



Running by the numbers and setting goals

a visual look at how to get the most from your Garmin or other favourite app

Short Video

- <https://vimeo.com/86442989>
- *Michael Browne is a (now) 83-year-old who likes to run. He likes to run a lot. 1951 Wellington mile-champion, 9 time marathon finisher, multiple 10km races and plenty of track racing, Michael should be an inspiration to us all.*
- *Filmed with Sony FS100 and Nikon D800.*
- *Filmed and edited by Mike Heydon / jetproductions.co.nz*

A little bit about me

- At School — 400m, 800m runner
- Started to run again in 2006
- Fell off the wagon
- Consistently running since 2010
- Blog(s)
 - <http://74running.com>
 - <http://whatrunnersdo.com>
 - <http://runwellington.com> (Coming soon)





Galicia, Spain – Ancient Roman Lighthouse – Torre de Hercules – Trail Circuit about 8kms along the Atlantic coast

My Running Goal(s)

- Holistic goals
 - Enjoy every run
 - Inspire others to start running
- Short term (6months to 1year)
 - Run 5 x 5km races under 19minutes (current PB 18:25 – 2014 Sep)
 - Maintain average weekly mileage to 70-80km per week
 - Be able to run half marathon distance under 90mins (non-competitively)
 - Be injury free



what
runners
do

Limone – Lake Garda, Italy – starting elevation 25-30m then climbs over 1500meters, Home to the Skyrunner world championship circuit Limone Xtreme race

Pop quiz — Q1



What can I measure?

- how much time you spent running
- how far you ran (distance)
- how much elevation you climbed
- heart rate fluctuation (your effort)
- cadence (number of steps)
- stride length (help with form)
- vertical oscillation (arm movement to help with form)

How can I measure?



The simple clock (with stop watch)

A Garmin (or other device) – usually with GPS tracking/distance HR

Garmin, Suunto, Polar are the top three most recognised when it comes to running watches

Apps – usually on a smart phone, combined with any device – Photo by www.dcrainmaker.com

Time

- How long did I run?
- A simple watch will do
 - If you want to get some 'feel' for distance over time
 - Go to a Track (Newtown for example)
 - Jog for 10-12 minutes (to warm up)
 - Run as many laps as you can around the track in 12mins @ hard effort
 - This is called a cooper test
 - This will give you an estimate of how much distance you can cover in 12mins
 - Work it out from there
 - Or do a local parkrun (5km) then adjust pace for easy runs

Heart rate



“Your resting heart rate is the heart pumping the lowest amount of blood you need because you’re not exercising.

Resting, sitting or standing, your pulse is usually the same. Sometimes as you stand for the first 15 to 20 seconds, your pulse may go up a little bit, but after a couple of minutes it should settle down.”

Heart rate

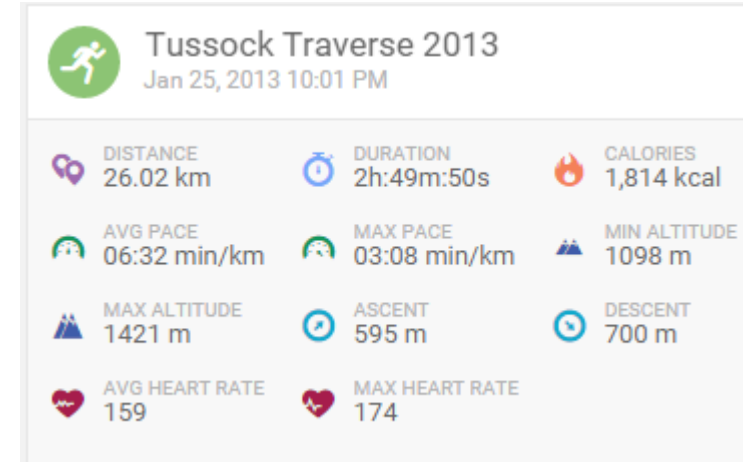
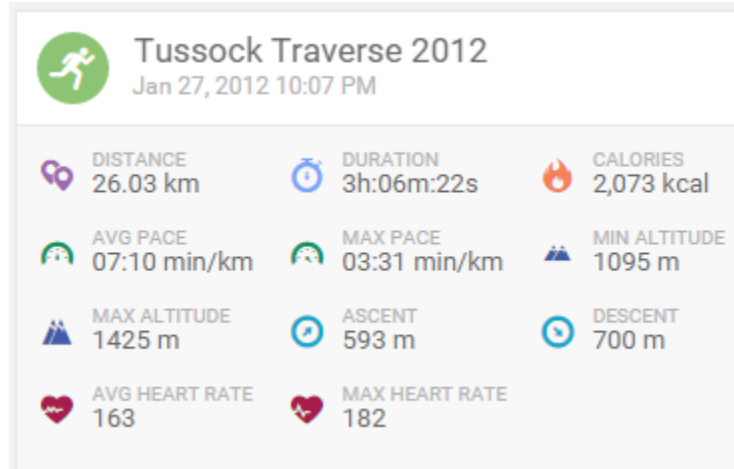
- The lowest HR of your day is commonly referred to as your resting heart rate (RHR).
- It is actually your lowest heart rate while awake.
 - Typically you'll see slightly lower heart rates while sleeping. So the term 'resting' is somewhat confusing as some may assume
 - rest does not = sleep.
 - rest = lying on the couch watching TV

