Force Board User Guide

v1.3







Change Log

Date	Version	Changes
2023-10-19	1.0	Initial Publication
2023-10-20	1.1	Added Quick Start section
2024-04-05	1.3	Updates for the 1.3 Force Board release





TABLE OF CONTENTS

1	Intro	duction	1
	1.1	What's New in the 1.3 Release?	1
2	Get S	tarted Quickly with Quick Start!	2
3		Board Portable Device	
4		Board App	
		App Overview	
	4.1		
	4.2	Screen Header	
	4.3	Navigation Bar	6
	4.4	Feed Screen	
	4.4.1		
	4.4.2		
	4.4.3		
	4.5	Workout Screens	
	4.5.1		
	4.5.2	Edit Routine, Customize Routine and Create Routine	
	4.5.3		
	4.5.4		
	4.5.5	Performing a My Routines Workout	. 25
		5.5.1 Confirm Holds Screen	
		5.5.2 Hold History Screen	
		5.5.4 Do Session Screen	
	4.5.6		
	4.6	Profile Screen	. 34
	4.6.1		
	4.6.2	Assessments	. 36
	4.6.3	Leaderboard	. 38
	4.7	Settings Screens	. 40
	4.7.1	My Equipment	. 41
	4.7.2	7 6	
	4.7.3		
	4.7.4 4.7.5		
5		ary	
6	Frequ	uently Asked Questions	. 50





1 Introduction

Welcome to the Force Board system! Thank you for choosing our platform to pursue your strength-training goals!

We believe that Force Board is the single best tool for finger strength training in climbing. It is safer and more convenient than hangboarding. It is safer and more quantified than just climbing. It is far more portable than a climbing gym.

This guide explains how to use the Force Board Portable device and Force Board app.

1.1 WHAT'S NEW IN THE 1.3 RELEASE?

This update to the manual accompanies the 1.3 version of the Force Board app. There are several updates in this release, including:

- Basic users who use the app for free, now have can see all of their past workouts on the Feed Screen. In earlier versions of the Force Board app, Basic users were restricted to their past three workouts.
- Rate of Force Development (RFD) is now supported for every rep you perform.
 - RFD is automatically detected during the first second of every rep. See the Glossary in Section 5 for more information.
 - RFD requires a Force Board device firmware update. This update increases the device sample rate to 40 Hz.
- The app now supports "Split Sets." By this, we mean that you can do single-hand repeaters on a given hold. As in, Left-Left-Left followed by Right-Right-Right-Right. See Table 6 for more information.
- Android 14 is now supported.
- In iOS, the Start/Stop Threshold is now reliably sent to the Force Board device.
- You can now save or discard partial routines.
- Routines are now captured fully and uploaded to the server at the end of the routine. This
 increases the responsiveness of the app during workouts.
- There is a double beep at the end of both the work and rest cycles to help signal the end of the current activity.
- Activities are now renamed from "Hang" to "Pull."
- You can now both pull and push on the Force Board Portable device and receive data.

As mentioned, utilizing all the features in the 1.3 release requires updating the device firmware to version 1.3.6. Perform this update using the Force Board app.

Known Issue

One known issue with the 1.3 release is that a firmware update on some Samsung Galaxy devices doesn't work reliably. Contact team@pitchsix.com if you experience issues.





2 GET STARTED QUICKLY WITH QUICK START!

Force Board seeks to be the most comprehensive way to train rock climbing finger strength and isometric training in general.

Being comprehensive is nice, but it must also be easy to use. Quick Start is the easiest way to get going with Force Board.

To run Quick Start, do the following:

- Download the Force Board app from the Google Play or Apple App store. Check here for links to both: https://pitchsix.com/downloads
- 2. Connect your Force Board to a hangboard and foot plate, as shown in Figure 1. If you don't have a foot plate, you can loop the Force Board adjustable sling around your foot. No hangboard? No problem. Use any type of hand grip you have.
- 3. **Turn on the Force Board Portable device**. If you can't find it, Figure 3 shows the power switch location.



Figure 1. Basic Force Board setup.

- 4. **Open the Force Board app and start Quick Start** by either tapping the Try It! button, or, if you're already logged in, tap Workouts/Quick Start as shown in the top right of Figure 2. (Quick Start and Try It! both execute the Quick Start routine).
- 5. Force Board will automatically pair. You don't have to explicitly pair your phone to Force Board. After starting Quick Start, the app will to pair to the Force Board Portable device. This should just take a few seconds. If successful, the app will open the Quick Start workout page.
- 6. Start pulling! Force Board automatically records data when you start to pull. Quick Start will record your time and max pull for each rep and count your resting time. It is ad-hoc, so start and stop when you want. No need to touch the app or device!
- 7. When you're done, press the Done button to exit.

For more information about Quick Start, see Section 4.5.3, Running Quick Start.

For more information about Force Board app and device, read on!

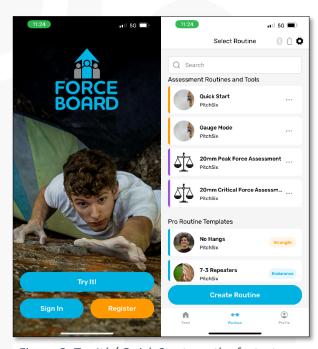


Figure 2. Try It! / Quick Start are the fastest way to get started with Force Board.





3 Force Board Portable Device

The Force Board Portable device is a Bluetooth-connected force gauge, or dynamometer. The device connects to the Force Board app to track all kinds of workouts, including finger-training workouts for climbing as well as any other muscle group you wish to train.

The Force Board Portable device is shown in Figure 3 and described in more detail in Table 1.

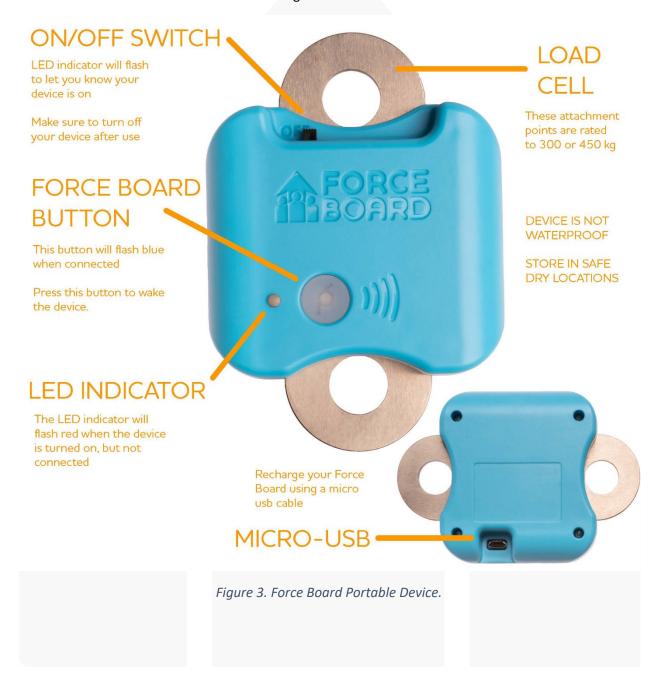






Table 1. Key elements of the Force Board Portable Device

Section	Description
Load Cell	Force Board currently comes with two load cell options: 300 kg or 450 kg.
	The load cells have a safe overload of 20%, so they have a max safe load of 360 kg or 540 kg. Do not exceed these values.
On/Off Switch	The Force Board version 1 hardware must be turned off or it will drain the battery in about 3 days.
	The Force Board version 1.1 hardware will drain about 1% of battery per day if it remains turned on.
	When turned off, the 1200 mAh battery will last for months between charges.
Plastic Housing	The Force Board housing is made from 100% post-consumer recycled plastic.
Force Board Button	The button will blink blue when the Force Board is connected by Bluetooth to the app.
	Pressing the button while the Force Board is connected will break the Bluetooth connection and the device will start Bluetooth advertising. This is one way to share the device among multiple users.
	The device goes to sleep after 5 minutes when not Bluetooth connected or 10 minutes with a Bluetooth connection. If the device is asleep, pressing the button will wake it and it will start Bluetooth advertising.
LED	The LED indicator has a several different states:
	Blinking red has two meanings:
	 When not in use, LED blinking red means the device is in Bluetooth advertising mode, seeking a new connection. During a workout, LED blinking red means you are in a rest period between reps.
	Blinking amber has two meanings:
	 When plugged in and charging, the LED blinks amber to indicate that the device is charging. During a workout, the amber LED indicates that rest period has concluded and you should start pulling.
	A blinking green LED occurs while the device is under load during a rep.
	A solid green LED is displayed during charging when the device battery is fully charged.
Micro USB	The micro-USB port is used to charge the Force Board Portable.
Sample Rate	Force Board samples data at 40 Hz.





