

MLog

from The Fat Lab

Track. Analyze. Adapt.

As recommended by *The Secret Life of Fat* and The Fat Lab, logging food (and activity) is critical to meeting your goals.

A log helps you look back over your meals and activities and correlate them with changes in your goals, such as weight

MLog from The Fat Lab makes taking action based your log a little easier through Machine Learning.

Before we get started, here are **four principals of MLogging.**

Don't count calories ...

MLog is totally individualized. You define your foods, meals, workouts, portions and so on. MLog measures these against your Metrics, such as weight.

MLog seeks to identify the foods and activities that are *associated with meeting* your goals and those *associated with blocking* your goals.

MLog does this by tracking the items you eat and in which day time blocks you eat them. (Same for exercise, sleep, and intermittent fasts!) MLog applies Machine Learning to score your inputs against meeting your goals.

... instead, think servings and reps.

When adding food items, think about your “standard” serving size.

For example, if you usually eat a half-cup of blueberries, you might create a **Food** item named, Blueberries. If, one morning, you eat $\frac{1}{4}$ of a cup of blueberries, that makes half of your usual serving—so you'd MLog “Blueberries” and set the servings to 0.5. If you ate a

whole cup, you'd MLog 'Blueberries' with the servings of two—twice your standard half-cup.

MLogging exercise or activity works the same. If your standard walk is a 30-minute brisk walk, define an **Activity** named, 'Walk'. If you complete a 45-minute walk, MLog that as "Walk" with reps 1.5, because 45 minutes is one-and-a-half times your standard 30 minutes.

Get ready to experiment. In a controlled way.

Using Machine Learning to analyze your activities and meals is cool. *But it's a process.*

Consider someone who eats just two foods:

 a salad for lunch and a slice of pizza for dinner.

Same foods. Same time. Every day. Extreme!

Whether they lost or gained weight, no fancy mathematics could tell which meal, if any, was the biggest contributor. There is no variation.

That's an extreme example to make a point.

You have to be ready to have a consistent set of foods in the short run and to vary them up in the long run. Be steady for a week or two with a routine. Then mix it up. Spend the next week or two eating the same meals but switching the time of day for each. Workout at night instead of in the morning. Do that for a week or two. Make some more changes.

It's a process. So ...

Be patient.

The more data you collect, the better. Sixty to ninety days of activities, meals, and weight measures start to show good results. You certainly can analyze just two days of data. But the results won't mean much.

Let's look at the MLog app screens.

The App home page

Log in to the MLog at <https://www.theseconlifeoffat.com/app-home>

The home page is the menu for all functions of MLog.

From here you access all the screens

Add log entry >

View log >

View metrics >

View sets >

Run log analysis >

Logging data on the Add log entry page

There are five categories of data to log.



Activity

Eat

Activity

Sleep

Measure

Intermittent Fast

Eat: record a meal or food item

Activity: record a workout or activity

Sleep: record sleep hours and quality

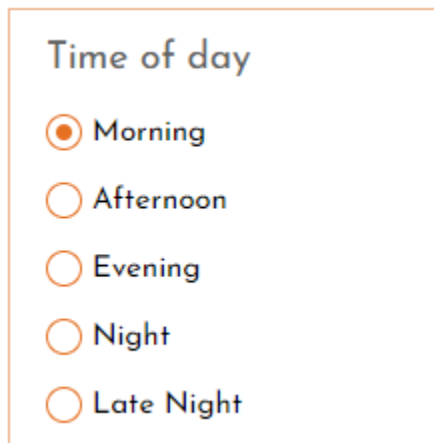
Measure: record a metric like weight or a user-defined metric

Intermittent Fast: record the hours of a fast

Time of day

For **Eat** and **Activity**, the time of day is recorded along with the servings or reps.

Time of day means what you want it to mean, but here are some guidelines.



Time of day

- Morning
- Afternoon
- Evening
- Night
- Late Night

Morning: from when you wake up until noon

Afternoon: from noon until four

Evening: from four until eight

Night: from eight until eleven

Late Night: after eleven.

