TRAINING PRESCRIPTION GUIDED BY HRV IN CYCLING

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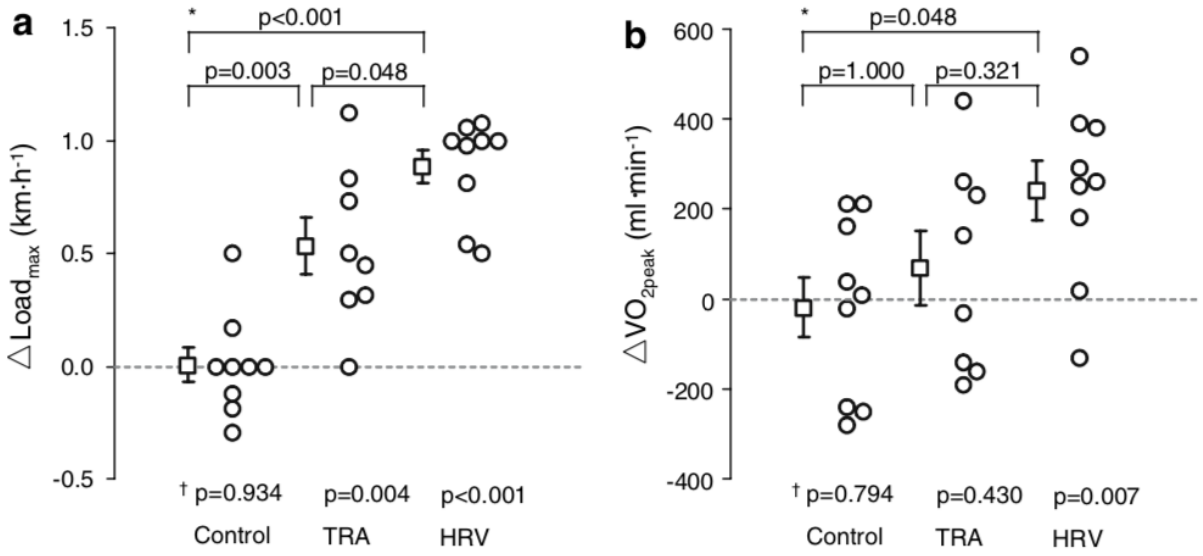
Introduction

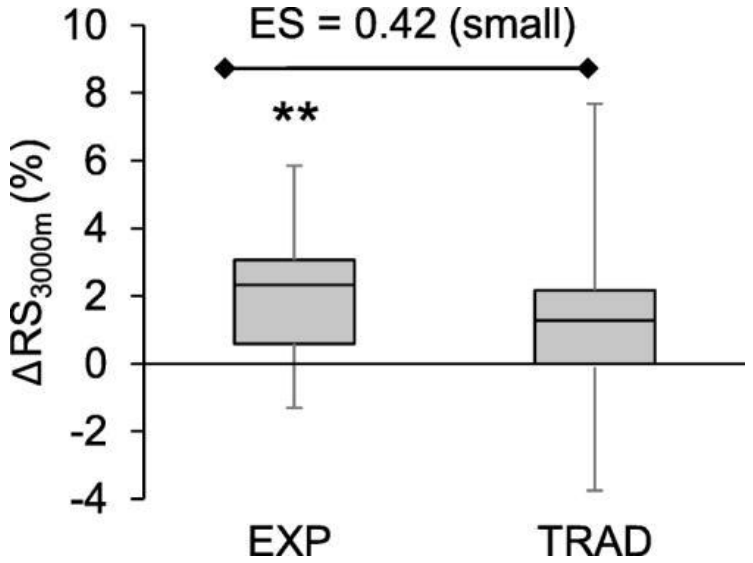
- Demands of road cycling
- Input-output relationship: Optimization
- HRV as an indirect measure of ANS: Fatigue and adaptation

