



Fitness-Fatigue and the Taper

Two leaky buckets, and the day the gap between them is widest.

Banister's impulse-response model of training, with the taper search that finds when to cut load and by how much.

SPORT

Any

FAMILY

The athlete

LICENCE

£249

one-off, perpetual

RUNNING IN THE PLATFORM

<https://edgewortharena.com/play#taper>

Inputs

NAME	TYPE	UNITS	WHERE IT COMES FROM
daily load	list	arbitrary units	your training log
tau_fitness, tau_fatigue, k (optional)	floats	days, days, -	fitted per athlete, or 45, 15 and 2

Outputs

NAME	TYPE	UNITS	NOTES
fitness, fatigue, performance	arrays	arbitrary units	
best taper	(length, cut)	days, fraction	

Method

1 Convolve the load with two decaying exponentials, one slow and one fast.

THIS IS THE SAMPLE

The method runs to 3 steps; one is shown. The assumptions, the limits, the module layout and the reference implementation come with the licence. Everything on the page below this -- what the model was measured at -- is the same in both versions, because that is the part you should not have to take on trust.



What it was measured at

Searched now, over taper length and load cut, on the standard constants.

MEASURE	RESULT	READING
Time constants	45 days fitness, 15 days fatigue	
Fatigue weight	2	performance is fitness minus twice fatigue
Best taper found	21 days, cutting 60%	
Units	arbitrary	the model ranks plans, it does not predict times

Assumptions

What has to be true for the numbers to mean what they say.

- Training effects add linearly and decay exponentially, which is a summary rather than a physiology.

Limits

Where it is known to be wrong. Published because a model without stated limits is one nobody has pushed on.

- The units are arbitrary: the model ranks plans, it does not predict times. Fitting the constants needs a season of honest load and test data.

LICENCE

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