FFT
INTERVAL WORKOUT HANDBOOK

10 Scientifically Based Cycling Interval Sessions



FastFitnessTips 2021

02.

ABOUT THIS BOOK



Thanks for picking up your copy of our Interval Workouts Handbook. We have chosen 10 of the best intervals from coaches that athletes of all levels have used to improve their cycling. This booklet will give you everything you need to replicate these workouts on any device. Intervals will improve your cycling aerobically and anaerobically as well as your ability to recover and repeat. They will help prepare your indoor training for outside IRL because outdoor riding is unpredictable and varied. Almost all outdoor riding consists of micro-intervals, countless bumps, corners, hills and climbs. You can print out this booklet and do these intervals manually or sync them directly to your computer (see below).



03.

INTERVAL SCIENCE

Let's talk about HIIT science! Intervals were perfected in running, long before they came to cycling by Zatopek, Bannister, Landy and Lydiard. High intensity interval training (HIIT) is more beneficial than low intensity or threshold intensity workouts done in the same time according to meta-analyses **(Milanovic et al, 2015; Ramos et al, 2015; Batacan et al, 2017, Wen et al, 2019).** Most studies shows an advantage in terms of VO2max, lactate threshold and peak power and a number of key physiological gains such as better mitochondrial density (J Physiol 2017 595.9: 2915) but which ones to do?

In 1996, **Izumi Tabata** compared moderate intensity training doing a 60-minute session, five days a week (70% VO2 max) to a group doing HIIT 5 days per week. Athletes did four days of sessions mixing 20 seconds at 170% of VO2 max with ten seconds of recovery, repeated eight times. On the fifth day, they did 30 minutes at 70%. Aerobic capacity rose by 15% in HIT (vs 10%) and anaerobic capacity rose by 23% (vs 0%).

In a 1998 **Stepto** investigated the effects of five different HIT programmes, performed 2x/wk for 3 consecutive weeks, in 20 endurance-trained cyclists. Benefits were best in those doing 8 × 4 minutes (at 85% Ppeak, 90s recovery) and also from 12 × 30 seconds at 175% Ppeak (4.5 minutes recovery).

In 2013, **Seiler** re-examined interval duration in a study of three different formats of long intervals on 35 cyclists for 7 weeks. He looked at 4x4m or 4x8m or 4x16m sessions with 2mins rest in between. VO2 max improved with 10.4%, 6.5%, 5.6% and 3.4% in the 4×8, 4×16, 4×4 and low-intensity group, respectively. Lately, **Paul Laursen** from New Zealand has compared various HIT/HIIT types in the lab (see from HIITScience.com).

In you want more, you can read all about the science of intervals here:

https://www.cyclingapps.net/blog/the-magic-of-interval-training/
https://medium.com/fastfitnesstips/magic-of-intervals-hiit-383f2f41958

04.

WORKOUT ADVICE

Love them or hate them, intervals will help you improve but approach them with the right mindset for the optimal benefit!



Warm Up

I would suggest a short warm up of your choice for 3-5mins before starting and a brief cool down afterwards, these should be shown on the download versions.

Pacing

Go hard but not flat out! Contrary to popular advice almost all intervals require some pacing (especially those longer than 3mins). So hold back a little for the second half of the interval, not to mention the next interval in the series!

Gap

Recover during the break or gap between intervals with low power (eg 55% of FTP) essentially just spinning the pedals in zone 1. Your heart rate should come down by about 50%. True, you will feel fresher by stopping pedalling altogether but it is better simulation of IRL to easy pedal.

Repeat

Attack the next interval with the same enthusiasm as the first, don't worry if your power drops a little just make sure you complete it. Concentrate on your cadence and form. Take a breather then repeat. Try and keep going until the last prescribed interval.

Evaluate

If by some miracle you are still fresh (wow!) then consider this the first "set". Have a 4min break and then repeat! For most people just doing one set as prescribed will be enough, but a training truth is your need to push your boundaries in order to improve (overload principle) so that you finish knowing you gave the session 100%.

Recover

After the session, look after your nutrition, fluid balance and sleep well. Recovery is important!

06.

WORKOUT DOWNLOAD

You can download this entire series of workouts and sync them to your computer using either Zwift or Training Peaks. In fact the TPeaks download is an entire 12w plan!

Zwift workouts are ZWO files, totally *free* to download if you share our link!