Chest based or Optical



- Until recently most devices required a chest strap
- Now you have the option of continuous monitoring vs activity based monitoring with optical HR monitoring

What can you learn from HR?



2012	2013
AVG HR 163	AVG HR 159
MAX HR 182	MAX HR 174
Time: 3:06	Time: 2:49
Avg Pace: 7:10min KM	Avg Pace: 6:32min KM

Effective use of HR

- Look for fluctuations
- If your average is higher than normal, Usually means you need a bit more rest
 - Check before a key training session
 - Speed work sessions are less effective if you can't be consistent
 - Reduce the intensity/duration
- Ultimately only YOU can tell how your body is feeling
- Use HR monitoring as a guide not the holy grail

Pop quiz — Q2



Back in the day..

- In 1977 Pete Riegel designed a race pace computer.
- The units sold for US\$2.50 each.

TO ESTIMATE FUTURE RACE PERFORMANCE

1. SET ARROW AT DISTANCE YOU HAVE RUN
2. READ "PERFORMANCE FACTOR" OPPOSITE YOUR PACE AT DISTANCE.
3. SET ARROW AT DISTANCE YOU WISH TO RUN.
4. YOUR POTENTIAL PACE MAY BE READ OPPOSITE THE PERFORMANCE FACTOR OBTAINED IN STEP (2).

