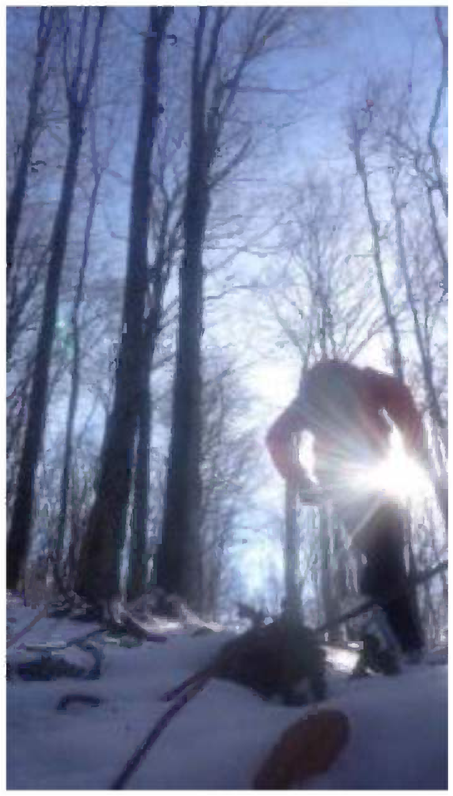
Pursuing the Perfect Pedometer



Trail running while using the Nike+ Stand Alone to track distance. This is the best simple pedometer for dedicated runners.
Credit: Jediah Porter

Which pedometer is right for you? If you are looking to track, record, and motivate your daily physical activity and/or count steps taken, a pedometer is just the ticket. OutdoorGearLab once again leads the way in reviewing the best of the best. We scanned the market and chose six of the best devices available. We tested under harsh outdoor conditions, but mainly in more pedestrian day-to-day applications. We assessed each device for usability, construction quality, and accuracy. Read on to see which device will best fit in your life.

In this review we limited our choices to devices that count steps and distance and that clips to one's shoe or pocket, but there are many different types of electronics that can monitor distance and activity. If you are looking for a wrist-mounted device, and/or one that also tracks your sleep patterns, check out our Fitness Tracker Review. If you are looking to specifically track speed and distance when riding a bike, consult our full Bike Computer Review. If you are looking for an electronic device for navigating in mountainous environments, check out our Altimeter Watch Review. Finally, if you are looking for more rigorous tracking of formalized fitness efforts, visit our GPS Training Watch Review.

Read the full review below >

Review by: Jediah Porter · Review Editor, OutdoorGearLab

November 2, 2014

Top Ranked Pedometers

Displaying 1 - 5 of 6

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Our Ranking	#1	#2	#3	#4	#5
Product Name	Striiv Smart Read the Review	Nike+ Stand Alone Read the Review	Pacer Read the Review	Garmin Foot Pod Read the Review	Ozeri 4x3 Razor Digital Pocket 3D Read the Review
Editors' Awards	Editors' Choice	Top Pick	Best Buy		Best Buy
Street Price	$34 Compare at 1 sellers	$16 Compare at 1 sellers	$0	Varies $51 - $70 Compare at 3 sellers	$29 Compare at 1 sellers
Overall Score	0 77 100	0 73 100	0 69 100	0 69 100	0 67 100
Editors' Rating	★★★★☆	★★★☆☆	★★★★☆	★★★☆☆	★★★☆☆
User Rating	Be the first to rate it	Be the first to rate it	Be the first to rate it	Be the first to rate it	1 rating

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Pros	Self-contained, creative and inspiring exercise incentives	Accurate and compact, targeted at athletes	Inexpensive and easy to setup	Easy to mount. targeted at athletes.	Small and accurate.
Cons	Requires frequent recharging	Requires Nike shoes or an aftermarket pouch, only tracks distance and does not count steps	less accurate. no distance measure. Requires carrying a smartphone everywhere.	Inaccurate, requires Garmin watch.	Finicky buttons and LCD screen. Only retains one week of data.
Best Uses	Tracking daily activity information for the casual fitness aficionado	Distance tracking for casual to intermediate runners	An excellent way to try out step tracking.	High-end runners looking for nuanced data.	Step tracking for people with basic fitness and activity tracking needs.
Date Reviewed	Oct 28, 2014	Nov 01, 2014	Nov 02, 2014	Oct 31, 2014	Nov 01, 2014
Weighted Scores	**Striiv Smart**	**Nike+ Stand Alone**	**Pacer**	**Garmin Foot Pod**	**Ozeri 4x3 Razor Digital Pocket 3D**
Interface - 25%	0 8 10	0 7 10	0 8 10	0 6 10	0 5 10
Portability - 25%	0 6 10	0 6 10	0 8 10	0 8 10	0 9 10
Durability - 20%	0 8 10	0 9 10	0 7 10	0 9 10	0 5 10
Accuracy - 15%	0 9 10	0 10 10	0 5 10	0 6 10	0 8 10
Ease Of Set Up - 5%	0 6 10	0 8 10	0 9 10	0 8 10	0 9 10
Features - 10%	0 9 10	0 3 10	0 3 10	0 3 10	0 5 10
Product Specs	**Striiv Smart**	**Nike+ Stand Alone**	**Pacer**	**Garmin Foot Pod**	**Ozeri 4x3 Razor Digital Pocket 3D**
Dimensions	2.75 x 1.6 x .5 inches	1.4 x .9 x .2 inches	n/a	1.4 x .9 x .25 inches	2.4 x 1.4 x .25 inches
Weight	1 3/8oz	1/4oz	same as your smartphone	1/4oz	1/2oz
Battery Life	3-4 days between recharges	months	same as your smartphone	months	months
Style (bracelet, clip, etc.)	clip	shoe pocket	smartphone app	clips to shoe	clip
Tracks Steps taken?	yes	no	yes	yes	yes
Tracks Distance?	yes	yes	no	yes	yes
Tracks other stats?				Step Cadence	
Data management?	on device, as well as proprietary online community.	proprietary app and online community	proprietary app and online community	on device, and then to proprietary computer and online database	on device
Needs additional device?	not necessary. But will sync with computer.	smartphone	smartphone	Requires compatible Garmin watch.	no
Social Aspect?	yes	yes	yes	yes	no
% inaccuracy	0.5%	0%	5.5%	4.1%	1.8%