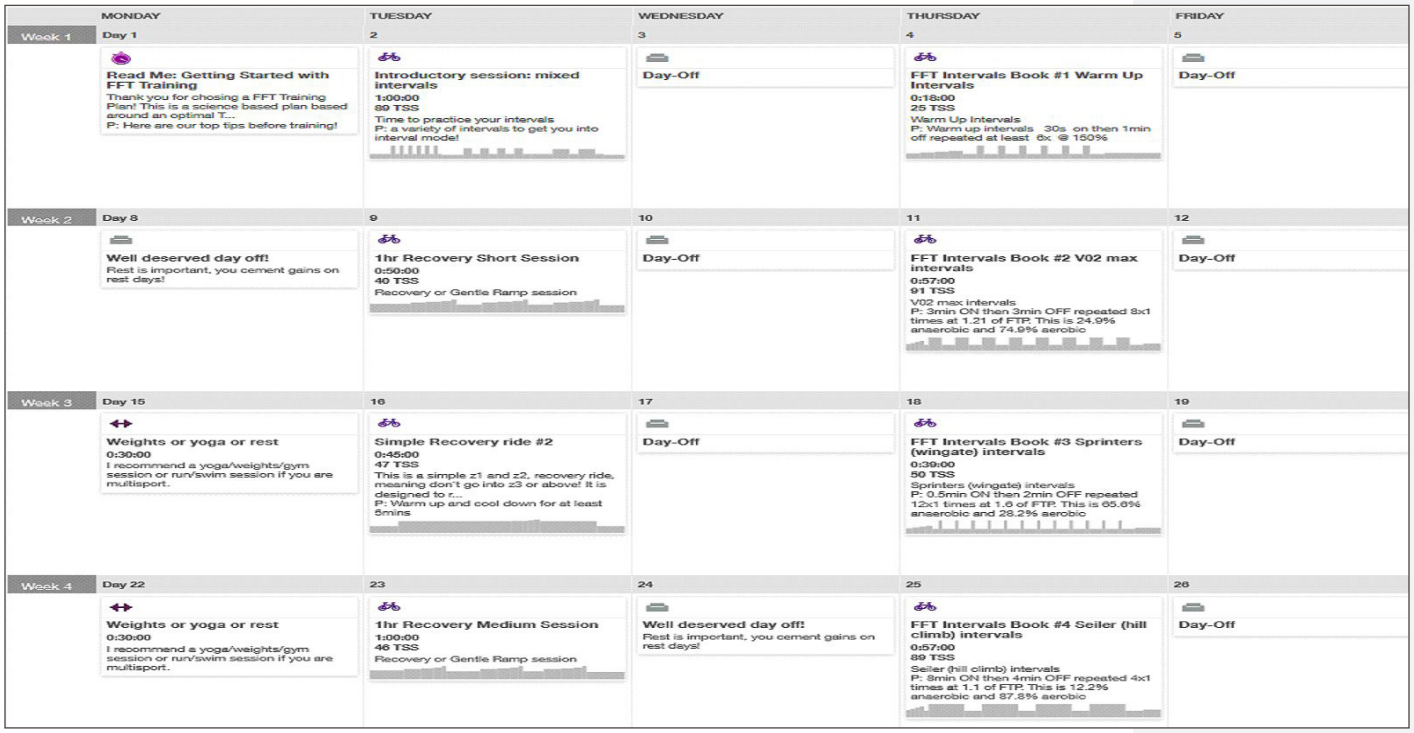
download here: http://bit.ly/zwiftwithtweet



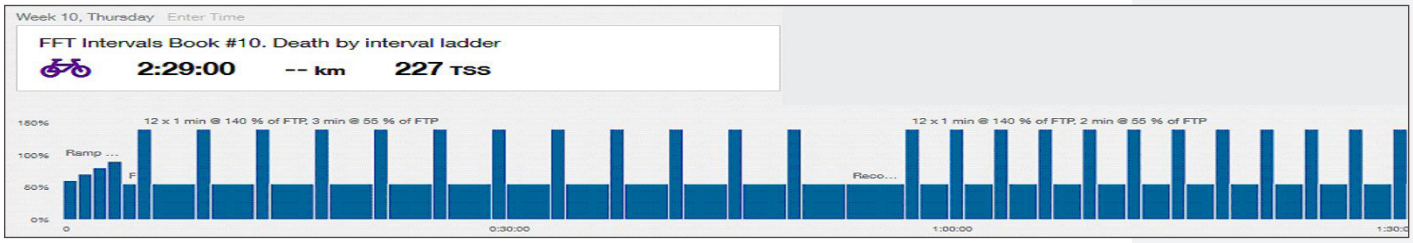
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Training Peaks download is only $8 if you use code “thankyou” for 50% off

