

**Supplementary Table S1: Uni- and multivariate logistic regression analysis for restrictive lung disease in all patients**

	No RLD n=210	RLD n=45	univariate p*	$\beta$	multivariate OR [Exp (B)]	p**
Age (years)	57.4 [55.9/58.8]	60.3 [57.1/63.6]	<0.1	0.03	1.03 [0.99/1.07]	n.s.
Gender (f/m)	117/93	19/26	0.1	-0.34	0.72 [0.34/1.5]	n.s.
Controls (yes, n[%])	45 [94]	3 [6]	----	----	----	----
Pre-Diabetes (yes, n[%])	62 [91]	6 [9]	----	0.39	1.48 [0.4/6.22]	n.s.
new diag. type 2 diabetes (yes, n[%])	23 [79]	6 [21]	----	1.36	3.91 [0.9/17.1]	0.07
long term type 2 diabetes (yes, n[%])	80 [73]	30 [27]	----	<b>1.78</b>	<b>5.82 [1.71/20.52]</b>	<b>&lt;0.01</b>
History of Smoking (yes, n[%])	26 [13]	7 [15]	n.s.	0.31	1.37 [0.50/3.75]	n.s.
History of CVD (yes, n[%])	20 [10]	5 [11]	n.s.	0.36	1.43 [0.5/4.47]	n.s.
History of aHT (yes, n[%])	111 [54]	31 [69]	<0.1	0.30	1.35 [0.49/3.74]	n.s.
mMRC-scale (0-4)	0.2 [0.12/0.22]	1.3 [1.0/1.6]	<b>&lt;0.01</b>	----	----	----
BMI (kg/m <sup>2</sup> )	30.5 [29.7/31.3]	32.8 [30.8/34.8]	<b>&lt;0.05</b>	0.05	1.05 [0.99/1.11]	n.s.
HbA1c (%)	6.2 [6.1/6.4]	7.0 [6.6/7.4]	<b>&lt;0.01</b>	----	----	----
HbA1c (mmol/mol)	44 [43/46]	53 [49/57]	<b>&lt;0.01</b>	----	----	----
Triglyceride (mg/dl)	147 [132/162]	189 [156/221]	<b>&lt;0.05</b>	0.01	1.01 [1.0/1.02]	n.s.
Cholesterol (mg/dl)	199 [193/205]	187 [173/201]	<0.1	-0.01	0.99 [0.98/1.01]	n.s.
eGFR (ml/min*1.73m <sup>2</sup> )	94.3 [91.8/96.9]	94.8 [85.7/104.0]	n.s.	----	----	----
FVC (%)	104.2 [102.4/106.0]	72.9 [72.0/79.8]	<b>&lt;0.01</b>	----	----	----
SB-Dlco (%)	89.8 [87.8/91.7]	69.1 [62.6/75.5]	<b>&lt;0.01</b>	----	----	----
TLC-B (%)	101.4 [99.4/102.6]	74.7 [72.3/77.1]	<b>&lt;0.01</b>	----	----	----
FEV1/VC (%)	97.7 [96.0/99.4]	103.8 [98.6/109.1]	<b>&lt;0.01</b>	----	----	----

Data given in mean [95%CI] or n [%]

Univariate comparison between patients with restrictive lung disease vs. patients with normal lung function were performed via one-way-ANOVA for metric variables and via  $\chi^2$ -test for dichotomous variables (p\*-values)

*Legend Supplementary Table S1 (continued):*

Multivariate logistic regression analysis was performed forward and backward with likelihood-ratio, odds ratio (Exp [B]) is given in mean [95%CI] (p\*\*-values); p-values <0.1 are printed cursive and p-values <0.05 are printed bold.