4 FORCE BOARD APP

4.1 APP OVERVIEW

The Force Board App has four main sections, described in Table 2 and shown in Figure 4. This user guide describes how to use each section in detail.

Table 2. Key sections of the Force Board app

Section	Description
Feed Screen	See a history of your past workout sessions, including session details.
Workout Screen	Create, manage and perform workout routines.
Profile Screen	Review your personal history, view assessment data and leaderboards.
Settings	Change configuration of the app, including units, personal info, etc.

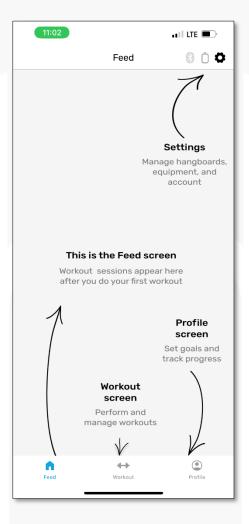


Figure 4. Force Board tutorial screen





4.2 SCREEN HEADER

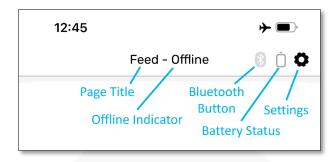


Figure 5. Force Board app screen header

Each screen in the Force Board app has a header with the screen title present.

For those screens that are available offline, the screen title will be annotated with "Offline" when the app is in offline mode. See "Offline Mode" in Section 0 FAQ.

The Bluetooth Button in the app is both an indicator of Bluetooth connection to the Force Board device and button to momentarily disconnect from the device. The indicator is blue or grey () depending on the connection status. When you are connected to Bluetooth (the indicator is blue), you can tap on it to disconnect. This is useful if you are sharing the Force Board device with a friend and both recording workout sessions on separate phones. (Pressing the Bluetooth button on the Force Board device will also disconnect the Bluetooth from the current phone).

The Battery Status indicator gives an approximate view of the state of charge of the Force Board device.

Tapping on the Settings button takes you to the Settings screen.

4.3 NAVIGATION BAR

The main screens in the app show the navigation bar at the bottom. The navigation buttons take you to the following sections of the app:

- Feed Screen. Left Button. Shows a history of your recent workouts.
- Workout Screen. Middle Button. Setup routines and start a workout session.
- **Profile Screen**. Right Button. Review your personal history, assessments and leaderboards.

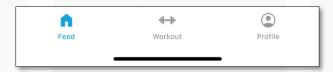


Figure 6. Force Board App Bottom Navigation Bar





4.4 FEED SCREEN

4.4.1 Workout Session Data Block

The data block on the feed screen is a high-level infographic showing your entire workout session in one graphic.



Figure 7. Feed Screen session infographic block, showing tool tips for max, RFD, average and time.

Aspects of the infographic include:

- Name and image of user.
- A button to see the Session Details.
- Workout session date.
- Title of the workout routine used for the session.
- Number of hangs (or pulls) in the session.
- Total number of seconds under load.
- Total effort for the session, in the form of Load Secs. This metric sums all the average loads for each hang, multiplied by the number of seconds for that hang. The unit is lbs secs or kg secs. The intention of the metric is a quick snapshot of the total effort of your session.
- The chart shows every rep for the workout session:





- o Each color represents a different hold.
- o Different shades represent sets in a hold.
- Each bar is a rep.
- You can tap on the bar to show a tooltip of the bar height.
- You can tap on the Max/RFD/Average/Time button to cycle through those four data sets for each session.



Figure 8. Feed screen chart options

4.4.2 Assessment Data Block

If you perform a peak force or critical force assessment, an additional assessment data block will appear in your feed screen, as shown in Figure 9. The upper blocks in Figure 9 are the workout session blocks described above. The additional assessment block is the lower of the two blocks. These report your peak force in the case of a peak force assessment, or critical force and stored energy in the case of a critical force assessment. See Assessments section 4.6.2 for an explanation of this data.

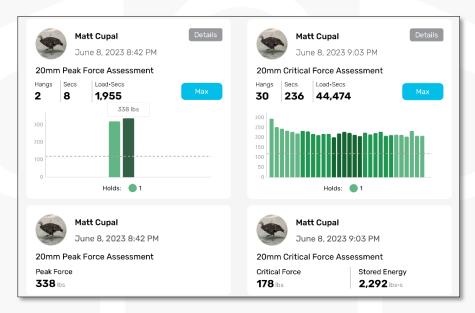


Figure 9. Feed screen assessment blocks, with peak force on the left and critical force on the right





4.4.3 Session Details Screen

Session Details is a sub-screen of the Feed Screen Session Block. Click on the Details button within the Session Block to move to the Session Details screen.

The Session Details objective is to present detailed information about your workout session, including the total load, total seconds and load charts for each rep. Figure 10 shows the Session Details screen, which includes the following data blocks:

- 1. Session Header Block
- 2. Summary Data Block
- 3. Hold Block
- 4. Chart Block
- 5. Metrics Block



Figure 10. Session Details screen





Session Header Block

The Session Header Block includes the user name, session date and routine name. In addition, there are two buttons on the right side of this block, one to retrieve the session notes and one to delete the session.



Figure 11. Session Details Session Header Block, with notes and delete buttons on the right

Clicking on the notes button shows the notes dialogue, as shown in Figure 12. This notes dialogue includes the captured temperature and humidity for your session and any notes you may have recorded at the end of your session. (Currently, notes can only be added right at the end of each workout session).

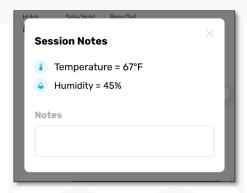


Figure 12. Session Details Notes Dialogue

Clicking on the trash can button brings up a dialogue to delete the current session. See Figure 13. Deleting the session will remove it from the Force Board database.

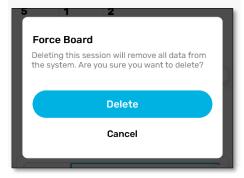


Figure 13. Session Delete Dialogue





Summary Data Block

The Summary Data Block lists overview parameters for your session, including:

- Number of hangs (or pulls).
- Total seconds under load.
- Load•Secs for the session—a measure of total effort. This metric sums all the average loads for each hang, multiplied by the number of seconds for that hang. The unit is lbs•secs or kg•secs.
- Number of holds.
- Sets per hold.
- Reps per set



Figure 14. Session Details Summary Data Block

Hold Block

The hold block lets you cycle through each hold in the session. Swipe left or right, or tap the arrows, to move between holds. Your target load for each hold is also shown.



Figure 15. Session Details Hold Block





Chart Block

The Chart Block has two view options. The default view is called a Sets Summary chart, shown in Figure 16. This view starts with a set count and rate of perceived exertion (RPE) table. If desired, RPE is captured for each set in a routine, with different RPE values represented by emoticons (see the glossary for what these emoticons look like).

The Sets Summary line chart has two lines drawn for each set, with each set drawn in a different color. The solid line is the average of all reps in the set. The dotted line is the last rep in the set.

In the table below the Sets Summary chart, you can see RFD (in lbs/s or kg/s), maximum (in lbs or kg), average (in lbs or kg) and load•secs (in lbs•s or kg•s) for the selected hold. The top row on this chart shows the values for the current routine. The bottom row are the all-time maximum values for the selected hold within the selected routine.

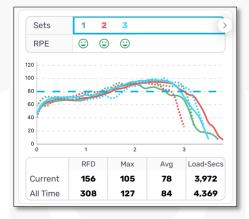


Figure 16. Session Details Sets Summary chart.

If you swipe left from the Sets Summary chart, you will see the Reps chart for sequential sets in the routine. This shows a line graph for each rep in the selected set and the current RFD, max, average and Load•Secs for the chosen set.