download here: http://bit.ly/intervalspeaks



	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Week 1	Day 1	2	3	4	5
	Read Me: Getting Started with FFT Training Thank you for chosing a FFT Training Plan! This is a science based plan based around an optimal T... P: Here are our top tips before training!	**Introductory session: mixed intervals** 1:00:00 89 TSS Time to practice your intervals P: a variety of intervals to get you into interval mode!	Day-Off	**FFT Intervals Book #1 Warm Up Intervals** 0:18:00 25 TSS Warm Up Intervals P: Warm up intervals . 30s on then 1min off repeated at least 6x @ 150%	Day-Off
Week 2	Day 8	9	10	11	12
	Well deserved day off! Rest is important, you cement gains on rest days!	**1hr Recovery Short Session** 0:50:00 40 TSS Recovery or Gentle Ramp session	Day-Off	**FFT Intervals Book #2 V02 max intervals** 0:57:00 91 TSS V02 max intervals P: 3min ON then 3min OFF repeated 8x1 times at 1.21 of FTP. This is 24.9% anaerobic and 74.9% aerobic	Day-Off
Week 3	Day 15	16	17	18	19
	Weights or yoga or rest 0:30:00 I recommend a yoga/weights/gym session or run/swim session if you are multisport.	**Simple Recovery ride #2** 0:45:00 47 TSS This is a simple z1 and z2, recovery ride, meaning don't go into z3 or above! It is designed to r... P: Warm up and cool down for at least 5mins	Day-Off	**FFT Intervals Book #3 Sprinters (wingate) intervals** 0:39:00 50 TSS Sprinters (wingate) intervals P: 0.5min ON then 2min OFF repeated 12x1 times at 1.6 of FTP. This is 65.6% anaerobic and 28.2% aerobic	Day-Off
Week 4	Day 22	23	24	25	26
	Weights or yoga or rest 0:30:00 I recommend a yoga/weights/gym session or run/swim session if you are multisport.	**1hr Recovery Medium Session** 1:00:00 46 TSS Recovery or Gentle Ramp session	**Well deserved day off!** Rest is important, you cement gains on rest days!	**FFT Intervals Book #4 Seiler (hill climb) intervals** 0:57:00 89 TSS Seiler (hill climb) intervals P: 8min ON then 4min OFF repeated 4x1 times at 1.1 of FTP. This is 12.2% anaerobic and 87.8% aerobic	Day-Off



TrainingPeaks will sync with Garmin / Wahoo / Apple Watch / Polar / Zwift / Rouvy / RGT / TrainerRoad / TrainerDay / TodaysPlan

08.



