

Table S1a. SNPs included in the genetic risk scores

Risk score	SNP name	Proxy	Chr.	Position	Coded allele
Adult BMI					
<i>RARB</i>	rs6804842		3	25106437	G
<i>TFAP2B</i>	rs2207139		6	50845490	G
<i>MAP2K5</i>	rs16951275		15	68077168	T
<i>FLJ45139</i>	rs2836754		21	40291740	C
<i>FTO</i>	rs1558902		16	53803574	A
<i>NLRC3</i>	rs758747		16	3627358	T
<i>CADM1</i>	rs12286929		11	115022404	G
<i>IFNGR1</i>	rs13201877		6	137675541	G
<i>RALYL</i>	rs2033732		8	85079709	C
<i>GRID1</i>	rs7899106		10	87410904	G
<i>CBLN1</i>	rs2080454		16	49062590	C
<i>TAL1</i>	rs977747		1	47684677	T
<i>NT5C2</i>	rs11191560		10	104869038	C
<i>EPB41L4B</i>	rs6477694		9	111932342	C
<i>ZBTB10</i>	rs16907751		8	81375457	C
<i>DOC2A</i>	rs4787491		16	30015337	G
<i>AGBL4</i>	rs657452		1	49589847	A
<i>HSD17B12</i>	rs2176598		11	43864278	T
<i>TLR4</i>	rs1928295		9	120378483	T
<i>RBM26</i>	rs1441264		13	79580919	A
<i>FUBP1</i>	rs12401738		1	78446761	A
<i>PRKD1</i>	rs12885454		14	29736838	C
<i>BDNF</i>	rs11030104		11	27684517	A
<i>NAVI</i>	rs2820292		1	201784287	C
<i>MTCH2</i>	rs3817334		11	47650993	T
<i>C5orf37</i>	rs2112347		5	75015242	T
<i>EHBP1</i>	rs11688816		2	63053048	G
<i>RASA2</i>	rs16851483		3	141275436	T
<i>ZFP64</i>	rs6091540		20	51087862	C
<i>HHIP</i>	rs11727676		4	145659064	T
<i>PACRG</i>	rs13191362		6	163033350	A
<i>FHIT</i>	rs2365389	rs6445197 ^a	3	61213993	C
<i>MC4R</i>	rs6567160		18	57829135	C
<i>KCTD15</i>	rs29941		19	34309532	G
<i>ADCY3</i>	rs10182181		2	25150296	G
<i>QPCTL</i>	rs2287019		19	46202172	C
<i>LMX1B</i>	rs10733682		9	129460914	A
<i>SBK1</i>	rs2650492		16	28333411	A
<i>TCF7L2</i>	rs7903146		10	114758349	C
<i>RPL27A</i>	rs4256980		11	8673939	G
<i>C6orf106</i>	rs205262		6	34563164	G
<i>LRP1B</i>	rs2121279		2	143043285	T
<i>SLC39A8</i>	rs13107325		4	103188709	T
<i>GNPDA2</i>	rs10938397		4	45182527	G
<i>NPCI</i>	rs1808579		18	21104888	C

