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Examination of Suunto t6 regarding Validity and Reliability

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Overview

1. Test Set Up
2. Presentation of Intermediate Results

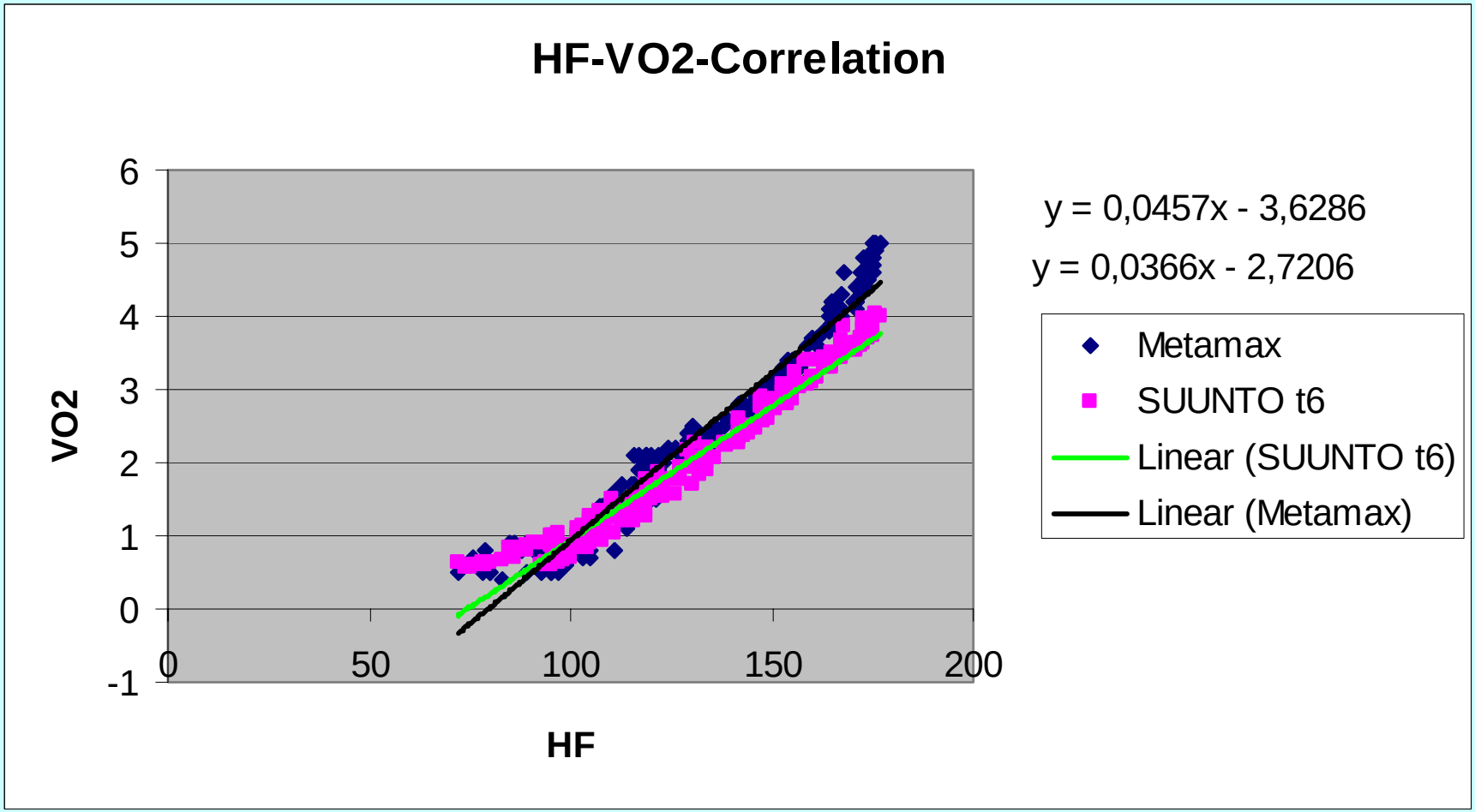
   a) Correlation of VO_2-Values

   b) Correlation of AF-Values
3. Bland-Altman Plots
4. Comparison of energy-conversion-values with HF-Monitoring-Method

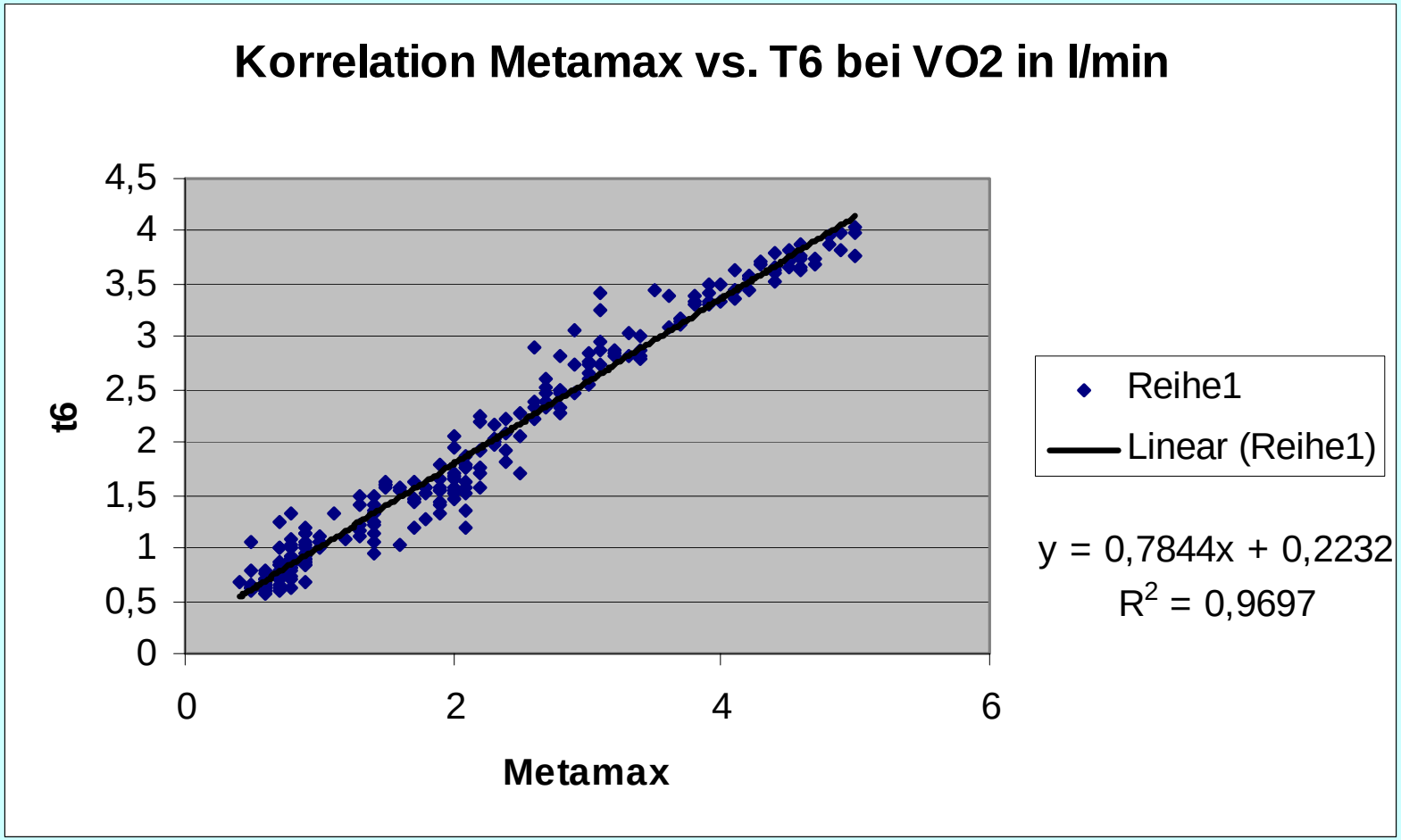
1. Test Set Up

Testpersons	Male	female
Relaxation phase	2 min lying	
	2 min sitting	
1. Exertion phase	2 min cycling at 50 Watts on stationary bike	2 min cycling at 25 Watts on stationary bike
2. Exertion phase	1 min per exertion-level on stationary bike until exhaustion	
1. Recovery phase	7 min at 50 Watts	
2. Recovery phase	Until respiratory values reach the values of the relaxation phase	