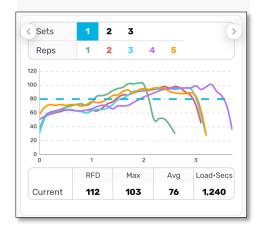


Figure 17. Session Details Reps Chart

The dashed horizontal dashed line on both of these charts is the Target Load for the hold.





4.5 WORKOUT SCREENS

You can get to the workout screens by tapping the Workout Button on the bottom Navigation Bar.

4.5.1 Select Routine Screen

The first screen after tapping the Workout Button is the Select Routine screen. This screen has three sections, My Routines, Assessment Routines and Tools, and Pro Routine Templates. Additionally, you can create a custom routine by clicking on the Custom Routine button at the bottom of this screen.

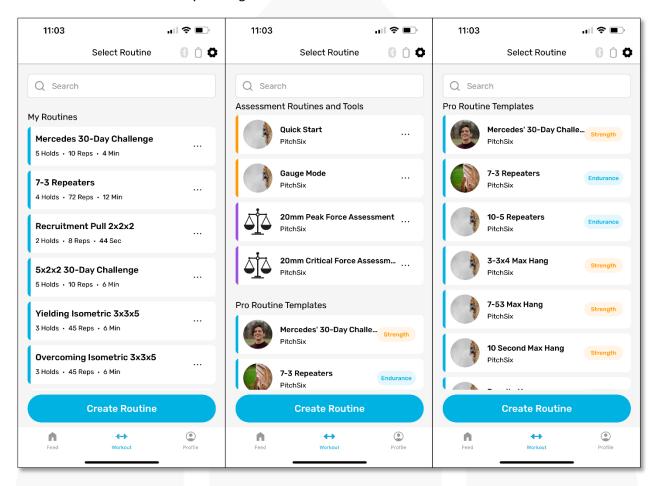


Figure 18. Select Routines screen, showing My Routines, Assessments and Pro Templates.

My Routines

My Routines is a list of routines you have defined for your personal use in the Force Board app.

Assessment Routines and Tools

These are fixed routines designated by the Force Board system. Table 3 gives an overview of each tool. A deeper explanation is included in Section 4.6.2 Assessments.





Table 3. Assessment Routines and Tools

Routine	Description
Quick Start Mode	Quick Start is an ad-hoc routine where you dynamically choose rep time and
	rest time. Sessions completed with Quick Start can be saved to the Force
	Board cloud.
Gauge Mode	Gauge Mode continuously streams the current load to the screen. Force
	Board essentially is a Bluetooth-enabled crane scale in this mode.
Peak Force	Peak force assessment measures how hard you can pull on a 20 mm edge for
Assessment	three seconds. Data from this test goes to your personal user profile as
	assessment data. The Peak Force Assessment is designed for occasional use,
	not as a daily workout.
Critical Force	The Critical Force Assessment measures your critical force (see Section 4.6.2
Assessment	Assessments). This is an emotionally demanding test because you will be
	performing 7-3 repeaters for five straight minutes.

Pro Routine Templates

Pro Routine Templates offer a variety of standard workout routines to help you get started using Force Board. Tap on any of these routines to open and modify to fit your needs. When you modify and save a Pro Template, it saves into your My Routines list. Table 4 has a list of the included Pro Templates.

Table 4. Pro Routine Templates

Routine	Description
No Hangs	No Hangs are a great routine for both gaining finger strength and health. This routine adapts Emil Abrahamson's no-hang routine to the Force Board. Execute once or twice a day, every day. Perform 5 holds, with 2 reps per hold. Each rep is a 10-second pull with a 20 or 50 second rest period between reps.
	Prior to doing this routine, test your 1 rep max for each hold then set your Target Load at 40% or 50% of that level for each hold. Re-test your max once per week and adjust your Target Loads for each hold.
	Mercedes Pollmeier uses this often for her clients during rehab, so her picture and name are on the routine.
7-3 Repeaters	7-3 repeaters are probably the best-known strength-endurance protocol. They mimic route climbing reasonably well.
	For each hold, perform 3 sets with 6 reps each. For each rep, pull for 7 seconds followed by 3 seconds of rest. Rest 60 seconds after each set or hold.
	This is an endurance protocol, so you should be struggling to achieve your Target Load near the end of each hold. Increase Target Load or change the grip after you hit your Target for all reps of a hold.
10-5 Repeaters	10-5 repeaters are a great strength-endurance protocol.





	For each hold perform 3 sets with 5 reps per set. Each rep lasts 10 seconds with 5 seconds rest between reps and 60 seconds rest after sets.
	This is an endurance protocol, so you should be struggling to achieve your Target Load near the end of each hold. Increase Target Load or change the grip after you hit your Target for all reps of a hold.
3-3x4 Max Hang	3-3x4 mimics hard bouldering with a mini-repeater targeting max strength. This was developed by Dr. Tyler Nelson.
	For each hold, perform 3 sets of 4 reps with each rep lasting 3 seconds. Rest for 3 seconds between reps, but 3 minutes after each set to fully recover before the next set.
	You're performing max-effort strength repeaters, so try hard! Increase your Target Load after you achieve Target for all sets and reps for a hold.
7-53 Max Hang	7-53 is an Eric Horst-developed protocol for intermediate to advanced climbers targeting maximum finger strength.
	For each hold, you'll perform 3 sets with only one rep each. Each rep lasts 7 seconds followed by a 53-second rest.
	This is a max effort protocol, so you should be working for 95% effort on each rep. Increase the Target Load if you can meet or exceed Target for all pulls on a hold.
10-Second Max Hang	10-Second Max Hangs are a simple protocol that can help you rapidly gain strength.
	For each hold, you'll do 1 set with 5 reps. For each rep, pull for 10 seconds, followed by 3-minute rest between reps and 5-minute rest between sets or holds.
	Max effort means you're pulling hard, so set the Target Load at 95% effort or more. Increase the Target Load if you can achieve your Target for all reps on a given hold.
Density Hangs	Density hangs are a long duration hang that help to promote tendon health by increasing the tendon density and elasticity as well as help with endurance strength.
	You must pull for 30-60 seconds and achieve a perceived effort of 75-90%.





4.5.2 Edit Routine, Customize Routine and Create Routine

The same screen is used for all three functions of editing an existing routine, customizing a pro template or creating a new routine. You access this screen in one of the following ways:

- To edit a routine, tap on the three dots on the right side of the My Routines blocks.
- To customize a Pro Template, tap on the Pro Template Block.
- To create a new routine, tap on the Create Routine button on the bottom of the Select Routine screen.

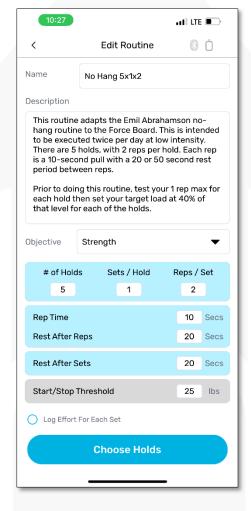


Figure 19. Edit, Customize, and Create Routine screen.





Table 5 describes the fields on the Edit Routine screen.

Table 5. Fields on the Edit Routine screen.

Field	Description
Name	Brief name of the routine. This appears on the Select Routines screen.
Description	Longer description of the routine.
Objective	The goal of the routine. Choices are:
	Health
	Endurance
	Strength
	• Power
# of Holds	How many holds, or grip positions, are included in the routine. Holds are not
	just finger positions; you can also think of a hold as "holding" an isometric
	position.
Sets/Hold	How many sets are executed per hold. Sets are groups of reps.
Reps/Set	Number of reps in each set.
Rep Time	The rep duration, in seconds.
Rest After Reps	The rest time after each rep, in seconds.
Rest After Sets	The rest time after each set, in seconds. This is also the rest time after each
	hold since holds always end with the end of a set.
Start/Stop Threshold	The Force Board device starts transmitting data after two sequential data
	samples are above this threshold value. Force Board stops transmitting data
	after two sequential data samples are below this threshold.
Log Effort for Each Set	If this box is checked, you will be able to select a rate of perceived exertion
	(RPE) value of 1-5 at the end of each set. The RPE value is logged as an
	emoticon.
Choose Holds Button	Click this button to specify the holds for the routine.