It is more important to be consistent than worry about exact definitions. Use your own behavior as a guide.

Morning is when you wake up to anything you'd consider "before lunch." If you eat lunch at 11, make that the start of your **Afternoon**.

You could think of **Morning**, **Afternoon**, and **Evening** as breakfast, lunch, and dinner time ranges. **Night** is after dinner. **Late night** is "midnight snack" Think, Denny's at 3:00 AM. (Think it but don't do it!)

The Eat screen

The **Eat** screen is used to record food or meals. Here, a **Meal** is a defined set of foods and servings used as a convenience function to enter multiple foods eaten at once.

If you often eat shredded wheat cereal with banana and milk, you can define a **Meal** that records all three foods at once.

Logging a Meal

To start, set the **Activity** to **Eat** and set the **Date and Time** of day for the **Meal**.

Once you've defined some **Meals** (below), you choose the **Meal** radio button. The **Choose a meal** dropdown will show your meals. Choose the meal and set the servings.



For example, if you have a meal for a Turkey

Sandwich, and you eat half a sandwich, set the serving to 0.5. That will record the sandwich items each as a half serving.

Set your **Servings** and click **Record**.

Logging a Food item

MLogging a **Food** item is similar to MLogging a **Meal**.

To start, set the **Activity** to **Eat** and set the **Date and Time** of day for the **Food** item.

Select the **Food** item radio button and choose the food from the dropdown. Set your **Servings** and **Record**.

Activity screen

The **Activity** screen works very much like the **Eat** screen. On this screen, an **Activity**, as with a **Food** item, is a single activity.

A **Workout** is a set of activities to be recorded at once (like a **Meal** is a set of **Food** items).

If you do a single exercise activity, like a 5k run, you can define an activity and record that each time you run.

If you do a 5k run and follow that up with pushups and sit-ups, you can add all three (5k run, pushups, sit-ups) as individual **Activities** and then group them into a **Workout** to make it easier to enter all three at once.

Logging a Workout

Set the **Date** and **Time of day**
Select **Activity** in the Activity box.
Select the **Workout** radio button.
Choose the workout from the drop down.
Set the **Reps**. Click **Record**.

Be careful with **Reps** when saving a **Workout**.



The screenshot shows a form for logging a workout. At the top, there are two radio buttons: 'Activity' (selected) and 'Workout'. Below this is a button labeled 'New activity +' with a plus sign. Underneath is a dropdown menu labeled 'Choose an activity' with a downward arrow. At the bottom, there is a text input field containing the number '1' and a slider control.

In our example, if your reps of pushups or sit-ups change each time you exercise, it is hard to set them in a **Workout** -- as the **Workout Reps** will multiply the individual **Activity Reps**. See below for more detail.

Logging a single Activity

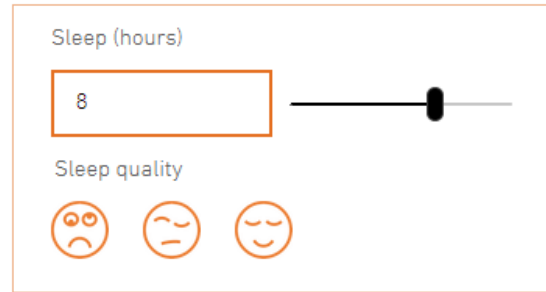
Select the **Date**. Select the **Time of day**.
Select **Activity** in the Activity box.
Select the **Activity** radio button.
Choose the Activity item from the drop down.
Set the **Reps**. Click **Record**.

Sleep screen

If you want to factor your sleep into the analysis (we recommend it), you use the **Sleep** screen.

On this screen, you record your hours of sleep and the quality of the sleep.

For example, you went to bed at 10:00 PM and got up at 6:00 AM, but tossed and turned all night, waking up frequently, you'd enter eight hours and select the left quality icon.



The screenshot shows a user interface for recording sleep. At the top, it says "Sleep (hours)" above a text input field containing the number "8". To the right of the input field is a horizontal slider with a black knob. Below this, it says "Sleep quality" above three circular icons: a sad face (left), a neutral face (middle), and a happy face (right).