Introduction

In runners…



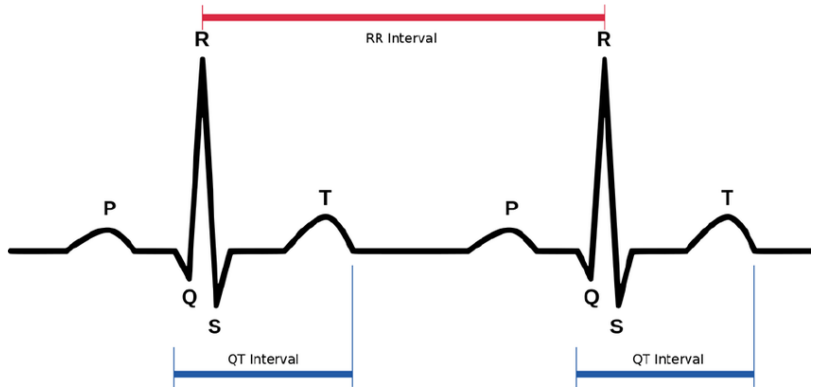
Kiviniemi et al.(2007)



Vesterinen et al.(2016)

Introduction

Daily prescription vs. Predefined prescription

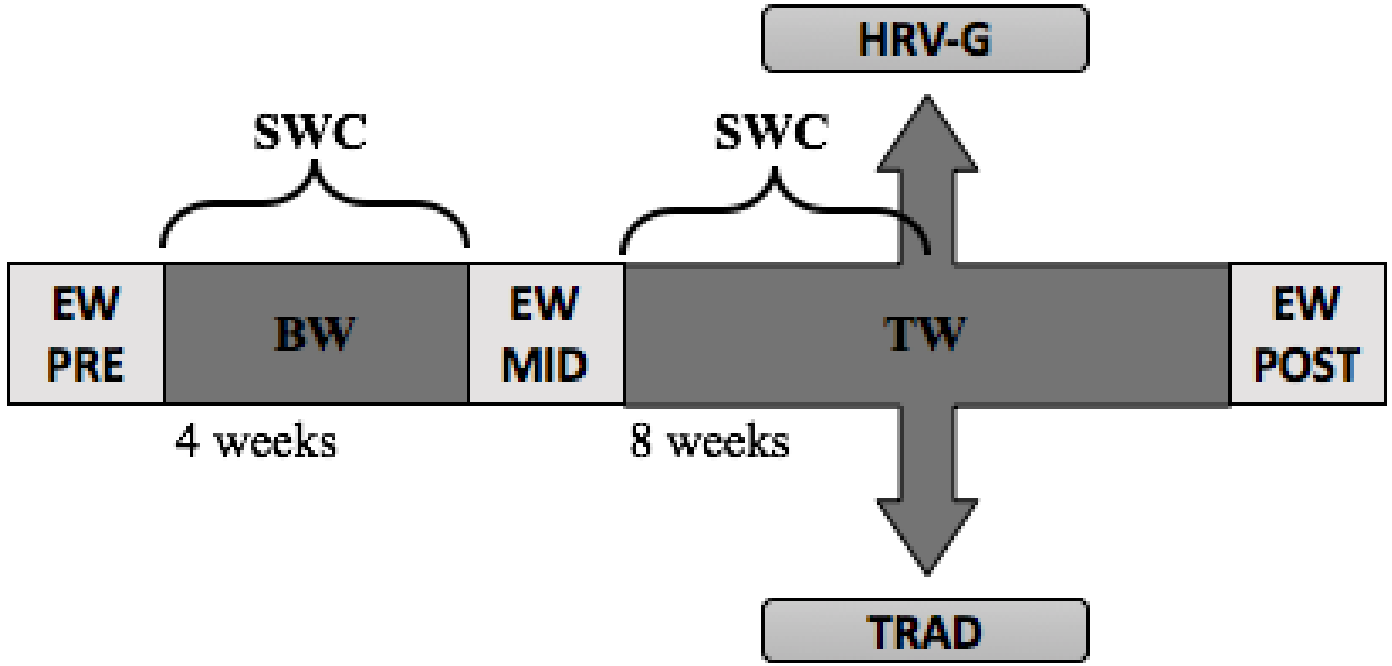