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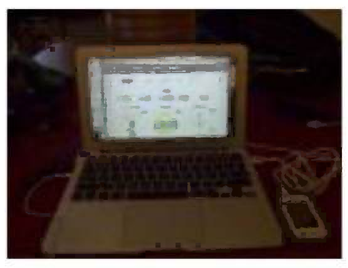
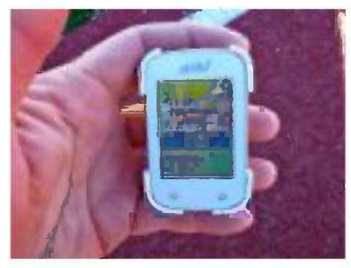
OutdoorGearLab Editors' Hands-on Review

Review Photos | Editors' Choice Winners | All Reviewed Products

Selecting the Right Product

Most people look to acquire a pedometer for one of two primary reasons: some will be simply looking to track their daily activity or exercise while others are looking to motivate further daily motion. If you are physically active already, and interested in using a device to track that, your needs will be slightly different from he or she who is looking to use a device to inspire healthy habits. That being said, every device in our test will serve either of these types of user. If you want more detailed data collection than can be gleaned from one of these simple counters, be sure to check out our Fitness Tracker Review which compares devices that record physical activity as well as sleep, diet, mood, and other personal data.

Lead test editor Jediah Porter unboxing the tester collection. Like most modern electronics, these models all came with concise and easy instructions to get the user started.

Credit: Megan Seel

Functions

Data Collection

If you are looking to quantify your daily physical activity, virtually any model will suffice. The most basic units count up the total number of steps taken in a day. All store that data for at least a few days. The simplest products store days worth of data in the device, disposing of older data as new data is generated. If the user is to keep track of long term trends, the

