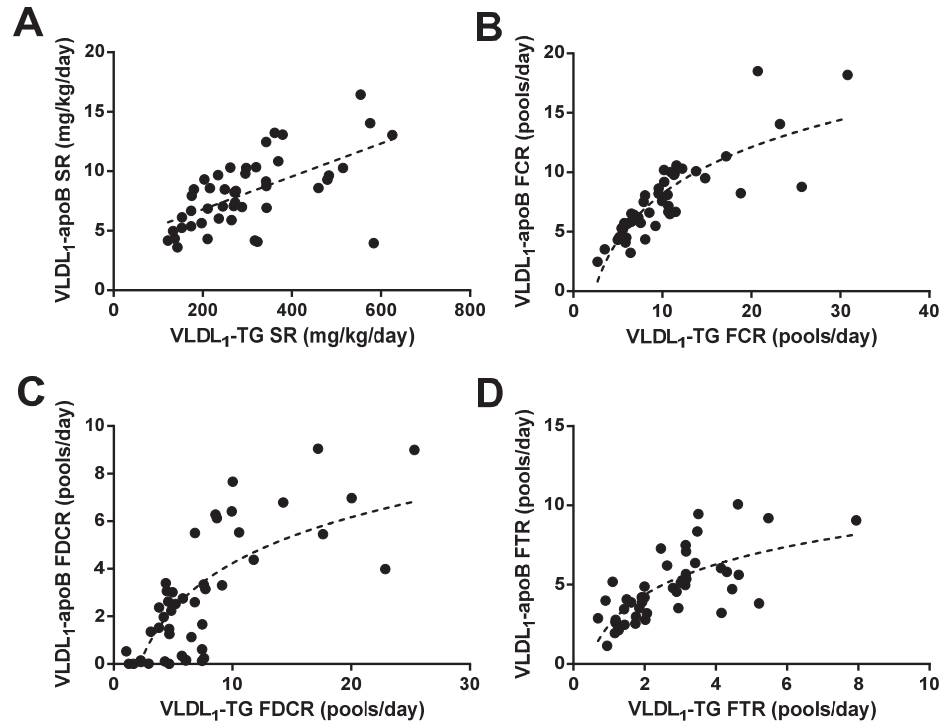
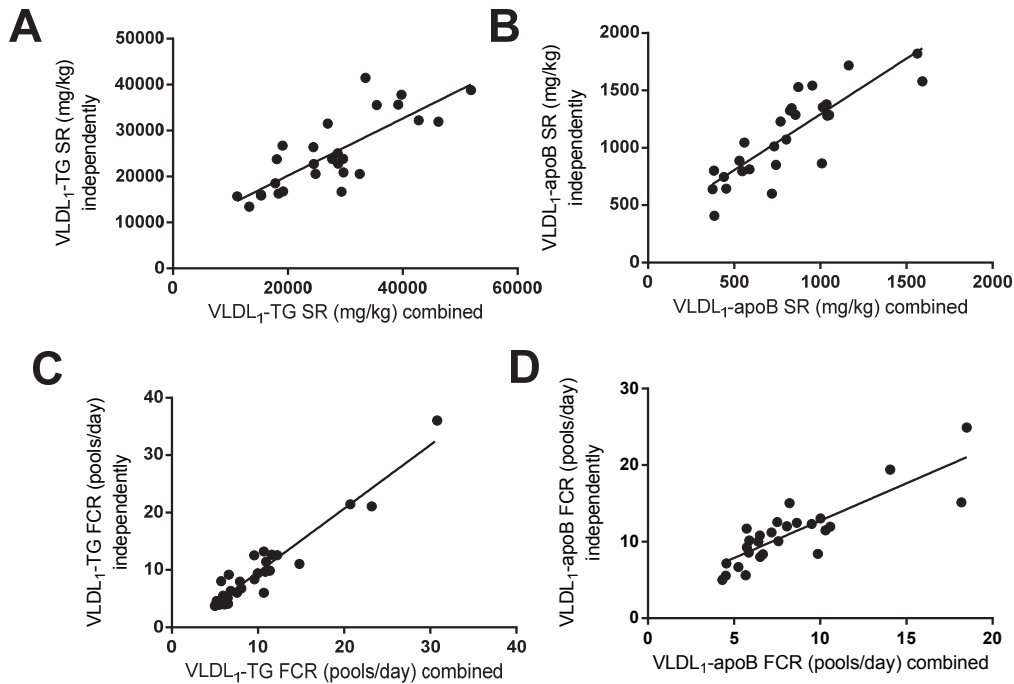


