REDEFINING THE LIMITS OF HUMAN PERFORMANCE.

THE BOA® HUMAN PERFORMANCE FIT LAB

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INDUSTRY IMPACT WHITE PAPERS

The BOA® Human Performance Fit Lab brings together science, product innovation, and athlete insights

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WORDS FROM OUR CEO.

BOA® is fortunate to be celebrating its 25th anniversary this year, having "dialed in" almost 300 million consumers with the BOA® Fit System since 2001. During our first 15 years, our focus was delivering a superior fit and user experience relative to other fit and closure systems, backed by a lifetime durability guarantee.

In 2018, we set our sights even higher, thinking beyond our system to the entire end-consumer product and how BOA® could be integrated into advanced configurations that deliver a proven performance advantage for elite athletes and workers around the world. This evolution helped establish BOA® as a high-performance fit system across snowsports, cycling, outdoor, athletic, and workwear.

Central to this evolution was the creation of our **Human Performance Fit Lab (HPFL)**, now a cornerstone of the company. Over the last eight years, the HPFL has accumulated more than 17 billion unique data points, conducted more than 1,871 athlete and worker tests, published six peer-reviewed white papers, and supported more than 645 new end-product solutions with our brand partners. The results show improvements in athlete and worker Speed, Power Transfer, Energy Efficiency, Stability, and Control in fundamental body movements that cut across our industries.

Through this work, we have scientifically demonstrated that BOA® delivers superior fit and meaningful performance advantages across our industries and product types.

This inaugural HPFL Impact Report outlines the journey and the performance advantages we have demonstrated. I am incredibly proud of and grateful for the dedicated work of the BOA® team and our outstanding brand partners, who continue to redefine the limits of human performance.

PROVEN PERFORMANCE ACROSS INDUSTRIES.

ALPINE SKI

Up to 0.45 seconds faster times on expert race courses with improved edge control.

Up to 6% Improved Power Transfer
Up to 10% Improved Stability & Control

SNOWBOARD

Up to 9% quicker edge-to-edge transitions for improved stability and control on extreme big mountain terrain.

Up to 4.5% Improved Power Transfer
Up to 9% Improved Stability & Control

CYCLING

Up to a 22-watt power advantage when attacking, while maintaining greater stability across technical terrain.

Up to 3% Improved Power Transfer
Up to 1.5% Improved Energy Efficiency

HELMETS

Up to 6% improved hold, delivering superior fit with less pressure points.

Up to 40% Finer Dial Adjustment Resolution

TRAIL RUN

Up to 15 minutes faster in a 100-mile race, with greater control and more energy.

Up to 1.5% Improved Energy Efficiency
Up to 7% Improved Stability & Control

MOUNTAINEERING

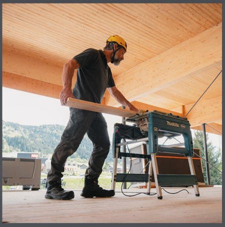
Up to 3 minutes saved per 100 meters of vertical distance, while exploring the most extreme peaks with confidence.

Up to 1.5% Improved Energy Efficiency
Up to 7% Improved Stability & Control

ATHLETIC - COURT

Up to 6% faster speed across the court with improved power and accuracy.

Up to 9% Improved Power Transfer
Up to 7% Improved Stability & Control



WORKWEAR

Up to 9% improved energy efficiency with greater stability and control throughout the workday.

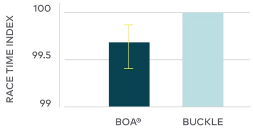
Up to 9% Improved Energy Efficiency
Up to 7% Improved Stability & Control

SEGMENT DEEP DIVE – ALPINE SKI.

MORE SPEED. MORE POWER. LESS PAIN.

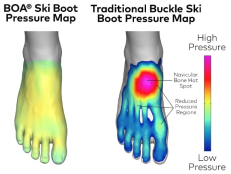
In 2023, the HPFL published the first peer-reviewed study on the role of ski boot design on performance. Across 22 expert skiers, BOA®-powered boots generated significantly greater rates of force production and peak forces on both downhill and uphill skis. Since then, more than 200 runs with European Cup and World Cup racers have tested BOA®-powered boots in the toughest conditions.