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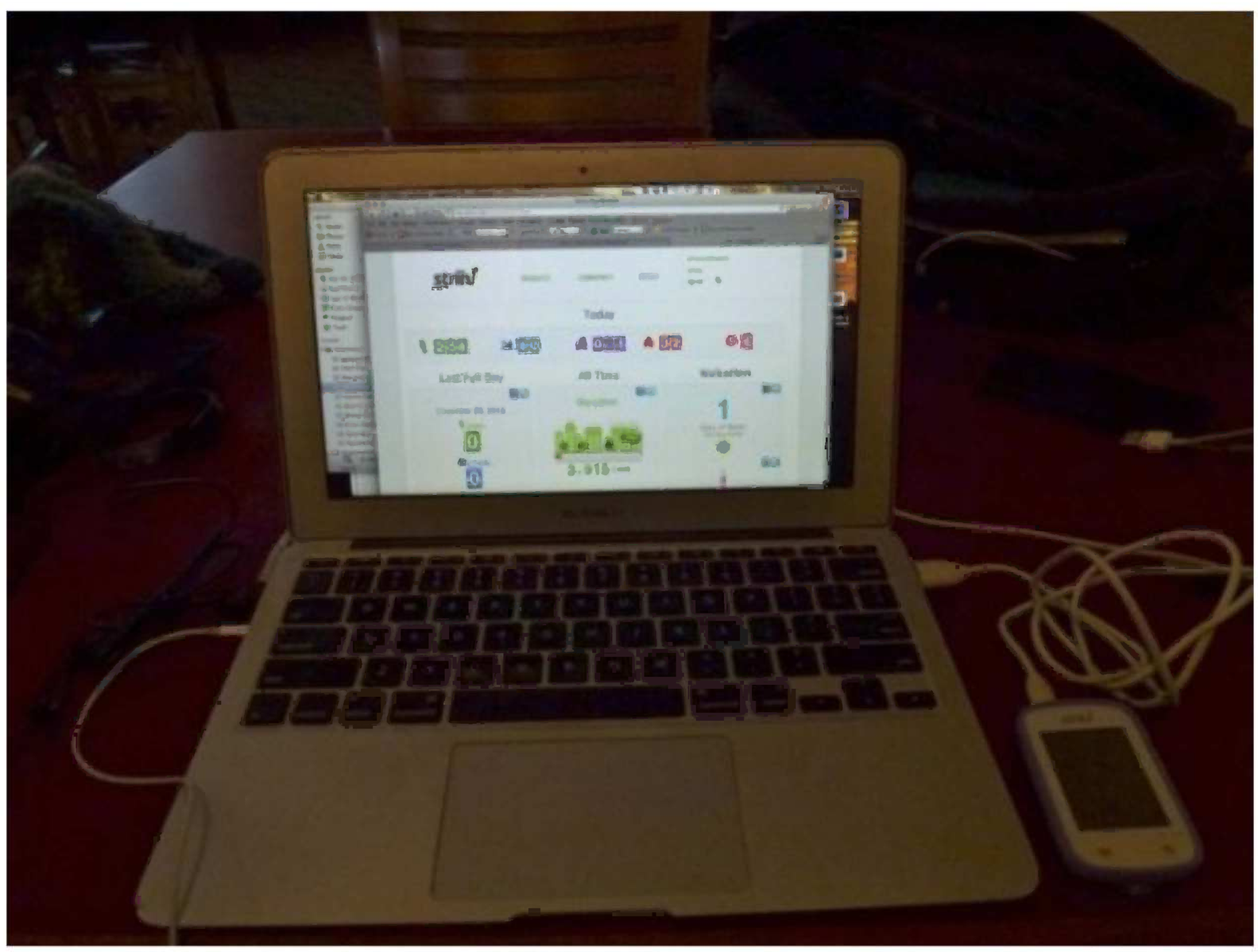
information must be manually transferred to a notebook of some sort. Other devices interface with specialized smartphone, computer, or web-based software that stores and organizes the information.

Activity Motivation
These devices are also used for physical fitness motivation. Almost every person will benefit from more physical activity. And almost everyone is strapped for time and motivation. Tracking and inspiring movement in even the busiest schedule is an idea that's time has come. Busy travelers, professionals, and desk-jockeys everywhere are making the most of their days by setting and reaching activity goals with electronic activity monitors. We walk a great deal in our daily lives. Tracking that with an unobtrusive and easy to use device gives a starting point for anyone looking to increase their energy output. Some manufacturers are using social media, data correlation, and clever games to motivate and organize individuals and communities in exercising more.



Our Editors Choice Striiv Smart, plugged in and synced up with the user's account on the Striiv website.

Credit: Jediah Porter

Criteria for Evaluation

Interface and Data Management
All these devices collect reliable data. However, it is the way the information is viewed, saved, and shared that sets them apart from one another. On one end of the spectrum, the simplest and least expensive self-contained (as opposed to requiring a smartphone or computer) device in our test, the Omron Hj-112 Digital Pocket gathers accurate data, but stores only the most recent days' information and can't be backed up or transcribed except by hand. The instrumentation in the Omron isn't much different than that held in the spendier options. What is different is the interface and data collection. The more expensive and higher-rated models in our test come equipped with very well thought out interactive apps or on-device screens. For sustained use and efficient integration of a pedometer into one's daily life, an interactive and effective interface is crucial. For what it's worth, none of our testers maintained the organization and motivation to use a non-app-connected device for more than a week or so at a time. Both the Editors' Choice winning Striiv Smart and Best Buy Pacer app have excellent accompanying interfaces.

