs2073267_G	A / A	0.03 (-)	17%	9.70×10^{-26}
rs601339_A	A / A	0.03 (↑)	83%	1.30×10^{-25}
rs910382_G	G / A	0.02 (↑)	50%	1.80×10^{-25}
rs711869_G	A / A	0.02 (-)	44%	2.00×10^{-25}
rs1051921_G	G / G	0.02 (↑)	80%	3.60×10^{-25}
rs11263432_T	T / T	0.02 (↑)	63%	4.00×10^{-25}
rs7598832_C	C / C	0.02 (↑)	67%	4.50×10^{-25}
rs6719672_G	A / G	0.03 (↑)	18%	5.40×10^{-25}
rs780159_G	A / A	0.02 (-)	56%	3.20×10^{-24}
rs6688233_T	C / C	0.02 (-)	24%	3.40×10^{-24}
rs622217_T	C / C	0.02 (-)	52%	3.60×10^{-24}
rs16891532_A	C / C	0.03 (-)	9%	3.70×10^{-24}
rs9644033_A	A / A	0.02 (↑)	76%	1.20×10^{-23}
rs10264590_A	A / A	0.02 (↑)	48%	4.00×10^{-23}
rs6446204_C	C / C	0.02 (↑)	75%	9.20×10^{-23}
rs10462028_A	G / A	0.02 (↑)	33%	1.10×10^{-22}
rs8030605_A	G / G	0.03 (-)	13%	1.30×10^{-22}
rs10992408_G	A / A	0.02 (-)	17%	1.70×10^{-22}
rs4779526_A	A / T	0.02 (↑)	76%	2.40×10^{-22}
rs4727695_A	A / A	0.03 (↑)	90%	8.00×10^{-22}
rs6853254_T	G / G	0.02 (-)	35%	9.70×10^{-22}
rs9388766_C	T / C	0.02 (↑)	69%	1.20×10^{-21}
rs6581662_T	T / C	0.02 (↑)	31%	1.80×10^{-21}
rs3741378_C	C / C	0.02 (↑)	86%	6.00×10^{-21}
rs13256367_A	A / C	0.02 (↑)	65%	1.90×10^{-20}
rs2993481_T	A / A	0.02 (-)	19%	9.20×10^{-20}
rs11724804_G	A / A	0.02 (-)	55%	1.50×10^{-19}
rs4420638_A	A / A	0.02 (↑)	81%	1.60×10^{-19}
rs1045241_C	C / C	0.02 (↑)	72%	1.90×10^{-19}
rs4450871_A	A / G	0.02 (↑)	56%	2.00×10^{-19}
rs7589318_G	A / A	0.02 (-)	68%	2.40×10^{-19}
rs2836179_G	G / G	0.02 (↑)	60%	2.60×10^{-19}
rs11592754_C	A / C	0.02 (↑)	14%	3.90×10^{-19}
rs303084_A	G / A	0.02 (↑)	79%	4.50×10^{-19}
rs9844972_C	G / G	0.03 (-)	7%	4.60×10^{-19}
rs2047937_C	C / T	0.02 (↑)	48%	5.20×10^{-19}
rs3764002_C	T / T	0.02 (-)	73%	1.60×10^{-18}
rs727428_T	T / T	0.02 (↑)	45%	1.90×10^{-18}
rs10980802_G	A / G	0.02 (↑)	49%	2.30×10^{-18}
rs11747001_A	A / A	0.02 (↑)	76%	3.00×10^{-18}
rs2222543_G	G / C	0.02 (↑)	62%	4.40×10^{-18}
rs39312_C	A / A	0.02 (-)	38%	6.70×10^{-18}
rs7235010_A	A / A	0.02 (↑)	77%	7.70×10^{-18}
rs9362097_G	A / A	0.02 (-)	46%	9.90×10^{-18}
rs9583489_C	C / C	0.02 (↑)	73%	1.20×10^{-17}
rs1805741_C	T / T	0.02 (-)	29%	1.40×10^{-17}
rs2254069_A	G / G	0.02 (-)	12%	1.50×10^{-17}
rs2235529_C	C / C	0.02 (↑)	84%	2.40×10^{-17}
rs17041868_C	T / T	0.03 (-)	8%	3.60×10^{-17}
rs13154197_G	A / A	0.03 (-)	9%	4.40×10^{-17}
rs2298632_C	T / T	0.01 (-)	51%	7.00×10^{-17}

rs1876829_C	C / C	0.02 (↑)	22%	7.40×10^{-17}
rs1440372_C	C / C	0.02 (↑)	73%	9.80×10^{-17}
rs4902632_A	A / T	0.02 (↑)	17%	1.00×10^{-16}