Method

- Participants

❖ 17 well-trained cyclists

- Experimental design



Method

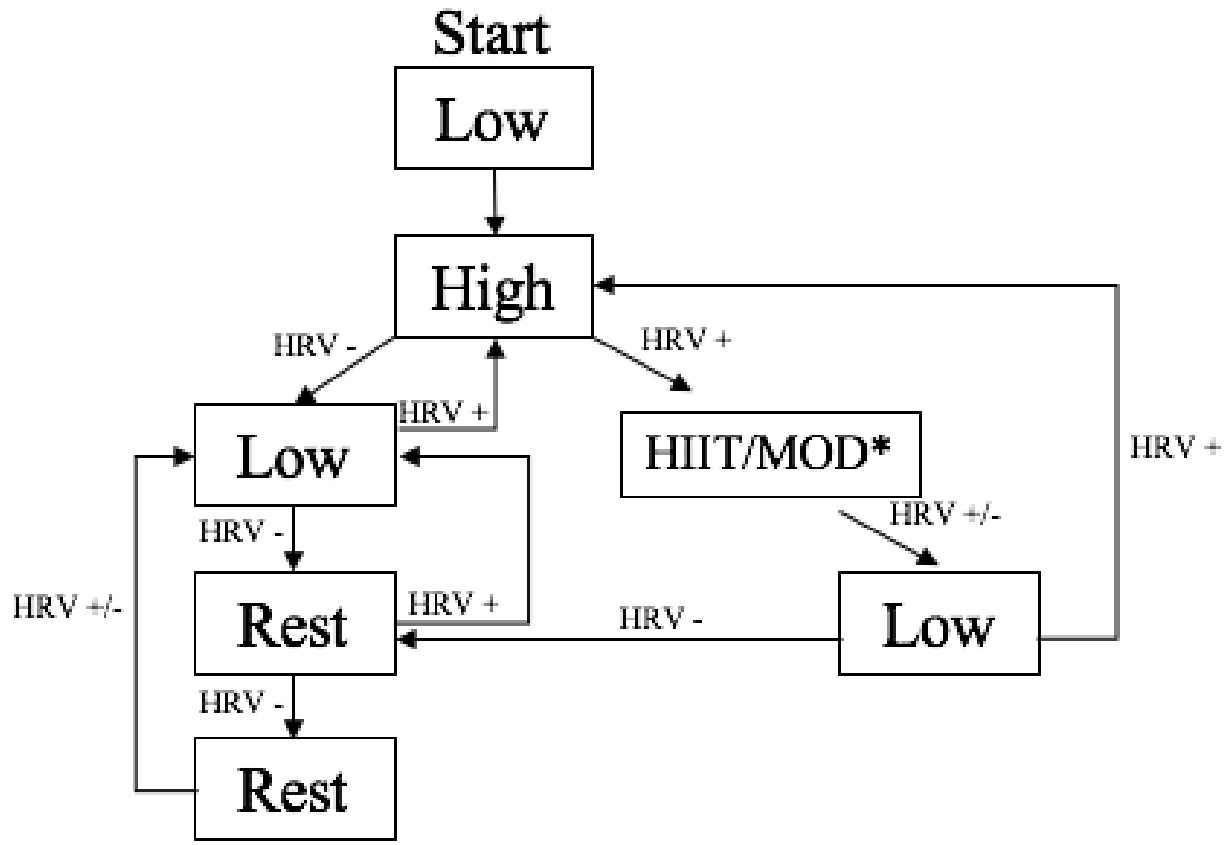
Graded exercise test

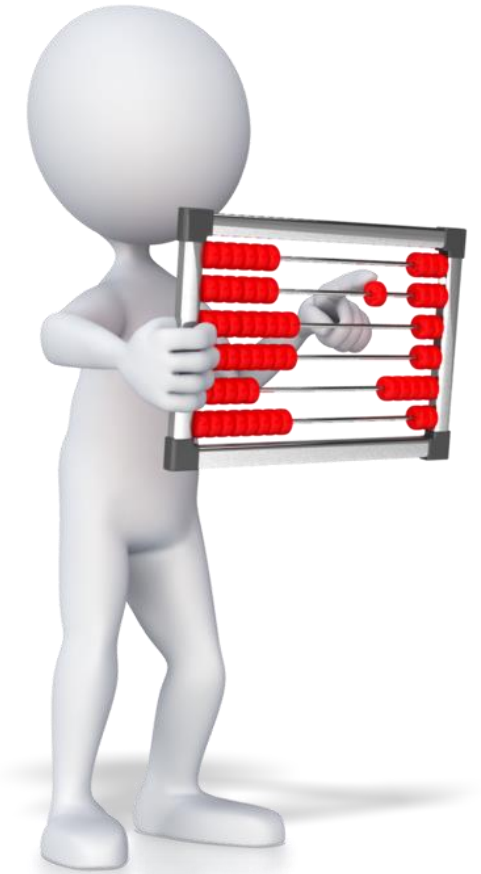