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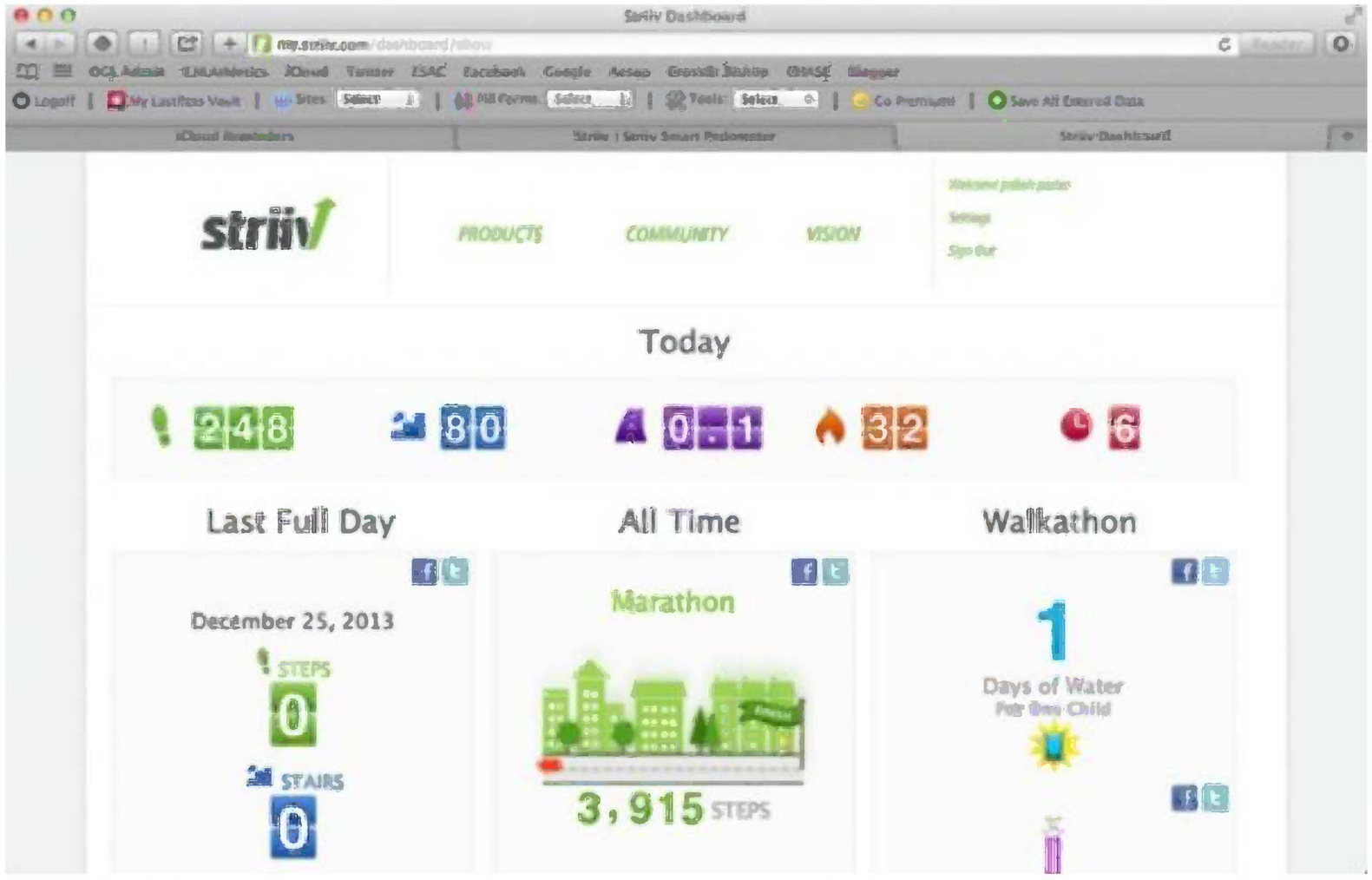

Screenshot of the web-based Striiv data management. In order to upload the data, the Smart device must be plugged in to the USB of your computer.

Credit: Jediah Porter

Finally, we assessed these devices for the way in which the information was transferred. The Pacer App inherently logs, displays, and stores information on the owner's smartphone. The Nike+ Stand Alone and Garmin Foot Pod sync to their accompanying apps, devices, and/or online communities wirelessly. The Striiv connects to a computer via cable, while the remaining devices store the data onboard only.

Portability

The use of fitness equipment, especially pedometers, requires absolute convenience and simplicity. It is of no use if the user doesn't have it on them. These tested devices, intended to be carried every hour of every day, must transport inconspicuously and handily. Portability scores and performance includes both the convenience and aesthetics of carting these around. One will carry these not just during exercise, but to meetings and dinners and events. There are two different styles of step-counting electronics in our test: devices intended to be foot-mounted or belt-clipped. All will work to some degree in the user's pants pocket, but none work if not on the body. Each person will have different wardrobe and comfort requirements. Generally, the foot-mounted tools are best for dedicated exercise. The waist-clipped models work well for those with more strict dress-codes. Most workplace appropriate outfits can be configured to carry yet conceal a belt mounted design. Special mention must be made of the Striiv Smart. The Smart can be configured in a few different carry modes. The simplest version comes with a belt clip and key chain. The same device can be purchased with these same two options, as well as an arm band, soft rubbery case, and carabiner style clip. Partially due to this flexibility and versatility, the Striiv Smart earned our Editors' Choice award.

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One possible carry option for the Striiv Smart device. Also pictured, the Editors Choice winning Leatherman Charge TTI multi tool, in pocket clip configuration.

Credit: Jediah Porter

Durability and Construction Quality

All the products in our test are compact, relatively inexpensive electronics. As such, their function will vary and occasionally fail. None of our tested devices completely failed, but the screens and buttons on the less expensive units were vulnerable to rough use. Buttons stuck on the Omron and Ozeri devices, and screen of the Ozeri lost sections of liquid crystal. All of the more expensive devices functioned fine through the length of the test, but showed finicky performance in terms of syncing, charging, and the like. The foot-mounted Nike+ Stand Alone and Garmin Foot Pod are particularly durable and require virtually no maintenance and no charging. The Striiv Smart has vulnerable buttons, but those can be locked for pocket carry, which we like.