If you slept well, but still woke up once or twice, and it took a little time to go back to sleep, you'd pick the middle icon.

If you slept straight through, choose the right icon.

Another way to think about sleep quality is how you feel upon waking.

If you feel completely un-rested, choose the left icon. If you feel good but slightly 'groggy', choose the middle. If you feel great and super-rested, choose the right icon.

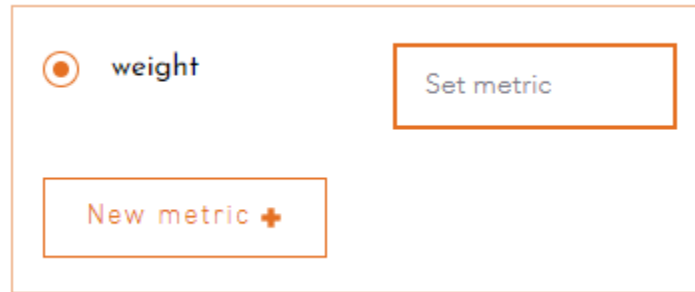
Tip: if you want to record sleep hours without sleep quality, define an **Activity**, say, My Sleep. Then record the "reps" as your sleep hours. Pretty flexible!

Measure screen

The default metric is weight. You can add user-defined metric to track other measures (for example gut irritation level). More on user-defined metrics later.

Set the **Date** and choose **Measure** for the **Activity**.

Select the **Metric** you want to record (if you have not defined any new metrics, you can only choose **Weight**).



Enter the value and click **Record**.

Only enter each metric once a day. Don't worry if you miss days. This will be accounted for in the analysis.

Intermittent fast screen

Record your hours of fasting on this screen, if you are doing intermittent fasting. Record on the Date the fast ended, if it runs overnight.

Set the **Date**. Choose the **Intermittent fast** activity.


Enter the hours of the fast. Hit **Record**.

View log

Here is where you can view your log and edit entries if needed.

Scroll through the entries and scroll left and right to see the records.

Double click an entry to edit or delete it.



MLog
by The Fat Lab

Date	Time of day	Type	Item	Quantity
Thursday, Apr 28, 2022		sleep	sleep	7.5
Thursday, Apr 28, 2022		sleep	sleep quality	2
Thursday, Apr 28, 2022	Morning	activity	pull-ups push-ups sit-ups	1
Thursday, Apr 28, 2022	Morning	food	Metamucil	1
Thursday, Apr 28, 2022	Morning	food	Espresso	1
Wednesday, Apr 27, 2022		sleep	sleep	7.5
Wednesday, Apr 27, 2022		sleep	sleep quality	2
Wednesday, Apr 27, 2022	Morning	food	Espresso	1
Wednesday, Apr 27, 2022	Morning	food	Metamucil	1
Wednesday, Apr 27, 2022	Morning	activity	elliptical tabata	1
Wednesday, Apr 27, 2022	Morning	food	blueberries	1

View metrics

Here is where you check your recorded metrics.

You can see if you've missed any days and go to the **Add log item** screen to add them.

View sets

We'll learn about entering sets below (**Meals** and **Workouts**).

Sets let you define commonly used groupings of food items or exercises and combine them for easier entry. **Meals** and **Workouts** are lists of items (food or exercises) each with a quantity.

An example: Let's say you frequently eat a breakfast

- half-slice of whole wheat toast
- a half-cup of blueberries
- a serving of granola

You could MLog the foods and servings in your breakfast individually. Or you can define a **Meal** with those three items and their individual servings in the meal. In this case the **Meal** would be defined as:

- Whole wheat slice: 1/2
- Blueberries: 1/2
- Granola: 1

Note that this assumes that you consider one cup of blueberries to be a single serving - so you've scaled it to 1/2 in this meal, because it is 1/2 a cup.

Another meal with a cup of blueberries would have a serving of one for the blueberries.