SUPPLEMENTAL MATERIAL

SUPPLEMENTARY FIGURES



Supplementary Figure I. Correlations between the kinetics of VLDL₁-TG and VLDL₁-apoB when modelled using a combined model for apoB100 and TG metabolism in VLDL subfractions. Correlations for (A) secretion rate ($r=0.61$, $P<0.001$), (B) fractional catabolic rate ($r=0.84$, $P<0.001$), (C) direct clearance ($r=0.74$, $P<0.001$) and (D) transfer rates ($r=0.71$, $P<0.001$). $n=46$ in all correlations. For FCR, FDCR and FTR r -values are given by the linear model with the logarithm of triglycerides as independent variable



Supplementary Figure II. Correlation between VLDL₁ kinetic parameters modeled using a either a combined model or independent model for TG and apoB100 metabolism in VLDL₁ (combined on x-axis or independently on y-axis). VLDL₁ Triglyceride and apoB100 kinetic parameters were first determined using a combined model where both triglycerides and apoB100 were modeled together (combined model). Next we also modeled the TG and apoB independently of each other in two separate models (independent). The FCR and SR from the two modeling approaches were plotted against each other. FCR is expressed as pools/day and SR as mg/day. R-square values are 0.64 and 0.91 for VLDL₁-TG SR and VLDL₁-TG FCR and 0.70 and 0.71 for VLDL₁-apoB SR and VLDL₁-apoB FCR, respectively. N=27 in this analysis.

SUPPLEMENTARY TABLES

Supplementary Table I. VLDL₂ Kinetic parameters of the subjects studied

Triglycerides	VLDL ₂ FCR (pools/day)	12.5 (5.4-34.6)
	VLDL ₂ SR (mg/kg/day)	29.6 (9.4-79.6)
	VLDL ₂ pool (mg/kg)	18.8 ± 7.4 (8.3-37.4)
ApoB100	VLDL ₂ FCR (pools/day)	5.3 (2.6-10.5)
	VLDL ₂ SR (mg/kg/day)	2.1 ± 0.9 (0.7-4.2)
	VLDL ₂ pool (mg/kg)	3.2 (1.1-7.4)

Kinetic parameters are given as mean ± SD (min-max) for normally distributed variables and as median (min-max) for non-normally distributed variables. Triglyceride pool (mg/dl) pool can be converted to concentration (mmol/L) by multiplying with 0.0113 and apoB100 pool (mg/dl) can be converted to concentration (g/L) by multiplying with 0.01. FCR, fractional catabolic rate; FDCR, fractional direct catabolic rate, FTR, fractional transfer rate; DSR, direct secretion rate.

Supplementary Table II. Correlations (r-values) between the metabolic characteristics in the subjects studied