Accuracy

The sensor portion of a pedometer is relatively simple and reliable. In our testing, however, accuracy varied between the devices fairly significantly. The least accurate device had a margin of error many times greater than the most accurate. In a remarkable performance, the Nike+ Stand Alone had perfect accuracy. This Nike product only measures distance (no step count) but it mapped the circumference of a standard track to the quarter mile, time after time.

At the other end of the spectrum, and predictably so, the free Pacer smartphone app demonstrated up to 7% error, with an average deviation from the actual of 5.5%. Now, if and when the user's goal is to track relative amounts of exercise and activity from day to day, the degree of error is hardly a factor. Provided the user uses the same device from one day to the next, the trends in his or her activity level will be clear. Therefore, degree of accuracy is not very important in overall consideration. It is important to note the limitations of these various devices, but the actual accuracy is not as important. Among the dedicated devices intended for day-to-day use (therefore eliminating the Pacer app and the exercise-specific foot mounted devices) accuracy is somewhat consistent across the line up. In this select list, the most accurate demonstrated a .5% inaccuracy while the least factual was only 3.3% off.

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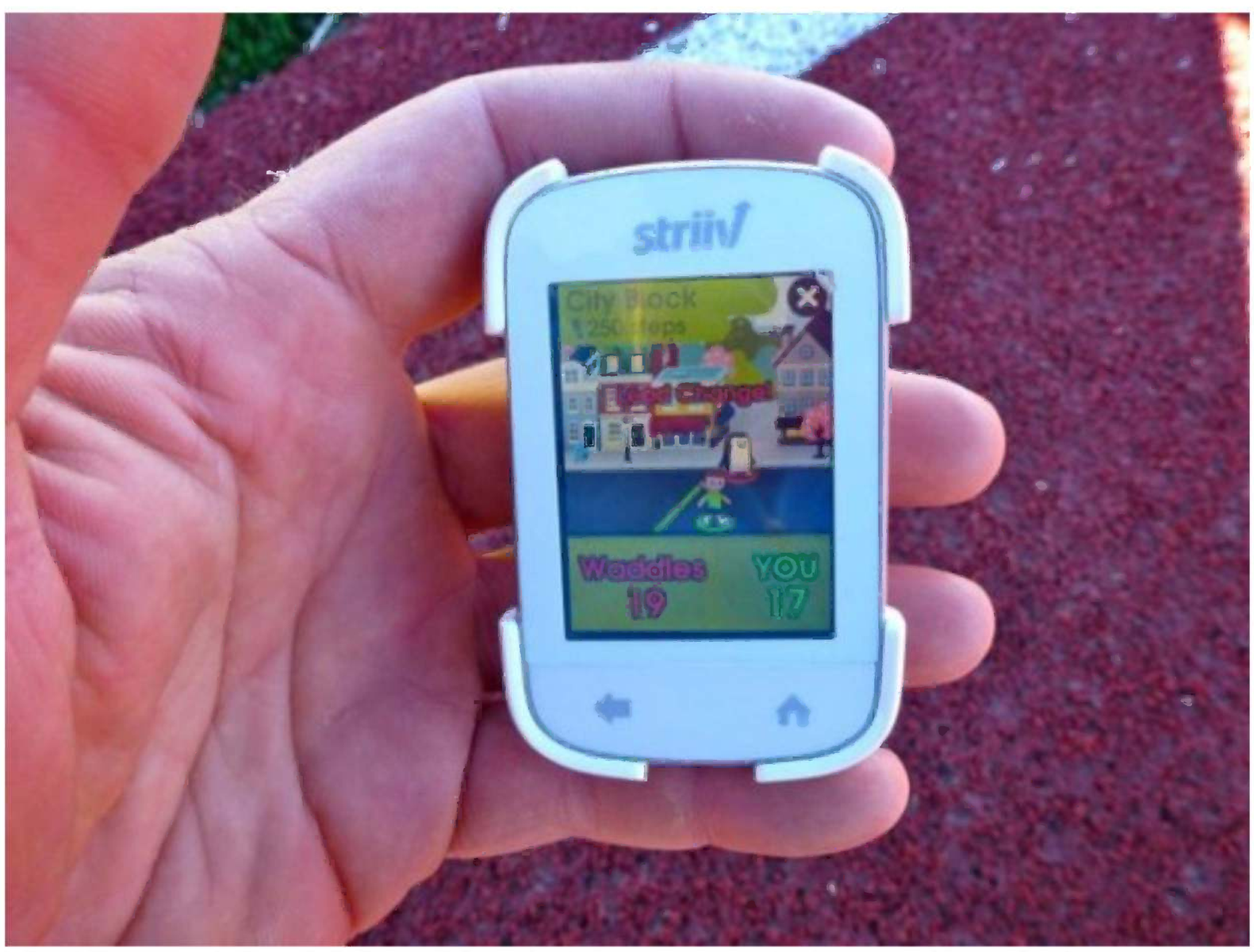
The Nike+ Stand Alone and Garmin Foot Pod are marketed to dedicated runners and walkers. Seen here on a test trail run.