4.5.2.1 Choose Holds Screen

The Choose Holds screen allows you to select holds to use in your routine. The term "hold" can mean a physical hold on a hangboard (Hold 1 in Figure 20) or, in the case of using Force Board for large-muscle training, "holding" an isometric position for a period of time (Hold 2 in Figure 20).

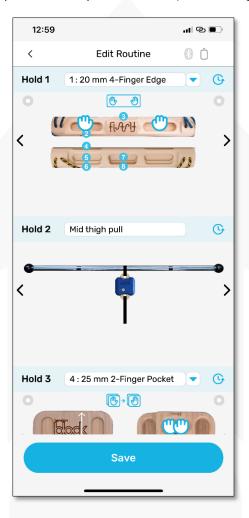


Figure 20. Choose Holds Screen

The Choose Holds screen shows the same number of holds that you specified on the Edit Routine screen. You can switch equipment by swiping right or left on the current equipment, or tapping on the right and left pointing chevrons next to the equipment $(\langle \rangle)$.

There are a few options for selecting a hold that cover the two equipment cases: hangboards or non-hangboards.

Choosing Holds on a Hangboard

Each hangboard in the Force Board system has holds already defined in the app, which are defined by the physical board itself. The holds are numbered in sequence and labeled with a blue dot.





When you select a hold, the hold name is populated by default with the hold number, depth, width and style. For example, on a Tension Flash board, hold 1 has a default name of "1: 20mm 4-Finger Edge." You can change the name of any hold in the routine by tapping and editing the name.



Figure 21. Each hangboard in the Force Board app has all holds identified with blue numbers.

There are two methods for selecting a hold on a hangboard:

- 1. Double tap on the hold number icon on the hangboard.
- 2. Tap the down arrow right of the hold name, then select a hold number (see Figure 22).

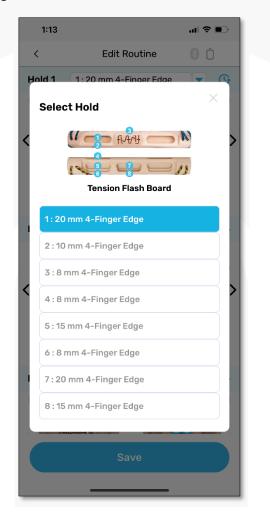


Figure 22. Choose Holds drop-down dialogue. Tap on a hold name to select.





Choosing Holds on a Non-Hangboard

Non-hangboard equipment are typically used for training larger muscle groups and they do not have specific holds (blue circles) defined in the Force Board app. To specify a hold in non-hangboard equipment, type in the name of the desired hold as shown in Figure 23.

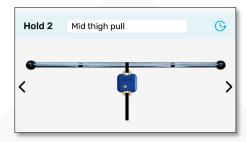


Figure 23. Type in the name of the hold for non-hangboard equipment.

The Force Board equipment graphics are a visual cue for what hold you are using. They do not change the measurement of the force gauge. If you wish, you can just use any hold and customize the name to your liking. The PitchSix Generic Hold is included for this purpose.

Hold Sequencing Options

Force Board offers 5 different hand sequencing options as shown in Figure 24. These options allow you to choose to perform routines with left, right or both hands.

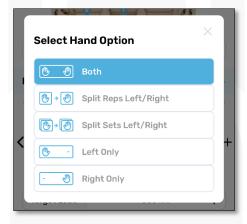


Figure 24. Force Board hand sequence options

The Both, Left and Right options are straightforward. In those cases, a pull is performed using both, left or right hands, then a rest timer counts the time to the next pull. The split hands options are a bit more complex. For split hands, you will pull with your left hand first, then the right hand. The right hand performs its pulls during the left-hand rest period, while the left-hand rest period simultaneously counts down.

Hand sequences are determined on a hold-by-hold basis. They can be intermixed within a given routine.





Table 6. Hand sequence options.

Hand Option	Description
Both	Pull with two hands on the hangboard at the same time. Rep and rest timing
	are simple, with each rep being completed by a simple pull-then-rest cycle.
Split Reps Useful for single-hand Max Hangs	Split Reps performs a left-hand pull followed by a right hand pull for each rep. For each rep you will perform first a left-hand pull, followed immediately by a right hand pull during the left-hand rest period. The left-hand rest period will count down during the right-hand pull.
	For example, if you define a 1 hold, 2 sets/hold, and 2 reps/set routine, the split reps sequence will be as follows: • Hold 1, set 1, rep 1 left • Hold 1, set 1, rep 2 left • Hold 1, set 1, rep 2 left • Hold 1, set 1, rep 2 right (then rest remainder if left set rest time) • Hold 1, set 2, rep 1 left • Hold 1, set 2, rep 1 right (then rest remainder of rep rest) • Hold 1, set 2, rep 2 left • Hold 1, set 2, rep 2 left • Hold 1, set 2, rep 2 right (no rest as the routine is finished) • Routine finished
Split Sets	Split Sets divides the sets into left- or right-hand sequences instead of dividing the reps. In this case, you perform all left-hand pulls for a set, followed by all
Useful for single-hand repeaters	right-hand pulls. For example, if you define 1 hold, 2 sets/hold, 2 reps/set routine, the split sets sequence will be as follows: • Hold 1, set 1, rep 1 left (then rest remainder of rep rest time) • Hold 1, set 1, rep 2 left • Hold 1, set 1, rep 1 right (then rest remainder of rep rest time) • Hold 1, set 1, rep 2 right (then rest remainder of left set rest time) • Hold 1, set 2, rep 1 left (then rest remainder of rep rest time) • Hold 1, set 2, rep 2 left • Hold 1, set 2, rep 1 right (then rest remainder of rep rest time) • Hold 1, set 2, rep 2 right (no rest as the routine is finished) • Routine finished
Left Hand Only	Pull with only the left hand on the hangboard. Rep and rest timing are simple,
	with each rep being completed by a simple pull-then-rest cycle.
Right Hand Only	Pull with only the left hand on the hangboard. Rep and rest timing are simple, with each rep being completed by a simple pull-then-rest cycle.





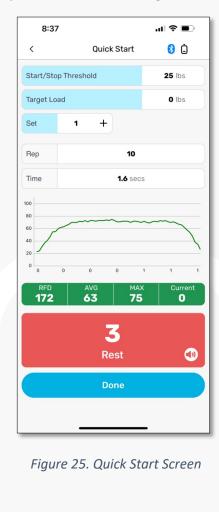
4.5.3 Running Quick Start

Quick Start is an ad-hoc workout routine that offers a fast way to get going with Force Board. To run Quick Start, tap it from the Select Routines screen. You will first stop on the Bluetooth Pair screen. Once paired, the app moves to the Quick Start screen.

On the Quick Start screen, you can start a rep by pulling on the device and stop a rep by not pulling. Your reps and rests can be as long or short as you wish—it is completely ad-hoc. To start a rep, you must exceed the "Start Rep Threshold."

You can use Quick Start without logging into the app by tapping the "Try It" button from the app landing screen. If you are logged in, you can optionally save a Quick Start routine after completing it.

Quick Start is a great tool for coaches or trainers to take quick assessments on many people. After each rep, the average, maximum and rep time are shown (see Figure 25).



6 Pitch Six



Table 7. Fields on the Quick Start screen.

Field	Description
Start/Stop Threshold	The Force Board device starts transmitting data after two sequential data
	samples exceed this threshold value. Force Board stops transmitting data after
	two sequential data samples are less than this threshold.
Target Load	Your goal load for the current rep. The Force Board app will give audible and
	visual feedback when you achieve your Target Load. Target Load shows as a
	dashed line on the Rep Chart.
Set Increment	If you wish, you can increment the set number during a Quick Start session. To
	do so, tap the plus button to the right of the set number box. Changing the set
	number will change the set reference within the Session Details screen and
	Feed screen.
Rep Counter	Counts the reps in each set. Will reset when the set count is incremented.
Rep Time	Time duration for each completed rep.
Rep Chart	Visual display of data for each rep.
RFD/Avg/Max/Current	Shows the RFD, average, max and current values for each rep in real time.
	These value update in real time.
Pull Timer	Displays the current hang or rest time for the reps. Pull time is shown in green.
	Rest time is shown in red.
Mute Button	Mute or unmute the audible second tick sounds.
Done Button	Quit Quick Start. You'll have the option yo save thge

You can optionally save a Quick Start Session. After you press the Done button, a save dialogue displays. If you wish to save the session, type in any session notes you wish to record and click Save Session. To not save the session, select Don't Save Session.

