SMART CUFFS PRO



USER MANUAL

THIS IS **BFR.**

THESE ARE THE **SMARTCUFFS.**

STATEMENT FROM OUR FOUNDER

My name is Nick Colosi, and I'm the founder of SmartTools, a company dedicated to developing innovative solutions, specializing in blood flow restriction training and IASTM.

Our company is based in Cleveland, Ohio—famous for the Rock & Roll Hall of Fame and definitely not your typical start-up location. But, we started packaging and shipping right out of my parents' basement and have grown from there.

My background is in sports and medicine, and I wanted to combine those two elements to create products. With my frequent travels, I also spend a lot of time away from home. In those situations, I would often say to myself, "I wish I had this sort of product with me." And you probably do the exact same thing. So, I aim to design products that add the most value to the customer and can suit multiple lifestyles and needs.

However, I believe that it's not only about knowing what products and solutions people want, but also about knowing how they want to be treated. That's why customer service is a major component of what we do at SmartTools. You have questions and want answers, so we take pride in answering those questions promptly. In fact, all emails are answered before the end of the workday, with no carryover.

I designed our SmartCuffs and other SmartTools to be intuitive, safe and so easy to use that anyone can do it without issue. That one-time basement business now has distribution centers in almost 50 countries, showing that if you dream it and believe in it, anything is possible. We're just getting started and look forward to creating even more innovative products that improve the health and wellbeing of the world.

Nick Colosi

A WORD FROM OUR DIRECTOR OF EDUCATION

You should not perform BFR Training without first consulting your healthcare provider. Not every person is a candidate to train in this manner and careful attention should be made to programming and personalized pressure.

Never exceed twenty (20) minutes of BFR on the limbs without reducing pressure.

Establish the ability to perform repetitions of your chosen exercise for 30 reps PRIOR to applying the SmartCuffs. Have an exercise plan in place.

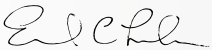
BFR Training should be challenging and difficult, but NOT painful. BFR is not intended for you to exercise to failure. Please make sure you are differentiating PAIN from a CHALLENGE (this is not tended to be a 'feel-good therapy' either).

If any pain, numbness or tightness/discomfort that exceeds a 7/10 is experienced, stop using immediately.

Dizziness and tingling in the hands, fingers or feet and toes is not normal. If you experience dizziness, numbness or tingling attempt to reduce the pressure in 10mmHg intervals until symptoms disappear. If symptoms persist, stop using immediately.

I hope you enjoy using BFR in your training regime as much as I do. I know you will see great results in strength and size in no time!

In health,



Ed Le Cara, DC, PhD, MBA, ATC, CSCS

WHAT IS LIMB OCCLUSION PRESSURE & UPPER OPERATIONAL PRESSURE?

Limb Occlusion Pressure (LOP) is a pressure needed to occlude arterial blood flow. Upper Operational Pressure (UOP) is a maximum BFR cuff pressure determined for each user by the SmartCuffs BFR cuff. The UOP is a pressure that is slightly less than LOP. The UOP is used to account for pressure variances from user to user. A personalized pressure is then calculated by the SmartCuffs BFR cuff as a percentage of the UOP, normally between 40%–80%. Personalized Pressure for each individual patient eliminates the need to account for cuff width, limb size, or blood pressure. By establishing a baseline UOP, we can know how much to reduce the pressure by so you are never exercising at occlusion, which is unsafe.

HOW OFTEN SHOULD IT BE MEASURED?

Personalized Pressure should be measured every 2–4 weeks. It does not need to be measured every session unless directed by your healthcare professional.

RECOMMENDED % OF UOP:

FOR THE ARM* 30%–50% UOP

FOR THE LEG* 50%–80% UOP

**Operating UOP tolerance +/-15mmHg*

DISCLAIMER

WARNINGS

- Do not remove screws or attempt to disassemble.
- Do not charge unattended.
- Do not immerse in water and keep away from any liquids.
- Unplug the charger once desired charge is reached prior to use. Do not use product while charging.
- **Never apply SmartCuffs to all four limbs at the same time.**
- For adult use only. Consult you doctor before using this product.