Credit: Jediah Porter

Ease of Set-up

You will most likely just do this once, but some of the devices are much easier to get using than others. Notably, the Striiv took a very long time to sync with its downloadable pc interface. The non-connecting devices (Omron and Ozeri) had easy-to-read instruction manuals and quick set up procedures. However, both of these have flimsy buttons that get inadvertently pressed. More than once with each of these devices, the user information and associated data was accidentally and completely cleared. This required another round of set-up, not to mention the loss of data.

Editors' Choice Award: Striiv Smart



Editors' Choice award winner Striiv Smart. Right on the device are games and milestones and inspirational messages.

Credit: Jediah Porter

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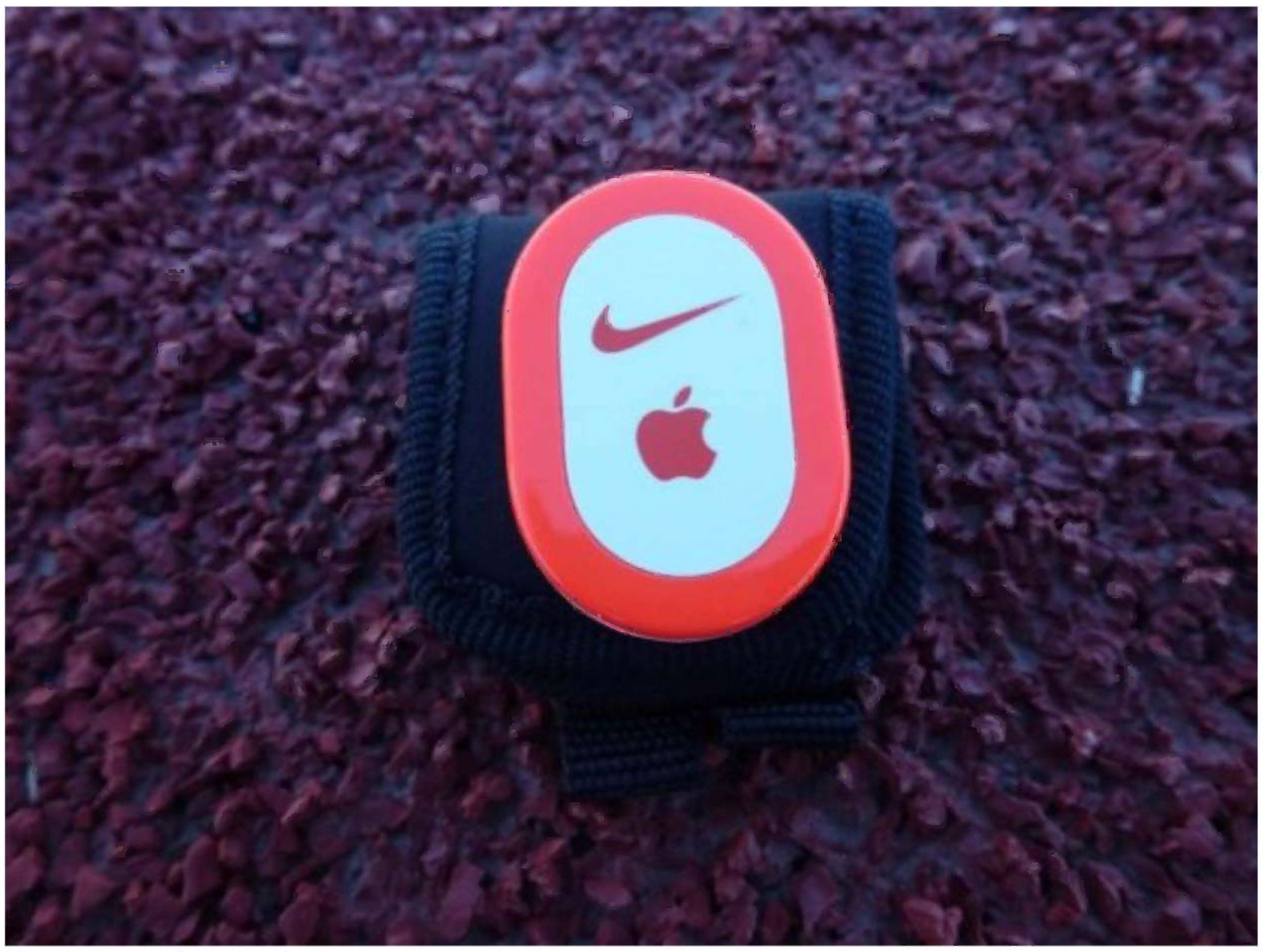
The Editors' Choice award in OutdoorGearLab tests goes to the product that performs the best overall. In this case, the Striiv Smart is by far the best motivator and activity tracker in our test. Built into the compact and rugged touchscreen device is a whole suite of games and milestones and inspiring messages. The Smart counts your steps accurately and translates that count to distance and a rough estimate of calories burned. Basically all of the devices we tested do this. The Smart goes above and beyond by correlating distance and stair climbing data to actual distances. It will count your action and update you as you've passed various milestones. It notes when you've walked the length of the Golden Gate Bridge, when you've walked the equivalent distance of a marathon, etc. The Smart also provides games, races, and a social experience. Striiv inc will donate to various charities, from which you can choose, as the user passes certain milestones. It claims to know the difference between stair climbing and horizontal walking. In summary, the Striiv Smart offers by far the most motivating interactive experience of all the models we tested. If you are looking to start a basic fitness plan and appreciate external and community inspiration, the Smart is just the ticket for you.