Engineered for ski racers, the BOA® Fit System delivers a micro-adjustable, multi-directional, zonal precision fit that wraps the lower leg and foot evenly—helping reduce peak pressure across the top of the foot while locking in the heel to improve speed, power transfer, stability, and control.



UP TO 0.45s

FASTER ON ELITE RACE COURSES



UP TO 14%

REDUCTION IN PEAK PRESSURE ON TOP OF THE FOOT

PERFORMANCE BENEFITS

BOA® ensures skiers benefit from a superior fit and proven performance advantages.

UP TO 1%

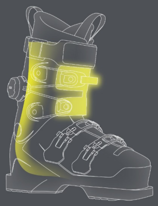
INCREASED SPEED

UP TO 6%

IMPROVED POWER TRANSFER

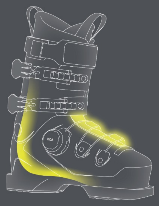
UP TO 10%

IMPROVED STABILITY & CONTROL



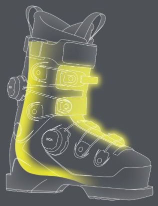
CUFF

Enhances control of power from edge to edge.



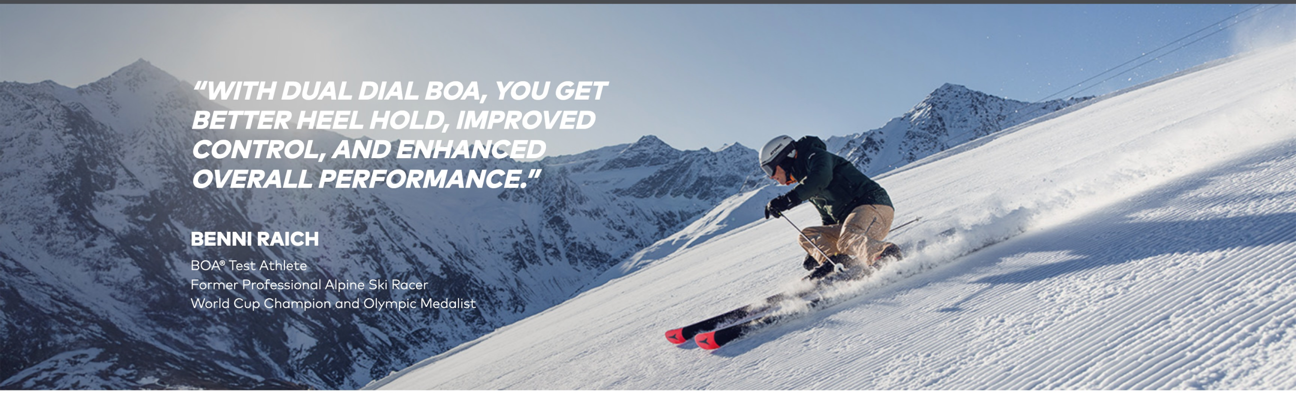
SHELL

Secure heel lock and midfoot connection drive power transfer into the ski.



THE ULTIMATE SOLUTION

Dual dial cuff + shell.



> ***"WITH DUAL DIAL BOA, YOU GET BETTER HEEL HOLD, IMPROVED CONTROL, AND ENHANCED OVERALL PERFORMANCE."***

BENNI RAICH

BOA® Test Athlete
Former Professional Alpine Ski Racer
World Cup Champion and Olympic Medalist

SEGMENT DEEP DIVE – SNOWBOARD.

TURN WITH POWER. RIDE WITH PRECISION.

In 2021, the HPFL published its first study to link boot fit, biomechanics, and carving performance in snowboarding. Over the next four years, BOA® used this data to reimagine snowboard boots and, in 2025, demonstrated that the BOA® PerformFit™ Wrap (PFW) solution produced a greater rate of force development and greater force under the toes during toe turns. This data-driven design delivers the optimal combination of speed, power, and control all over the mountain.

Athletes in BOA-powered product from Burton, Salomon, K2, and Yonex brought home 11 medals from the 2026 Milano Cortina Games.