	Weight	BMI	Waist	Body fat	Fat mass	Lean mass	Liver fat	Visc. fat	Subc. fat	Glucose	Insulin	HOMA-IR	Plasma TG	HDL-C	LDL-C	LDL size	Apo CIII	Apo CII	Apo A5	Apo E	Resistin	Adiponectin	RBP4	LPL activity	HL activity	LPL mass	PLTP
BMI	0.62†																										
Waist	0.74†	0.75†																									
Body fat	-0.07	0.52†	0.23																								
Fat mass	0.52†	0.81†	0.64†	0.81†																							
Lean mass	0.85†	0.23	0.50†	-0.57†	0.01																						
Liver fat	0.25	0.58†	0.50†	0.42†	0.50†	-0.02																					
Visc. fat	0.52†	0.54†	0.70†	0.19	0.47†	0.36*	0.49†																				
Subc. fat	0.28	0.61†	0.56†	0.64†	0.71†	-0.09	0.34	0.31																			
Glucose	0.22	0.37*	0.34*	0.13	0.25	0.12	0.45†	0.38*	-0.36																		
Insulin	0.22	0.49†	0.52†	0.42†	0.48†	-0.02	0.48†	0.50†	0.39*	0.51†																	
HOMA-IR	0.24	0.51†	0.52†	0.42†	0.49†	-0.01	0.49†	0.51†	0.28	0.63†	0.99†																
Plasma TG	0.30*	0.44†	0.46†	0.19	0.32*	0.13	0.46†	0.36*	0.36	0.17	0.34*	0.32*															
HDL-C	-0.23	-0.15	-0.17	0.05	-0.09	-0.20	0.12	-0.08	0.10	-0.11	-0.16	-0.17	-0.22														
LDL-C	0.07	0.01	-0.01	0.13	0.16	-0.03	0.06	-0.10	0.09	0.00	-0.15	-0.11	-0.18	0.23													
LDL size	-0.42†	-0.32*	-0.39†	-0.01	-0.27	-0.35*	-0.23	-0.45†	0.15	-0.32*	-0.14	-0.19	-0.56†	0.21	0.10												
ApoC-III	0.32*	0.30*	0.36*	0.07	0.22	0.19	0.36*	0.29	0.13	0.00	0.13	0.12	0.84†	0.06	0.01	-0.53†											
ApoC-II	0.16	0.39†	0.29	0.29	0.33*	-0.02	0.47†	0.22	0.26	0.17	0.24	0.23	0.60†	-0.09	0.09	-0.37*	0.50†										
ApoA5	-0.12	-0.07	-0.16	0.07	-0.03	-0.15	0.10	0.01	-0.18	0.05	-0.10	-0.08	0.12	0.06	-0.07	0.04	0.02	0.17									
ApoE	-0.01	0.18	0.12	0.15	0.12	-0.07	0.36*	0.10	0.25	0.08	0.21	0.20	0.60†	-0.17	0.10	-0.38*	0.46†	0.85†	0.09								
Resistin	0.13	0.07	0.02	-0.10	-0.02	0.12	0.04	-0.08	-0.30	-0.07	-0.23	-0.21	0.13	-0.09	0.02	-0.15	0.26	0.05	-0.01	0.00							
Adiponectin	-0.12	0.05	-0.06	0.33*	0.19	-0.27	0.06	0.02	0.29	-0.11	0.04	0.03	0.29	0.22	0.18	-0.17	0.31*	0.26	-0.04	0.30	-0.06						
RBP4	0.09	-0.13	-0.01	-0.21	-0.14	0.18	-0.03	-0.08	-0.33	0.03	0.07	0.08	0.03	0.13	-0.02	-0.02	0.17	-0.05	0.13	-0.04	0.20	-0.23					
LPL activity	-0.45†	-0.15	-0.23	0.19	-0.11	-0.50†	0.20	-0.19	0.08	-0.06	-0.04	-0.05	-0.03	0.08	0.05	0.24	0.04	0.03	0.22	0.01	0.05	0.18	-0.21				
HL activity	0.26	0.31*	0.42†	-0.07	0.11	0.24	0.30	0.42†	0.11	0.11	0.19	0.18	0.17	-0.15	-0.13	-0.13	0.13	0.11	-0.29	0.06	0.08	-0.06	0.12	-0.27			
LPL mass	-0.41†	-0.17	-0.20	0.14	-0.13	-0.41†	0.15	-0.20	0.07	-0.01	-0.08	-0.10	0.07	0.08	-0.16	0.13	-0.01	0.00	0.27	0.03	-0.07	0.15	-0.26	0.70†	-0.39*		
PLTP	-0.01	0.07	0.02	0.07	0.04	-0.06	-0.05	-0.08	0.07	-0.04	-0.01	-0.02	0.24	-0.11	-0.42†	0.05	0.20	0.05	0.01	-0.01	-0.17	-0.03	0.00	0.10	0.09		
CETP	-0.13	-0.03	-0.20	0.11	0.00	-0.16	-0.16	-0.10	-0.08	0.14	0.16	0.20	-0.04	-0.10	-0.01	-0.21	-0.08	-0.02	0.16	0.03	-0.06	0.27	-0.05	0.34*	-0.22	0.08	-0.10

Pearson correlations (r-values) between kinetic parameters and metabolic, lipid and lipase characteristics. Non normally distributed variables were log transformed before analysis. *, P<0.05; †, P<0.01; ‡, P<0.001. Green = positive correlations with P<0.01 or P<0.001, and yellow = negative correlations with P<0.01 or P<0.001.