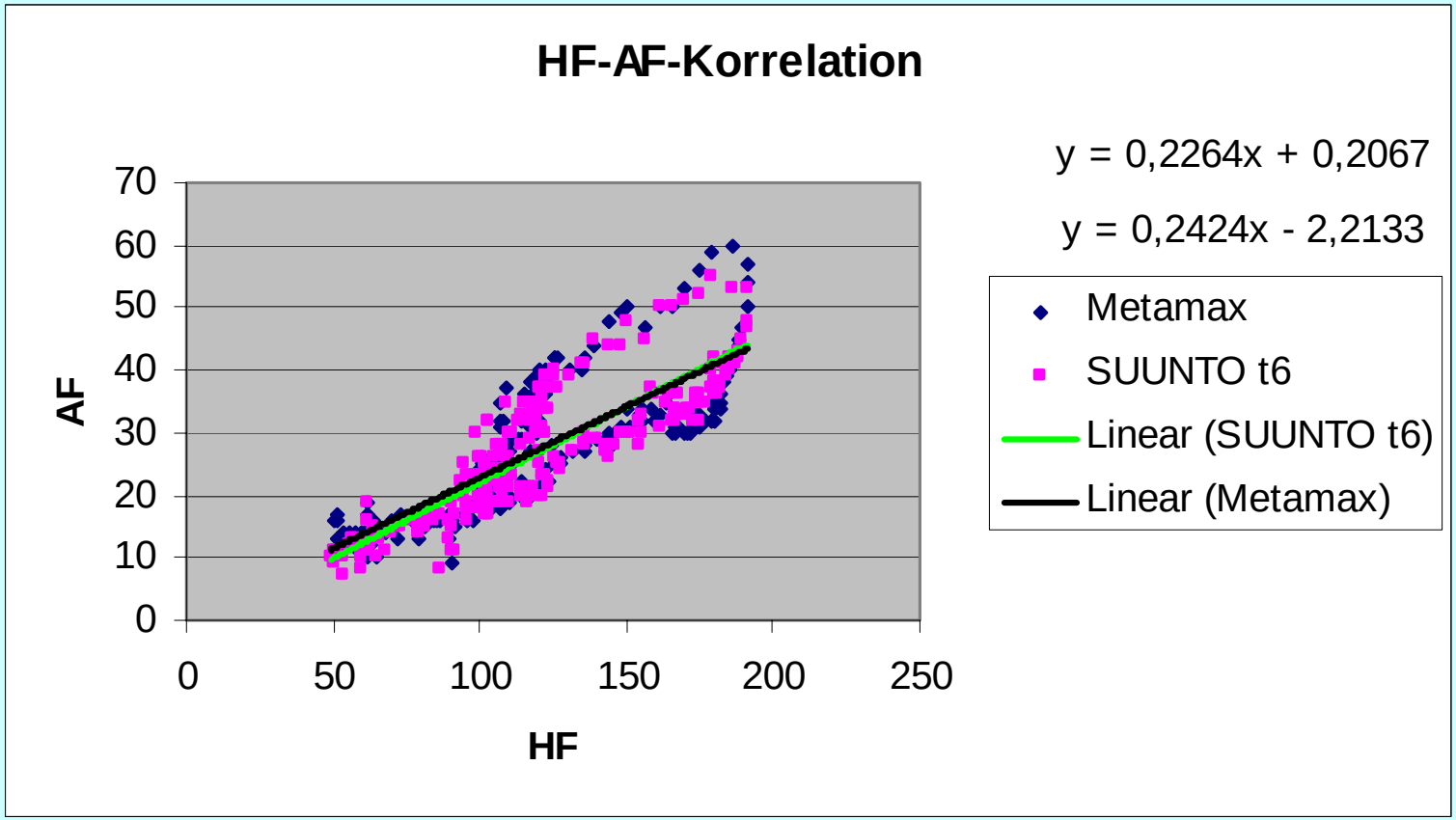
2. Presentation of Intermediate Results



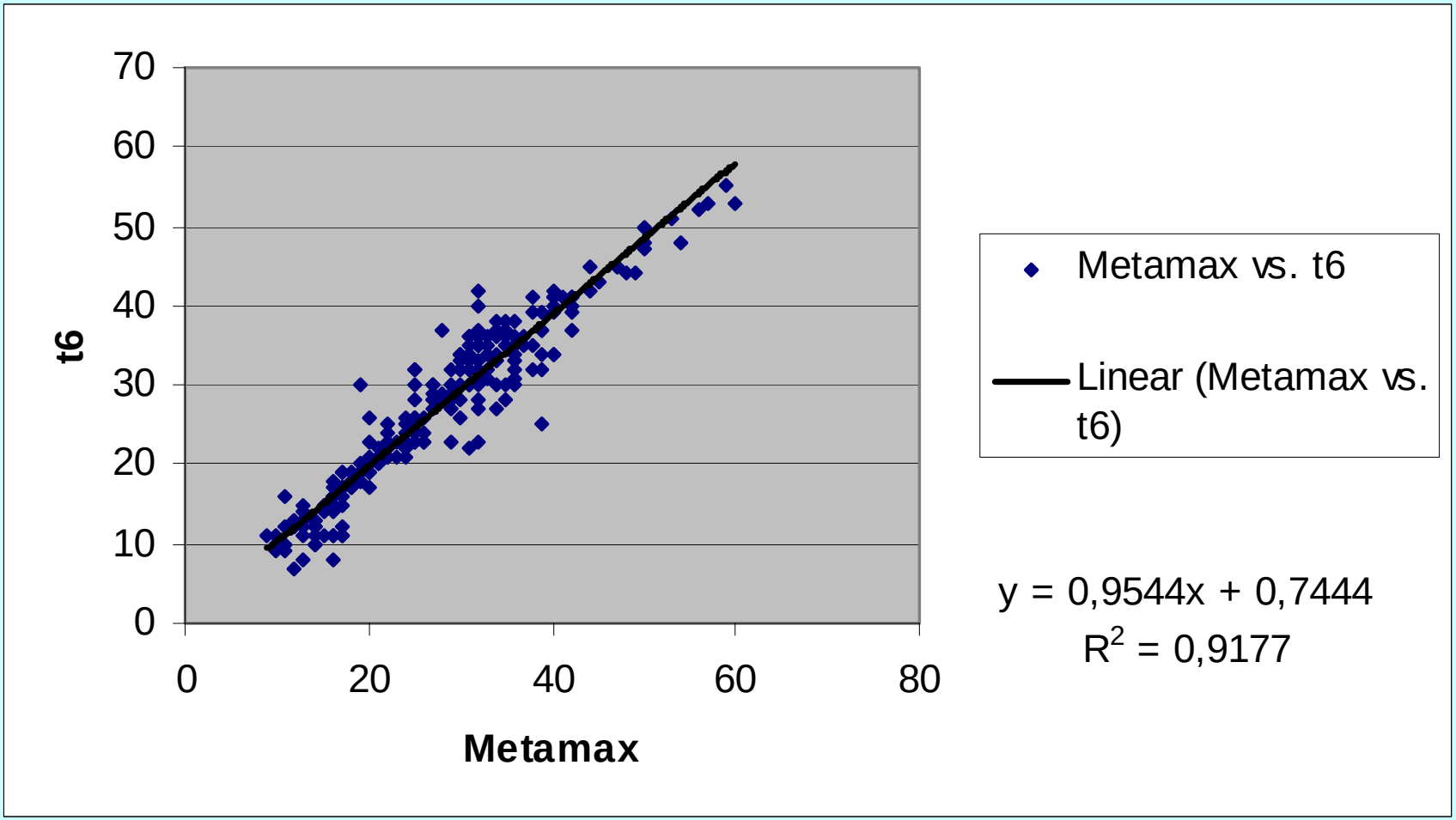
a) Correlation of VO_2-Values



b) Correlation of AF-Values



Correlation of Metamax and Suunto t6 with AF