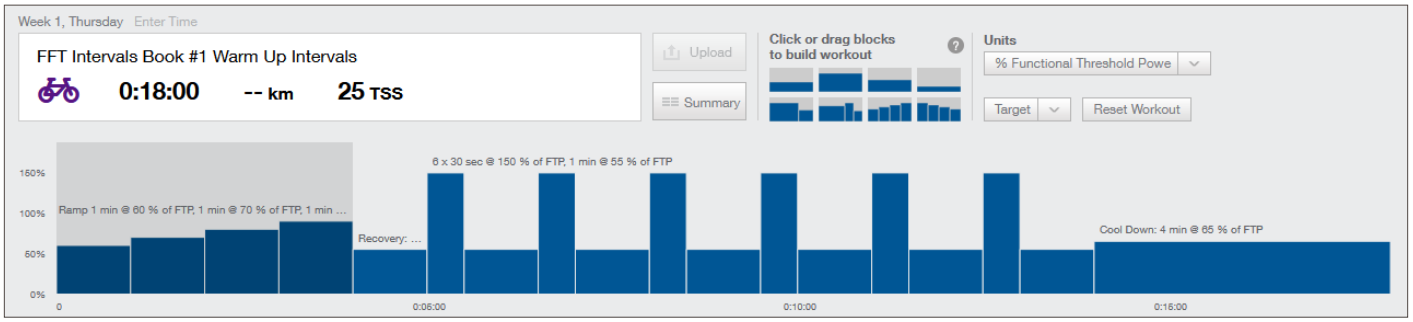
INTERVAL LIST OVERVIEW

NAME	ON	OFF	REPEATS	x FTP
1. Warm up intervals	**30s**	**1min**	**6x**	**1.5**
0.5min ON then 1min OFF repeated 6x1 times at 1.48 of FTP. This is 65.6% anaerobic and 28.2% aerobic				
2. V02 max intervals	**3min**	**3min**	**8x**	**1.2**
3min ON then 3min OFF repeated 8x1 times at 1.21 of FTP. This is 24.9% anaerobic and 74.9% aerobic				
3. Sprinters (wingate) intervals	**30s**	**2min**	**12x**	**1.5**
0.5min ON then 2min OFF repeated 12x1 times at 1.6 of FTP. This is 65.6% anaerobic and 28.2% aerobic				
4. Seiler (hill climb) intervals	**8min**	**4min**	**4x**	**1.1**
8min ON then 4min OFF repeated 4x1 times at 1.1 of FTP. This is 12.2% anaerobic and 87.8% aerobic				
5. Breakaway aerobic intervals	**6min**	**2min**	**4x**	**1.1**
6min ON then 2min OFF repeated 4x1 times at 1.14 of FTP. This is 15.1% anaerobic and 84.9% aerobic				
6. 5x5x5 intervals	**5min**	**5min**	**5x**	**1.2**
5min ON then 5min OFF repeated 5x1 times at 1.16 of FTP. This is 17.3% anaerobic and 82.7% aerobic				
7. Tabata classic intervals	**20sec**	**10sec**	**4 sets of 6x**	**1.5**
0.3min ON then 0.1min OFF repeated 8x4 times at 1.5 of FTP. This is 57.1% anaerobic and 13.8% aerobic				
8. Larsen (type#3) intervals	**2.5min**	**2min**	**8x**	**1.3**
2.5min ON then 2min OFF repeated 8x1 times at 1.3 of FTP. This is 28.3% anaerobic and 71.5% aerobic				
9. Seiler's 4x8 intervals	**4min**	**2min**	**8x**	**1.2**
4min ON then 2min OFF repeated 8x1 times at 1.2 of FTP. This is 20.3% anaerobic and 79.6% aerobic				
10. Death by interval ladder	**1min**	**1-3min**	**3 sets of 12x**	**1.4**
1min ON then 2min OFF repeated 12x3 times at 1.3 of FTP. This is 50% anaerobic and 50% aerobic				



09.

#1 WARM UP INTERVALS



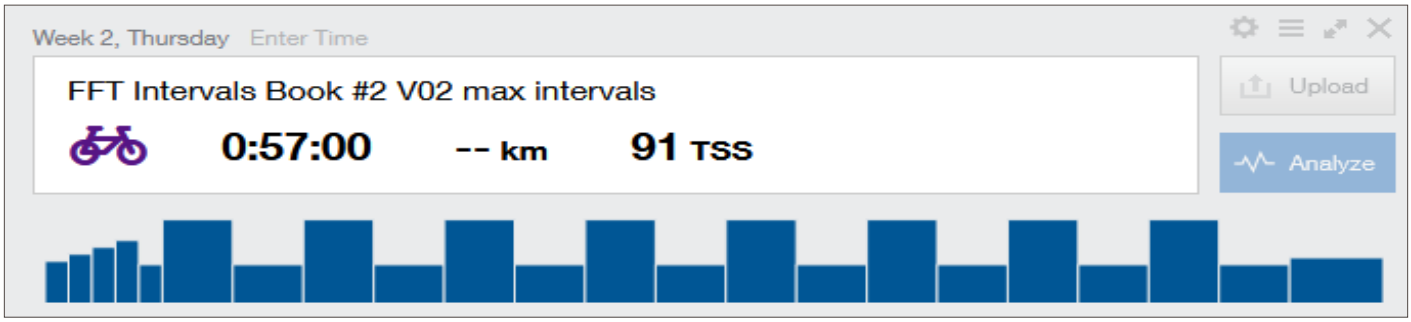
Repeats	**6x**
	Beginners: 4x; Improvers: 8x
On-Off time	**30s / 1min**
Session	**8mins** (18m incl warmup)
Aerobic%	**25%**
Power (%FTP)	**140% (z6)**
Load (TSS)	**25 (easy)**

Science: This is the classic VO2 max series designed to take you close to the aerobic limit in 45mins, which is a nice workout in itself!

10.