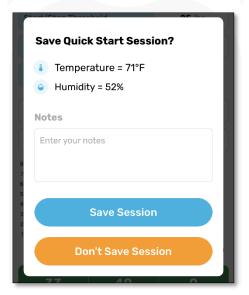


Figure 26. Quick Start save dialogue, allowing optional saving of a Quick Start session.





4.5.4 Running Gauge Mode

Gauge Mode continuously streams the current load to the screen. It operates as a basic Bluetooth connected strain gauge. No data is saved in Gauge Mode.

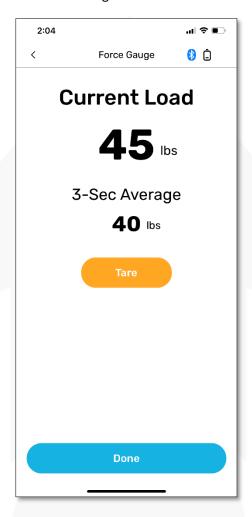


Figure 27. Gauge Mode screen.

Table 8. Fields on the Gauge Mode screen.

Field	Description
Current Value	Current value measured by the device. This value is continuously streamed.
3-Second Average	A running 3-second average of the current value.
Tare	Tare, or zero out, the current load on the Force Board Portable device. Use this
	if you have a relatively large load already hanging on the device prior to starting
	a measurement.
Done Button	Quit Gauge Mode.





4.5.5 Performing a My Routines Workout

To perform a workout from the My Routine list, simply tap on any routine block. The app follows this sequence when starting a routine:

- 1. Tap on a routine in your My Routines list.
- 2. Confirm your holds and set Target Loads on the Confirm Holds screen.
 - a. Optionally, look at the Hold History screen to review past effort for the associated hold.
- 3. Pair on the Pair Bluetooth screen.
- 4. Perform the workout on the Do Session screen.

Each of these is described below in the following sections

4.5.5.1 Confirm Holds Screen

The Confirm Holds screen is very similar to the Choose Holds Screen. Refer to section 0





Choose Holds Screen for details on how to select equipment and holds. Confirm Holds also lets you set a Target Load and tap to the Hold History screen for each hold in your routine.

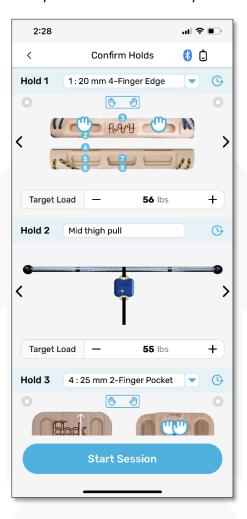


Figure 28. Confirm Holds screen, adding capability for both Target Load and Hold History.

Table 9. New fields on the Confirm Holds screen not present on the Choose Holds screen.

Field	Description
Target Load	Your goal load for the current rep. The Force Board app will give audible and visual feedback when you achieve your Target Load. Target Load shows as a dashed line on the Rep Chart on the Do Session screen.
Hold History Link	Links to the Hold History screen—showing a past history for the selected hold.
Start Session	After pairing to Bluetooth, the app moves to the Do Session screen to execute the workout session.





4.5.5.2 Hold History Screen

The Hold History screen shows the past history for the selected hold. You can use this information to either make an alternate hold choice, or adjust the Target Load for that hold. Figure 29 shows the Hold History screen for a 3-second rep. Historical data for recent sessions is displayed in date-sorted data blocks. Scrolling up on the screen will show older data blocks if available.

The Hold History screen has the following data blocks:

- Hold Block
- Date Block
- Load Block
- Chart Block

The data on the Hold History screen cannot be updated, it is for historical reference only.

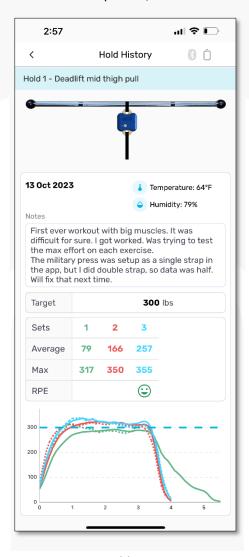


Figure 29. Hold History Screen

Hold Block





The Hold Block (Figure 30) shows the selected hold for this screen. To change holds, go back to the Confirm Holds page and select a new hold.

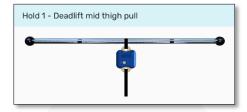


Figure 30. Hold History Hold Block

Date Block

The Date Block (Figure 31) shows the date that the session data was captured, temperature and humidity at the time the session was performed, along with session notes entered at the end of the session.

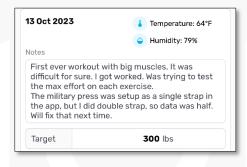


Figure 31. Hold History Date Block

Loads Block

The Loads Block (Figure 32) shows first the selected Target Load for the chosen hold and session. The table below is organized by set, showing the max, average and RPE for each set. RPE is optional and may not be present.



Figure 32. Hold History Loads Block

Chart Block

Finally, the Chart Block (Figure 33) shows summary plots for the each of the sets, with two lines drawn for each set. Each set is in a different color. The solid line is the average of all reps in the set. The dotted line is the final rep in the set.





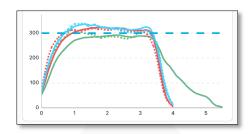


Figure 33. Hold History Chart Block

4.5.5.3 Bluetooth Pairing Screen

Force Board does not bond to your phone. This means that you do not have to go to your Bluetooth settings and explicitly pair to the device. Instead, after you elect to start a workout, the app will attempt to pair to your Force Board Portable unit. If successful, the Bluetooth indicator button at the top of the app will go from grey to blue () and the app will move to the workout page (Do Session, Quick Start, or Gauge Mode).

If the device fails to pair, a dialogue will display asking you to confirm that the Force Board Portable device is turned on and in pairing mode (red LED should be blinking). If the Force Board Portable device has gone to sleep, pressing the Force Board button will wake it and start transmitting a Bluetooth connect, or advertising, signal.







Figure 34. Bluetooth Pairing Screen





4.5.5.4 Do Session Screen

The Do Session, short for "do workout session," screen is a focal point for the app as that is a major location where your workouts will occur. Do Session displays your current hold, lets you adjust your Target Load, displays routine sequencing and rep timing as well as summary load data for the rep.

Do Session is divided into several blocks of data, including:

- Hold Block
- Sequence Block
- Chart Block
- Timer Block

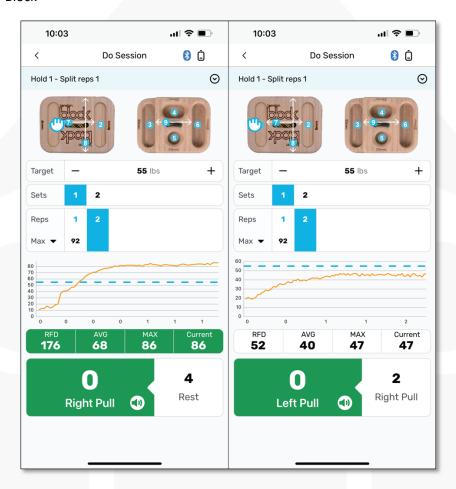


Figure 35. Do Session Screen, on left Current Load exceeds the Target Load, on right is Current Load is below the Target Load

Hold Block

The Do Session Hold Block (Figure 36) shows the currently selected hold name, equipment and grip position. If only a left or right hand is designated for this grip, then only the left or right hand will be shown. The Target Load is also present in this block. You can edit the Target Load either with the + and – buttons, or by tapping on the current value and typing in a new value.





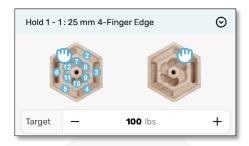


Figure 36. Do Session Hold Block

Sequence Block

The Do Session Sequence Block (Figure 37) tracks the set and rep for the current hold. It also displays max values for past reps.