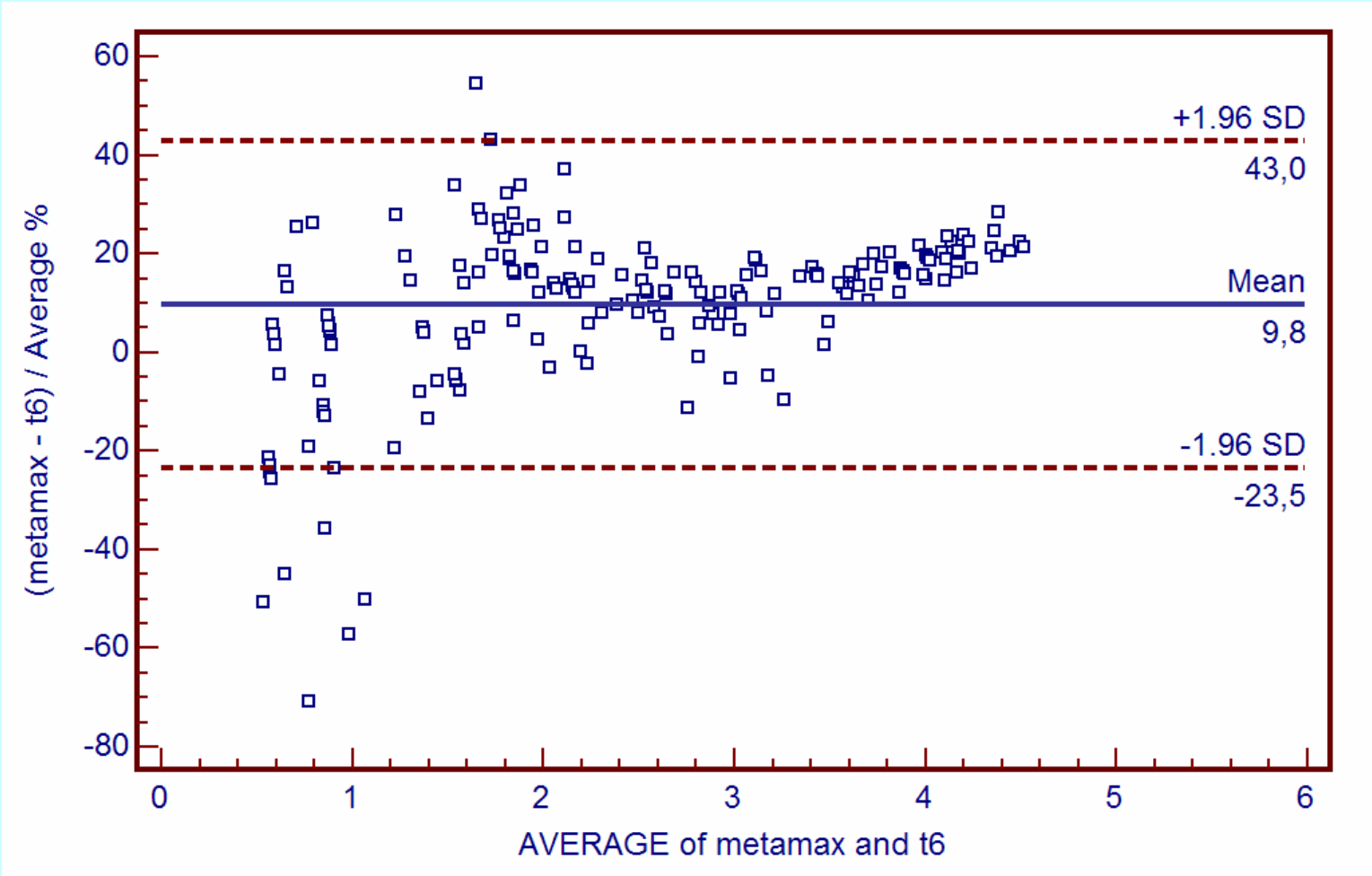


Intermediate Conclusion

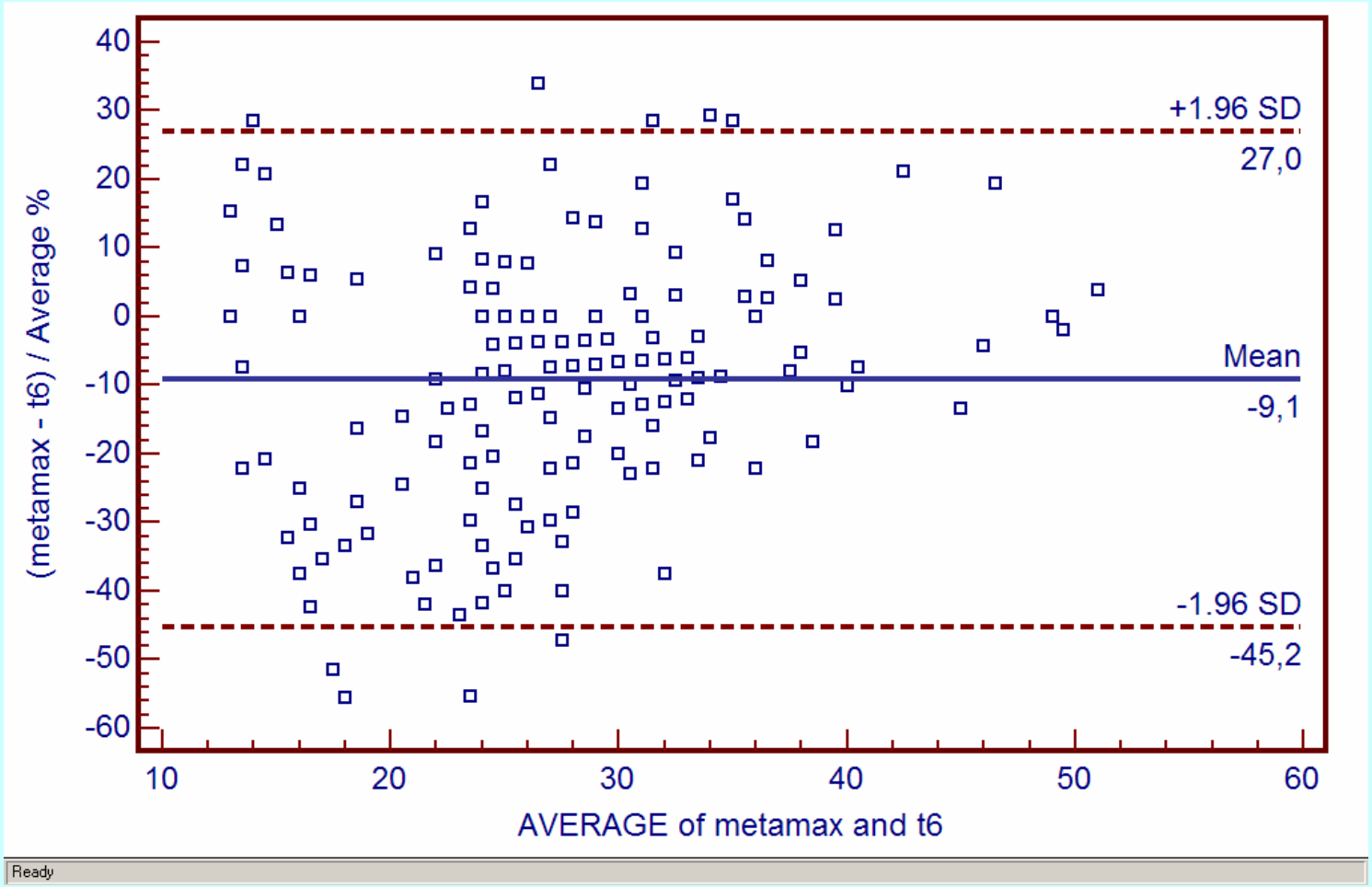
- Oxygen consumption correlation between Metamax and Suunto t6: $r > 0,95$
- Respiration rate correlation between Metamax and Suunto t6: $r > 0,96$