#2 VO2MAX INTERVALS



Repeats	**8x**
	Beginners: 6x; Improvers: 10x
On-Off time	**3min / 3min**
Session	**45mins** (57m incl warmup)
Aerobic%	**75%**
Power (%FTP)	**120% (z6)**
Load (TSS)	**91 (high)**

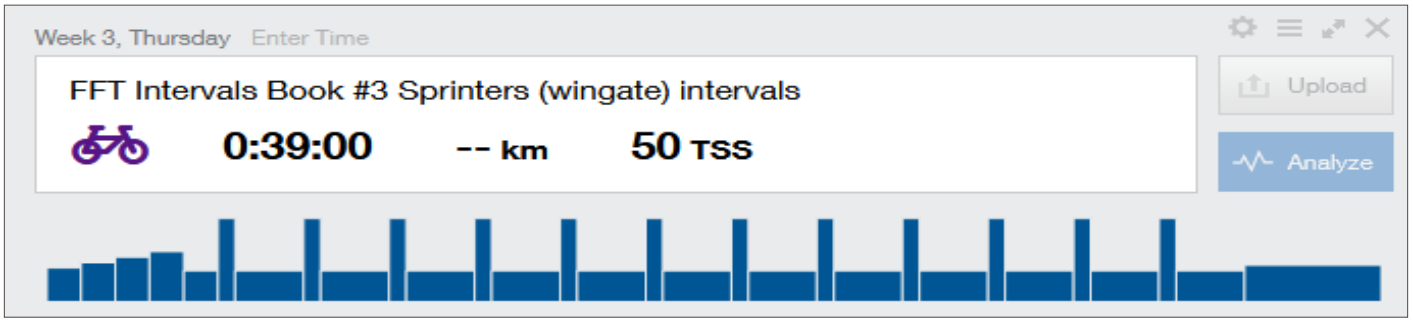
Science: This is the classic VO2 max series designed to take you close to the aerobic limit in 45mins, which is a nice workout in itself!



11.

aka "wingate lab"

#3 SPRINTERS INTERVALS



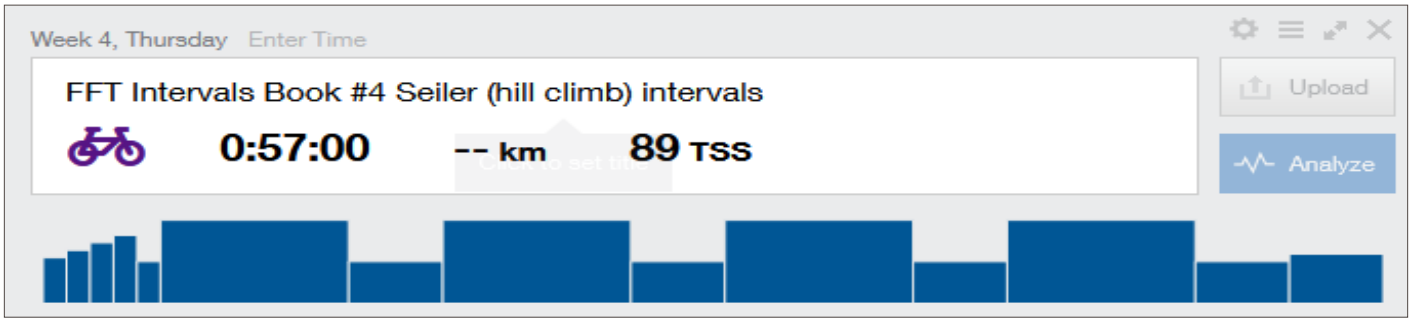
Repeats	**12x**
	Beginners: 8x; Improvers: 16x
On-Off time	**30sec / 2min**
Session	**28mins** (39m incl warmup)
Aerobic%	**28%**
Power (%FTP)	**160% (z7)**
Load (TSS)	**50 (moderate)**

Science: This is the intervals series used in endurance labs around the world using the all out Wingate protocol at 160% FTP!

12.



#4 SEILER “HILL” INTERVALS



Repeats	**4x**
	Beginners: 3x; Improvers: 6x
On-Off time	**8min / 4min**
Session	**44mins** (57m incl warmup)
Aerobic%	**88%**
Power (%FTP)	**110% (z4)**
Load (TSS)	**89 (high)**

Science: Stephen Seiler found 8min intervals the best in a series of papers compared with low intensity, 4min and 16min intervals.

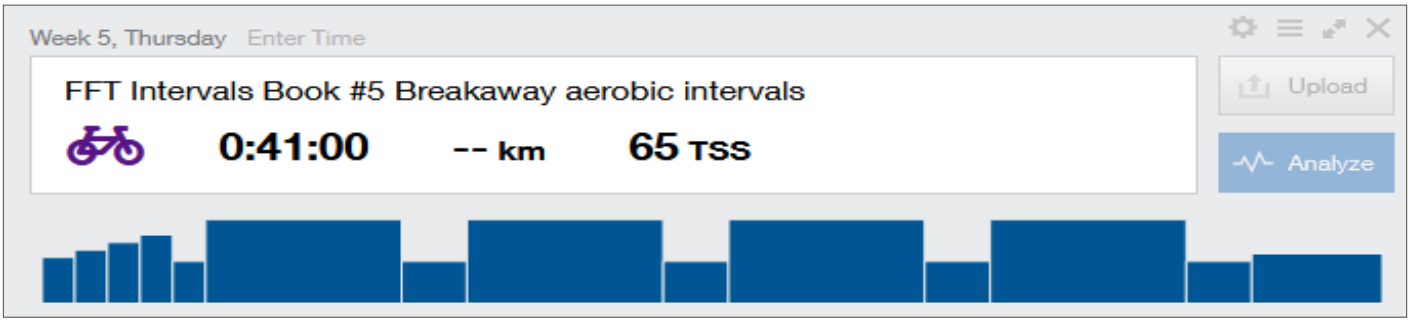
https://pubmed.ncbi.nlm.nih.gov/21812820