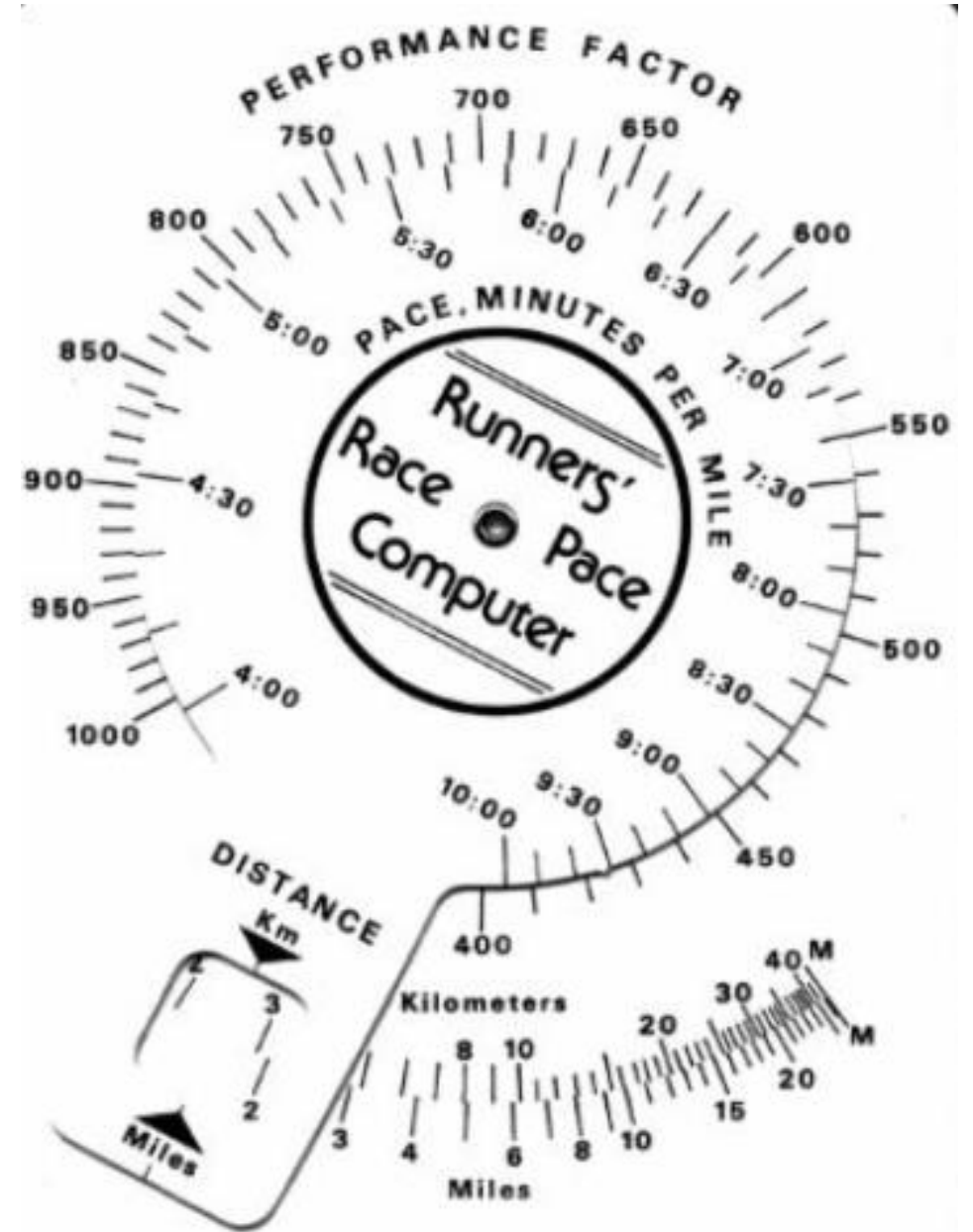
EXAMPLE

YOU RUN 10 K AT 7:10 PER MILE. YOUR PERFORMANCE FACTOR = 620. AT THIS PERFORMANCE FACTOR, YOU SHOULD BE ABLE TO RUN 1 MILE AT 6:18 OR A MARATHON AT 7:53 MINUTES/MILE

TO COMPARE PAST PERFORMANCES

THE BEST RACE IS THE ONE WITH THE HIGHEST PERFORMANCE FACTOR.
EXAMPLE: 20 MILES @ 7 MIN/MILE IS BETTER THAN 5 K AT 6:20 MIN/MILE, BECAUSE ITS PERFORMANCE FACTOR IS HIGHER

© 1977 P. S. Riegel - Columbus, Ohio



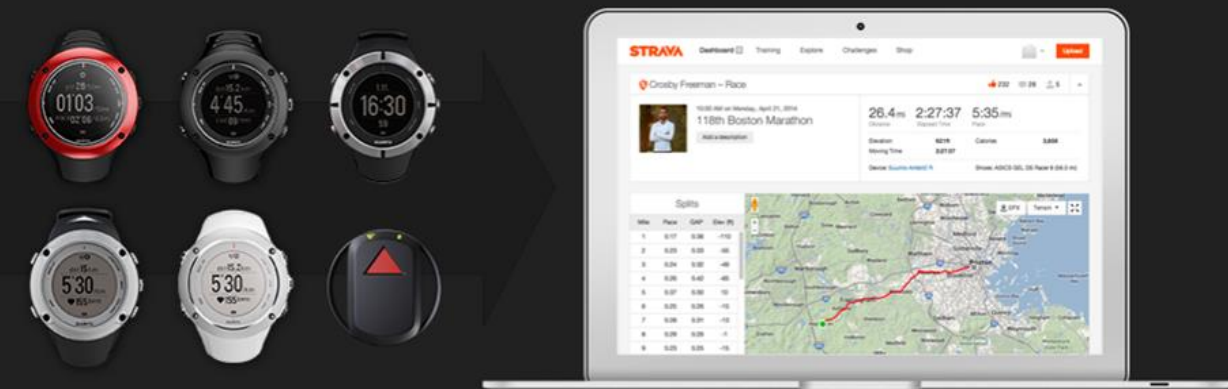
Distance using GPS

- Quite handy if you have a GPS tracking watch
 - Many available
 - Suunto, Garmin, Polar are leaders with pros and cons on each
 - Most sync to Strava – www.strava.com

STRAVA

Strava, a sports community for athletes all over the world, lets you experience social fitness - connecting and competing with others via mobile and online apps. Strava provides motivation and camaraderie, and helps us prove that we're out there doing what we love to do. Connect your Movescount profile to your Strava account to transfer Moves to Strava. Any Move with GPS data can be transferred automatically.