40’ Time-trial

Method

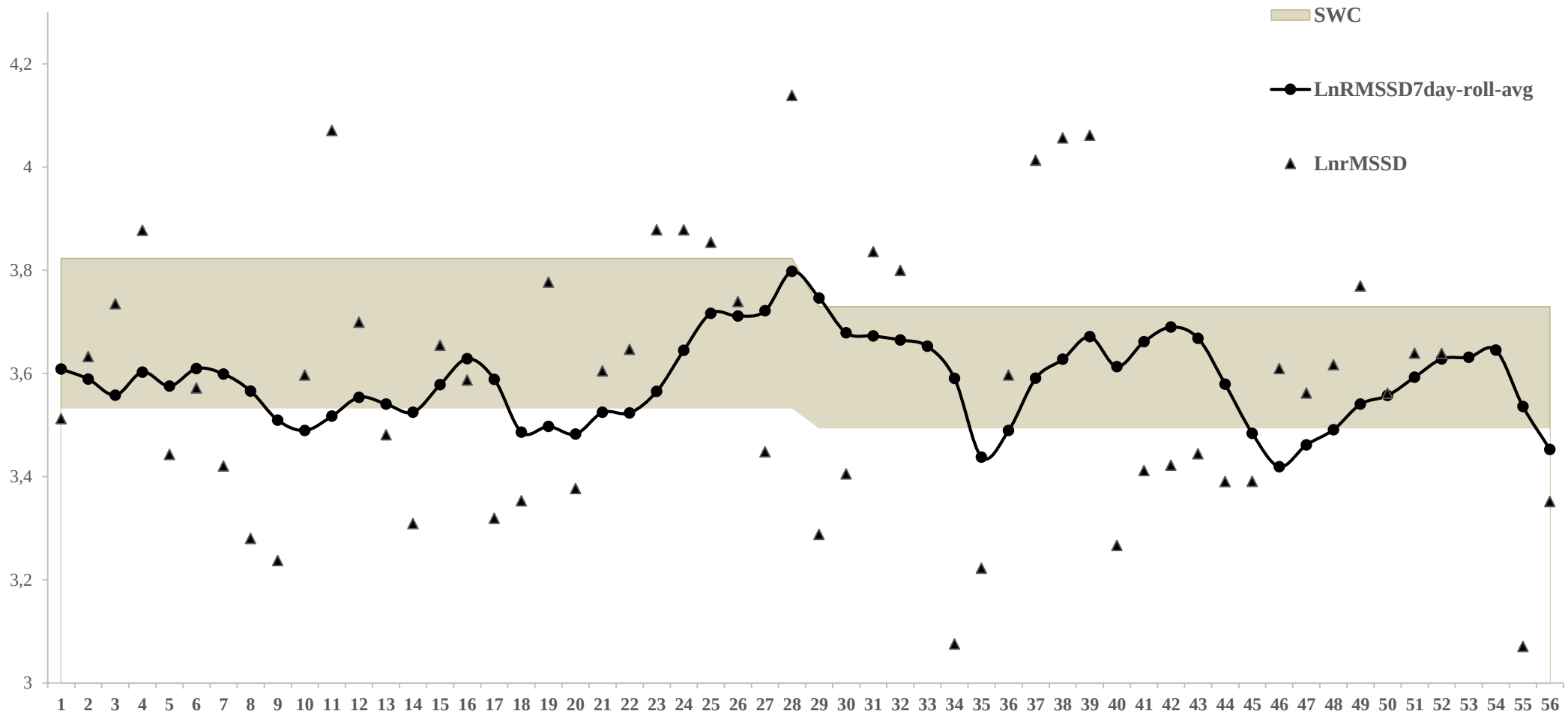
- **Predefined (TRAD)**
  - ❖ 3:1
  - ❖ Same volume
  - ❖ Low, Mod and High intensity training
- **Based on HRV measurements** (HRV-G)

