Technology for Data-Driven Decisions

Enhance outcomes for

- Lower-extremity
- Physical therapy
- Rehab patients

Tekscan™

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Tekscan™

Introduction

As clinicians in physical therapy or rehabilitation facilities, versatility is your bread and butter. The ability to adapt clinical approaches to meet the needs of incredibly diverse patient populations is key to making your practice a lasting success.

In this eBook, we'll discuss your lower-extremity assessments, which can involve athletes, post-surgery/injury patients, and the elderly at risk of falling, among others. You most likely see a good number of these individuals, as the numbers displayed can attest.

When faced with sports injuries, rehabilitation cases, and fall risk patients, many clinicians rely on visual assessment methods, like watching a patient walk or using a balance board.

But how are those assessments being quantified?

In a world where insurance reimbursement and accountability are essential, clinicians must be able to measure and validate patient progress with quantifiable data.

How do you know when a patient is ready to safely return to activities?

Without objective and consistent information, you may not feel 100% confident.

The Clinical Solution: SportsAT™

Equip yourself with dependable data to establish complete confidence in your decisions. Unlike visual assessment tools that will always rely on the subjective interpretation of the clinician, SportsAT software provides objective insight into the quantitative measurements you can use to accurately monitor progress of rehab programs.

"Virtually everyone who walks in your door with a lower-extremity injury or condition, you can now test with this one tool."

John Guarino

Clinical Solution: SportsAT

SportsAT includes all the essential tools you need to accurately evaluate, rehabilitate, and assess lower-extremity instability, imbalances, and deficiencies. Objective, actionable information collected with SportsAT allows you to maintain consistency between tests and reduce the likelihood of human error.

This clinical solution will empower you to make better decisions for your patient populations by providing information to reliably influence:

- Return-to-Life Decisions
- Concussion Evaluations
- Fall Risk Assessments
- Balance Rehabilitation
- Chronic Ankle Instability Management
- Pressure & Weight Distribution Evaluations

Return-to-Life Decisions

With so many aspects of daily life relying on lower-limb usage, you likely see a number of patients who simply want to return to normalcy after experiencing unexpected injuries or complications. To send these patients back to everyday activities with 100% certainty in their successful rehabilitation, you'll need the help of objective data.

Baseline & Benchmark Testing

With supporting data, you can be absolutely confident that your treatment plans have progressed a patient to a level where it's safe to resume daily activities. Baseline and benchmark testing capabilities provided by SportsAT allow you to accurately monitor and validate patient progress throughout your treatment programs.

Quickly Generate Reports

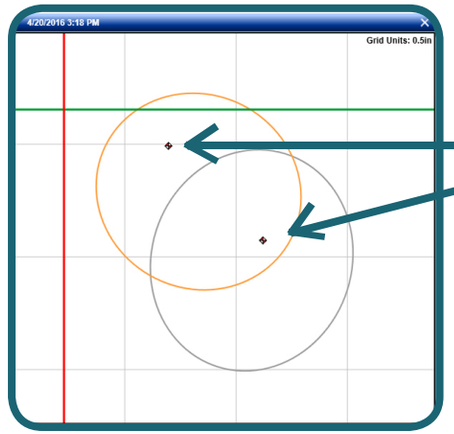
Software-generated reports provide patients with tangible evidence of your work and can be passed on to referring physicians, team doctors, and other personnel invested in the patients' well being.

Built-In Balance Trainer

Provide real-time feedback to patients with SportsAT's built-in Balance Trainer.

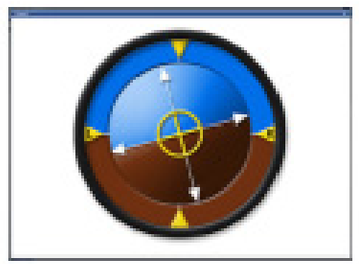
Guide patients' balance in real-time to establish stability.

Also use the Balance Trainer to track improvements in balance over time.



Visually identify progress in sway and stability.

Notice how Center of Force (CoF) has shifted closer to the neutral position in the orange circle (post-rehab data).



Balance Rehabilitation

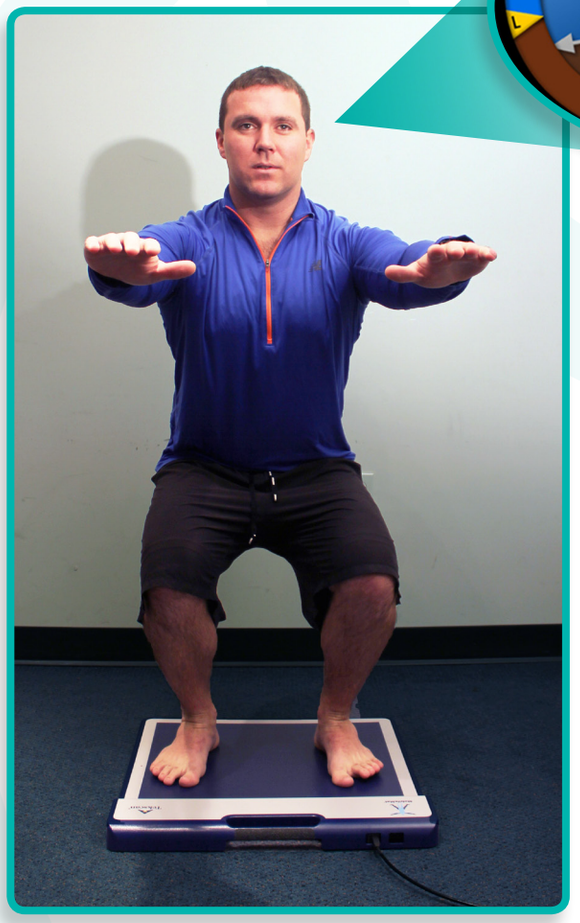
Balance training is effective in improving measures of postural control and ultimately fall risk, in addition to the rate of that fall risk in older adults.[5]

You may already be using some form of balance training in your clinic or rehab facility; however, these methods may not be able to provide your patients with true insight into their postural stability and control.