<http://www.strava.com>



The image shows six different models of GPS sports watches arranged in two rows of three. The top row includes a red watch with a black face, a black watch with a black face, and a silver watch with a black face. The bottom row includes a black watch with a black face, a white watch with a black face, and a black watch with a red triangle on the face. To the right of the watches is a laptop displaying the Strava website interface. The website shows a user profile for 'Crosby Freeman - Race' with a recent activity for the '118th Boston Marathon' showing a distance of 26.4 miles, a moving time of 2:27:37, and a goal time of 5:35/mile. Below the activity is a 'Splits' table and a map showing the race route.

Split	Time	Dist	Speed
1	0:17	0.50	1:50
2	0:20	0.50	1:40
3	0:24	0.50	1:30
4	0:26	0.50	1:20
5	0:27	0.50	1:10
6	0:28	0.50	1:00
7	0:29	0.50	1:00
8	0:29	0.50	1:00
9	0:29	0.50	1:00



GPS accuracy (Distance)

- GPS – Global Positioning System
 - Widely used in most devices
 - Depends on device/implementation in general varies between 15m to 5m
- Apps are not the most accurate but are getting better
 - Don't rely on it if your life is at stake



GPS & GLONASS

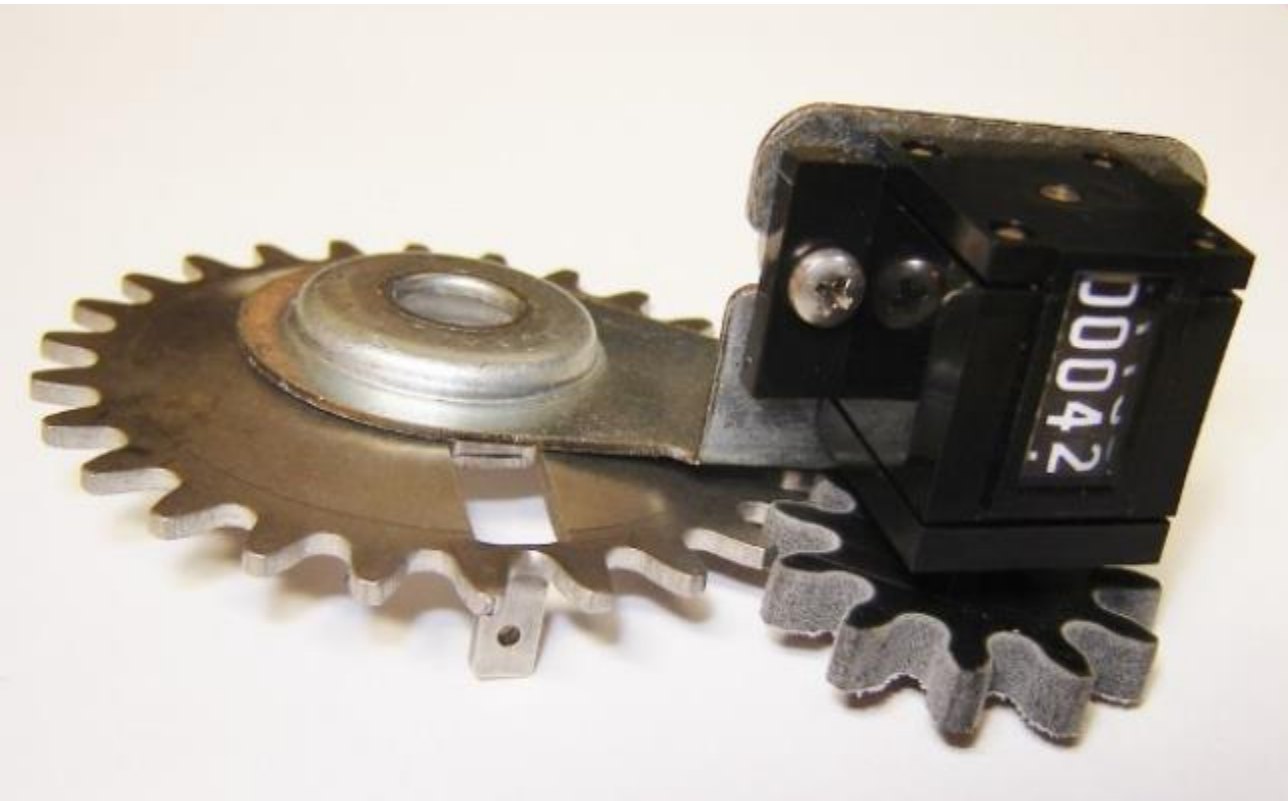
- Globalnaya navigatsionnaya sputnikovaya sistema, or "GLObal NAVigation Satellite System", is a space-based satellite navigation system operating in the radio navigation-satellite service
- Used by the Russian Aerospace Defence Forces
- Provides an alternative to GPS and is the second alternative navigational system in operation with global coverage and of comparable precision
- Most newer devices use both – so it's a good thing!