<i>UBE2E3</i>	rs1528435		2	181550962	T
<i>C19orf7</i>	rs3810291		19	47569003	A
<i>BCDIN3D</i>	rs7138803		12	50247468	A
<i>CADM2</i>	rs13078960		3	85807590	G
<i>USP37</i>	rs492400		2	219349752	C
<i>TOMM40</i>	rs2075650		19	45395619	A
<i>TNNI3K</i>	rs12566985		1	75002193	G
<i>ASB4</i>	rs6465468		7	95169514	T
<i>CLIP1</i>	rs11057405		12	122781897	G
<i>MTIF3</i>	rs12016871		NA	NA	T
<i>STXBP6</i>	rs10132280		14	25928179	C
<i>PRKD1</i>	rs11847697		14	30515112	T
<i>HIF1AN</i>	rs17094222		10	102395440	C
<i>LINGO2</i>	rs10968576		9	28414339	G
<i>FANCL</i>	rs1016287		2	59305625	T
<i>CREB1</i>	rs17203016		2	208255518	G
<i>KCNK3</i>	rs11126666		2	26928811	A
<i>LRFN2</i>	rs2033529		6	40348653	G
<i>ELAVL4</i>	rs11583200		1	50559820	C
<i>SMG6</i>	rs9914578		17	2005136	G
<i>HIP1</i>	rs1167827		7	75163169	G
<i>ETV5</i>	rs1516725		3	185824004	C
<i>ADPGK</i>	rs7164727		15	73093991	T
<i>GBE1</i>	rs3849570		3	81792112	A
<i>MAN1A1</i>	rs9374842		6	120185665	T
<i>RIT2</i>	rs7239883		18	40147671	G
<i>FIGN</i>	rs1460676		2	164567689	C
<i>KIAA1303</i>	rs12940622		17	78615571	G
<i>ERBB4</i>	rs7599312		2	213413231	G
<i>DMXL2</i>	rs3736485		15	51748610	A
<i>PCDH9</i>	rs9540493		13	66205704	A
<i>RABEP1</i>	rs1000940		17	5283252	G
<i>NRXN3</i>	rs7141420		14	79899454	T
<i>GALNT10</i>	rs7715256		5	153537893	G
<i>GPRC5B</i>	rs12446632		16	19935389	G
<i>GRP</i>	rs7243357		18	56883319	T
<i>GNAT2</i>	rs17024393		1	110154688	C
<i>SCARB2</i>	rs17001654		4	77129568	G
<i>MYST1</i>	rs9925964	rs1978487 ^a	16	31129942	C
<i>OLFM4</i>	rs12429545		13	54102206	A
<i>C9orf93</i>	rs4740619		9	15634326	T
<i>CALCR</i>	rs9641123		7	93197732	C
<i>NEGR1</i>	rs3101336		1	72751185	C
<i>ATP2A1</i>	rs3888190		16	28889486	A
<i>HNF4G</i>	rs17405819		8	76806584	T
<i>KIAA1505</i>	rs2245368		7	76608143	C
<i>PGPEP1</i>	rs17724992	rs9636202 ^a	19	18449238	A
<i>FOXO3</i>	rs9400239		6	108977663	C
<i>SEC16B</i>	rs543874		1	177889480	G
<i>IRS1</i>	rs2176040		2	227092802	A

<i>PTBP2</i>	rs11165643		1	96924097	T
<i>TMEM18</i>	rs13021737	rs13012571 ^a	2	632550	G
Adult WHR					
<i>BCL2</i>	rs12454712		18	58996864	T
<i>BMP2</i>	rs979012		20	6571374	T
<i>ADAMTS9</i>	rs2371767	rs4607103 ^b	3	64686944	T
<i>SFXN2</i>	rs7917772		10	104477433	A
<i>SPATA5</i>	rs303084		4	124286398	A
<i>WARS2</i>	rs2645294		1	119376110	T
<i>SMAD6</i>	rs1440372		15	64820205	C
<i>MEIS1</i>	rs1385167		2	66054152	G
<i>VEGFA</i>	rs1358980		6	43872529	T
<i>EYA2</i>	rs6090583		20	44992238	A
<i>DCST2</i>	rs905938		1	153258013	T
<i>CCDC92</i>	rs4765219		12	123006063	C
<i>CMIP</i>	rs2925979		16	80092291	T
<i>ITPR2</i>	rs10842707		12	26362631	T
<i>DNM3</i>	rs714515		1	170619613	G
<i>PEMT</i>	rs4646404		17	17360924	G
<i>SNX10</i>	rs1534696		7	26363764	C
<i>JUND</i>	rs12608504		19	18250135	A
<i>MSC</i>	rs12679556		8	72676782	G
<i>CALCRL</i>	rs1569135		2	187823643	A
<i>LY86</i>	rs1294410		6	6683751	C
<i>HMGA1</i>	rs1776897		6	34302989	G
<i>RFXDC2</i>	rs8030605		15	54291890	A
<i>HOXC13</i>	rs1443512		12	52628951	A
<i>TNFAIP8</i>	rs1045241		5	118757185	C
<i>BTNL2</i>	rs7759742		6	32489714	A
<i>SCYL1BP1</i>	rs10919388		1	168639127	C
<i>ABCA1</i>	rs10991437		9	106775741	A
<i>HOXA11</i>	rs7801581		7	27190296	T
<i>RSPO3</i>	rs1936805		6	127493809	T
<i>CPEB4</i>	rs7705502		5	173253421	A
<i>PPARG</i>	rs17819328		3	12464342	G
<i>FAM13A1</i>	rs9991328		4	89932144	T
<i>PBRM1</i>	rs2276824		3	52612526	C
<i>SLC30A10</i>	rs2820443		1	217820132	T
<i>FLRT1</i>	rs11231693		11	63619188	A
<i>COBLL1</i>	rs10195252		2	165221337	T
<i>NMU</i>	rs3805389		4	56177507	A
<i>KCNJ2</i>	rs8066985		17	65964940	A
<i>NKX3-1</i>	rs7830933		8	23659269	A
<i>CEBPA</i>	rs4081724		19	38516786	G
<i>NFE2L3</i>	rs10245353		7	25825139	A
<i>MAP3K1</i>	rs9687846		5	55897651	A
<i>ZNRF3</i>	rs2294239		22	27779477	A
<i>GDF5</i>	rs224333		20	33487376	G
<i>PLXND1</i>	rs10804591		3	130816923	A
<i>FLJ16641</i>	rs17451107		3	158280303	T