rs6433219_A	G / A	0.02 (↑)	28%	1.50×10^{-16}
rs7122422_C	G / C	0.01 (↑)	48%	2.50×10^{-16}
rs2444770_T	T / T	0.02 (↑)	85%	3.20×10^{-16}
rs10512606_C	A / A	0.03 (–)	8%	3.60×10^{-16}
rs11079041_A	T / T	0.02 (–)	30%	4.40×10^{-16}
rs4849294_T	C / T	0.01 (↑)	63%	6.40×10^{-16}
rs1316979_T	C / C	0.03 (–)	6%	7.00×10^{-16}
rs4851221_G	A / A	0.02 (–)	18%	9.40×10^{-16}
rs1144_C	T / C	0.01 (↑)	34%	1.50×10^{-15}
rs3851294_G	G / G	0.03 (↑)	90%	2.30×10^{-15}
rs1105881_G	C / C	0.01 (–)	37%	2.70×10^{-15}
rs11051005_A	A / A	0.02 (↑)	76%	3.10×10^{-15}
rs6920788_T	C / T	0.02 (↑)	71%	3.90×10^{-15}
rs7680787_T	T / T	0.01 (↑)	64%	4.20×10^{-15}
rs12459350_A	A / G	0.01 (↑)	54%	5.20×10^{-15}
rs4704389_A	A / A	0.01 (↑)	41%	6.50×10^{-15}
rs6932767_T	T / T	0.02 (↑)	79%	1.30×10^{-14}
rs1474921_A	G / G	0.01 (–)	38%	2.00×10^{-14}
rs380654_G	C / G	0.01 (↑)	40%	2.40×10^{-14}
rs8055190_C	C / C	0.03 (↑)	96%	2.70×10^{-14}
rs9647379_G	G / G	0.01 (↑)	59%	2.70×10^{-14}
rs2398893_A	G / G	0.01 (–)	71%	2.80×10^{-14}
rs2821391_A	G / G	0.01 (–)	71%	2.90×10^{-14}
rs998749_A	G / G	0.01 (–)	49%	2.90×10^{-14}
rs12828318_A	A / A	0.02 (↑)	82%	3.20×10^{-14}
rs10844642_A	A / C	0.01 (↑)	61%	3.70×10^{-14}
rs1328757_T	C / T	0.01 (↑)	48%	4.20×10^{-14}
rs1053593_G	G / T	0.01 (↑)	35%	5.00×10^{-14}
rs1498126_C	C / C	0.02 (↑)	78%	6.30×10^{-14}
rs1190982_T	C / C	0.01 (–)	30%	7.00×10^{-14}
rs12774134_C	C / T	0.02 (↑)	88%	8.80×10^{-14}
rs11726981_C	A / A	0.01 (–)	27%	1.20×10^{-13}
rs7800072_G	T / T	0.01 (–)	34%	1.40×10^{-13}
rs10880321_G	C / G	0.01 (↑)	61%	1.40×10^{-13}
rs7823561_A	A / A	0.01 (↑)	66%	1.60×10^{-13}
rs4761628_G	G / T	0.01 (↑)	36%	1.70×10^{-13}
rs7242873_G	A / A	0.02 (–)	8%	2.00×10^{-13}
rs2061705_G	A / G	0.01 (↑)	50%	5.30×10^{-13}
rs17326656_T	T / T	0.01 (↑)	24%	9.00×10^{-13}
rs13406302_C	A / C	0.01 (↑)	26%	9.10×10^{-13}
rs2452877_A	A / A	0.01 (↑)	56%	1.20×10^{-12}
rs7114403_A	T / T	0.01 (–)	51%	1.50×10^{-12}
rs2283847_T	C / T	0.01 (↑)	57%	2.10×10^{-12}
rs11187537_C	G / C	0.01 (↑)	26%	2.50×10^{-12}
rs6752964_C	T / C	0.02 (↑)	10%	4.00×10^{-12}
rs3789615_C	C / T	0.01 (↑)	58%	4.60×10^{-12}
rs11893688_T	C / T	0.01 (↑)	67%	5.70×10^{-12}
rs332105_G	G / A	0.01 (↑)	44%	6.30×10^{-12}
rs8030277_T	A / T	0.01 (↑)	32%	1.00×10^{-11}
rs10963067_C	C / C	0.02 (↑)	91%	1.20×10^{-11}
rs174829_G	A / G	0.01 (↑)	65%	1.30×10^{-11}
rs2057869_A	G / A	0.01 (↑)	29%	2.20×10^{-11}
rs421168_G	A / A	0.01 (–)	39%	2.40×10^{-11}
rs10745659_G	C / C	0.01 (–)	44%	2.50×10^{-11}