GPS accuracy (Distance)

- On trails this can vary a lot because of combined factors of undulations and bush cover etc
- Hint: Please don't whinge about a race because your GPS watch reported shorter/longer distance than what was advertised
- Read more here:
http://www.riverregionrunners.org/html/gps_accuracy_article.html
- <http://www.gps.gov/systems/gps/performance/accuracy/>

Jones/Oerth counter

- <http://www.jonescounter.com/>



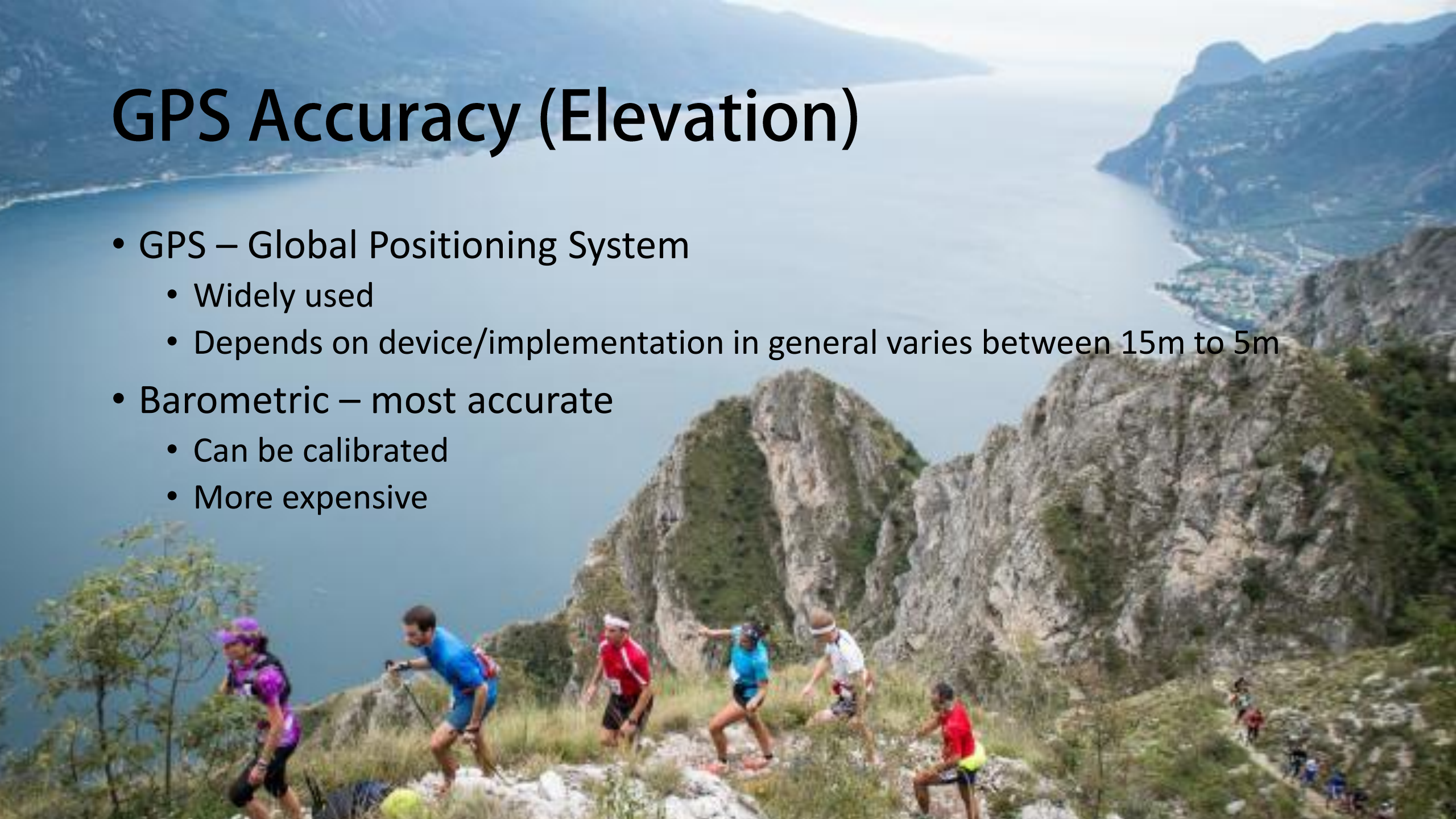
NO RESTRICTIONS —
RUNNERS MAY USE ENTIRE ROAD



RIGHT SIDE ONLY — RUNNERS
MAY NOT CROSS CENTER LINE.
-CONES AND MONITORS REQUIRED

GPS Accuracy (Elevation)

- GPS – Global Positioning System
 - Widely used
 - Depends on device/implementation in general varies between 15m to 5m
- Barometric – most accurate
 - Can be calibrated
 - More expensive



GPS Accuracy (Elevation)



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How accurate is the Barometric Altimeter?

[Email this Answer](#) [Print this Answer](#)

01/20/2016

Garmin does not publish accuracy for the barometric pressure sensor. Garmin does publish the accuracy of the barometric altimeter readout. The accuracy is published as 10 feet with proper calibration.

Proper calibration is obtained by either inputting a known elevation, or by inputting a normalized air pressure. One could then infer from the accuracy of the altitude that the barometer would be accurate to one thousandth of an inch of mercury. The device will only display up to the hundredths of an inch of mercury.

Garmin's devices are designed as recreational GPS devices, as an aid to navigation. They should not be used for any activity requiring precise measurements such as surveying or weather prediction.

GCT — Ground contact time

- Ground contact time (GCT) is the amount of time it takes your foot to strike and lift off, and it can have a profound impact on your overall running ability.
- A study in the Journal of Applied Physiology found that even a fifteen-millisecond improvement in GCT resulted in a 3% improvement overall.¹
- That may sound minuscule, but for a runner able to do 10km in forty minutes, it would result in a one-minute improvement. And for the marathon runner? It turns into seven whole minutes.