Same with whole wheat bread. If, for you, a single slice is one serving, half a slice is a 1/2 serving. To be consistent, if you defined a sandwich **Meal**, with two slices of whole wheat bread, the servings for the bread would be two.

The sandwich **Meal** might look like this

- Whole wheat bread: 2
- Lettuce: 1
- Tomato slice: 2
- Swiss cheese slice: 1
- Mayo: 1

You decide what is your single serving of each food. It doesn't matter whether a single serving of blueberries is one cup or half-cup. Just be consistent once you define the serving for a food item.

The **View sets** screen lets you see and edit (or delete) your **Sets**.

Don't worry about deleting a **Set** that you've used. The items in the set are recorded in an itemized fashion. Deleting the **Set** won't affect your log.

Add Meal

Before you add a **Meal**, you have to add the **Food** items that will make up the **Meal**. But that's easy.

Select **Food** on the **Eat** screen. and then **New food+**. Give the food a name and save it.

Once you have the **Food** items, you can build them into a **Meal**.

Select the **Meal** radio button on the **Eat** screen.

Then click the **New meal+** button.

Give your meal a unique name. This needs to be unique among your meals.

Select a food item from the drop down.

My breakfast

Manage meal servings

yogurt

1

Espresso	1
blueberries	0.5
yogurt	0.5

Save

Set the servings for this food item in the meal. Then click the + button.

Repeat for each of the food items in the meal.

When ready, click **Save**.

With the meal shown in the image, if you recorded a single serving of this meal, you'd see three items in your log: Espresso (1 serving), blueberries (1/2 serving), yogurt (1/2 serving).

If you recorded two servings of the meal, you'd see: Espresso (2 servings), blueberries (1 serving), yogurt (1 serving). This is because the overall meal servings multiply the individual servings in the meal definition.

Add a workout

Adding a **Workout** is very much like adding a **Meal**.

First you have to define individual activity items (that is, exercises). Then you combine them into a workout.

You could define a 10K run, a 1.5K swim, and a 40K bike ride as exercises. Then combine them into a triathlon workout as shown on the image.

A word on intensity. What if you do the same distance, say 5K, but one day you are killing it, a personal best time? Or, next day, you struggle to finish? (Hey, it happens to all of us.)

You don't have to define a new activity. Just adjust the reps. For that best day, choose 5K run and



The screenshot shows a mobile application interface for defining a workout. At the top, there is a text input field containing the word "triathlon". Below this is a section titled "Manage workout activities". Underneath, there is a list of activities. The first activity is "10K run", which has a dropdown arrow to its right. Below "10K run" is a control element consisting of a text box containing the number "1", a slider, and a plus sign button. Below this are three more activities listed in a table-like format:

1.5K swim	1
40K bike	1
10K run	1

At the bottom right of the interface is a blue "Save" button.

make the reps 1.2. And set the reps to 0.8 for that sluggish day. The system is flexible that way.

Analyze

The **Run log analysis** page is where you run analysis of your log activities versus your goals.

The screenshot shows the 'Analyze' interface. At the top, there is a dropdown menu with 'weight' selected. Below it are two date pickers: 'Start' with the date '03/07/2022' and 'End' with the date '04/28/2022'. There are three buttons: 'Advanced >' (white with orange border), 'Analyze' (black with white text), and 'List view' (green with white text). To the right of 'List view' is a 'Chart view' button (white with green border).

If you've created any user-defined metrics, they will be selectable in the drop down. Otherwise, weight is the only metric to analyze.

The initial dates will span the recorded history of the selected metric. Set a shorter time window if you want to exclude any dates. Let's talk about what happens when you run **Analyze**.

Your metric data is packaged up with the associated activity data.

This data package is sent to our machine learning engine. A model is built on your data to identify which factors (the foods, activities, sleep, and fasting data you MLogged) are associated with helping you meet your metric goal, and which are associated with impeding your goals. Some factors will turn out to be neutral, that is, not strongly raising or lowering your metric. Note, no personally identifiable data is sent in the package.

Results of the analysis are sent back to the app and displayed.

List view

List view presents the foods and activities in a list format in three blocks.