Top Pick Award for Runners: Nike+ Stand Alone



The Nike pod with aftermarket lace pocket.

Credit: Jediah Porter

We give our Top Pick award in each category to the product that stands out for performance in a certain niche or special application. As a dedicated indoor or outdoor run-tracking device, the Nike+ Stand Alone was an easy choice for this award. If you are a dedicated running enthusiast, training alternately outdoors, on an indoors track, and even occasionally on a treadmill, this Nike product is the best and simplest way to keep tabs on your efforts. It is accurate, simple, and easy to use. The built-in battery seems to last a really long time, and there are no buttons on the device itself. All the data management is done from your smartphone. The primary disadvantage of this device is mounting it to your shoes. Nike running shoes have a built-in compartment, while those shod by other brands will need to use some sort of aftermarket pouch or improvisation.

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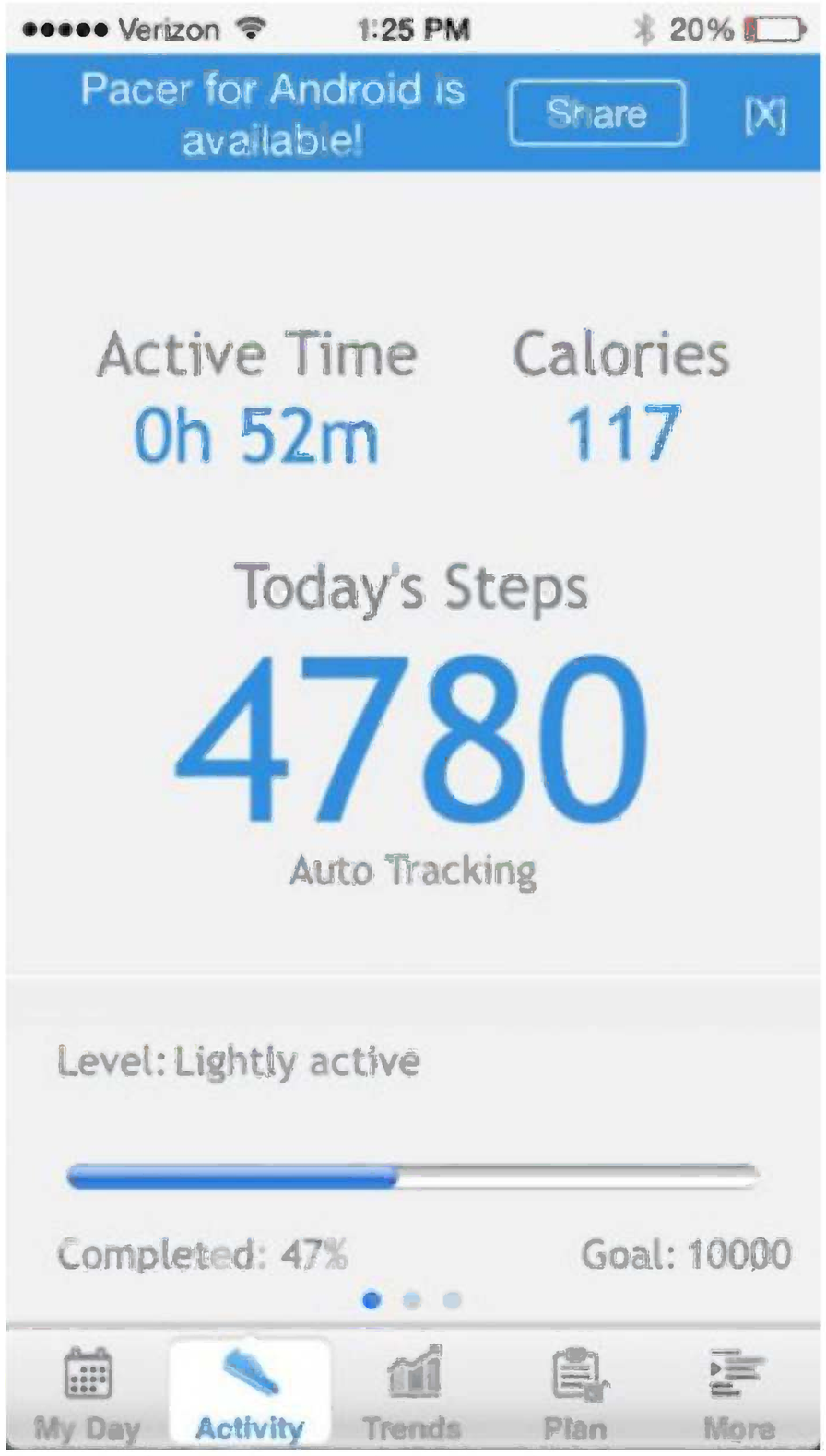
Best Buy Award for Smartphone Users: Pacer Smartphone App