Figure 37. Do Session Sequence Block

Chart Block

The Do Session Chart Block (Figure 38) shows the load chart for the current rep. The Target Load is displayed as a horizontal line chart on this chart. Below the load chart are the values for rep Average, Max and Current value. These are updated in real time and calculated as follows:

- **RFD** is calculated as the maximum 250 ms rate of force development over the first second of data. See the Glossary (Section 5) for more information on this calculation.
- AVG is the average value calculated over all samples in the rep, including the ramp up and ramp down time.
- MAX is measured as the highest single sample in the rep.
- Current is the current value of the data.

As shown in Figure 35, the background behind Average, Max and Current values will turn green when the Current load exceeds the Target Load. The app will also have a higher audio tone when the Current measured load exceeds the Target Load.

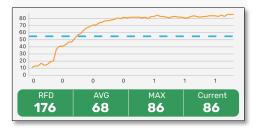


Figure 38. Do Session Chart Block





Timer Block

The Do Session Timer Block (Figure 39) times your current rep and previews what is next in the routine. The larger left block shows the current activity and the smaller right block is the next activity. In Figure 39, the current activity is a hang timer that is about to expire (the Force Board app counts the full zero second). The next activity is a 10-second rest period.

Timer tick sounds can be enabled or muted by tapping the speaker button () in the current activity block.



Figure 39. Do Session Timer Block

4.5.6 Performing an Assessment

Assessments are an intriguing aspect of the Force Board app. Assessments are intended as occasional-use routines to track your progress on key metrics. Assessments get loaded into the Force Board Leaderboard (see Section 4.6.3) and therefore can help you understand where you are in comparison to other climbers.

Assessments are standardized routines that cannot be modified. Currently, all assessments use a 20 mm edge in a variety of ways. Each assessment is described in more detail in Section 4.6.2. Currently available assessments include:

- Peak Force for both hands as well as left hand or right hand.
- Critical Force for both hands as well as left hand or right hand.

To start an assessment, click on the desired assessment routine (Peak Force or Critical Force). The next screen (see Figure 40) will provide some information about the assessment and ask for which hand options you wish to use (both, left or right). Select a hand option and confirm that you are using a 20 mm edge size, then tap on I'm Ready, Test Me! button.

Note: It is important to use the same 20 mm flat edge as everyone else so as to not invalidate the database for all.

After clicking on the Test Me! button, assessments use the Do Session screen, as described in Section 0





Do Session Screen.

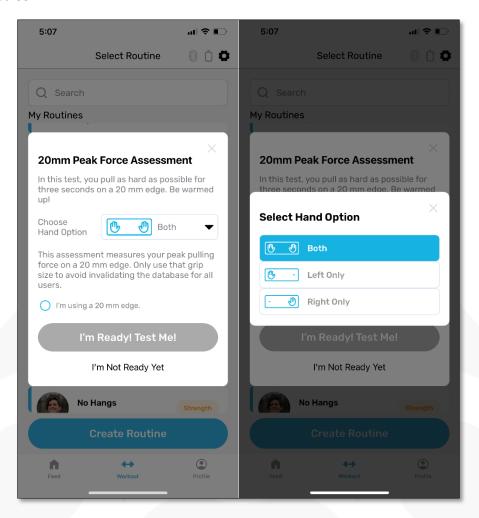


Figure 40. Peak Force Assessment dialogue (left) and hand choice (right). (Available soon)

4.6 PROFILE SCREEN

The profile screen gives a summary view of your training history and overall strength. There are three tabs on the profile screen, including:

- Ledger: A summary view of your training history.
- Assessment: Assessment metrics, including peak force and critical force, along with other derived metrics.
- Leaderboard: Your position on the global leaderboard for the various assessment criteria.





4.6.1 Ledger

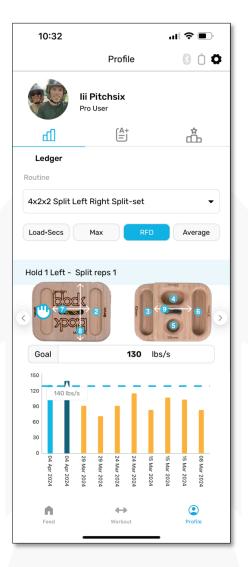


Figure 41. User Profile screen, Ledger tab

The Ledger screen summarizes your progress for each routine. Elements on the screen include:

- Routine selection: Choose any of your My Routines you have performed.
- Load Secs/Max/RFD/Average buttons: These buttons change the chart data shown.
- Whole Routine/Holds: Swipe left or right to move between the entire routine or different holds in the routine.
- Goal: Set a goal. Goals can be set for any hold or the whole routine, and any of the Load • Secs/Max/RFD/Average buttons. Chart bars that achieve this goal get colored blue.
- Chart: Displays the Load Secs/Max/RFD/Average data for the given hold or whole routine. This data is across the entire session or hold for a given day. All reps for a session are collapsed into each data bar. The most recent data appears on the left of the chart. Units for the display are lbs or kg for Average and Max. For Load Secs, units are lbs secs or kg secs. For RFD, the units are lbs/s or kg/s





4.6.2 Assessments

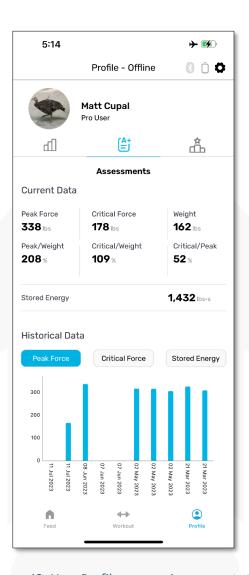


Figure 42. User Profile screen, Assessments tab

The Assessments screen lists your assessment data captured when you perform the Peak Force or Critical Force assessment routines. No data shows on this screen until you have performed assessments. The assessment metrics are:

• Peak Force: This is the peak force you can generate on a 20 mm edge over a 3-second period. In Figure 43, it is the top left of the curve—the maximum force you can generate for a moment of time. You finger grip you wish (crimp, drag, etc), but you can only grasp a single 20 mm edge without other holds aiding you. This 20 mm edge should be flat and not in-cut or sloping. The Peak Force test is a single 3-second-long pull. You can perform it as many times as you wish. Peak Force uses existing stored energy in your cells to generate max effort, which is why the test I constrained to 3 seconds. Peak Force is a reasonably good predictor of the bouldering you can climb. See Figure 43.





- Critical Force: Critical Force is your maximum force you can generate after all stored energy in your cells is depleted. Put another way, it is the force your aerobic energy system can generate. See Figure 43 it is the force measured on the right-hand side of the chart. In the Critical Force Test, you use a 20 mm flat edge to perform 5 straight minutes of 7 seconds on, 3 seconds off repeaters with max effort with every single pull! This test is emotionally demanding, so prepare to suffer! Critical Force measures how much force you can generate using your aerobic energy system after all stored energy is depleted from your muscle cells. It is a good predictor of what route climbing grade you can achieve. See Figure 43.
- **Stored Energy**: Stored energy is a measure of how much energy you store in your muscle cells that is harnessed using your anerobic energy system. Stored Energy is the area under the curve in Figure 43.
- Peak/Weight Ratio: Peak Force to body weight ratio. This is an excellent metric for boulderers to train.
- **Critical/Weight Ratio**: Critical Force to body weight ratio. This is an excellent metric for route climbers to train.
- Peak/Critical Ratio: Peak Force to Critical Force ratio. Helps you understand where you may be
 able to see gains during focused training.

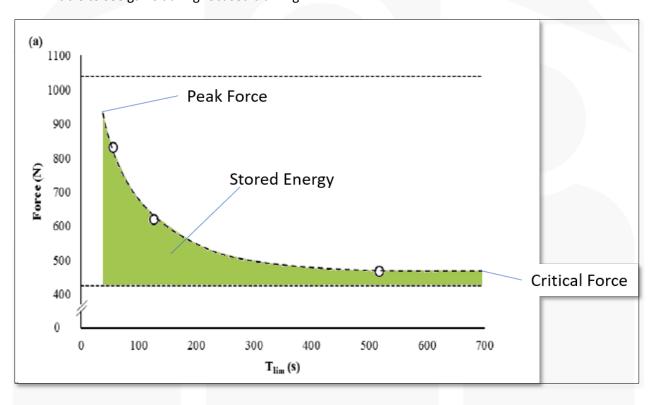


Figure 43. Peak Force, Critical Force and Stored Energy explained

The assessment screen also lets you see historical data for Peak Force, Critical Force and Stored Energy. The most recent data is on the left of the chart.