- rMSSD LnrMSSD $LnrMSSD_{7\text{-day-rollavg}}$





Results

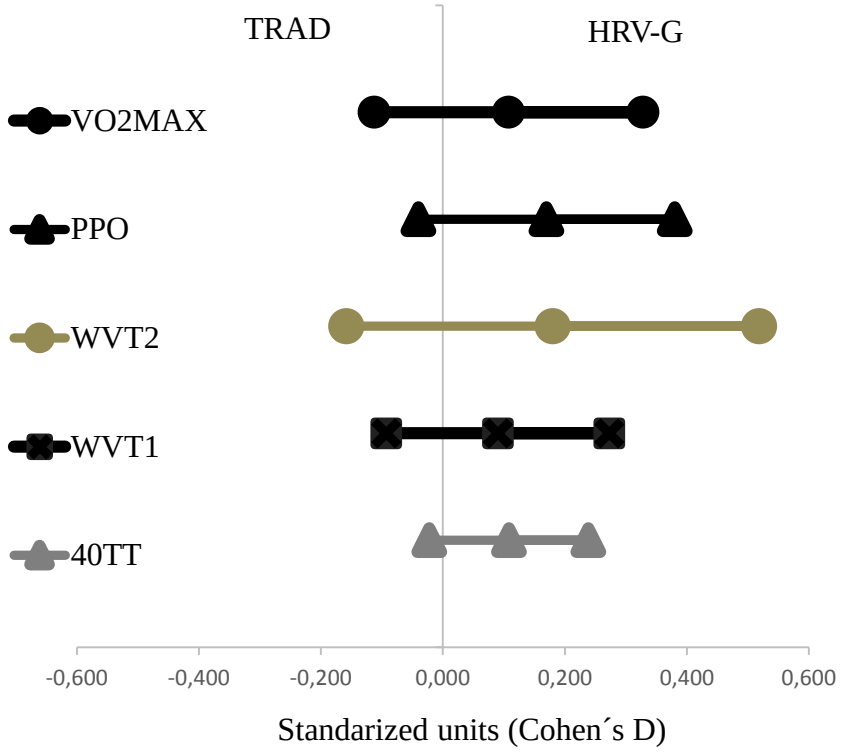

SWC
LnRMSSD7day-roll-avg
LnrMSSD
4,2
4
3,8
3,6
3,4
3,2
3
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56

Results

	HRV-G (n = 9)					TRAD (n = 8)				
Variables	**MID**	**POST**	**Standardised change (90% confident limits)**	**Chances**	**Qualitative assessment**	**MID**	**POST**	**Standardised change (90% confident limits)**	**Chances**	**Qualitative assessment**
VO_2max	56,34 ± 7.58	55,8 ± 8.18	-0.09 (0.41; -0.58)	16/51/34	unlikely beneficial	54.30 ± 7.81	52.13 ± 6.78	-0.22 (0.15; -0.59)	3/42/55	very unlikely beneficial
PPO	356.83 ± 39.74	374,28* ± 43.65	0.38 (0.58; 0.17)	92/8/0	likely beneficial	346,75 ± 16.73	351.50 ± 17.01	0.25 (1.11; -0.61)	54/28/18	unclear
WVT2	275.00 ± 41.46	311,11** ± 37.73	0.94 (1.30; 0.59)	100/0/0	most likely beneficial	256.25 ± 17.68	281.25 ± 22.16	1.02 (1.77; 0.27)	96/3/1	very likely beneficial
WVT1	191.67 ± 27.95	200.00 ± 25.01	0.32 (0.62; 0.01)	75/24/1	possibly beneficial	175.00 ± 23.15	178.13 ± 28.15	0.07 (0.42; -0.29)	29/64/7	unclear
40TT	243.11 ± 41.73	260,78** ± 44.76	0.33 (0.45; 0.21)	96/4/0	very likely beneficial	214.42 ± 32.36	223.13 ± 36.15	0.21 (0.40; 0.03)	53/47/0	possibly beneficial

***p < 0.05; ** p < 0.01**

Results



Unlikely beneficial(24/74/1)

Possibly beneficial (40/59/0)

Possibly beneficial (46/51/3)

Likely trivial (16/84/1)

Likely beneficial (12/88/0)

Intensity distribution:
66/24/10% for **HRV-G**
64/27*/9% for **TRAD**
(p = 0.04)

Conclusions

- Higher increments in fitness & performance for HRV-G
- Better timing for prescribing HIGH
- But.. In **PRO** level?