Supplementary Table III. Correlations with VLDL₂-TG and VLDL₂-apoB kinetic parameters

	VLDL ₂ -TG		VLDL ₂ -apoB	
	FCR	DSR	FCR	DSR
Weight	0.27	0.26	0.11	0.09
BMI	0.05	0.25	0.04	0.21
Waist	0.03	0.33*	0.04	0.22
Body fat	-0.18	0.26	-0.16	0.20
Fat mass	0.00	0.37*	-0.06	0.23
Lean mass	0.31*	0.12	0.18	0.00
Liver fat	0.11	0.28	0.10	0.20
Visceral fat	0.11	0.37*	0.18	0.14
Subcut fat	-0.21	0.14	-0.11	0.31
Glucose	0.06	0.24	-0.04	0.06
Insulin	0.01	0.18	0.12	0.03
HOMA-IR	0.01	0.21	0.10	0.06
P- triglycerides	-0.28	-0.02	-0.25	-0.05
HDL cholesterol	0.00	0.01	-0.07	-0.08
LDL cholesterol	-0.03	-0.02	-0.08	0.04
ApoC-III	-0.34*	-0.10	-0.23	-0.09
ApoC-II	-0.20	0.00	-0.14	-0.06
ApoA5	-0.04	-0.11	-0.21	-0.35*
ApoE	-0.33*	-0.10	-0.18	-0.01
LPL activity	-0.21	-0.18	-0.25	0.03
HL activity	0.23	0.13	0.36*	0.16
LPL mass	-0.32*	-0.07	-0.48†	0.02
Resistin	0.09	-0.14	0.14	-0.10
Adiponectin	-0.34*	-0.13	-0.23	0.08
RBP4	0.14	0.22	0.10	0.01
PLTP	-0.33*	-0.16	-0.31*	-0.01
CETP	-0.05	0.00	-0.06	0.09

Pearson correlations (r-values) between kinetic parameters and metabolic, lipid and lipase characteristics. Non-normally distributed variables were log transformed before analysis. FCR, fractional catabolic rate; FDCR, fractional direct catabolic rate, FTR, fractional transfer rate; DSR, direct secretion rate. *, p<0.05; †, p<0.01; ‡, p<0.001

Supplementary Table IV. Stepwise regression models for (A) VLDL₁-TG SR, (B) VLDL₁-APOB SR, (C) VLDL₁-TG FCR, (D) VLDL₁-APOB FCR and (E,F) plasma triglycerides

(A) VLDL₁-TG SR

Independent	Standardized β	Significance	Adjusted r^2
Liver fat	0.38	0.01	0.34
Fat mass	0.33	0.03	
<i>Weight</i>	-0.03	>0.10	
<i>BMI</i>	-0.20	>0.10	
<i>Waist</i>	-0.01	>0.10	
<i>Body fat</i>	0.08	>0.10	
<i>Visceral fat</i>	-0.004	>0.10	
<i>Glucose</i>	0.13	>0.10	
<i>Insulin</i>	0.002	>0.10	
<i>Age</i>	0.06	>0.10	

(B) VLDL₁-APOB SR

Independent	Standardized β	Significance	Adjusted r^2
Liver fat	0.52	<0.001	0.25
<i>Fat mass</i>	0.20	>0.10	
<i>Weight</i>	0.26	>0.10	
<i>BMI</i>	0.21	>0.10	
<i>Waist</i>	0.20	>0.10	
<i>Body fat</i>	0.04	>0.10	
<i>Visceral fat</i>	0.22	>0.10	
<i>Glucose</i>	-0.05	>0.10	
<i>Insulin</i>	0.036	>0.10	
<i>Age</i>	-0.114	>0.10	

(C) VLDL₁-TG FCR

Independent	Standardized β	Significance	Adjusted r^2
ApoC-III	-0.46	<0.04	0.19
<i>ApoE</i>	-0.018	>0.10	
<i>Age</i>	0.085	>0.10	
<i>HL activity</i>	-0.27	>0.10	
<i>ApoC-II</i>	-0.006	>0.10	

(D) VLDL₁-APOB FCR

Independent	Standardized β	Significance	Adjusted r^2
ApoC-III	-0.52	<0.001	0.39
HL activity	-0.33	<0.019	
<i>ApoE</i>	-0.046	>0.10	
<i>Age</i>	-0.047	>0.10	
<i>ApoC-II</i>	0.046	>0.10	

(E) Plasma triglycerides and VLDL₁ triglyceride kinetic parameters

Independent	Standardized β	Significance	Adjusted r^2
VLDL ₁ -FCR	-0.73	<0.001	0.76
VLDL ₁ -SR	0.71	<0.001	
VLDL ₁ -FTR*	-0.16	0.1	