13.

"aerobic"

#5 BREAKAWAY INTERVALS



Repeats	**4x**
	Beginners: 3x; Improvers: 6x
On-Off time	**6min / 2min**
Session	**30mins** (41m incl warmup)
Aerobic%	**85%**
Power (%FTP)	**1.15% (z4)**
Load (TSS)	**65 (moderate)**

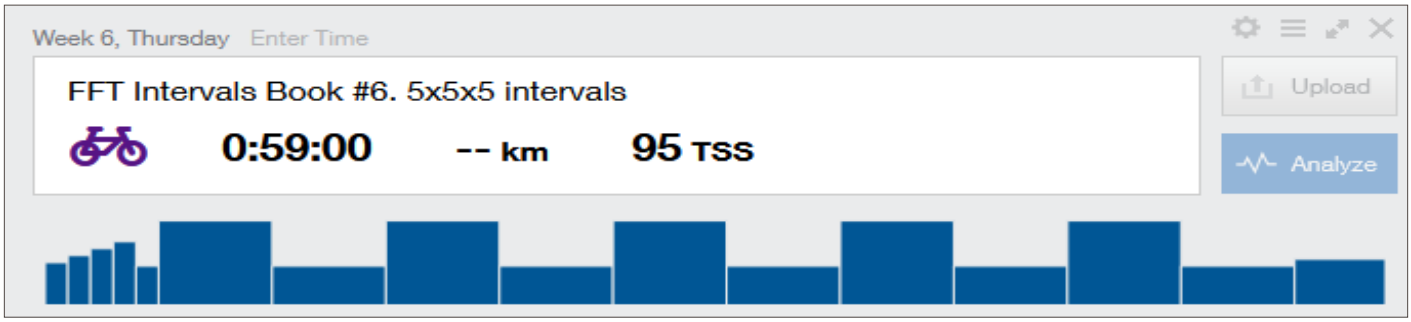
Science: These 6min intervals are similar to Seiler intervals but with a 2min recovery gap which makes for a highly aerobic workout!

14.



aka " WKO / StrongLifts"

#6 5X5X5 INTERVALS



Repeats	**5x**
On-Off time	**5min / 5min**
Session	**45mins** (59m incl warmup)
Aerobic%	**83%**
Power (%FTP)	**1.15% (z4)**
Load (TSS)	**95 (high)**

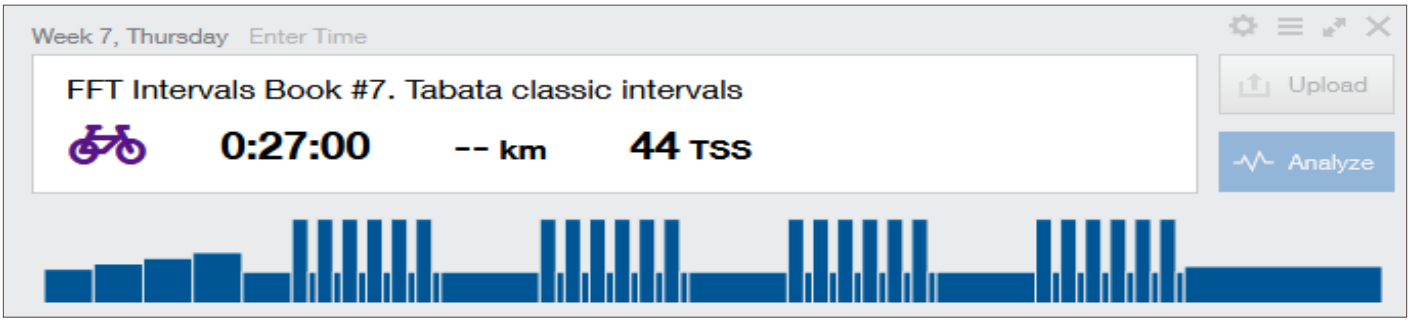
Science: Inspired by StrongLifts 5x5 in the gym, we present 5x5x5 (5mins rest) which actually is a good test of your recovery ability.

https://stronglifts.com



15.