Child BMI

<i>GNPDA2</i>	rs13130484		4	44870448	T
<i>ADCY3</i>	rs11676272		2	24995042	G
<i>TMEM18</i>	rs4854349		2	637861	C
<i>SEC16B</i>	rs543874		1	176156103	G
<i>FAIM2</i>	rs7132908		12	48549415	A
<i>FTO</i>	rs1421085	rs3751812 ^b	16	52358455	G
<i>OLFM4</i>	rs12429545		13	53000207	A
<i>TFAP2B</i>	rs987237		6	50911009	G
<i>TNNI3K</i>	rs12041852		1	74776088	G
<i>MC4R</i>	rs6567160		18	55980115	C
<i>ELP3</i>	rs13253111		8	28117893	A
<i>RAB27B</i>	rs8092503		18	50630485	G
<i>LMX1B</i>	rs3829849		9	128430621	T
<i>ADAM23</i>	rs13387838		2	206989692	A
<i>GPR61</i>	rs7550711		1	109884409	T

VAT/SAT ratio

<i>LY86</i>	rs912056		6	6681196	T
<i>LYPLAL1</i>	rs6689335		1	217695305	C
<i>UBE2E2</i>	rs7374732		3	23178458	C

Liver fat

<i>LYPLAL1</i>	rs12137855		1	217515001	C
<i>GCKR</i>	rs780094		2	27594741	T
<i>PPP1R3B</i>	rs4240624		8	9221641	A
<i>NCAN</i>	rs2228603		19	19190924	T
<i>PNPLA3</i>	rs738409		22	42656060	G

Pericardial fat

<i>TRIB2</i>	rs10198628		2	12881948	G
<i>ENSA</i>	rs6587515		1	148875512	G
<i>EBF1</i>	rs1650505		5	157962312	G

SAT SNP

<i>FTO</i>	rs7185735		16	52380152	G
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SAT SNP female

<i>GSDMB</i>	rs2123685		17	35307415	T
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VAT and VATadjBMI SNP

<i>RREB1</i>	rs2842895		6	7051315	C
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VAT and VATadjBMI SNP female

<i>GRAMD3</i>	rs10060123		5	125711809	C
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^a Linkage disequilibrium between proxies and original SNPs: $R^2 > 0.96$, $D' = 1$

^b Linkage disequilibrium between proxy and original SNP: $R^2 = 0.93$, $D' = 0.97$

Table S1b. Matrix presentation of the number of overlapping SNPs and/or loci per risk score / phenotype