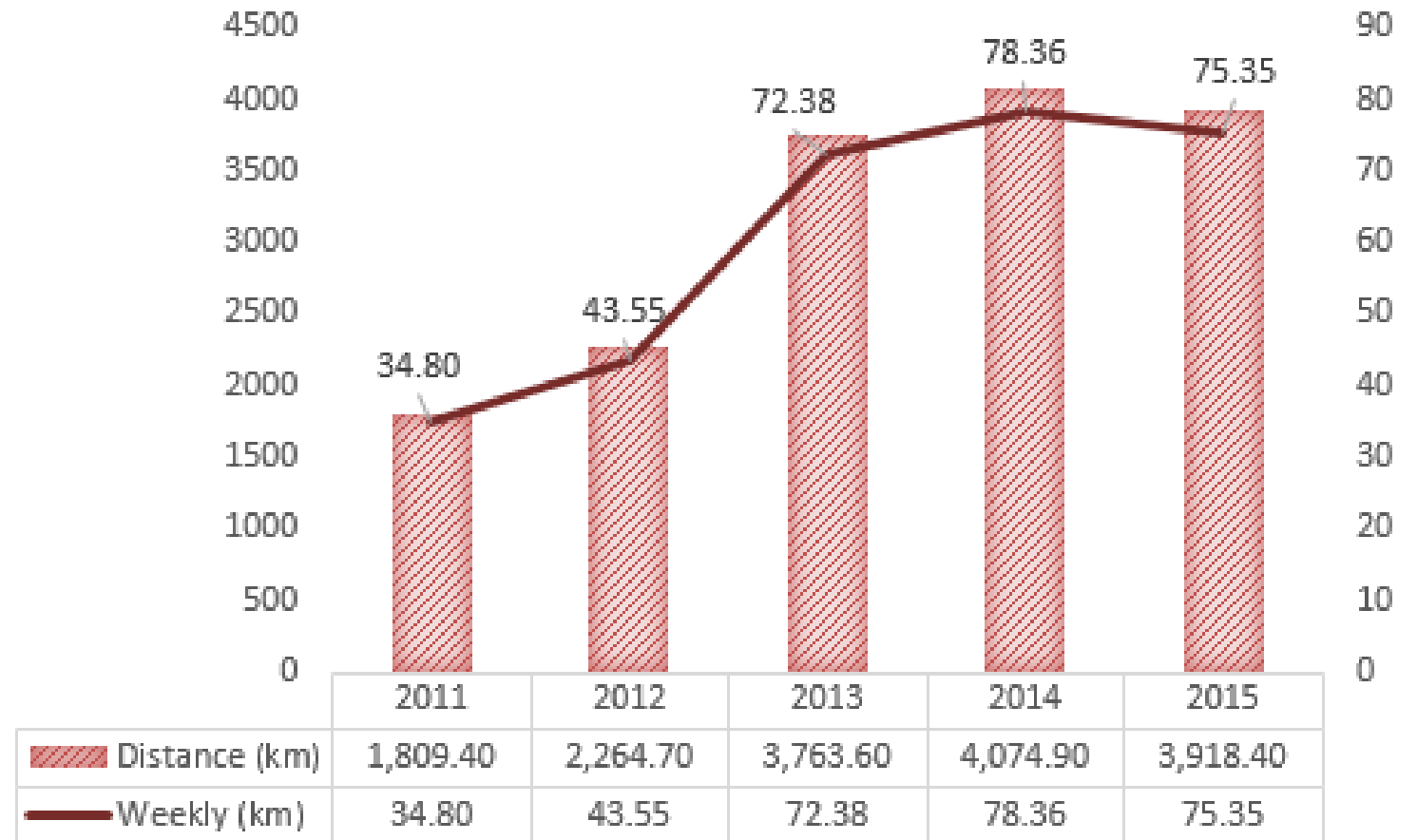
<http://breakingmuscle.com/running/the-single-secret-to-becoming-a-better-runner>

Cadence

- Your height, weight, leg and stride length and running ability will determine your optimal cadence.
- Everyday runners generally fall between 160-170 steps per minute, while elite runners strike the ground around 180 steps per minute or higher—with some getting above 200 at their fastest speeds

Why collect data

- Review your runs
- Visualise your training patterns



What is the benefit?

