PutterForce™

User Guide — The science of the putt and how the app works.

PART ONE

The Science

Why PutterForce exists and what it measures.

The problem putting has always had

The language of putting instruction is almost entirely a language of direction. Break, grain, aim point, line. Every major putting aid ever developed starts from the assumption that direction is the problem.

It is not.

The majority of missed putts — and nearly all three-putts — are caused by distance error. The ball started on the right line and arrived at the wrong speed. Too hard and it slides past on the high side. Too soft and it dies below the break. The line was correct. The force was wrong.

There has never been a reliable, calculated unit of measure for putting force. Golfers have managed distance through feel and experience, with no objective reference and no systematic way to improve. PutterForce is that measurement.

The four variables that govern every putt

Every putt on every green is determined by exactly four variables. Change any one of them and the required stroke force changes.

DISTANCE

The primary driver. A longer putt needs more energy. Thi

SLOPE

The gradient along the putt line — not just the side break. Uphill needs signif

GREEN SPEED

Measured by the Stimpmeter. Faster surfaces need less f

PACE PREFERENCE

Dying at the hole maximises the effective cup size — a slow ball can go in

> ***No golfer can hold all four variables in their head simultaneously and produce a reliable result under pressure. A single number can.***

What independent ball-roll analysis revealed

High-speed ball-roll analysis — technology that tracks rotation, velocity and trajectory from the moment of impact — produced two findings central to the PutterForce system.

Backspin is not neutral

A conventional flat-faced putter imparts backspin at impact. The ball skids before rolling — bouncing along the surface before true forward roll is established. During this phase it is not responding predictably to slope. It is at the mercy of grain, texture and surface imperfections.

A ball beginning true forward roll immediately at impact follows the slope from the first moment of contact. The calculated break is the actual break — not an approximation adjusted for an unpredictable skid phase. Ball-roll analysis verified this directly.

Tempo is the control variable

The ratio between backswing duration and follow-through duration has a direct, reproducible effect on ball speed — independent of stroke length. Research by Dave Pelz documented the 2:1 back-to-through ratio in tour players. Golfers who maintain this ratio produce consistent ball speed. Those who vary it produce variable ball speed regardless of stroke length.

Distance errors are not primarily a length problem. They are a timing problem. And timing can be measured, trained and improved.

The geometry of consistent contact

On a conventional flat-faced putter, contact away from the face centre generates torque — a twisting force that redirects the ball and changes the effective loft simultaneously. Off-centre strikes on a flat face produce a different result than centre strikes, even from an identical stroke.

A face with the same radius of curvature as the golf ball changes this geometry fundamentally. When two surfaces of equal radius meet, the contact normal — the line perpendicular to both surfaces at the point of contact — always passes through the centre of the sphere, regardless of where on the face the contact occurs.

> ***This is not a reduced torque coefficient.***
> ***It is a geometric zero — a consequence of the shape itself.***

Every contact point on a round face produces the same mechanical outcome. The same geometry also presents the face at a slightly upward angle at the contact point, which encourages immediate forward rotation rather than backspin. Zero torque and zero backspin emerge from the same design principle.

PutterForce — a new unit of measure

PutterForce is a number from 0.1 to 9.9 representing the precise stroke energy required for a specific putt. It takes all four governing variables as inputs and produces a single output. The calculation is proprietary.

The scale is linear. A PutterForce of 6.0 requires exactly twice the stroke energy of a PutterForce of 3.0, regardless of which combination of inputs produced those numbers. Learn the feeling of 3.0 and you

know how to hit every putt that calls for it — on any course, on any green.

PutterForce works with any putter. The measurement is universal. The round face geometry described above is the optimal equipment context for these principles — a putter that delivers consistent contact allows the PutterForce number to be trusted completely. Without it, the number is still correct. With it, the stroke can be too.

PART TWO

Using PutterForce

A complete guide to the Feel, Read and Learn tabs.

PutterForce has three tabs — Feel, Read and Learn. Feel is where you use it. Read is where the green is mapped. Learn is where the data accumulates into something useful.

The app opens with a short video on every launch. Tap anywhere to skip. On first launch, a three-screen introduction walks through the three tabs. Swipe through or tap the dots to advance.

Feel

Feel is the primary interface. Open it before any putt, set your inputs, and the PutterForce number updates in real time. Everything else in the app serves this number.

Setting your inputs

Input	Range	Detail
Distance	3 – 60 ft 0.5 ft steps	Set to the distance of your putt. If you have scanned the green on the Read tab, distar
Slope	-5% to +5% 0.1% steps	Negative values are downhill (shown in green). Positive values are uphill (shown in re
Green speed	Slow (8) Med (10) Fast (12) Tourn. (14)	The Stimpmeter rating of the green. Ask the pro shop or starter for today's number. If
Pace	Die at Hole or Firm Pace	Die at Hole: the ball arrives at the cup with minimal remaining speed. This is the stand Firm Pace: adds 15% to the required force, calibrated for a ball rolling 12 to 18 inches

The PutterForce number

The large number in the centre of the screen is the only number you need before you pull the putter back. It updates immediately as you adjust any input. It is displayed at maximum size so it is readable from a playing position without picking up the phone.