SNPs overlap

	Child BMI (N=15)	Adult BMI (N=97)	Adult WHR (N=49)	VAT/SAT ratio (N=3)	Adult fatty liver (N=5)	Adult pericardial fat (N=3)	SAT SNP	SAT SNP female	VAT and VATadjBMI SNP	VAT and VATadjBMI SNP female
Child BMI (N=15)	15									
Adult BMI (N=97)	3	97								
Adult WHR (N=49)	0	0	49							
VAT/SAT ratio (N=3)	0	0	0	3						
Adult fatty liver (N=5)	0	0	0	0	5					
Adult pericardial fat (N=3)	0	0	0	0	0	3				
SAT SNP	0	0	0	0	0	0	1			
SAT SNP female	0	0	0	0	0	0	0	1		
VAT and VATadjBMI SNP	0	0	0	0	0	0	0	0	1	
VAT and VATadjBMI SNP female	0	0	0	0	0	0	0	0	0	1

Loci* overlap

	Child BMI (N=15)	Adult BMI (N=97)	Adult WHR (N=49)	VAT/SAT ratio (N=3)	Adult fatty liver (N=5)	Adult pericardial fat (N=3)	SAT SNP	SAT SNP female	VAT and VATadjBMI SNP	VAT and VATadjBMI SNP female
Child BMI (N=15)	15									
Adult BMI (N=97)	6	97								
Adult WHR (N=49)	0	5	49							
VAT/SAT ratio (N=3)	0	0	2	3						
Adult fatty liver (N=5)	0	0	0	1	5					
Adult pericardial fat (N=3)	0	0	0	0	0	3				
SAT SNP	1	0	0	0	0	0	1			
SAT SNP female	0	0	0	0	0	0	0	1		
VAT and VATadjBMI SNP	0	0	1	1	0	0	0	0	1	
VAT and VATadjBMI SNP female	0	0	0	0	0	0	0	0	0	1

* A locus was defined as the region +/- 500,000 base pairs from the location of the SNP

Table S1c. Matrix presentation of the correlation between the genetic risk scores

		Child BMI (N=15)	Adult BMI (N=97)	Adult WHR (N=49)	VAT/SAT ratio (N=3)	Adult fatty liver (N=5)	Adult pericardial fat (N=3)
Child BMI (N=15)	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	1867					
Adult BMI (N=97)	Pearson Correlation	,196**	1				
	Sig. (2-tailed)	.000					
	N	1867	1995				
Adult WHR (N=49)	Pearson Correlation	.022	-.016	1			
	Sig. (2-tailed)	.341	.470				
	N	1867	1995	1995			
VAT/SAT ratio (N=3)	Pearson Correlation	-.025	.022	,127**	1		
	Sig. (2-tailed)	.283	.317	.000			
	N	1867	1995	1995	1995		
Adult fatty liver (N=5)	Pearson Correlation	-.014	.013	.013	,057*	1	
	Sig. (2-tailed)	.537	.563	.548	.011		
	N	1867	1995	1995	1995	1995	
Adult pericardial fat (N=3)	Pearson Correlation	.023	.017	-.011	-.025	-.028	1
	Sig. (2-tailed)	.318	.444	.627	.269	.210	
	N	1867	1995	1995	1995	1995	1995

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table S2. Power calculation

		N=1 738		N=1 993	
	Std. Deviation	Beta detectable per SD*	Beta detectable per additional risk allele*	Beta detectable per SD*	Beta detectable per additional risk allele*
Childhood BMI (N=15)	4.09		0.021		0.020
Adult BMI (N=97)	6.17		0.014		0.013
Adult WHR (N=49)	4.47		0.020		0.018
VAT/SAT ratio (N=3)*	1.16	0.088	0.076	0.082	0.071
Adult fatty liver N=5)	1.20		0.073		0.068
Adult pericardial fat (N=3)*	0.98		0.090		0.084

*Unweighted risk scores since no information on the effect estimates was available

* Based on a power of 80% with a significance level of 0.005

Table S3. Associations of unweighted genetic risk scores with MRI adiposity measures (N= 1 995)