rs7612999_A	G / G	0.01 (–)	25%	3.90×10^{-11}
rs6449133_T	T / G	0.01 (↑)	65%	4.10×10^{-11}

rs2595004_C	T / T	0.02 (-)	18%	5.00×10^{-11}
rs7919055_C	NA	0.03 (-)	4%	5.30×10^{-11}
rs2066107_T	T / T	0.01 (↑)	39%	5.40×10^{-11}
rs2058914_G	A / A	0.01 (-)	26%	6.80×10^{-11}
rs2333496_T	T / T	0.01 (↑)	69%	7.80×10^{-11}
rs10887759_A	G / A	0.02 (↑)	16%	8.30×10^{-11}
rs12684047_T	T / T	0.02 (↑)	81%	1.20×10^{-10}
rs4239275_T	T / C	0.01 (↑)	40%	1.40×10^{-10}
rs6486060_G	G / A	0.01 (↑)	45%	2.00×10^{-10}
rs2320125_T	C / C	0.01 (-)	35%	2.00×10^{-10}
rs807067_T	T / T	0.01 (↑)	52%	2.10×10^{-10}
rs17167945_G	A / A	0.01 (-)	15%	2.50×10^{-10}
rs36232_G	G / G	0.01 (↑)	82%	2.80×10^{-10}
rs9750952_C	C / C	0.01 (↑)	77%	7.00×10^{-10}
rs710122_G	G / G	0.01 (↑)	26%	1.10×10^{-9}
rs9896963_C	T / C	0.01 (↑)	18%	1.20×10^{-9}
rs9305545_G	A / A	0.02 (-)	17%	1.40×10^{-9}
rs747249_A	G / G	0.01 (-)	36%	1.50×10^{-9}
rs6874524_T	T / C	0.01 (↑)	78%	1.70×10^{-9}
rs676556_G	A / A	0.01 (-)	19%	2.00×10^{-9}
rs6908042_A	G / G	0.01 (-)	68%	2.60×10^{-9}
rs2701523_A	A / G	0.01 (↑)	74%	2.70×10^{-9}
rs1360485_T	T / T	0.01 (↑)	68%	2.70×10^{-9}
rs544668_T	T / T	0.01 (↑)	60%	3.50×10^{-9}
rs7091853_C	G / G	0.01 (-)	57%	3.50×10^{-9}
rs1979527_A	C / A	0.01 (↑)	20%	3.70×10^{-9}
rs1278493_G	G / A	0.01 (↑)	44%	3.80×10^{-9}
rs12631066_C	C / C	0.01 (↑)	22%	4.60×10^{-9}
rs2823096_A	A / A	0.01 (↑)	81%	4.90×10^{-9}
rs10891483_T	C / T	0.02 (↑)	12%	5.00×10^{-9}
rs362275_C	C / T	0.01 (↑)	70%	6.40×10^{-9}
rs6496127_G	G / G	0.01 (↑)	54%	6.60×10^{-9}
rs7235891_C	C / C	0.01 (↑)	48%	7.40×10^{-9}
rs1156979_A	A / T	0.01 (↑)	38%	7.80×10^{-9}
rs505102_C	T / C	0.01 (↑)	23%	9.10×10^{-9}
rs10507524_C	T / C	0.02 (↑)	10%	9.50×10^{-9}
rs13028903_T	C / T	0.01 (↑)	47%	1.40×10^{-8}
rs12440695_C	T / T	0.01 (-)	39%	1.50×10^{-8}
rs2590440_G	A / G	0.01 (↑)	21%	1.60×10^{-8}
rs2240328_T	C / C	0.01 (-)	17%	1.90×10^{-8}
rs3758938_T	T / T	0.01 (↑)	68%	2.20×10^{-8}
rs4454603_C	C / T	0.01 (↑)	52%	2.90×10^{-8}
rs1328369_T	C / T	0.01 (↑)	51%	3.00×10^{-8}
rs12186798_G	A / G	0.01 (↑)	19%	3.50×10^{-8}
rs15285_C	C / T	0.01 (↑)	74%	3.60×10^{-8}

N/A indicates variants that could not be imputed using the 1000 genomes project datasets and variants that have a frequency of < 5%. Your genome was sequenced at 30x/100x coverage and is not imputed. However, to calculate percentiles, we need to compare your data with other users imputed data. To make the data comparable, we need to exclude some of the variants from your data.