In a reflection of the variety of options available on the market, we have awarded two products our Best Buy Award. One is a dedicated device, while the other is an app for your smartphone. Different users will have different preferences. In short, if you're on a budget and looking for simple step-counting function, either of these will work. Choose the Pacer Smartphone App if you carry your phone everywhere you go. Choose the Ozeri if you

occasionally leave your phone on your desk or kitchen counter while moving about. Obviously, if you don't have a smartphone, the Razor is an excellent choice.



Screenshot from the Best Buy winning Pacer App.

Credit: Jediah Porter

At a rock-bottom free price, the Pacer smartphone app is an obvious choice for one of our Best Buy awards. Many people, especially those looking for a pedometer, already have a smartphone. This app uses your Android or iOS phone's built in accelerometer to detect steps. (The accelerometer is the part that "knows" which way the phone is oriented, so that the screen can be oriented accordingly. Not to mention the accelerometer's application in shake-to-activate apps and "bump" style data transfer between phones.) The app takes this data, plus your height and weight, to calculate how many calories you've burned. There are also optional paid upgrades. The user can spend $1.99, for instance, to incorporate workouts and activity performed without the phone on the users body. This points to a drawback of the Pacer app. You must have the phone on you for every step for the count to be accurate and useful. Most people's routine means that the phone gets left on the desk or kitchen counter while strolling around. These steps won't be counted. Same goes for more formalized exercise.

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Best Buy Award for a Self-Contained Unit: Ozeri 4x3 Razor Digital Pocket 3D

The Ozeri 4x3 Razor Digital Pocket 3D device and all of its parts. It comes with a spare battery, a leash, a screwdriver for replacing the battery, and a separate pocket clip.

Credit: Jediah Porter

The Ozeri 4x3 Razor Digital Pocket 3D works similarly to the Pacer App, counting daily steps and compiling that data. All this data saving is done in-device, and is held for the most recent seven days. The Ozeri is significantly more accurate than the Pacer, and does not require carrying or owning a smartphone. The price is right, and the durability is acceptable. Our testing team recommends this product for those motivated by their daily objectives and their own most recent performances. If you are looking for more of an interactive experience, you'll pay a premium for one of the social-networked options.

History

Biofeedback is a process that enables an individual to learn how to change physiological activity for the purposes of improving health and performance. A pedometer is a biofeedback device that tells a person how many steps they have taken or how far they have walked, usually within one day, with the intention of bringing more awareness to their level of activity. These differ from GPS-based motion tracking devices in that they are typically intended solely for walking.

A simple step-counter, uses a tiny spring-loaded pendulum to sense movement; it counts a step taken each time the pendulum swings. Sketches for a design were found among Leonardo da Vinci's notes. He apparently intended it to track how far troops moved each day. Many sources credit Thomas Jefferson, the third president of the United States, with inventing the pedometer in the 1780s, although there is conflicting evidence that perhaps he merely imported the technology from France. He never applied for patents on any of his inventions, so who should receive the precise credit remains unknown. It is known that in 1780 a French watchmaker named Abraham-Louis Perrelet invented a pedometer that relied on the same technological developments as the self-winding watch, which he and others developed in the 1770s.

Widespread use of pedometers for biofeedback began in the 1960s in Japan when Y. Hatano sold and marketed the Manpo-kei, meaning "10,000 steps meter." Hatano provided research to prove his marketing claim that 10,000 daily steps was the perfect balance of activity for a healthy lifestyle. This round number, amounting to around five miles for the average person, persists to this day as the recommendation for "how much exercise is necessary to manage your weight," by the U.S. Surgeon General.

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The recent development of portable information devices has increased the accuracy and multi-functionality of modern designs. While the pendulum-based models are still in widespread use and are cheap, they can be inaccurate. This is exacerbated when converting steps taken to distance traveled or calories burned. Accelerometers are electronic devices that can sense movement in up to three dimensions. Smartphones contain accelerometers to orient the device for viewing the screen, and applications have been recently developed to use them as pedometers. In some cases these can be run without using the central CPU of the device, and thus don't drain the battery.

Every device in this review uses a miniaturized electronic accelerometer. An accelerometer simply detects movement. Each device uses a slightly different combination of sensors and algorithms to translate the movement of the device into a human's activity. All data displayed by or exported from the devices we tested is an indirect translation of the movement of the device. The translation of that movement is a function of the design and programming of the

device as well as data entered by the user. In most cases, the user must enter his or her stride length, for instance. The device senses the movement of a single step, and distance is derived by multiplying the step count by the user's average stride length. Additionally, some of the tested models come with accompanying smartphone and/or computer apps that can process and correlate user-entered data like subjective mood measure, food intake, body mass, etc.

— Jediah Porter

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