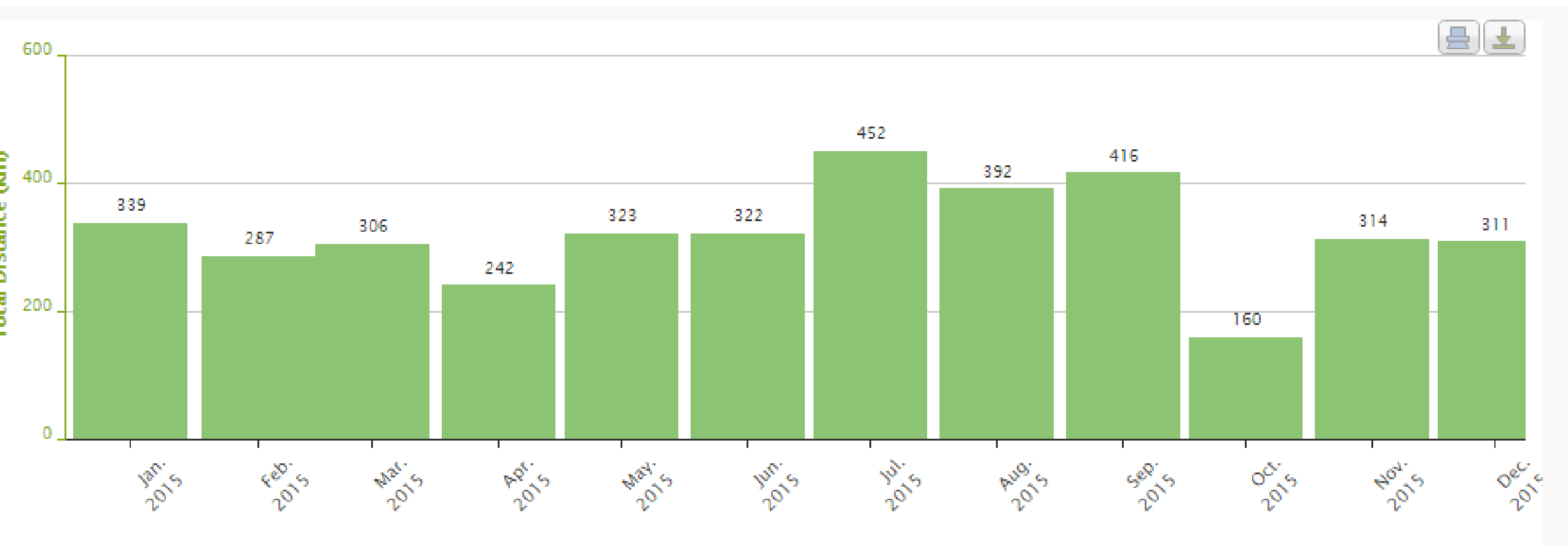
- Self assessment
- Set goals (daily/weekly/monthly)
- Avoid burnout
- Avoid injuries
- Review progress
- Set benchmarks
- Repeat

Visual look at Strava data

- Look at some data collected over 5 years

Setting goals

- Be realistic – think longer term
 - Pick some short races and one key long race
 - Break the 52 weeks into
 - Macro and Micro cycles of
 - Base building > Substance > Race > Recovery
 - Allow to have fun – don't make it a chore



1 JAN. 2015 - 31 DEC. 2015

DAY

WEEK

MONTH

YEAR



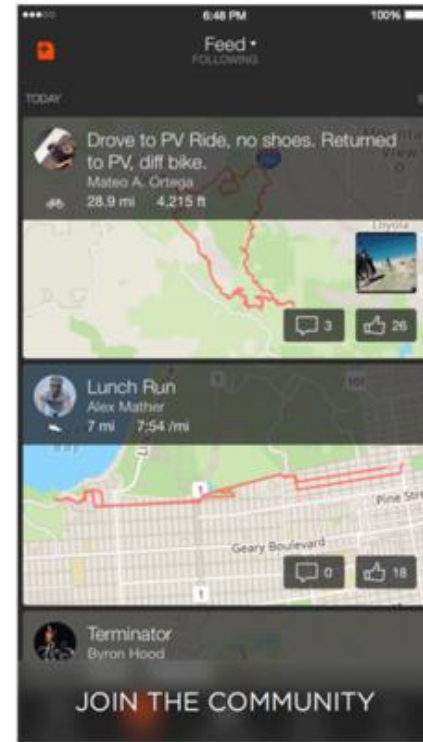
Apps



Apps



Apps



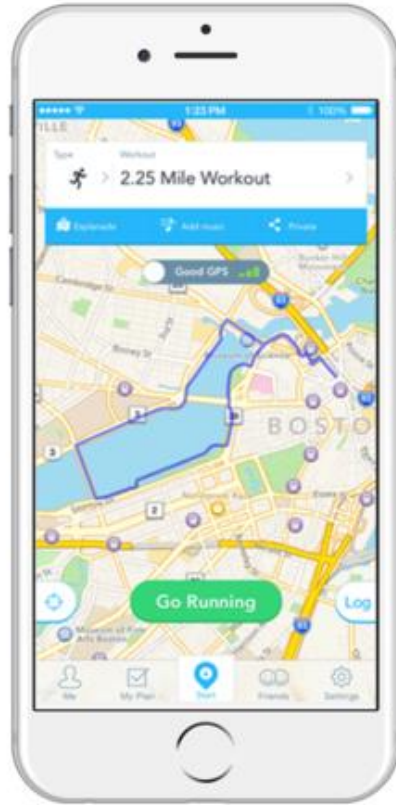
Apps















Thanks for coming to RunFest...
Photo credit: Pete Marshall