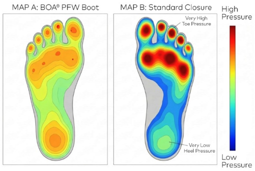
4 GOLD

5 SILVER

2 BRONZE

BOA® PerformFit™ Wrap distributes pressure more evenly across the top of the foot—allowing riders to lock their heel without pressure points. This heel lock without pressure enables better carving and edge-to-edge power transfer.

PLANTAR PRESSURE MAP COMPARISON



UP TO **5%**

INCREASE IN HEEL HOLD DURING TOE TURNS

PERFORMANCE BENEFITS

BOA® PerformFit™ Wrap boots help riders maintain a stronger connection to their equipment, enabling more effective force transfer with edge-to-edge control. This improved edge control helps reduce sliding and friction, supporting greater speed and confidence across all terrain.

UP TO **3%**

INCREASED SPEED

UP TO **4.5%**

IMPROVED POWER TRANSFER

UP TO **9%**

IMPROVED STABILITY & CONTROL

POWER TRANSFER

STABILITY & CONTROL

> ***"THE BOA FIT SYSTEM GUARANTEES MY BOOTS ARE DIALED FOR ANY SORT OF RIDING. FROM HITTING 60-FOOT JUMPS IN THE PARK TO BIG DAYS FREE RIDING IN THE BACKCOUNTRY. ONCE I AM DIALED IN, I'M GOOD TO GO."***

ZOI SADOWSKI-SYNNOTT
BOA® Athlete
Professional Snowboarder
Most decorated snowboarder in Olympic history

SEGMENT DEEP DIVE – NORDIC.

STRONGER HOLD. GREATER CONTROL.

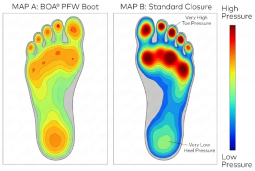
Snowsports are BOA®'s heritage, and Nordic is one of its newest segments—pioneering the application of BOA® to a discipline where every gram, every second, and every degree of motion matters. Performance has been validated at the highest level of competition, supported by initial pilot testing with World Cup, European Cup, and NCAA Division I All-American athletes. Proven benefits in energy efficiency and stability & control across snow and outdoor industries provide confidence in BOA®'s direction in Nordic.

Athletes in BOA®-powered product from Atomic, Fischer, Madshus, Salomon, and Rossignol brought home 92 medals from the 2026 Milano Cortina Games.

32 GOLD
27 SILVER
33 BRONZE

Pilot testing on roller skis with World Cup, European Cup and NCAA Division I All-American level athletes shows BOA® PerformFit™ Wrap delivers a stronger heel hold than the same boot with laces. A more secure heel keeps the foot connected to the boot through every kick and glide—translating effort directly into propulsion, delivering greater energy efficiency.

PLANTAR PRESSURE MAP COMPARISON



UP TO 2%

STRONGER HEEL HOLD VS. THE SAME BOOT WITH LACES

PERFORMANCE BENEFITS

In Nordic, every stride matters. BOA® delivers a dialed in, precision fit designed to support performance with every movement.

UP TO
7%
IMPROVED STABILITY & CONTROL

> *"NORDIC SKIING DEMANDS BOTH POWERFUL PUSH-OFF AND LATERAL CONTROL. BOA APPLIES LEARNINGS FROM SPORTS LIKE TRAIL RUNNING AND ALPINE SKIING TO DELIVER THE OPTIMAL COMBINATION OF PERFORMANCE BENEFITS FOR NORDIC ATHLETES."*

DAN FEENEY PH.D.
VP of Partner Product Innovation
and Development, BOA® Technology

BOA®'S HUMAN PERFORMANCE FIT LAB JOURNEY

DOWNLOAD HPFL IMPACT REPORT

2026

WHITE PAPERS

We seek external peer reviews by leading scientists worldwide to provide credibility to our methods and findings. Publishing these papers allows us to share our methods with scientists and industry laboratories to continue advancing fit and performance.

AGILITY PAPER #1
AGILITY PAPER #2
TRAIL RUN PAPER #1 - ENERGY EFFICIENCY
TRAIL RUN PAPER #2
ALPINE SKI PAPER
MATERIALIZATION PAPER

SCIENTIFIC ABSTRACTS

SNOWBOARD POWER TRANSFER
SNOWBOARD WRAPPING FIT
ALPINE SKI POWER TRANSFER

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