Risk score	SAT (N=1 746)		VAT (N=1 742)		VAT/SAT ratio (N=1 738)		Liver fat percentage (N=1 950)		Pericardial fat mass (N=1 803)		BMI @ 10 (N=1 993)	
(number of SNPs in risk score)	Beta (CI 95%)	P	Beta (CI 95%)	P	Beta (CI 95%)	P	Beta (CI 95%)	P	Beta (CI 95%)	P	Beta (CI 95%)	P
Main risk scores												
Child BMI (N=15)	0.047 (0.027; 0.066)	5.00*10⁻⁶	0.046 (0.025; 0.067)	2.40*10⁻⁵	-0.014 (-0.033; 0.005)	0.154	0.018 (-0.003; 0.038)	0.086	0.004 (-0.017; 0.025)	0.680	0.069 (0.048; 0.089)	7.00*10⁻⁶
Adult BMI (N=97)	0.016 (0.009; 0.023)	9.00*10⁻⁶	0.013 (0.005; 0.020)	0.001	-0.009 (-0.016; -0.002)	0.010	0.003 (-0.004; 0.010)	0.438	0.007 (0.000; 0.015)	0.066	0.022 (0.015; 0.029)	4.07*10⁻⁹
Adult WHR (N=49)	-0.008 (-0.018; 0.002)	0.114	-0.001 (-0.011; 0.010)	0.909	0.011 (0.001; 0.020)	0.028	-0.002 (-0.012; 0.008)	0.649	-0.011 (-0.021; 0.000)	0.046	-0.008 (-0.018; 0.002)	0.116
VAT/SAT ratio (N=3)	-0.006 (-0.044; 0.032)	0.768	-0.008 (-0.049; 0.033)	0.694	0.001 (-0.036; 0.037)	0.966	-0.012 (-0.050; 0.026)	0.554	-0.013 (-0.053; 0.027)	0.513	-0.008 (-0.047; 0.031)	0.702
Adult fatty liver N=5)	0.002 (-0.035; 0.038)	0.922	0.006 (-0.033; 0.045)	0.755	0.003 (-0.031; 0.038)	0.845	0.105 (0.069; 0.141)	1.57*10⁻⁸	0.021 (-0.018; 0.059)	0.292	-0.016 (-0.054; 0.021)	0.394
Adult pericardial fat (N=3)	-0.024 (-0.068; 0.020)	0.283	0.022 (-0.025; 0.069)	0.358	0.056 (0.015; 0.098)	0.008	-0.007 (-0.050; 0.037)	0.761	0.061 (0.015; 0.107)	0.009	-0.028 (-0.072; 0.017)	0.226

Bold values represent significant outcomes after Bonferroni correction for 10 analyses ($P < 0.005$)

Table S4. Associations of the BMI genetic risk scores with MRI adiposity measures adjusted for BMI (N= 1 995)

Risk score (number of SNPs in risk score)	SATadjBMI (N=1 746)		VATadjBMI (N=1 742)		VAT/SAT ratio adjBMI (N=1 738)		Liver fat percentage adjBMI (N=1 950)		Pericardial fat mass adjBMI (N=1 803)	
	Beta (CI 95%)	P	Beta (CI 95%)	P	Beta (CI 95%)	P	Beta (CI 95%)	P	Beta (CI 95%)	P
Main risk scores										
Child BMI (N=15)	-0.004 (-0.014; 0.006)	0.434	0.004 (-0.008; 0.015)	0.545	0.006 (-0.004; 0.017)	0.243	0.000 (-0.010; 0.011)	0.924	-0.005 (-0.017; 0.006)	0.363
Adult BMI (N=97)	0.004 (-0.002; 0.010)	0.209	0.002 (-0.005; 0.010)	0.565	-0.003 (-0.010; 0.004)	0.350	-0.004 (-0.011; 0.002)	0.216	0.002 (-0.006; 0.009)	0.681
Adult WHR (N=49)	0.0004 (-0.008; 0.009)	0.929	0.007 (-0.003; 0.017)	0.181	0.006 (-0.004; 0.015)	0.243	0.002 (-0.007; 0.011)	0.608	-0.007 (-0.017; 0.003)	0.188
VAT/SAT ratio (N=3)*	0.002 (-0.032; 0.037)	0.888	-0.001 (-0.041; 0.038)	0.945	-0.002 (-0.039; 0.035)	0.929	-0.010 (-0.046; 0.025)	0.573	-0.012 (-0.052; 0.028)	0.565
Adult fatty liver (N=5)	0.019 (-0.013; 0.051)	0.247	0.011 (-0.026; 0.049)	0.549	-0.01 (-0.045; 0.025)	0.569	0.128 (0.095; 0.161)	4.73*10⁻¹⁴	0.021 (-0.017; 0.059)	0.278
Adult pericardial fat (N=3)*	-0.013 (-0.052; 0.027)	0.521	0.038 (-0.007; 0.084)	0.101	0.058 (0.016; 0.100)	0.007	-0.001 (-0.042; 0.039)	0.945	0.074 (0.028; 0.120)	0.002
rs7185735 (SAT)	0.12 (0.063; 0.177)	3.70*10⁻⁵	0.036 (-0.030; 0.103)	0.282	-0.086 (-0.148; -0.025)	0.006	0.003 (0.056; 0.063)	0.918	0.0002 (-0.067; 0.068)	0.997
rs2123685 (SAT female)	-0.085 (-0.243; 0.074)	0.294	-0.225 (-0.408; -0.041)	0.016	-0.178 (-0.348290; -0.007)	0.041	0.064 (-0.100; 0.228)	0.445	-0.087 (-0.270; 0.097)	0.354
rs2842895 (VAT and VATadjBMI)	0.018 (-0.041; 0.076)	0.549	-0.004 (-0.072; 0.064)	0.905	-0.032 (-0.094; 0.031)	0.326	-0.007 (-0.068; 0.053)	0.815	0.048 (-0.021; 0.116)	0.173
rs10060123 (VAT and VATadjBMI female)	-0.024 (-0.089; 0.041)	0.464	-0.051 (-0.126; 0.024)	0.180	-0.034 (-0.103; 0.036)	0.342	-0.010 (-0.076; 0.057)	0.777	-0.050 (-0.125; 0.026)	0.197