3. Bland-Altman Plots

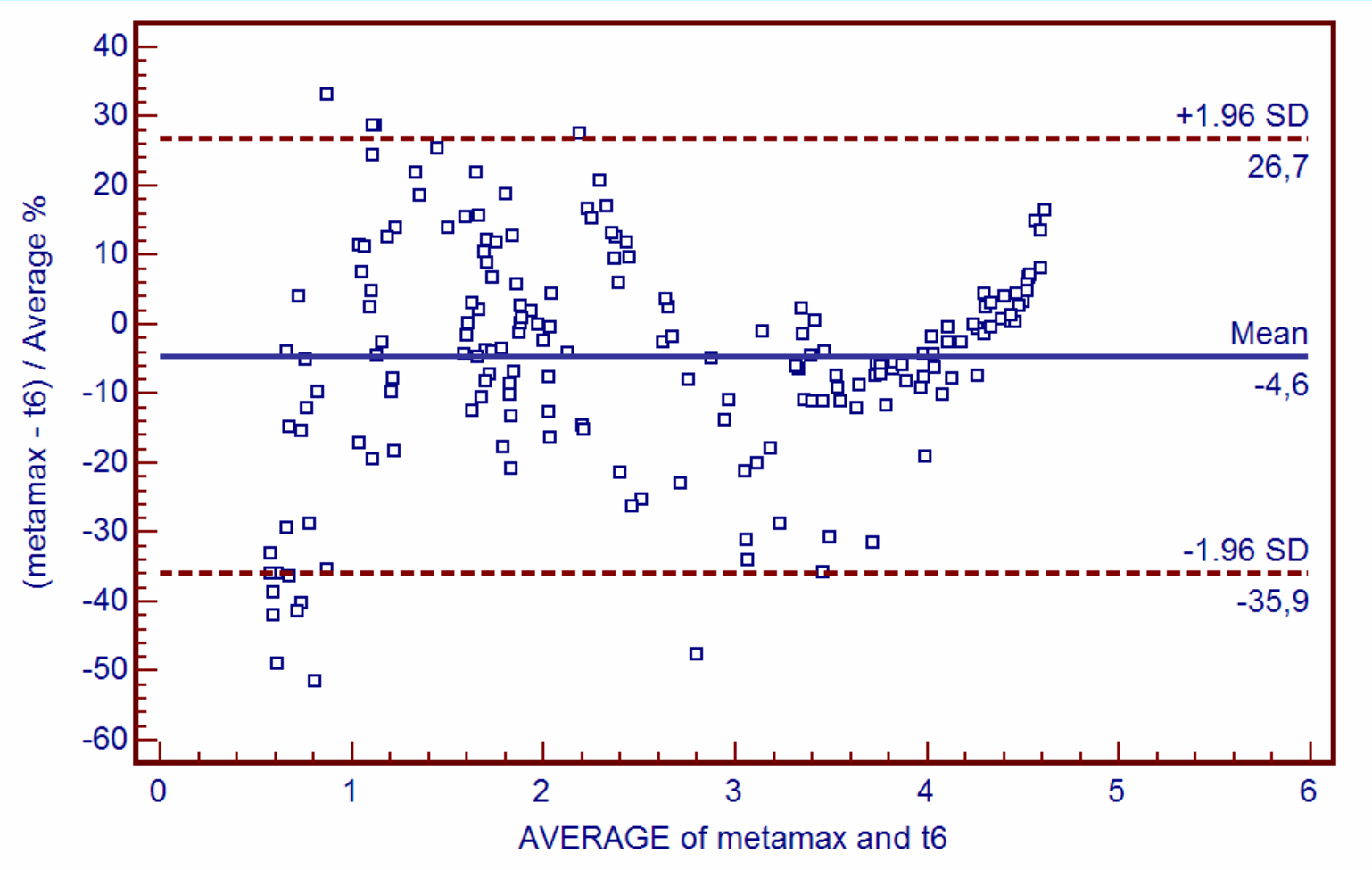
Bland-Altman Plot for VO_2



Bland-Altman Plot for AF

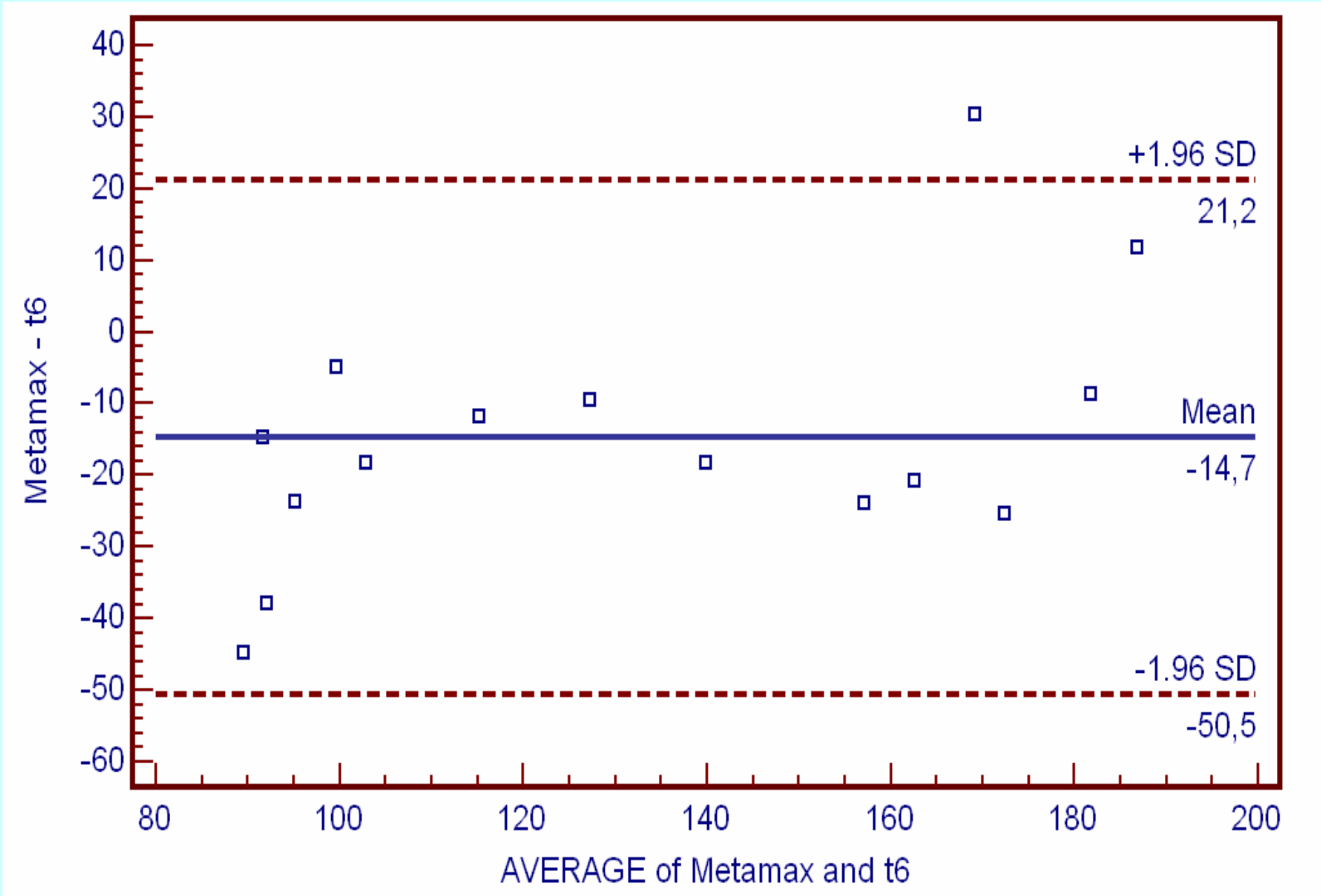


Bland-Altman Plot for VO_2 2. Kalk.