Abbreviations: aHT, arterial Hypertension; BMI, body mass index; CVD, cardio-vascular disease; eGFR, estimated glomerular filtration rate; FEV1/VC, forced expiratory volume in 1-sec. adjusted to vital capacity; FVC, forced vital capacity; TLC-B, total lung capacity measured with bodyplethysmography; LF, lung function, mMRC, modified British Medical Research Council breathlessness scale ;OR, odds ratio, RLD, restrictive lung disease; SB-DLco, single breath diffusion capacity of the lung for carbon monoxide; T2D, type 2 diabetes mellitus

**Supplementary Table S2: Uni- and multivariate logistic regression analysis for restrictive lung disease in patients with type 2 diabetes**

	No RLD n=103	RLD n=36	<u>univariate</u> p*	$\beta$	<u>multivariate</u> OR [Exp (B)]	p**
Age (years)	60.0 [58.1/62.0]	61.2 [57.4/65.0]	n.s.	0.02	1.02 [0.98/1.07]	n.s.
Gender (f/m)	47/56	14/22	n.s.	-0.53	0.59 [0.2/1.5]	n.s.
Diabetes duration (years)	10.0 [7.8/12.2]	10.9 [8.3/13.42]	n.s.	----	----	----
History of Smoking (yes, n[%])	15 [15]	5 [14]	n.s.	-0.14	0.87 [0.24/3.1]	n.s.
History of CVD (yes, n[%])	6 [6]	4 [11]	n.s.	0.76	2.15 [0.5/8.51]	n.s.
History of aHT (yes, n[%])	70 [71]	27 [75]	n.s.	-0.27	0.77 [0.3/2.2]	n.s.
mMRC-scale (0-4)	0.18 [0.1/0.26]	1.47 [1.2/1.79]	<0.01	----	----	----
BMI (kg/m <sup>2</sup> )	31.4 [30.3/32.6]	33.1 [30.8/35.4]	n.s.	0.03	1.03 [0.97/1.10]	n.s.
HbA1c (%)	6.9 [6.7/7.2]	7.3 [6.9/7.7]	0.08	3.31	27.4 [0.1/5836]	n.s.
HbA1c (mmol/mol)	52 [50/55]	56 [52/61]	0.08	----	----	----
Triglyceride (mg/dl)	166 [149/184]	201 [162/240]	0.05	0.01	1.01 [0.99/1.01]	n.s.
Cholesterol (mg/dl)	191 [182/199]	183 [167/200]	n.s.	-0.01	0.99 [0.98/1.01]	n.s.
Polyneuropathy (yes, n[%])	48 [47]	19 [53]	n.s.	-0.39	0.68 [0.27/1.69]	n.s.
Retinopathy (yes, n[%])	20 [19]	7 [19]	n.s.	0.19	1.21 [0.42/3.53]	n.s.
Nephropathy (yes, n[%])	23 [23]	16 [44]	<b>&lt;0.05</b>	<b>1.03</b>	<b>2.73 [1.2/6.14]</b>	<b>&lt;0.01</b>
FVC (%)	101.5 [99.1/103.8]	77.0 [73.1/80.9]	<b>&lt;0.01</b>	----	----	----
SB-Dlco (%)	89.0 [86.4/91.5]	66.5 [59.6/73.3]	<b>&lt;0.01</b>	----	----	----
TLC-B (%)	100.4 [98.8/102.1]	73.9 [72.0/75.7]	<b>&lt;0.01</b>	----	----	----
FEV1/VC (%)	98.8 [96.2/101.5]	104.4 [98.1/110.7]	<b>&lt;0.01</b>	----	----	----

Data given in mean [95%CI] or n [%]

Univariate comparison between patients with restrictive lung disease vs. patients with normal lung function were performed via one-way-ANOVA for metric variables and via  $\chi^2$ -test for dichotomous variables (p\*-values)

Multivariate logistic regression analysis was performed forward and backward with likelihood-ratio, odds ratio (Exp [B]) is given in mean [95%CI] (p\*\*-values); p-values <0.1 are printed cursive and p-values <0.05 are printed bold.

*Legend Supplementary Table S2 (continued):*

Abbreviations: aHT, arterial Hypertension; BMI, body mass index; CVD, cardio-vascular disease; eGFR, estimated glomerular filtration rate; FEV1/VC, forced expiratory volume in 1-sec. adjusted to vital capacity; FVC, forced vital capacity; TLC-B, total lung capacity measured with bodyplethysmography; LF, lung function, mMRC, modified British Medical Research Council breathlessness scale; OR, odds ratio; RLD, restrictive lung disease; SB-DLco, single breath diffusion capacity of the lung for carbon monoxide