*Unweighted risk scores since no information on the effect estimates was available

Bold values represent significant outcomes after Bonferroni correction for 10 analyses ($P < 0.005$)

Table S5. Associations of the BMI genetic risk scores with SAT and VAT measures adjusted for VAT and SAT (N= 1 995)

Risk score (number of SNPs in risk score)	SATadjVAT(N=1 736) **		VATadjSAT (N=1 736) **	
	Beta (CI 95%)	P	Beta (CI 95%)	P
Main risk scores				
Child BMI (N=15)	0.008 (-0.003; 0.018)	0.152	0.008 (-0.004; 0.019)	0.179
Adult BMI (N=97)	0.014 (0.008; 0.021)	2.90*10⁻⁵	0.0002 (-0.007; 0.007)	0.962
Adult WHR (N=49)	-0.011 (-0.021; -0.002)	0.018	0.007 (-0.003; 0.017)	0.168
VAT/SAT ratio (N=3)*	-0.002 (-0.039; 0.034)	0.899	-0.004 (-0.043; 0.035)	0.841
Adult fatty liver (N=5)	0.007 (-0.028; 0.041)	0.708	-0.002 (-0.039; 0.035)	0.912
Adult pericardial fat (N=3)*	-0.057 (-0.099; -0.015)	0.008	0.057 (0.011; 0.102)	0.014
rs7185735 (SAT)	0.132 (0.071; 0.193)	2.20*10⁻⁵	-0.042 (-0.107; 0.024)	0.212
rs2123685 (SAT female)	0.128 (-0.040; 0.297)	0.136	-0.208 (-0.389; -0.027)	0.024
rs2842895 (VAT and VATadjBMI)	0.024 (-0.038; 0.087)	0.444	-0.019 (-0.086; 0.048)	0.580
rs10060123 (VAT and VATadjBMI female)	0.006 (-0.063; 0.075)	0.855	-0.049 (-0.123; 0.025)	0.194

*Unweighted risk scores since no information on the effect estimates was available

Bold values represent significant outcomes after Bonferroni correction for 10 analyses ($P < 0.005$)

** **SATadjVAT**: SAT adjusted for VAT

VATadjSAT: VAT adjusted for SAT

Table S6. Phenotypic variance in MRI fat measures explained by genetic risk scores based on adult and childhood BMI, and liver fat, and separate SNPs in the full group (N= 1 995)