The metronome

Below the PutterForce number is the metronome, which trains you to deliver the required force with consistent timing. Switch between two modes using the segmented control.

Feel mode

The phone produces a haptic pulse at the exact tempo for your current distance. Longer putts receive a slower rhythm. Shorter putts run faster. The Newton's Cradle animation shows the swing amplitude scaled to the PutterForce value — a larger arc means a longer stroke is required. Tap Go to start the metronome. Tap Stop to end it.

Measure mode

The phone listens to your actual stroke via its motion sensors. After you make a stroke, it displays three results:

— Actual BPM — the tempo you produced

— Back-to-through ratio — how your timing compared to the 2:1 target

— Tempo consistency — your match to the target as a percentage

If no stroke is detected within 8 seconds, a manual log option appears. Tap it to record the putt without tempo data.

Logging putts

After each putt, tap Made or Missed. The app logs the distance, PutterForce value, slope, green speed and outcome. The running tally at the bottom of the screen shows putts made out of total and your make rate as a percentage. A dot trail builds as you putt — green for made, red for missed.

Sessions warn at 25 minutes and auto-save at 30. A saved session appears in the History tab.

Read

Read maps the putting surface using the iPhone's built-in depth scanner. It requires an iPhone 12 Pro or later. The scan takes seconds and produces a three-dimensional elevation model of the green that feeds directly into the PutterForce calculation.

Before you scan

Three numbered instructions appear on screen: stand at the ball, point the phone toward the hole, walk the green slowly. The distance slider defaults to 12 feet. The app will set this automatically from the scan — you can override it at any time.

Scanning the green

Tap Scan Green. The live AR view opens.

1. Walk slowly from the ball toward the hole, keeping the phone pointed at the green surface. Do not rush — a slow walk gives the scanner time to build coverage.
2. An elevation heatmap overlay appears once 500 mesh vertices are captured. A pulsing gold indicator shows the scan is active.

3. A progress bar fills as coverage improves. Instruction text on screen updates through four stages as you walk.
4. The Done Scanning button appears once coverage reaches 25%. For best results, continue walking until the progress bar is fuller.
5. Tap Done Scanning. The result screen appears.

> The measured distance in feet appears in gold when the scanner has detected it automatically. This value feeds directly into the Feel tab when you return.

Reading the result screen

The result screen has three panels.

Top panel — overhead elevation heatmap

The heatmap covers 60% of the screen. Colour runs from dark blue at the lowest point to green at level ground to amber-red at the highest point. The PutterForce number appears large in gold. Below it: distance, slope percentage, and break direction. Bottom-left shows slope, break amount, and scan confidence (low, medium, or high). Bottom-right shows the colour legend.

Placing the hole

Tap anywhere on the heatmap to place the hole marker. The marker moves to the tapped position and the app immediately recalculates slope, break and distance by sampling the elevation grid along the new ball-to-hole path. Every number on screen updates. Tap again to reposition.

Bottom-left panel — captured frame

A still image from the camera at the moment scanning ended, labelled CAPTURED. Use it to verify the scan covered the correct area.

Bottom-right panel — elevation profile

A cross-section of the green along the putt line, labelled PROFILE, with the slope percentage. The left side is the hole. The right side is the ball. The curve shows whether the putt rises, falls or changes gradient along its path.

View modes

A selector at the top of the Read tab switches between three views when not in the result state:

— **AR Live** — the live camera feed with the elevation mesh overlay floating on the real green surface

— **Overhead** — the elevation heatmap from directly above, with contour lines and slope direction indicators

— **Profile** — the cross-section elevation along the putt line

Tap Rescan to start a new scan.

Learn

Learn has two tabs: History and Library.

History

PutterForce handicap
A single number summarising your distance control accuracy across your last twenty qualifying sessions (minimum five putts each), weighted exponentially toward recent performance. Lower is better. Requires at least two qualifying sessions before it appears.

30-day trend
Your make rate plotted across every session in the past 30 days. Visible once two data points exist. The trend tells you whether your distance control is improving, declining or stable.

Session list
Every saved session with date, green speed, putt count and make rate. Sessions are colour-coded: green above 70%, neutral above 50%, red below. Tap any session for the full putt-by-putt breakdown.

Sharing a session
From any session detail view, tap Share to generate a card showing your make rate, putts made, total putts and green speed. The card exports at three times screen resolution and can be shared to any destination.

Library

Three content categories:

— **Video** — Drop Bear Golf's fundamental putting technique: Sole. Press. Sweep. Links to YouTube.

— **eBooks** — Zen and the Art of Putting and Beyond Zero. Links to zenandtheartofputting.com.

— **Game** — Pocket Golf, a Drop Bear browser game. Opens externally.

Device requirements

Feature	Requirement
Read tab — LiDAR green scanning	iPhone 12 Pro or later (LiDAR sensor required)
Feel and Learn tabs	Any iPhone running iOS 17 or later
Haptic metronome feedback	Any iPhone with a Taptic Engine (all modern iPhones)
Measure mode — stroke detection	iPhone with CoreMotion accelerometer (all iPhones)