The first block lists the items that are helping you meet your goal.

The list runs down the columns with the most helpful factor list first. The last item in the second column is less strong of a helper -- almost neutral.

The second block lists the neutral items. It starts with the items closer to the helpful block and ends in the second column with items that are closer to being associated with impeding your goal.

The third block lists the items that are strongly not helping you meet your goals.



Note that meeting or not meeting your goals depends on the goal. If you are looking to lower your metric (as with weight, usually), then the helpful items are associated with weight loss.

If there was a metric you wanted to raise, then the helpful items would be those associated with increasing the metric.

Chart view

Chart view presents the same data in the same order, just with bars for each item to show the relative "strength" of each item's contribution.

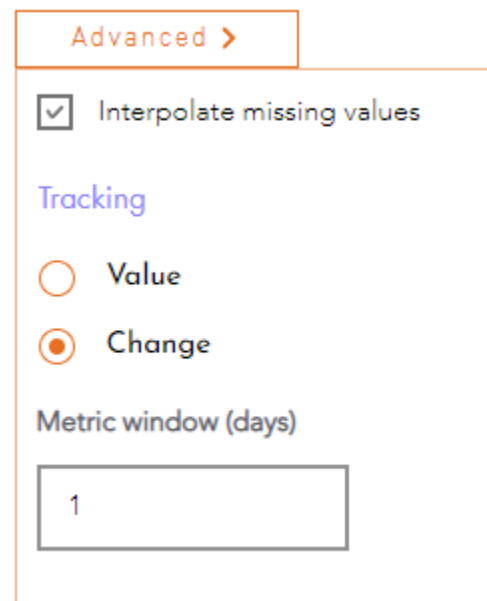
Advanced

The **Advanced** settings allow you to tweak the behavior of the analysis

Interpolate missing values changes the behavior towards missing values. For an item like weight, it usually works well to interpolate missing days measurements. That way, if you missed a day or three recording your weight, those days will be filled in based on the preceding and next days that you did record. This is the default behavior for weight. You can override that and only analyze days that have an explicit weight measurement. If you defined your own metric for, say, gut irritation level or number of migraine incidents, these are not good candidates for interpolation.

Tracking changes whether to track the absolute number or the change in the metric between days. Weight works by default on changes in weight. Other metrics, for example number of migraine incidents, work best with the absolute value, not the change.

Metric window sets the days to "look back" before each metric. For weight, the default is one day. That means today's weight is modeled against yesterday's eating. If you want to use two-day or longer window, set that here.



Advanced >

Interpolate missing values

Tracking

Value

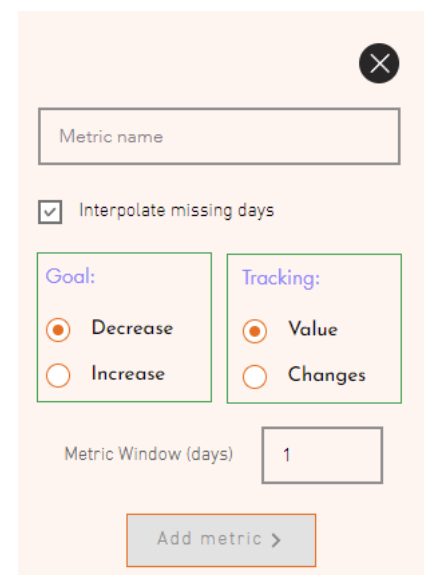
Change

Metric window (days)

1

User defined metrics

These are the same options you set when defining your own metric. The same guidelines above apply when creating a metric. Think about whether the measure is continuous (like weight) or discrete (like migraines) to set or unset interpolation. Similarly, whether tracking changes (as with weight) makes sense, or if the absolute number makes sense (as with migraines).



✕

Metric name

Interpolate missing days

Goal:

Decrease

Increase

Tracking:

Value

Changes

Metric Window (days)

1

Add metric >

Finally, experiment with the window to get a sense of how many days appear to influence your metric.

Additionally, the **Goal** is set when defining the metric. Set it as a goal to increase or decrease the measure.