SAFETY INSTRUCTIONS & CONTRAINDICATIONS



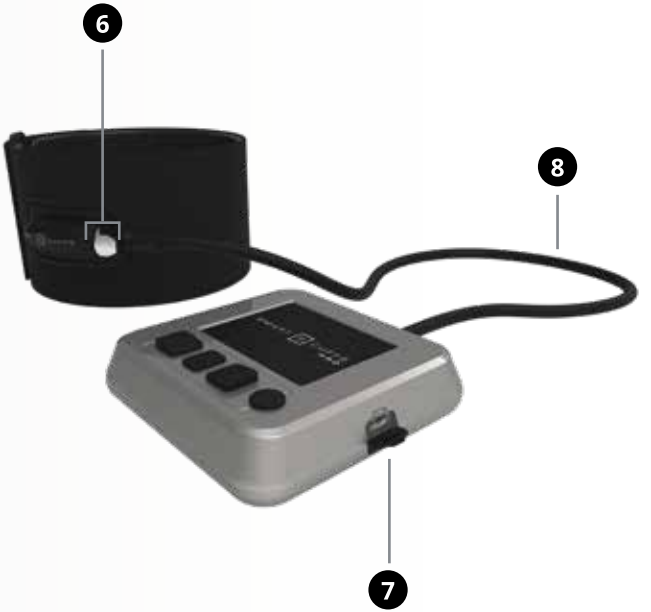
DANGER: *To reduce risks of electric shock, fire, and personal injury, this product must be used in accordance with the following.*

- As with any new exercise program/device, consult your physician prior to use of this product. Especially if you have any of the following conditions: History of Deep Vein Thrombosis (DVT), Pregnancy, Varicose Veins, High Blood Pressure, Cardiac Disease, or Lymphedema.
- For adult use only.
- Use as instructed within this User Manual.
- If any pain, numbness or tightness/discomfort that exceeds a 7/10 is experienced, **stop using immediately.**
- Dizziness and tingling in the hands, fingers or feet and toes is not normal. If you experience dizziness, numbness or tingling attempt to reduce the pressure in 10mmHg intervals until symptoms disappear. If symptoms persist, **stop using immediately.**
- Never leave the SmartCuffs PRO device operating or charging unattended.
- Never apply SmartCuffs to all four limbs at the same time.
- Do not drop or misuse the SmartCuffs PRO device.
- Do not tamper or alter the SmartCuffs PRO device.
- Do not immerse in water.
- Examine the SmartCuffs PRO device prior to each use.
- Only recharge with supplied charger.

SPECIFICATIONS



SmartCuffs PRO Device



SmartCuff and SmartCuffs PRO Device



SmartCuff

1. Up/home button (press once for up, press and hold for home)
2. Enter button
3. Down button
4. Power on/off button
5. LED screen
6. Connection coupler
7. Micro USB charging port
8. Hose
9. D-ring
10. Valve protector
11. O-ring (black rubber piece)
12. Air release port

APPLYING THE SMARTCUFFS

APPLYING THE ARM CUFF



1. Apply cuff with the logo readable with valve on the outside of arm. Push the strap of the cuff through plastic D-ring (#9). Apply as tight as possible to the upper arm. The bottom flap of the cuff should slide under the top part of the cuff.

2. Attach the coupler (#6) by pushing down on the metal pin. You should hear a click. If no click is heard, the pin is already in position. Attach coupler into valve. A click will be heard.

3. You are ready to begin to operate the SmartCuffs PRO device.

**To release air from the cuff in case of emergency, press down on the Air Release Port (#12) without covering the port entirely (or else you will block the escaping air). If this does not work, simply take the cuff off by releasing from the Velcro.*

For more detailed information, videos, and instruction, download our SmartCuffs® Academy app on the Apple App Store or Google Play Store.

APPLYING THE LEG CUFF



1. Apply cuff with the logo readable with valve on the outside of leg. Push the strap of the cuff through plastic D-ring (#9). Apply as tight as possible to the upper leg. The bottom flap of the cuff should slide under the top part of the cuff.

2. Attach the coupler (#6) by pushing down on the metal pin. You should hear a click. If no click is heard, the pin is already in position. Attach coupler into valve. A click will be heard.

3. You are ready to begin to operate the SmartCuffs PRO device.

**To release air from the cuff in case of emergency, press down on the Air Release Port (#12) without covering the port entirely (or else you will block the escaping air). If this does not work, simply take the cuff off by releasing from the Velcro.*

USAGE INSTRUCTIONS

DEVICE OPERATION

1. With your SmartCuff(s) applied to desired limb(s), press **<Enter/Power On>** button (#2).

2. Press **<Start Exercise>** or **<Update Settings>**.

   In Update Settings, you can **<Choose Language>**, **<Factory Reset>** or **<Update Firmware>**. For help updating firmware, see the Update Firmware section on the following page.

3. After pressing **<Start Exercise>**, choose the exercising limb: **<Arm>** or **<Leg>**.

   TIP: *Double tap up/down buttons to skip by 10% increments.*

4. Choose method to Set Pressure: **<Manual>** or **<Personal Pressure>** or **<IPC>**.

   If **<Personal Pressure>** is chosen, Choose UOP% (allow up to 3 minutes for calculation).