4.6.3 Leaderboard

The leaderboard (Figure 44) is a fun chart to show you where to rank in the world compared to other climbers. Figure 44 shows the leaderboard for Peak Force using both hands. You can choose to see the leaderboard for any of the available assessment data, including:

- Peak Force
- Critical Force
- Stored Energy
- Peak Force/Weight Ratio
- Critical Force/Weight Ratio
- Peak Force/Critical Force Ratio

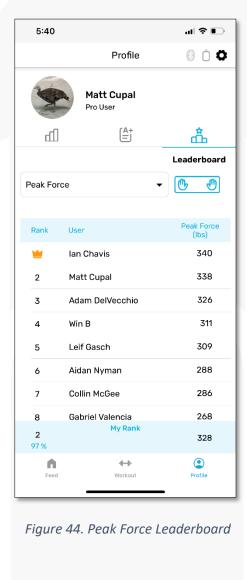






Table 10. Key fields on the Leaderboard screen

Field	Description	
Metric Drop Down	Choose from the available Leaderboard metrics, including: Peak Force Critical Force Stored Energy Peak Force/Weight Ratio Critical Force/Weight Ratio Peak Force/Critical Force Ratio	
Hand Selection (b)	All of the leaderboard metrics are available for both hand, right hand or left hand. Tap on this icon to select your hand option. Select Hand Option Both Left Only Right Only	
Leaderboard	Shows each participant in the Leaderboard, including absolute rank and pull load measured.	
Personal Rank	At the bottom of the leaderboard, your personal rank is shown, including absolute rank, percentile, and pull load measured.	

If you do not wish to have your data shown on the leaderboard, turn off the Public Account setting on the user info screen.





4.7 SETTINGS SCREENS

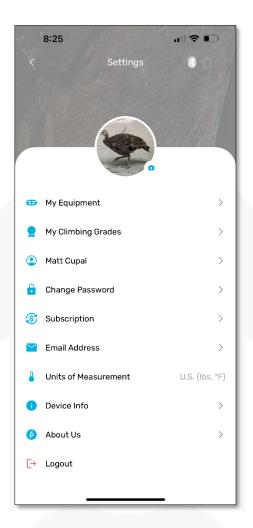


Figure 45. Force Board Settings Screen

Settings screens allow you to configure the Force Board app in a variety of ways, as shown in Figure 45. The screens include:

- My Equipment: Link and unlink equipment for use in your routines.
- My Climbing Grades: Set your grading systems and specify your climbing performance.
- User Info: Information about you and ability to make an account private or delete an account.
- Change Password: Update the password for your account.
- **Subscription:** Subscribe as a Force Board Pro.
- Email Address: Update the email your Force Board account uses.
- Units of Measurement: Change between U.S. and metric units.
- **Device Info:** Check up on the Force Board Portable device, including updating the firmware.
- **About Us:** Contact PitchSix and check the app version number.
- Logout: Log out of the Force Board app.

Settings screens that warrant further explanation are described in the following sections.





4.7.1 My Equipment

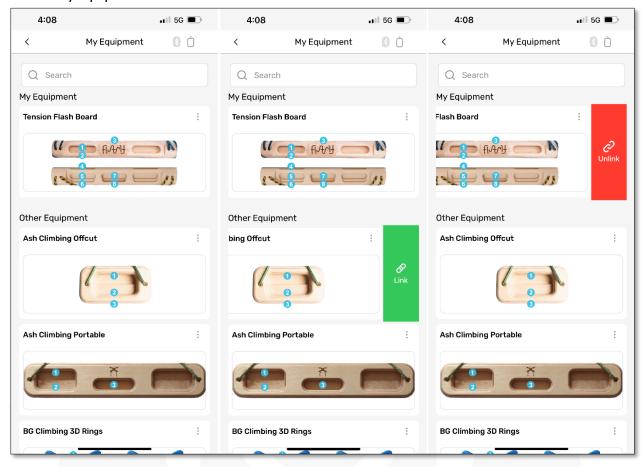


Figure 46. Force Board My Equipment Screen

The My Equipment screen is where you link equipment for use in your workout routines. Equipment linked to your account shows under the My Equipment heading. Unlinked equipment shows below the Other Equipment heading.

To link equipment, tap anywhere on the equipment image then tap the green Link button. To unlink a piece of equipment, tap on a linked equipment and choose Unlink. See Figure 46.







Figure 47. Special PitchSix Equipment

There are pieces of equipment by PitchSix that are worth noting:

• **PitchSix Generic Hold** is a generic hold that you can use if your actual equipment is not included in the Force Board app. The Generic Hold has a single hold position on it. When building a routine, select that hold and rename it to anything you wish.

Note: If the equipment you own is not included in the Force Board app, please contact team@pitchsix.com and ask us to integrate the equipment. This is an easy process—all that is needed is a picture and description of the equipment/hangboard.





- **PitchSix One-Strap Bar** is a bar used for larger muscle group workouts such as deadlifts, arm curls, front squats, etc. The One-Strap Bar differs from the Two-Strap Bar because you are performing an exercise that only uses a single strap when attaching to the Force Board Portable device. See Figure 48 for an example of the one-strap vs two-strap bar.
- **PitchSix Two-Strap Bar** is used for exercises where straps are used on both sides of the bar, such as a back squat (Figure 48 right panel). The Force Board Portable device is used only on one strap. Loads measured are multiplied by two to compensate for only measuring half of the user load.



Figure 48. One-Strap Bar on left and Two-Strap Bar on right





4.7.2 My Climbing Grades

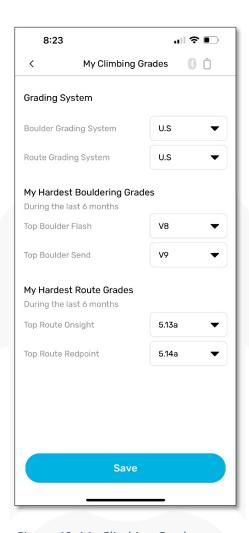


Figure 49. My Climbing Grades screen

On this screen, you can choose the grade system for both bouldering and routes. For bouldering, the choices are U.S. or French. For routes, the choices are U.S., French, or Australian.

You can also set your hardest grades achieved in the last 6 months, including flash and project grades for both bouldering and routes. This data will be used for upcoming features in the app.





4.7.3 User Info

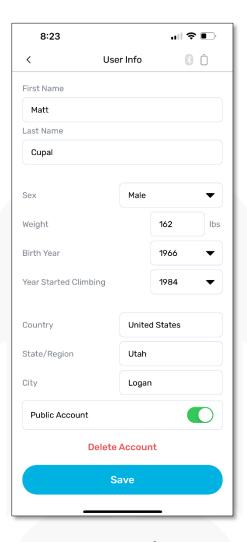


Figure 50. User Info screen

The User Info screen has some basic information about you, including weight, age, years climbing and the city you live in. This data is useful for future features in the Force Board system.

By default, your account is set as a public account. This means others can discover you and you will show up in the leaderboards and other charts. If you wish to be private, turn off the public account feature. Doing so will mask you from these features.

If you wish to delete your account, click the account delete button.

Note: Deleting your account is an irreversible function. When deleted, all your data will be purged from the Force Board platform.





4.7.4 Subscription

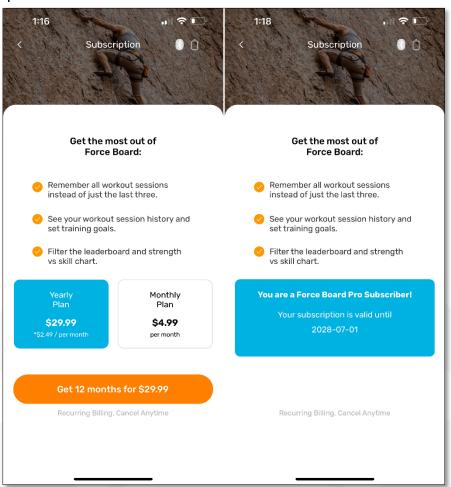


Figure 51. Subscription screen for a Basic user (left) and Pro user (right)

The Pro vs Basic feature set for the Force Board app is outlined in Table 11. Subscriptions for Force Board are handled by the Apple App Store or the Google Play Store.