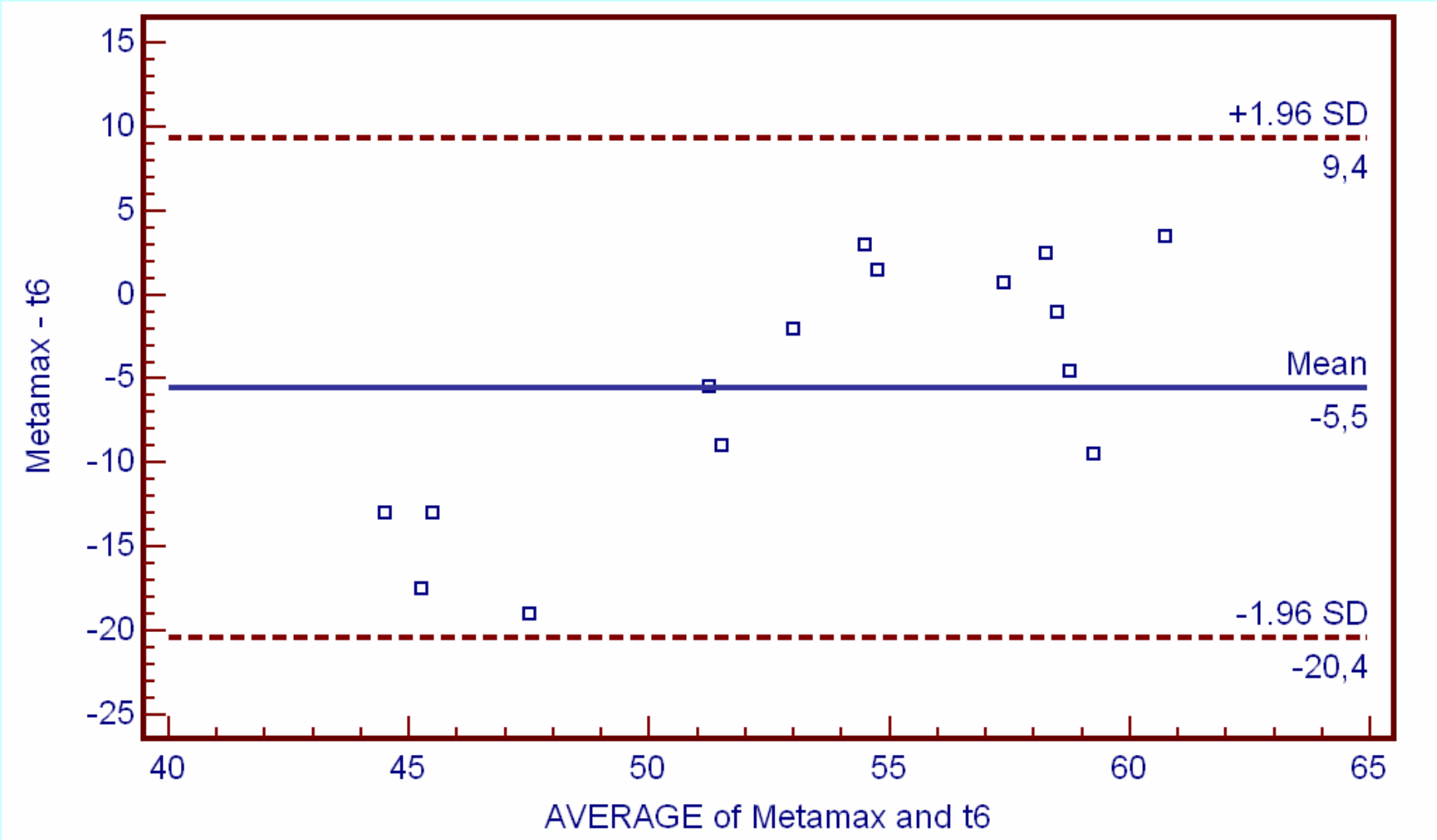


Bland-Altman Plots of all Max-values

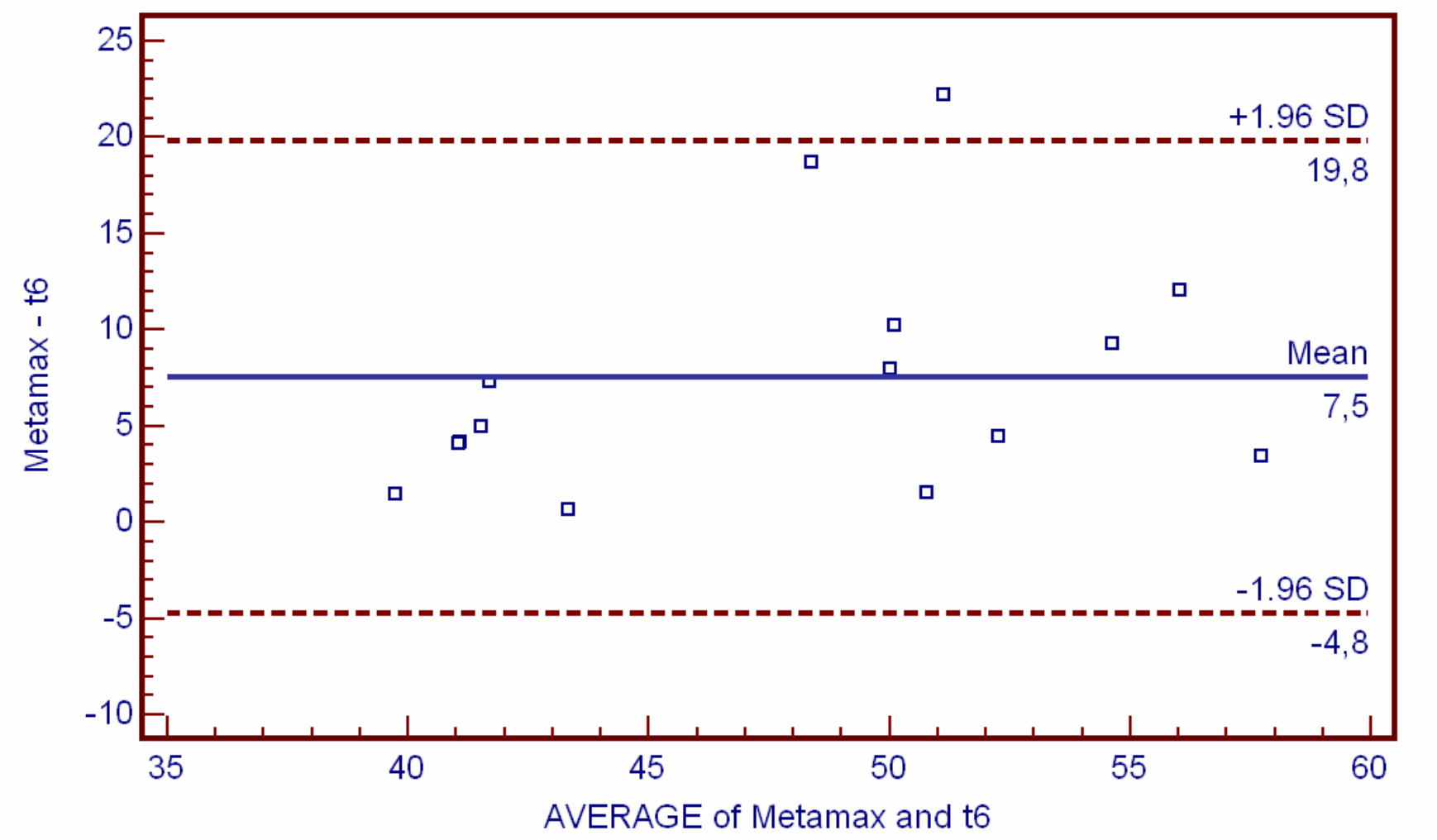