#7 TABATA INTERVALS



Repeats	**4 sets of 8x**
	Beginners: 12x; Improvers: 36x
On-Off time	**20sec / 10sec**
Session	**15mins** (27m incl warmup)
Aerobic%	**14%**
Power (%FTP)	**150% (z7)**
Load (TSS)	**44 (moderate)**

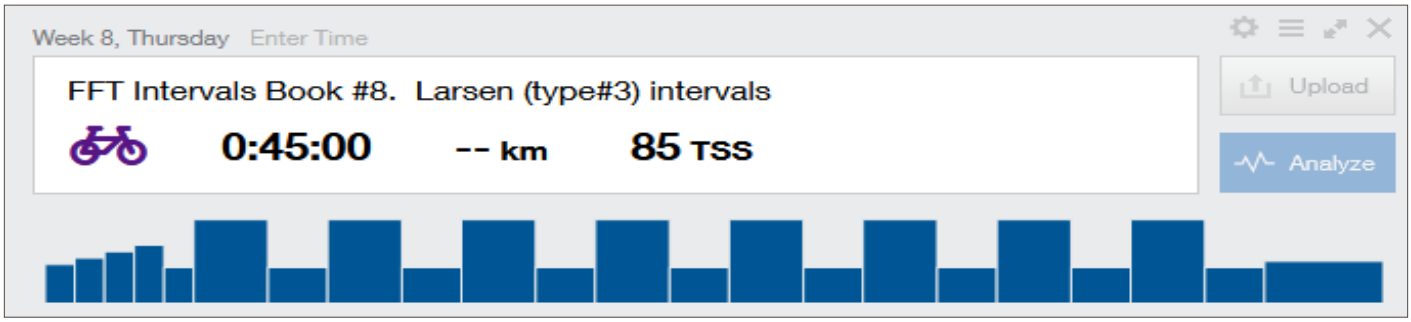
Science: Izumi Tabata found that doing this series 5 days a week for 6 weeks, resulted in +28% anaerobic & +14% aerobic fitness gains.

https://pubmed.ncbi.nlm.nih.gov/8897392/

16.



#8 LARSEN #3 INTERVALS

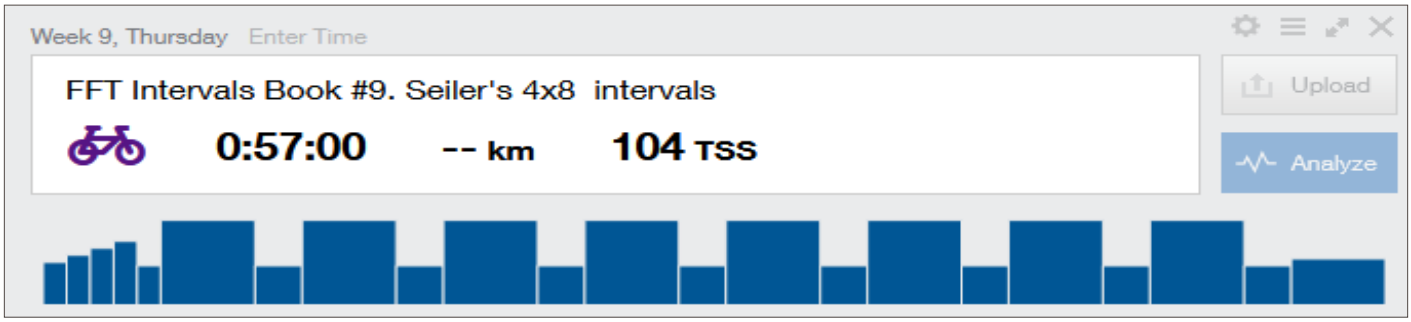


Repeats	**8x**
	Beginners: 8x; Improvers: 16x
On-Off time	**2.5min / 2min**
Session	**34mins** (45m incl warmup)
Aerobic%	**72%**
Power (%FTP)	**130% (z6)**
Load (TSS)	**85 (high)**

Science: Paul Larson classified intervals into 5 types based on aerobic/anaerobic/nm contribution. Here is type #3.