(F) Plasma triglycerides and VLDL₁ apoB kinetic parameters

Independent	Standardized β	Significance	Adjusted r^2
VLDL ₁ -SR	0.42	<0.001	0.63
VLDL ₁ -FCR	-0.41	<0.001	
VLDL ₁ -FTR**	-0.36	<0.01	

Stepwise multivariable regression analysis of kinetic parameters and plasma triglycerides, including into the model all the variables that correlated in bivariate analysis with $P \leq 0.10$ and potential confounding factors such as gender and study center. Non normally distributed variables were log transformed before analysis. *excluding FTR gives an adjusted r^2 of 0.74; **excluding FTR gives an adjusted r^2 of 0.56

Supplementary Table V. Correlations with VLDL₁-TG and VLDL₁-apoB kinetic parameters within men, n=37

	VLDL ₁ -TG				VLDL ₁ -apoB			
	FCR	FDCR	FTR	SR	FCR	FDCR	FTR	SR
Weight	0.14	0.05	0.14	0.40*	0.04	0.12	-0.12	0.42*
BMI	0.00	-0.03	-0.05	0.48†	-0.11	0.00	-0.23	0.46†
Waist	-0.04	0.00	-0.06	0.55‡	-0.10	0.16	-0.35*	0.49†
Body fat	0.24	0.23	-0.01	0.54‡	0.19	0.22	-0.19	0.44†
Fat mass	0.23	0.16	0.10	0.52‡	0.15	0.20	-0.14	0.47†
Lean mass	0.05	-0.07	0.20	0.23	-0.04	0.05	-0.04	0.28
Liver fat	0.04	-0.03	-0.06	0.57‡	0.01	0.04	-0.23	0.59‡
Visceral fat	-0.06	-0.17	0.20	0.38*	-0.01	0.01	-0.01	0.46†
Subcut fat	-0.42	-0.30	-0.28	0.56†	-0.43	-0.21	-0.38	0.61†
Glucose	0.31	0.18	0.11	0.45†	0.24	0.28	-0.05	0.21
Insulin	-0.09	-0.14	-0.06	0.38*	-0.13	0.08	-0.23	0.33*
HOMA-IR	0.00	-0.07	-0.01	0.43†	-0.05	0.12	-0.19	0.33*
P- triglycerides	-0.49†	-0.29	-0.56‡	0.47†	-0.55‡	-0.10	-0.71‡	0.49†
HDL cholesterol	0.02	-0.12	0.12	-0.19	0.09	0.10	0.01	-0.20
LDL cholesterol	0.32	0.21	0.22	0.02	0.28	0.00	0.23	0.00
ApoC-III	-0.42*	-0.24	-0.52†	0.27	-0.45†	-0.08	-0.63‡	0.39*
ApoC-II	-0.28	-0.18	-0.23	0.21	-0.27	-0.06	-0.25	0.30
ApoA5	-0.20	-0.20	0.03	0.00	-0.05	-0.07	-0.13	-0.06
ApoE	-0.39*	-0.27	-0.36*	0.14	-0.46†	-0.27	-0.27	0.17
LPL activity	-0.03	0.01	-0.12	-0.10	0.07	0.07	-0.02	0.08
HL activity	-0.05	0.03	-0.17	0.36*	-0.11	0.08	-0.17	0.34
LPL mass	-0.03	-0.02	-0.01	-0.12	0.05	0.14	-0.03	-0.02
Resistin	0.00	0.04	-0.05	-0.01	-0.05	-0.10	-0.09	-0.01
Adiponectin	-0.29	-0.29	-0.22	-0.16	-0.26	-0.15	-0.15	0.10
RBP4	-0.12	-0.03	-0.08	0.12	-0.11	0.06	-0.27	0.15
PLTP	-0.27	-0.05	-0.34*	-0.06	-0.17	0.10	-0.32	0.12
CETP	0.07	0.01	-0.05	0.04	-0.01	0.04	0.06	-0.10

Pearson correlations (r-values) between kinetic parameters and metabolic, lipid and lipase characteristics in men. Non-normally distributed variables were log transformed before analysis. FCR, fractional catabolic rate; FDCR, fractional direct catabolic rate, FTR, fractional transfer rate; SR, secretion rate. *, P<0.05; †, P<0.01; ‡, P<0.001. Correction for multiple testing was not performed due to the exploratory nature of the study.