MVV = FEV_1 × ?

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Background: Maximum voluntary ventilation (MVV) is rarely measured, as most laboratories estimate from FEV_1. Guidelines are non-specific in their recommendations of which multiplier to use, with factors ranging from 30 to 45.
Aim: To determine the appropriate multiplier for the West Australian population.
Method: Data were taken from 95 consecutive cardiopulmonary exercise tests (46 female and 49 male). Spirometry and MVV were measured in the same session using a MedGraphics CPX Express cardiopulmonary system. The data were analysed using paired sample *t*-tests to assess the variance between measured MVV and estimated MVV.
Results: A survey of laboratory practices in Australia and New Zealand found that of twenty-six respondents, sixteen performed exercise tests. Eight laboratories estimate using 35, whereas six use 40 as a multiplier. Two laboratories measure MVV.
When FEV_1x35 was used to estimate MVV, the difference from measured was significant for both males ($p<0.0001$) and females ($p=0.0002$). Using FEV_1x40 the differences were not significant for either males ($p=0.2$) or females ($p=0.5$).
Combining the data yielded the following:

	Mean ±SD (n=95) L,BTPS/min	Significance vs MVV
MVV	99.4 ± 31.2	-
FEV_1x35	87.0 ± 28.5	<0.0001
FEV_1x40	99.5 ± 32.5	0.99

The mean FEV_1x35 differed significantly from the mean measured MVV ($p<0.05$). On the other hand the mean FEV_1x40 was not significantly different from the mean measured MVV ($p>0.05$).
Conclusion: The use of 35 as a multiplier underestimated MVV by 13%. We recommend the use of FEV_1x40 for the estimation of MVV in the West Australian population.

Key Words: Estimated, MVV, FEV_1, survey.