   If **<Manual>** is chosen, select the pressure at which you wish to exercise.

   If **<IPC>** is chosen, **DO NOT EXERCISE ON THIS SETTING.** *This should only be done under the supervision of a medical professional.*

5. Once the pressure is set, the unit will prompt you to **<Disconnect Hose and Begin Exercise>** or **<AutoRegulate>**.

   If **<AutoRegulate>** is chosen, keep hose attached and begin exercise. If not, follow step #6.

6. Disconnect the hose by pressing down on the metal clip attached to the Coupler (#5). If you are exercising two limbs, attach hose to non-inflated cuff and press **<Repeat Pressure>**.

7. Begin exercise.

8. Once exercise is completed, deflate the SmartCuff(s) by reattaching hose to the SmartCuff(s) and press **<Start New Session>**.

9. Turn off device by pressing the **<Power>** button (#4).

CHARGING

» To ensure battery longevity, fully charge for 6–8 hours before first use.

» To charge, connect the Micro USB end into the charging port (#6) and plug-in the USB side of the charging cable into the supplied adapter. Plug adapter into wall outlet.

» Battery meter will be in the top right-hand corner of each screen once turned on.

» Battery can be recharged at any time.

» Not recommended to deplete the battery.



TIP: *For efficiency, charge battery when the battery meter shows 2 bars.*

UPDATE FIRMWARE

Follow the on-screen instructions. This initial process is done easiest using a mobile phone. **NEVER** exit screen or power off while updating new firmware.

1. Press **<Update Settings>** on home screen.
2. Choose **<Update Firmware>**
3. Open mobile phone WiFi settings and connect to the WiFi Access Point displayed on the SmartCuffs PRO device.
4. On your phone, navigate to http://10.1.1.1
5. Provide WiFi credentials when prompted on your phone and click submit.
6. SmartCuffs PRO device will then connect and update automatically.

CLEANING, MAINTENANCE AND STORAGE

SmartCuffs PRO Device

» Use slightly damp towel or alchohol to clean the SmartCuffs PRO device and dry with soft cloth.

» **DO NOT** hand wash the SmartCuffs PRO device.

» Store in a cool dry place.

SmartCuffs

» Use alcohol spray or wipes to clean the SmartCuffs. You can also hand wash the SmartCuffs with cold soap and water and hang dry. **DO NOT** put in dryer.

» Store in a cool dry place.

EXERCISE RECOMMENDATION



STRENGTH AND HYPERTROPHY

Establish the ability to perform 30 repetitions of an exercise PRIOR to applying the SmartCuffs. This will equate to about 20% of your 1RM to start. See **Appendix 1** for establishing your 1RM estimate. You do not want to exercise to failure (inability to complete all repetitions).

THREE WHOLE BODY EXERCISES

HIP HINGE OR SQUAT VARIATION
(ie. Deadlift or Barbell Squat)

+

UPPER BODY PUSH
(ie. Benchpress)

+

UPPER BODY PULL
(ie. Lat Pulldown)

THEN

TWO ISOLATED EXERCISES
(ie. Bicep curl, Tricep pushdown, Hamstring curl, Quad Extension)

A SET OF BFR EXERCISES IS PERFORMED BY:

- **PERFORMING 30 REPETITIONS** (not to failure!). *This should not be too difficult to complete.*
- Resting for 30–60 seconds
- **PERFORMING 15 REPETITIONS** (not to failure!). *This should be a little difficult.*
- Resting for 30–60 seconds
- **PERFORMING 15 REPETITIONS** (not to failure!). *This should be a little more difficult.*
- Resting for 30–60 seconds
- **PERFORMING 15 REPETITIONS** (not to failure!). *This should be very difficult.*
- Go to next exercise (ie. resting for 30–60 seconds)

EXERCISE RECOMMENDATION



AEROBIC CONDITIONING

Establish your Heart Rate Reserve (HRR) (see **Appendix 1**).

Work on treadmill, rower, bike, stair stepper, etc. at 30% HRR to start and increase intensity by 10% each week. More fit individuals can start at 45% of HRR will need to increase the intensity by 10% each week (up to 60% HRR).

20 minutes maximum cuff inflation is recommended for safe training.

