

INSTRUCTIONS FOR USING THE GLI TLCO EXCEL SHEET CALCULATOR  
Update (July/17/2017)

What the software does:

1. The software works on Microsoft Excel 10 for Windows
2. Reads the input spreadsheet (Sheet2)
3. Calculates predicted values, their lower limits of normal (5th centiles), Z-Scores, Percent Predicted and Percentile of the following outcomes: **TLCO, KCO and VA in SI units**
4. Displays the data in the output spreadsheet (Sheet3)

You will first need to enable macros for excel in the following manner:

1. Select the file/option button
2. Click on Excel Options
3. Go to the Trust Center
4. Click on Trust Center Settings
5. Go to Macro Settings
6. Click on Enable all Macros

Then you will have to format the input sheet as follows:

- 1) Fill out the appropriate columns using a new row for each subject.
  - If there is any columns that does not pertain to a certain subject leave that cell blank
- 2) To run the program once all the data has been entered press ctrl-F
- 3) If you wish to reset the program press ctrl-R

The following characteristics apply to the input:

Variables	Units	Example	Limits	Valid Age Range (years)
ID	-	4, 7AB, ABOH	-	-
Sex	Integer or string	1, <b>Male</b> 2, <b>Female</b>	-	-
Age	Years	45.57	3.0 – 95.0	-
Height	Cm	175.1	50-250	-
TLCO	mmol·min <sup>-1</sup> ·kPa <sup>-1</sup>	8.1	1-25	4 – 80
VA	L	4.8	0-15	4 – 80
KCO	mmol·min <sup>-1</sup> ·kPa <sup>-1</sup>	1.7	0-10	4 - 80

- **If Sex is string it must be specific as upper M, Male, F or Female**
  - lower case male, female will not produce correct values
- **TLCO and KCO are in SI units. To convert TLCO from traditional units**

TLCO SI units (mmol·min<sup>-1</sup>·kPa<sup>-1</sup>) = TLCO Traditional units (mL·min<sup>-1</sup>·mmHg<sup>-1</sup>)/2.986421

- **TLCO should be adjusted for the inspiratory oxygen partial pressure at standard barometric pressure ( $P_B$ , 101.3 kPa)**

If you have any questions you may contact Sanja Stanojevic at: [sanja.stanojevic@sickkids.ca](mailto:sanja.stanojevic@sickkids.ca)

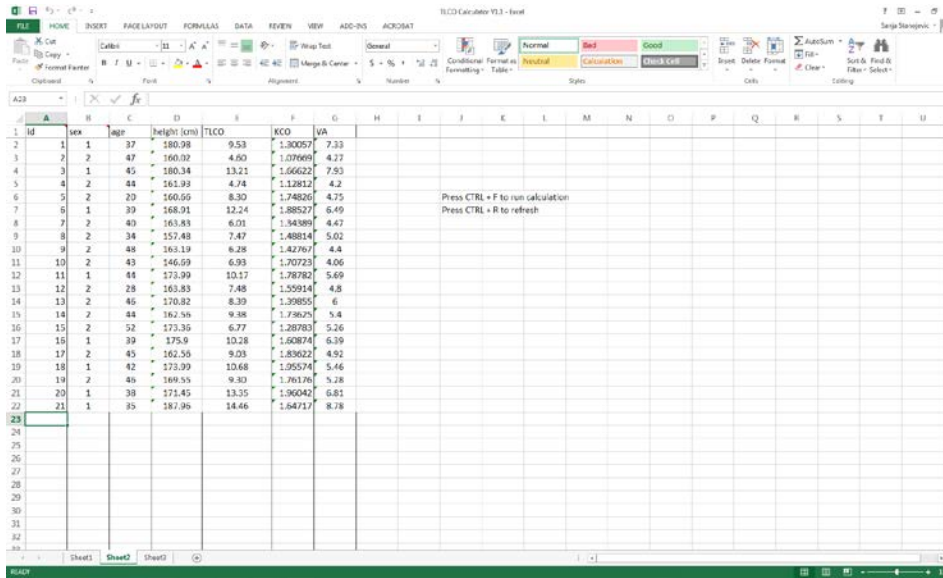
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For SI units (mmol; kPa):  $T_{L,CO} [P_B, \text{adjusted}] = T_{L,CO} \cdot (0.505 + 0.00488 \cdot P_B)$

- If a fixed dead space volume is used, TLCO must also be corrected for dead space

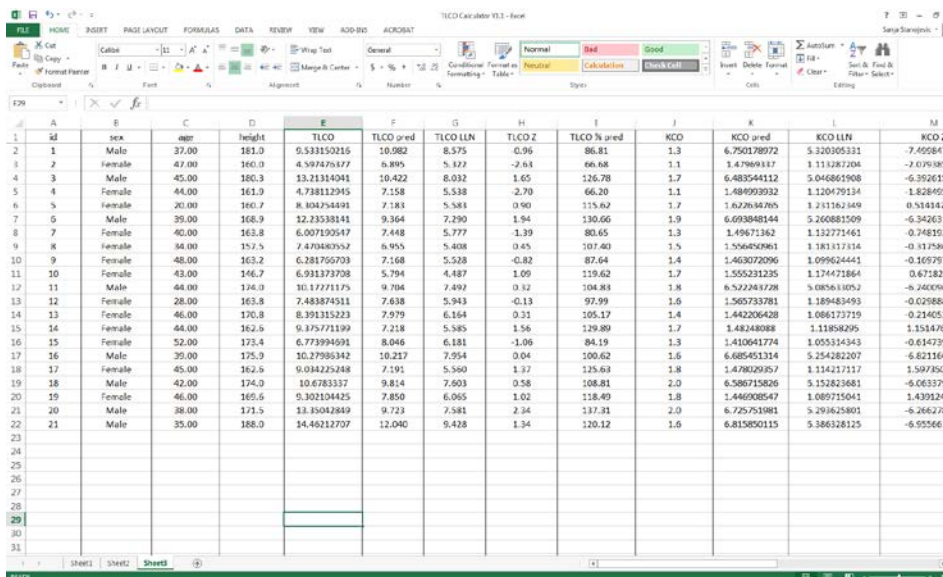
$$T_{L,CO}' = T_{L,CO} \cdot (V_I - V_{D, \text{equip}} - V_{D, \text{an, est}}) / (V_I - V_{D, \text{equip}} - V_{D, \text{an, fixed}})$$