Maximum Values Ventilation 1. Calk (n=16)



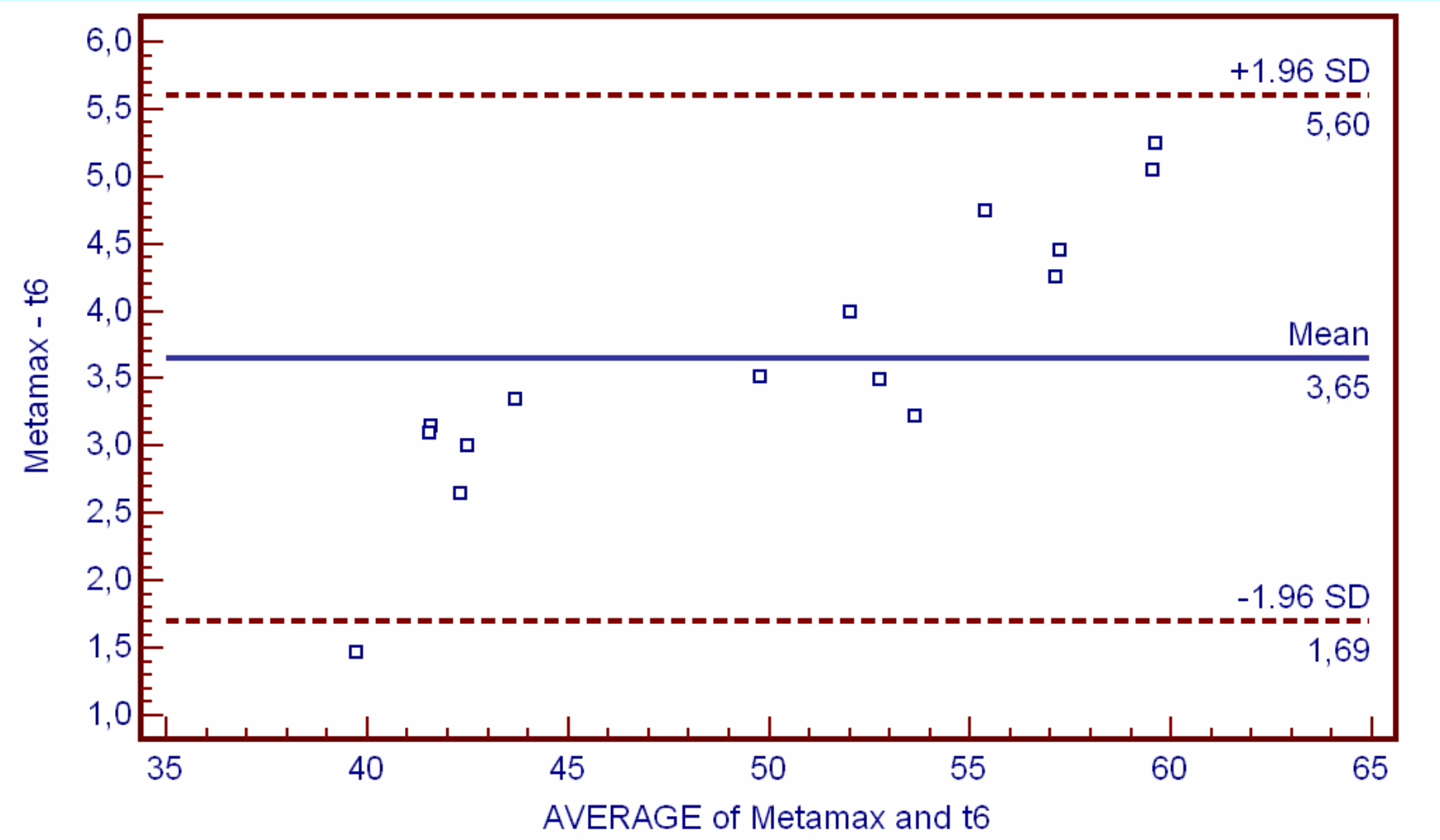
Maximum Values Respiration Rate (n=16)



Maximum Values VO2 1. Calk (n=16)