APPENDIX 1

BFR WORKSHEET

HEART RATE RESERVE (HRR)

Resting Heart Rate (before out of bed is best): _____

Max HR = 220 − age = 220 − _____(age) = _____HRMax

Max HR – Resting HR = HR Reserve (HRR)

_____ HRR x .30 + _____HRRest = _____Training Target

((HRR x (.30)Training Intensity%)) + Resting HR = Target HR

**Trained individuals start at 45% HRR and work up to 60%*
***Untrained start at 30% HRR and work up to 60%*

1-REPETITION MAXIMUM (1RM)

Number of Repetitions	Percent of 1RM		Weight Lifted
1	100	X	1.00
2	95	X	1.05
3	93	X	1.08
4	90	X	1.11
5	87	X	1.15
6	85	X	1.18
7	83	X	1.2
8	80	X	1.25
9	77	X	1.3
10	75	X	1.33
11	70	X	1.43
12	67	X	1.49
15	65	X	1.54

ESTIMATE 1RM EXAMPLE

10 RM Test: 100lbs
100 x 1.33 = 133lbs Estimated 1RM
133 x .20 = 26.6lbs
133 x .35 = 46.55 lbs
BFR Training Intensity = **27 lbs–47 lbs**

SUMMARY

Perform 3–4 warm-up sets prior to your best effort
Reach your 5-rep maximum or 10-rep maximum
Multiply by the respective number to estimate your 1RM
Multiply estimated 1-RM by 0.20 or 0.35 (for training intensity of 20 to 35 percent)

WHAT IS ISCHEMIC PRECONDITIONING?

Ischemic preconditioning (IPC) is a therapeutic approach that has been developed to attenuate the damage incurred by ischemia-reperfusion injury.

DO NOT EXERCISE OR MOVE DURING THIS MODE. THIS IS A PASSIVE MODALITY.

This therapy has been used in numerous clinical trials in diverse patient populations, including patients undergoing repair of congenital heart defects, coronary artery bypass grafting, and primary percutaneous coronary intervention.

SAFETY DISCLAIMER
IPC should only be done under the supervision and guidance of a medical professional at all times.

APPENDIX 2

COMMON MISTAKES/TROUBLESHOOTING

SIZING	If you are on the border of two sizes, choose the smaller size otherwise the pressure will not be enough to obtain a proper personalized pressure calculation. Make sure the cuff is fitting tightly around the limb to ensure proper personalized pressure calculation.
APPLICATION	Make sure the bottom flap slides under the top portion of the cuff.
VALVE	Always press the metal button down when applying or removing the valve from the stem.
CONNECTION	Ensure you hear a click when you attach the coupler to valve. If you have trouble connecting, the black O-ring might be dried out. If this is the case, apply a small amount of Vaseline to the O-ring and reconnect.
EXERCISE	Exercises are meant to be sub-maximal. Ensure one can perform each exercises for the pre-determined amount of reps prior to using the cuffs.

COMPRESSION SCALE	Discomfort or tightness should NEVER exceed a 7–8/10. If the compression scale exceeds a 7–8/10, press the stem to release air until the pressure reduces below a 7–8/10.
ABRUPT SHUT OFF	If the unit shuts down unexpectedly, check the battery level. If the battery level is 1 bar or shows the "!" icon, the unit does not have enough power to complete what was requested. Plug into charger and charge to 2 or bars.
ERROR DURING INFLATION	Check to make sure the cuffs are fitting properly and that the air bladder is fully enclosing the limb. Make sure you are sliding the bottom flap of the cuff underneath the top flap. Also, be sure to remain still throughout the UOP calculation. Any movement will disrupt the pressure sensor and cause an error. Finally, if you are consistently getting errors in the standing or seated position, try laying on your back and retry UOP calculation.

PRODUCT WARRANTY

SmartCuffs PRO device, cuffs, accessories and other attachments are a Limited One-Year Warranty.

The SmartCuffs PRO device, cuffs, accessories, and other attachments are warranted by Smart Tools Plus, LLC, an Ohio corporation (“SmartTools”), against manufacturing defects in material and workmanship for a period of one year from the date of purchase from SmartTools. In the event of any such defect occurring during the warranty period, SmartTools will, at its option, (a) correct the defect by repair or by replacement of the applicable part or component that fails as a result of such defect, without charge for parts and labor; or (b) replace the device with one of the same or then current design.

The foregoing warranties do not cover normal wear and tear or cosmetic damage, and are void if the device and/or the attachments and other accessories (collectively, the “product”) are not used in accordance with the user manual, are otherwise misused or modified in any way, and/or are repaired or altered by anyone other than an authorized service representative of SmartTools. These warranties expressly exclude transportation, shipping or insurance costs, or defects, damages, or failure resulting from misuse, abuse, improper or abnormal usage, or neglect.

All replaced parts and products become the property of SmartTools. New or reconditioned parts and products may be used in the performance of warranty service. Repaired or replaced parts and products are warranted for the remainder of the original warranty period only. You will be charged for repair or replacement of parts and products made after the expiration of the applicable warranty period.

SMART CUFFS

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