#9 SEILER 4X8 INTERVALS



Repeats	**8x**
On-Off time	**4min / 2min**
Session	**46mins** (57m incl warmup)
Aerobic%	**80%**
Power (%FTP)	**120% (z6)**
Load (TSS)	**104 (very high)**

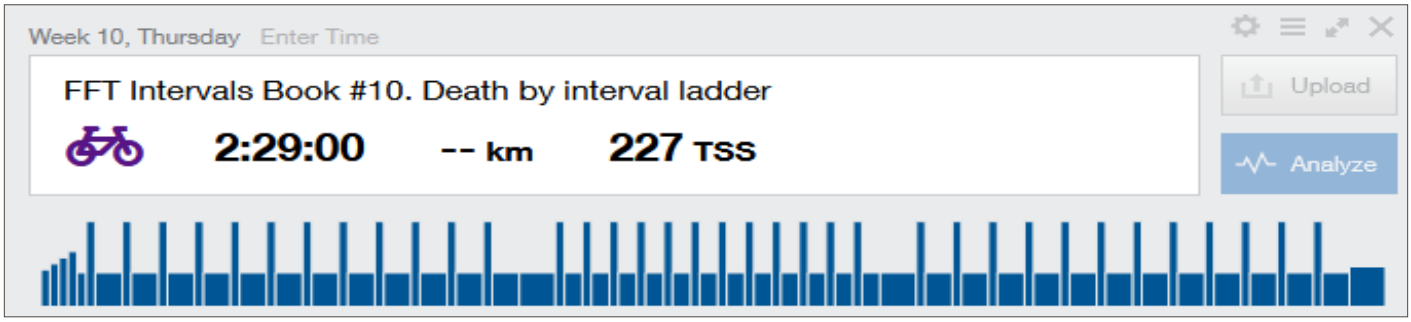
Science: Stephen Seiler found 4min intervals an efficient workout with almost as much increase in threshold pwr (vs 8min or 16min).

https://pubmed.ncbi.nlm.nih.gov/21812820

18.



#10 DEATH BY INTERVALS



Repeats	**3 sets of 12x**
	Beginners: 2 sets of 8x
On-Off time	**1min / 2min**
	Rest: 3min set1, 2min set2, 1min 3
Session	**106mins (150m+warmup)**
Aerobic%	**49%**
Power (%FTP)	**130% (z6)**
Load (TSS)	**227 (extreme)**

Science: This is the ultimate interval workout! A series of 12x 1min intervals in three sets with reducing rest (3min > 2min then 1min)!



Want More?

We hope you found this workout booklet a useful resource for your training and preparation. However this is just the beginning. We offer 1:1 coaching and group coaching and more than 100 off the shelf training plans. We aim to bring a scientific well-rounded coaching experience to athletes who are looking for something new in their training.

COACHING OPTIONS

	FFT Unlimited Group support	FFT Student 1:1 wattsapp	FFT Full 1:1 personal
Training plans	Tpeaks Unlimited	Customized	Personalized
FFT tool suite	Main set (10+)	Full set (50+)	Full set (unique access)
Feedback/contact	Group support	Monthly	Weekly
Analysis software	Intervals.icu / Strava	Intervals.icu / Peaks	*FREE* Peaks
FTP/fitness tests	Quarterly	Monthly	Any / flexible
Race prep & analysis	No	No	Yes
Bike fit / aero analysis	Yes (photo)	Yes (video)	Yes (video/*.fit file)
Main communication	Group support	Email/Wattsapp	Telephone / Skype
	£35/mo $€ 45	£65/mo $€ 80	£99/mo $€ 120

http://fft.tips/peaks

TRAINING PLANS

Find your perfect FFT training peaks plan

	Sprinter Peak < 30mins	TimeTrial Peak < 60mins	Endurance Peak < 240mins	Ultra/Tri Peak >240mins
6hr/week	HIIT Builder Beginner Or Sprint training plan	FTP Builder Beginner Or Polarized+HIT	Polarized 80:20 Beginner Or Sportive plan	GranFondo Beginner Or Everesting plan
8hr/week	HIIT Builder Improver Or Sprint training	FTP Builder Improver Or Polarized+HIT	Polarized 80:20 Improver Or Sportive plan	GranFondo Improver Or Everesting plan
12hr/week	HIIT Builder Regular Or Sprint training	FTP Builder Regular Or Polarized+HIT	Polarized 80:20 Regular Or Sportive plan	GranFondo Regular Or Everesting plan
15hr/week	HIIT Builder Pro Or Sprint training	FTP Builder Pro Or Polarized+HIT	Polarized 80:20 Pro Or Sportive plan	GranFondo Pro Or Everesting plan
Duration $cost	12w | 24w $45 $60	12w | 24w $45 $60	12w | 24w $45 $60	12w | 24w $45 $60


FFT