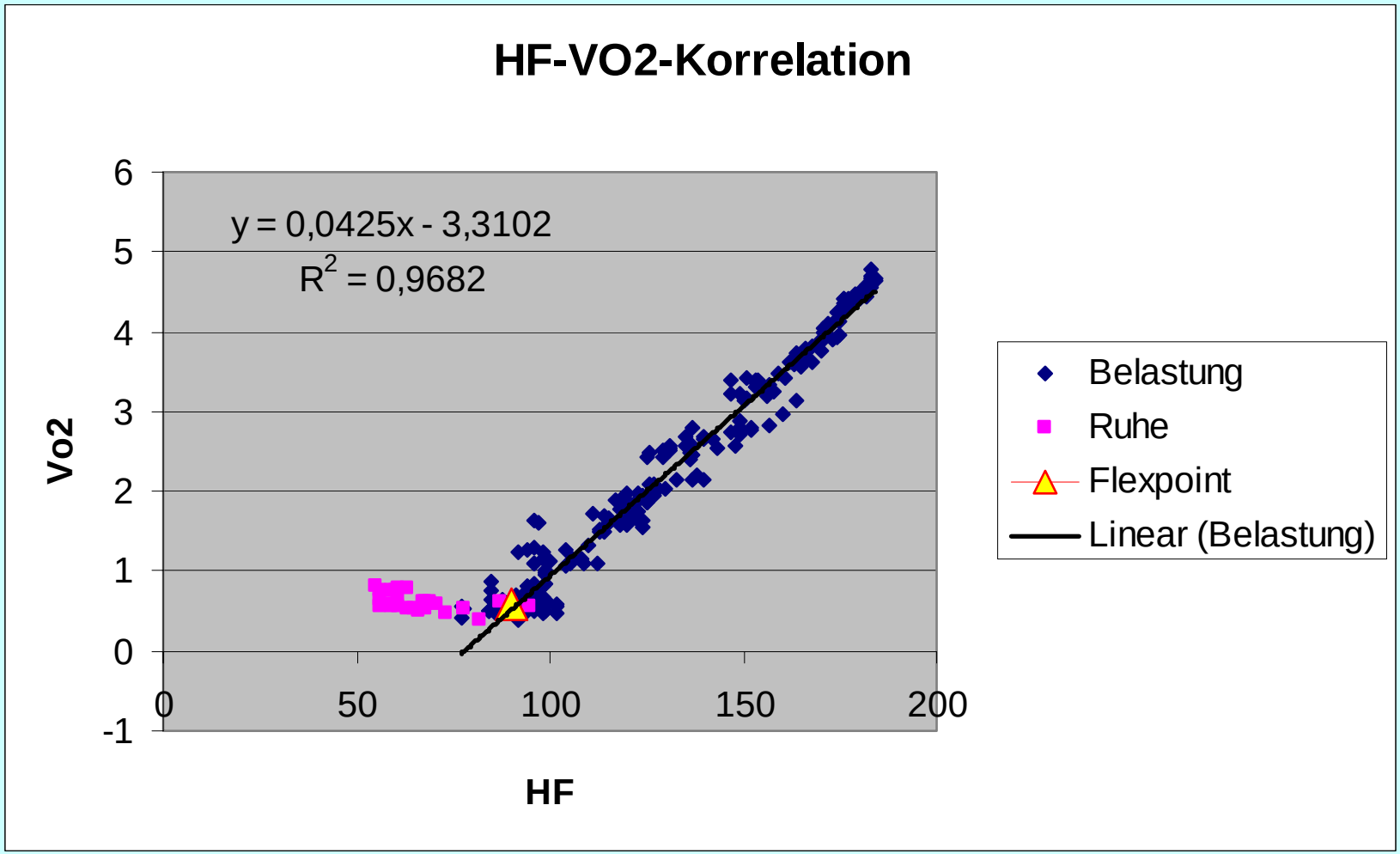
Maximum Values VO2 2. Calk (n=16)



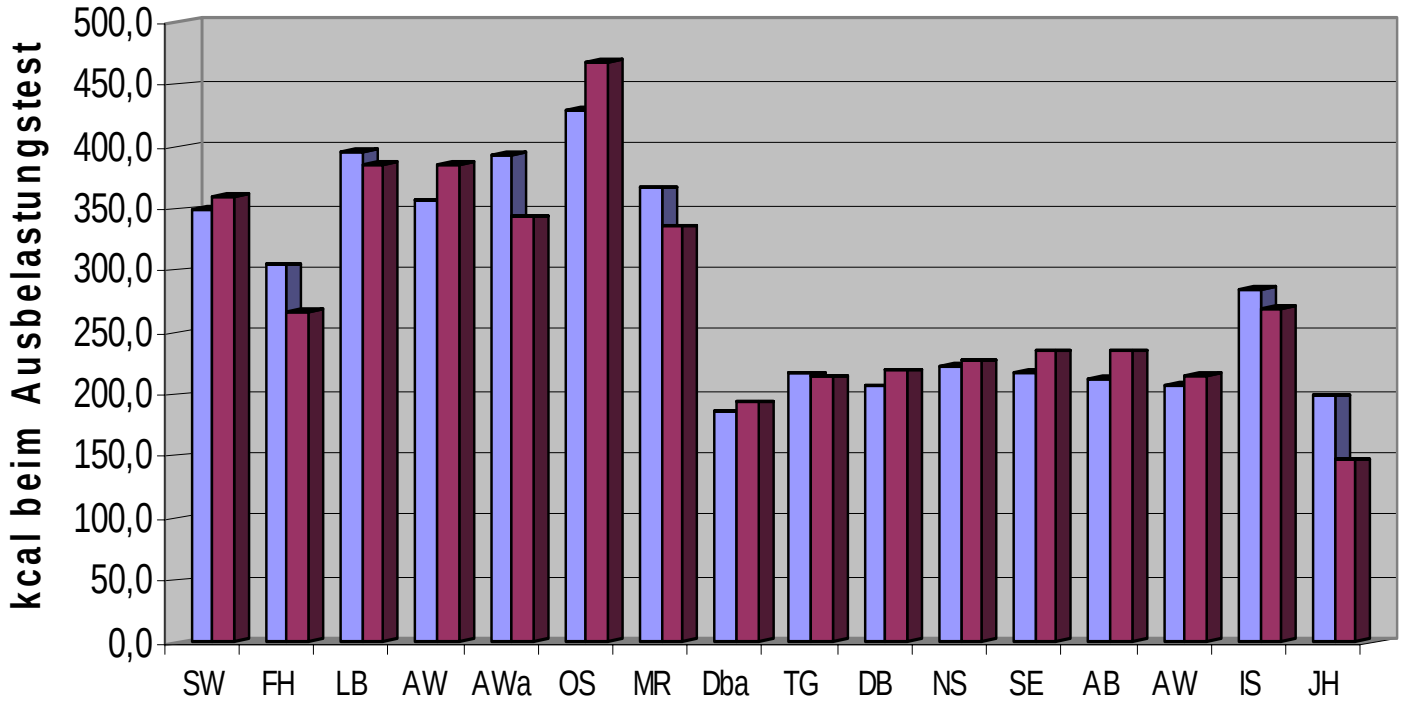
Intermediate Conclusion

- Suunto t6 provides for ventilation ± 12%, respiration rate ± 14% and oxygen consumption ± 9% reliable values during the maximum stress test until exhaustion.

