Button

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1 Introduction

The traditional algorithm for calculating athletic form given below was originally developed on top of Dr. Eric W. Banister's impulse-response model published in 1975. An adapted version of this algorithm developed by Dr. Andy Coggan is used by Strava to calculate form, fitness, and fatigue as part of their premium feature. We have taken this approach in our fitness app with the intention of creating a lightweight fitness app that helps to direct training with the understanding that any data that is tracked and analyzed necessarily is optimized. Whether desired or not, when we look at data that we can change, we desire to improve that data set, to influence its trends, and to improve its output.

$$p(t) = p_0 + \kappa_1 \sum_{i=1}^{t-1} \left(w_i e^{\frac{-(t-i)}{\tau_1}} \right) - \sum_{i=1}^{t-1} \left(w_i e^{\frac{-(t-i)}{\tau_1}} \right)$$

Variable Definitions
p_0 = initial performance
w_i = training load on day i
κ_1 = weighing factor for fitness
κ_2 = weighing factor for fatigue
τ_1 = decay constant for fitness
τ_2 = decay constant for fatigue