Table 11. Differences between Basic and Pro app users.

Feature	Basic	Pro
Subscription	Free	Monthly or annual subscription
Feed Screen	All sessions stored in cloud, includir	g session data and infographic display
Ledger History	See history of total effort (Load • Secs)	See history of total effort, max, RFD
	for 3 most recent routines	and average for all routines
Goal Setting	None	Set goals for total effort, Max, Avg and
		RFD for all routines and holds
Assessments	Displays latest peak force, critical	Displays current and historical peak
	force and stored energy for both, left	force, critical force and stored energy
	or right hand	both, left or right hand
Leaderboard	Only shows top 10	Shows all users, plus your rank





4.7.5 Device Info

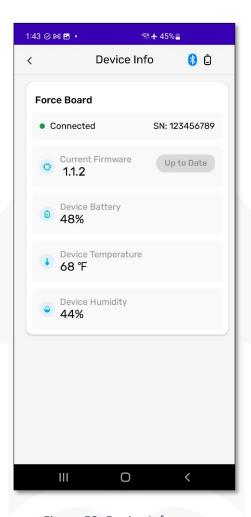


Figure 52. Device Info screen

The Device Info screen shows information about your Force Board Portable device, including:

- Your device serial number
- Your current firmware version, with an ability to update the firmware if available
- The device battery level
- Device temperature and humidity

You must Bluetooth connect to your Force Board Portable device to view the Device Info screen.





5 GLOSSARY

Link: You must "link" equipment to your My Equipment list prior to using in your workout routines.

Load•Secs: A snapshot metric for total effort for a session. This metric sums all the average loads for each hang, multiplied by the number of seconds for that hang. The unit is lbs•secs or kg•secs.

RFD: Rate of Force Development. This is a measure of how quickly you generate force at the beginning of each rep. Force Board automatically captures RFD for every rep by calculating the highest rate of force development across all possible 250 ms periods during the first second of each rep. Using this method creates a reliable method for measuring RFD. When you pull faster, a faster RFD is found. It eliminates errors introduced when locating the start of a rep, or measuring the RFD based on the max of each rep, which may happen multiple seconds into the rep. RFD is a useful measure when considering how quickly a climber could grab a hold and generate significant pulling force.



Figure 53. Force Board RPE emoticons

RPE: Rate of perceived exertion. In the Force Board app, this is optionally captured as one of five emoticons as shown in Figure 54. RPE can be captured at the conclusion of each set in a workout session.



Figure 54. Force Board RPE emoticons





Hold: The term "hold" is used in the app to denote either a hand position on a hangboard or a body position that is held for a period of time during an isometric exercise. A hold is the highest-order counting parameter in a Force Board routine.

Set: A set is a collection of reps. Force Board uses a set as the second-level counting parameter in a routine—you define a certain number of sets per each hold.

Rep: A rep is a single pull on the Force Board device. This is the lowest counting parameter in a routine. A group of reps can be defined for each set in a routine.

Start/Stop Threshold: The Force Board device starts transmitting data after two sequential data samples exceed this threshold. Force Board stops transmitting data after two sequential data samples are below this threshold.

Tare: Zero out the current load on the device. Force Board tares automatically when turned on. Gauge Mode also has a tare button.

Target Load: Your goal load for the current rep. The Force Board app will give audible and visual feedback when you achieve your Target Load. You can set a Target Load for on a hold-by-hold basis.

Peak Force: The maximum force you can generate for a short period of time. In the Force Board system, Peak Force is measured for 3 seconds on a 20 mm edge.

Critical Force: Critical Force is your maximum force you can generate after all stored energy in your cells is depleted. Put another way, it is the force your aerobic energy system can generate on a sustained basis.

Stored Energy: Stored energy is a measure of how much energy you store in your muscle cells that is harnessed using your anerobic energy system.





6 Frequently Asked Questions

Can I use Force Board offline, without a data connection?

When available, the Force Board app communicates regularly to the Force Board cloud server. After each session all data is stored to the cloud, for example. When a data connection is not available, the app can run in offline mode. In offline mode, the app will allow you to select and execute workout sessions. These sessions will be cached and uploaded to the server when a data connection is restored.

Note: Offline mode works based on a caching function: You must visit a given screen first, when data connection is available. Doing so caches the screen, which then can be used in offline mode.

Specific screen behavior during offline mode:

- **Feed**: Cached version available when offline, but the screen will not update until connection is restored.
- Select Routine: You can view and start any routine, including My Routines, Assessments, Quick Start or Gauge Mode. You cannot create new routines or edit existing routines during offline mode.
- **Do Session/Quick Start/Gauge Mode**: These screens will execute in offline mode. Session data is locally cached and will be uploaded again when a data connection is restored.
- **Profile**: Cached version available when offline, but the screen will not update until connection is restored
- **Settings**: Not available in offline mode.

How do I give feedback on the Force Board system?

Feel free to visit our Facebook Force Board Users Group, or email us at team@pitchsix.com

How do I pair my phone to the Force Board?

Force Board does not form a Bluetooth bond to your phone, instead, when you start a workout, the device automatically connects using Bluetooth. You'll see the pairing screen shown in Figure 55 prior to starting a routine. On this screen, the Bluetooth indicator button turns from grey to blue when pairing occurs (8 8).

Force Board may not show up in your list of Bluetooth devices because it doesn't bond to the phone. We chose this method because it is fast and allows for simpler sharing of the Force Board device if two users are using the same device to workout simultaneously.







Figure 55. Force Board Bluetooth Pairing screen.

The Bluetooth indicator turns from grey to blue (🛭 🕄) when paired.

What is Gauge Mode?

Gauge mode is essentially a Bluetooth crane scale. Force data is streamed from the device constantly. Any force present on the Force Board load cell will show on the screen. You can also tare (or zero) the load at any time. No data is stored to the Force Board cloud in Gauge mode.

Can you add a max level measurement to Gauge Mode?

Gauge Mode is not a workout mode. There are many other routines for that purpose. Quick Start as a simple way of collecting data and measuring reps.





How do I get started with Force Board?

The easiest way to get started is by using Quick Start workout. See section 4.5.3.

Can I make my own custom routines?

Yes!

To do so, click on the "Create Routine" button on the bottom of the Select Routines tab. Fill in the key info for the routine, select your holds and save. You can then use the routine for a workout session.

What are the Pro Routine Templates?

Pro Routine Templates are a list of common hangboard protocols such as 7-3 repeaters or max hangs. Tap on one of these to see the details. You can then modify to fit your needs. If you modify and save a Pro Template it is listed in your "My Routines" library.

How do I add a hangboard to my routine?

Under Settings → My Equipment, you can "link" any of our already integrated hangboards into your equipment library and then use them in your routine. To do so, go to Settings→My Equipment, tap on any hangboard and choose "Link." You can "unlink" using the same method.

My hangboard is not in the app, what should I do?

The Force Board app has a database of many of the portable hangboards on the market. If one you need is missing from the app, you can do a few things:

- 1. Use the PitchSix Generic Hold as the hangboard and customize the name as needed.
- 2. Use any other hangboard and customize the name as needed.
- 3. Contact PitchSix and ask us to include your hangboard in the app. We're happy to integrate any hangboard you have.

How do I tare the Force Board Portable device?

The Force Board Portable automatically tares every time it is turned on. You can explicitly tare on the Gauge Mode screen by tapping the Tare button.

If you are hanging something from the Force Board, such as a steel bar, that you would not like to be measured as load in your workout routine, then set up the system completely before turning on the device. Generally, hangboards are light enough that this probably doesn't matter very much, so don't worry about it.





Where does the Force Board name come from?

Simply put, measuring force with a hangboard.

Also, because we're very deep thinkers $\stackrel{\smile}{\circ}$, another interpretation is the force that a group of people (a "board," like a corporate board) imparts on you to help push you higher.

What does the Force Board logo mean?

As climbers, we're literally trying to move upward. The logo represents you being pushed higher by a group of friends (your personal "board" of people) that inspire and motivate you.