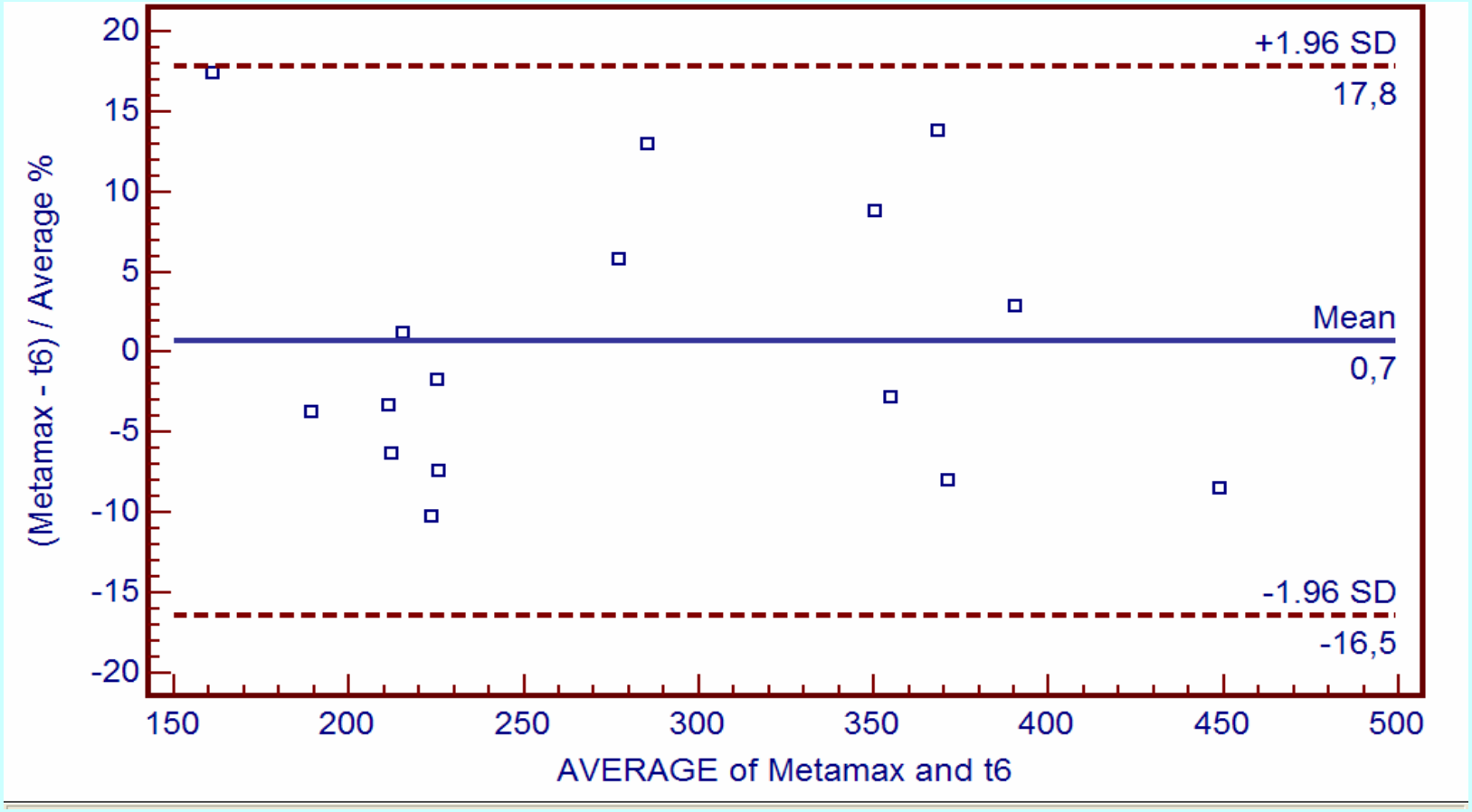
4. HF-Monitoring-Method



Comparison of Energy Consumption between HF-Monitoring und Suunto t6



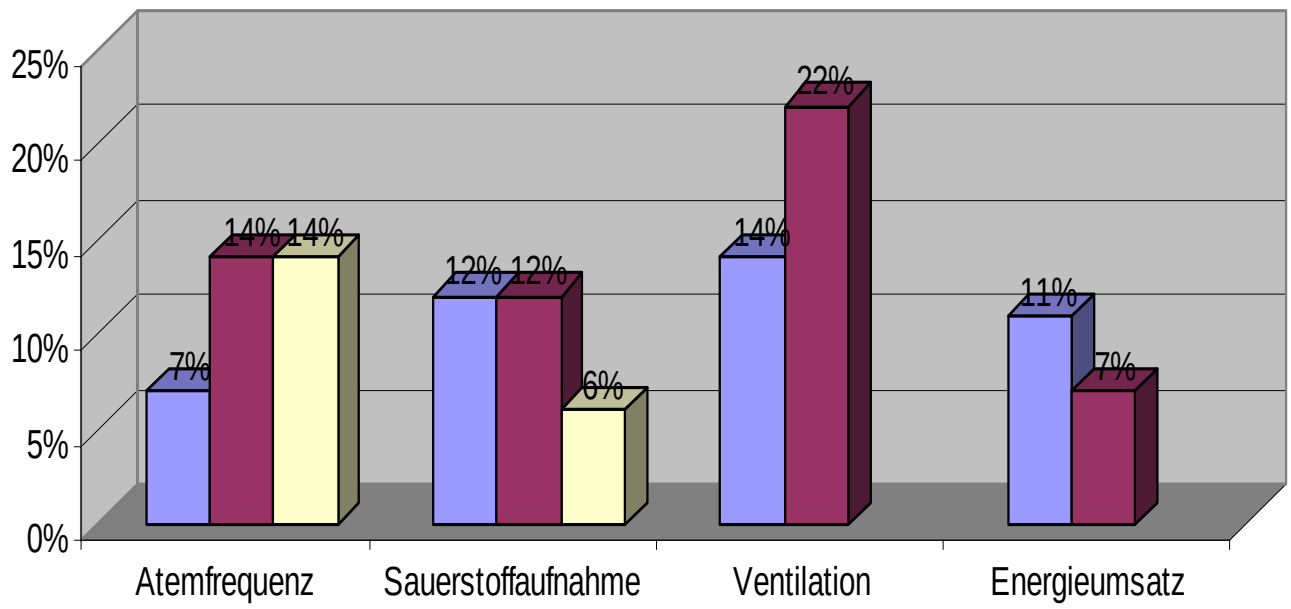
Bland-Altman Plot for Energy Consumption



Intermediate Conclusion

- Suunto t6 provides in comparions to HF-Monitoring-Method reliable values with a deviation of ± 7% during a maximum stress test until exhaustion

Deviations


Vergleich der Studien von Firstbeat und der Uni Bayreuth
25%
20%
15%
10%
5%
0%
7%
14%
14%
12%
12%
6%
14%
22%
11%
7%
Atemfrequenz
Sauerstoffaufnahme
Ventilation
Energieumsatz
Studie Firstbeat
Studie Bayreuth 1.kalk
Studie Bayreuth 2.kalk

Conclusion

- The correlation for respiration rate and oxygen consumption between Metamax and Suunto t6 is very high
- Suunto t6 provides reliable values during a maximum stress test until exhaustion for ventilation, respiration rate - especially for oxygen consumption and energy consumption

END

Thanks for your attention!