Figure 1: Example TLCO Calculator input (Sheet 2)



ID	sex	age	height (cm)	TLCO	KCO	VA
1	1	37	180.98	9.53	1.30057	7.33
2	2	47	160.92	4.60	1.07669	4.27
3	1	45	180.34	13.21	1.56622	7.93
4	2	44	161.99	4.74	1.12812	4.2
5	2	20	160.66	8.30	1.74826	4.75
6	1	39	168.01	12.24	1.88527	6.49
7	2	40	163.83	6.01	1.34389	4.47
8	2	34	157.48	7.47	1.48814	5.02
9	2	48	163.19	6.28	1.42767	4.4
10	2	43	146.69	6.93	1.70723	4.06
11	1	44	173.99	10.17	1.78782	5.69
12	2	28	163.83	7.48	1.50914	4.8
13	2	46	170.82	8.39	1.39855	6
14	2	44	162.55	9.38	1.73625	5.4
15	2	52	173.35	6.77	1.28763	5.26
16	1	39	175.9	10.28	1.60874	6.39
17	2	45	162.55	9.03	1.83022	4.92
18	1	42	173.99	10.68	1.95574	5.46
19	2	46	169.55	9.30	1.76176	5.28
20	1	38	171.45	13.35	1.96042	6.81
21	1	35	187.95	14.46	1.64717	8.78

Figure 2: Example TLCO Calculator Output (Sheet 3)



sex	age	height	TLCO	TLCO p pred	TLCO LLN	TLCO Z	TLCO % pred	KCO	KCO p pred	KCO LLN	KCO Z	
1	Male	37.00	181.0	9.533150215	10.982	8.575	0.96	86.81	1.3	6.750178972	5.23035331	-7.4558474
2	Female	47.00	160.0	4.597476177	6.895	5.127	-2.61	66.68	1.1	4.79691137	1.111281204	-2.0761855
3	Male	45.00	180.3	13.21314041	10.422	8.032	1.65	126.78	1.7	6.483544112	5.046861908	-6.926151
4	Female	44.00	161.9	4.738112945	7.158	5.338	-2.70	66.20	1.1	1.484993932	1.120479134	1.828455
5	Female	20.00	160.7	8.304754491	7.183	5.581	0.90	115.62	1.7	1.622634765	1.211162349	0.5141471
6	Male	39.00	168.9	12.23538141	9.364	7.790	1.94	130.66	1.9	6.693848144	5.260881509	-6.346331
7	Female	40.00	163.8	6.097105617	7.448	5.777	1.39	80.65	1.3	1.49471362	1.13277161	-0.748152
8	Female	34.00	157.5	7.470489752	6.955	5.408	0.45	107.40	1.5	1.506492961	1.181117134	-0.115386
9	Female	48.00	163.2	6.281756703	7.168	5.528	-0.82	87.64	1.4	1.463072096	1.099624441	-0.169797
10	Female	43.00	146.7	6.931373708	5.794	4.487	1.09	119.62	1.7	1.555231235	1.174471864	0.671827
11	Male	44.00	174.0	10.17771175	9.704	7.492	0.32	104.83	1.8	6.522241728	5.085611052	-6.240964
12	Female	28.00	163.8	7.483874511	7.638	5.943	-0.13	97.99	1.6	1.565733781	1.189483493	-0.029888
13	Female	46.00	170.8	8.391315223	7.979	6.164	0.31	105.17	1.4	1.442206428	1.086173719	-0.2146528
14	Female	44.00	162.5	6.195711199	7.218	5.385	1.56	129.89	1.7	1.44344088	1.13958295	1.1514761
15	Female	52.00	173.4	6.773994591	8.046	6.181	-1.06	84.19	1.3	1.410641774	1.055314343	-0.614735
16	Male	35.00	175.9	10.27986342	10.217	7.954	0.04	100.62	1.6	6.685451314	5.254282207	-6.8211664
17	Female	45.00	162.9	9.034225248	7.191	5.560	1.37	125.63	1.8	1.478029357	1.114217117	1.5978501
18	Male	42.00	174.0	10.6783337	9.814	7.603	0.58	108.81	2.0	6.586715826	5.152823681	-6.0633798
19	Female	46.00	165.6	9.302104425	7.850	6.065	1.02	118.49	1.8	1.446008547	1.089715041	1.4391241
20	Male	38.00	171.5	13.35042849	9.723	7.581	2.34	137.31	2.0	6.725751981	5.294615801	-6.2661284
21	Male	35.00	188.0	14.46212707	12.040	9.428	1.34	120.12	1.6	6.813850115	5.386328125	-6.9556619

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