Risk score	SAT (N=1 746)	VAT (N=1 742)	VAT/SAT ratio (N=1 738)	Liver fat percentage (N=1 950)	Pericardial fat mass (N=1 803)	BMI @ 10 (N=1 993)
(SNPs in risk score)	Explained variance (%)	Explained variance (%)	Explained variance (%)	Explained variance (%)	Explained variance (%)	Explained variance (%)
Childhood BMI (N=15)	1.167	0.636	0.874	0.464	<0.001	1.765
Adult BMI (N=97)	1.769	1.107	0.566	0.068	0.331	2.458
Adult WHR (N=49)	0.177	0.007	0.238	0.006	0.197	0.181
VAT/SAT ratio (N=3)*	0.002	0.002	<0.001	0.019	0.016	0.103
Adult fatty liver N=5)	0.056	0.047	0.006	2.222	0.364	0.046
Adult pericardial fat (N=3)*	0.004	0.009	0.303	0.005	0.023	0.195
rs7185735 (SAT)	1.042	0.400	0.714	0.092	0.066	0.669
rs2123685 (SAT female)	0.007	0.168	0.093	0.035	0.022	0.130
rs2842895 (VAT and VATadjBM)	0.019	0.000	0.019	<0.001	0.126	0.153
rs10060123 (VAT and VATadjBMI female)	0.085	0.168	0.004	0.030	0.166	0.144

Bold values represent explained variances for significant associations of the risk scores / SNPs with the outcome

*Unweighted risk scores since no information on the effect estimates was available.

Table S7. Phenotypic variance in MRI fat measures explained by genetic risk scores based on adult and childhood BMI, and liver fat, and separate SNPs in boys (N=979) and girls (N=1 016) separately

Risk score	SAT (N=1 746)	VAT (N=1 742)	VAT/SAT ratio (N=1 738)	Liver fat percentage (N=1 950)	Pericardial fat mass (N=1 803)	BMI @ 10 (N=1 993)
(SNPs in risk score)	Explained variance (%)	Explained variance (%)	Explained variance (%)	Explained variance (%)	Explained variance (%)	Explained variance (%)
Boys						
Childhood BMI (N=15)	0.936	0.404	0.804	0.352	<0.001	2.261
Adult BMI (N=97)	2.509	1.202	0.972	0.195	0.384	2.931
Adult WHR (N=49)	0.166	0.032	0.073	0.016	0.259	0.338
VAT/SAT ratio (N=3)*	0.103	0.041	0.040	0.028	0.005	0.087
Adult fatty liver N=5)	0.175	0.081	0.190	1.440	<0.001	0.029
Adult pericardial fat (N=3)*	0.002	0.196	0.228	0.001	0.077	0.083
rs7185735 (SAT)	0.521	0.239	0.228	0.104	0.241	0.230
rs2123685 (SAT female)	0.010	0.238	0.145	0.014	0.194	0.149
rs2842895 (VAT and VATadjBM)	0.000	0.055	0.048	0.063	0.028	0.032
rs10060123 (VAT and VATadjBMI female)	0.184	0.172	0.022	0.492	0.107	0.188
Girls						
Childhood BMI (N=15)	1.550	0.828	1.406	0.468	<0.001	1.682
Adult BMI (N=97)	1.369	1.007	0.376	0.002	0.276	1.813
Adult WHR (N=49)	0.215	<0.001	0.553	0.001	0.139	<0.001
VAT/SAT ratio (N=3)*	0.204	0.151	0.041	0.019	0.128	<0.001
Adult fatty liver N=5)	0.172	0.068	0.091	3.096	0.039	0.012
Adult pericardial fat (N=3)*	0.218	0.002	0.395	0.004	0.993	<0.001
rs7185735 (SAT)	2.086	0.615	1.746	0.081	0.002	0.944
rs2123685 (SAT female)	0.007	0.118	0.066	0.227	0.026	<0.001
rs2842895 (VAT and VATadjBM)	0.059	0.044	0.001	0.022	0.301	<0.001
rs10060123 (VAT and VATadjBMI female)	0.029	0.167	0.085	0.087	0.230	<0.001

Bold values represent explained variances for significant associations of the risk scores / SNPs with the outcome

*Unweighted risk scores since no information on the effect estimates was available.