**Supplementary Table S3: Uni- and multivariate logistic regression analysis for restrictive lung disease in patients with type 2 diabetes and nephropathy and non-diabetic patients**

	no RLD n=130	RLD n=25	<u>univariate</u> p*	beta	<u>multivariate</u> OR [Exp (B)]	p**
Age (years)	55.8 [53.9/57.8]	61.1 [57.1/65.1]	<b>&lt;0.05</b>	0.03	1.03 [0.98/1.08]	n.s.
Gender (f/m)	82/48	10/15	<b>&lt;0.05</b>	-0.59	0.55 [0.21/1.47]	n.s.
Type 2 diabetes (yes, n [%])	23 [18]	16 [64]	<b>&lt;0.01</b>	<b>2.15</b>	<b>8.57 [3.36/21.9]</b>	<b>&lt;0.01</b>
History of Smoking (yes, n [%])	15 [12]	5 [20]	n.s.	0.35	1.42 [0.37/5.42]	n.s.
History of CVD (yes, n [%])	15 [12]	2 [8]	n.s.	0.02	1.02 [0.18/5.63]	n.s.
History of aHT (yes, n [%])	59 [46]	18 [72]	<b>&lt;0.05</b>	0.20	1.21 [0.37/3.98]	n.s.
mMRC-scale (0-4)	0.17 [0.1/0.2]	1.24 [0.8/1.7]	<b>&lt;0.01</b>	----	----	----
BMI (kg/m <sup>2</sup> )	30.3 [29.3/31.3]	32.6 [29.7/35.5]	<i>&lt;0.1</i>	0.04	1.04 [0.96/1.13]	n.s.
HbA1c (%)	5.9 [5.7/6.0]	7.1 [6.5/7.7]	<b>&lt;0.01</b>	----	----	----
HbA1c (mmol/mol)	41 [39/42]	54 [48/61]	<b>&lt;0.01</b>	----	----	----
Triglyceride (mg/dl)	147 [124/170]	186 [144/227]	n.s.	----	----	----
Cholesterol (mg/dl)	206 [198/214]	185 [166/204]	<i>&lt;0.05</i>	-0.01	0.99 [0.98/1.01]	n.s.
eGFR (ml/min*1.73m <sup>2</sup> )	91.1 [88.2/94.0]	82.8 [70.9/94.8]	n.s.	----	----	----
urinary ACR (mg/g) #	8.1 [4.6/23.4]	35.9 [10.5/101.1]	<i>&lt;0.01</i>	----	----	----
Nephropathy (yes, n [%])	23 [18]	16 [64]	<b>&lt;0.01</b>	----	----	----
FVC (%)	105.2 [102.7/107.6]	75.7 [69.0/82.3]	<b>&lt;0.01</b>	----	----	----
SB-Dlco (%)	90.5 [87.9/93.2]	65.1 [56.0/74.1]	<b>&lt;0.01</b>	----	----	----
TLC-B (%)	100.7 [98.2/103.2]	73.9 [70.8/77.0]	<b>&lt;0.01</b>	----	----	----
FEV1/VC (%)	96.7 [94.6/98.9]	105.6 [98.6/112.5]	<b>&lt;0.01</b>	----	----	----

Data given in mean [95%CI] or n [%] or (#) median [25./75.percintile]

Univariate comparison between patients with restrictive lung disease vs. patients with normal lung function were performed via one-way-ANOVA for metric variables and via  $\chi^2$ -test for dichotomous variables (p\*-values)

Multivariate logistic regression analysis was performed forward and backward with likelihood-ratio, odds ratio (Exp [B]) is given in mean [95%CI] (p\*\*-values); p-values <0.1 are printed cursive and p-values <0.05 are printed bold.

*Legend Supplementary Table S3 (continued):*

Abbreviations: ACR, albumin-creatinine-ratio; aHT, arterial Hypertension; BMI, body mass index; CVD, cardio-vascular disease; eGFR, estimated glomerular filtration rate; FEV1/VC, forced expiratory volume in 1-sec. adjusted to vital capacity; FVC, forced vital capacity; TLC-B, total lung capacity measured with bodyplethysmography; LF, lung function, mMRC, modified British Medical Research Council breathlessness scale; OR, odds ratio; RLD, restrictive lung disease; SB-DLco, single breath diffusion capacity of the lung for carbon monoxide