Objective Balance Simplified

With the **Balance Compass** included in SportsAT, your patients can stand on a pressure mapping mat and view – in real time – how their movements and weight distribution affect their dynamic balance.

There is nothing more valuable than providing patients with visual feedback and proof of your treatment's success!



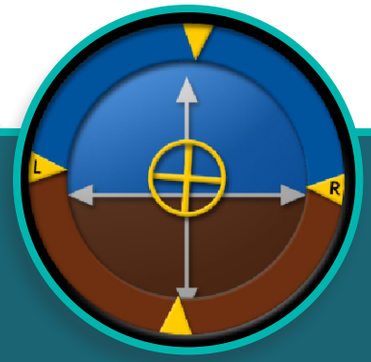
Display the Balance Compass in front of your patients while they interact with a pressure mapping mat.

As they view any change in pressure or weight distribution, you can help patients establish or re-establish normal balance.

Balance Compass Capabilities

Use this feature to collect baseline balance data. After the patient undergoes your rehabilitation efforts, retest the subject to validate improvements over time.

PRE-TREATMENT



POST-TREATMENT

PROGRESS PATIENTS CAN SEE!

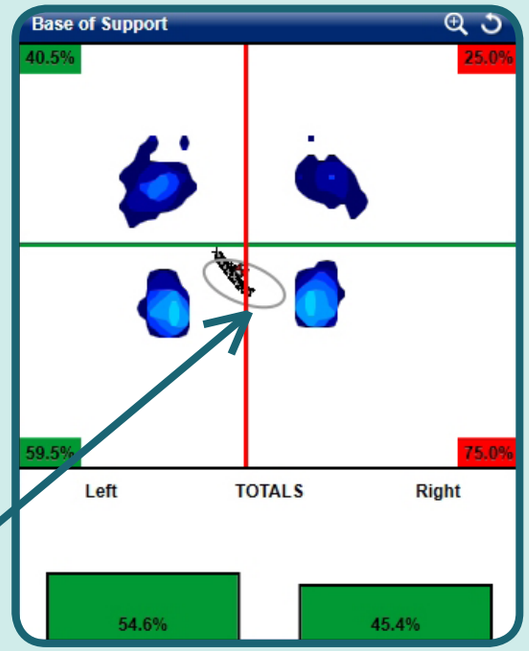
Fall Risk Assessments

Published work supports the theory that people who sway faster tend to be more unstable, and are therefore more likely to fall.

With SportsAT, you're able to evaluate **Center of Force (CoF)** velocity which can indicate a risk of falling.
Small, but significant, motions that affect balance and sway often go undetected during visual assessments.

SportsAT software provides a clear picture of the speed and direction of a patient's movement, measured on two planes:
Left - Right and Front - Back.

The Area of Ellipse offers insight into CoF movements with a 95% Confidence Interval



Additional parameters captured by SportsAT software:

Summary

Length of CoF Path (in):	76.87	40.48	-47.3%
95% Confidence Area (in^2):	25.32	3.43	-86.5%
Base of Support Area (in^2):	44.7	36.2	-19.1%
CoF Excursion F-B (in):	14.37	5.04	-64.9%
CoF Excursion L-R (in):	11.97	2.46	-79.5%
CoF Frame Variance (in):	1.6439	0.0363	-97.8%

Not only are you able to perform a visual assessment of the patient, but with SportsAT, you're also able to collect objective sway data—a graphical representation of what's going on as a patient engages with the mat.

Chronic Ankle Instability Management

Often a product of acute lateral ankle sprains, **Chronic Ankle Instability (CAI)** is a common musculoskeletal injury that affects individuals from all walks of life. Your CAI patients can include anyone from high-level athletes, to weekend warriors, to your middle-aged and elderly clients with reoccurring instability issues.

To assess CAI, you can use **time-to-boundary (TTB)**, a spatiotemporal measure that has detected deficits related to ankle instability. Studies have shown TTB measures to be more reliable than traditional center of pressure (COP) measures.[6]

Time-to-Boundary

The estimate of the time it would take for the CoF of a subject to reach the boundary of the base of support if the CoF were to continue from its current location, at its current velocity. The larger the time-to-boundary number, the more stable the subject.

TTB

This testing protocol is simple with MobileMat & SportsAT!

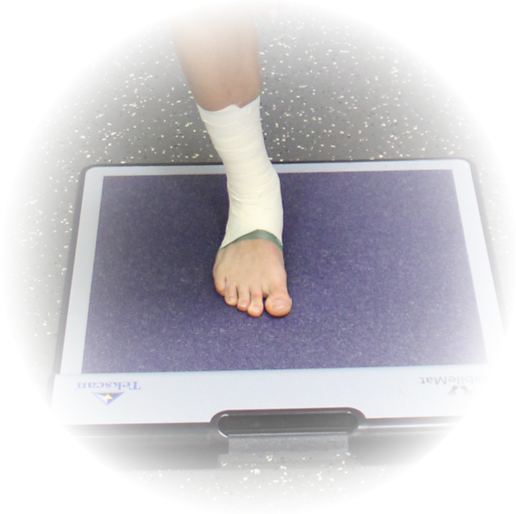
Perform Three 10-Second Trials

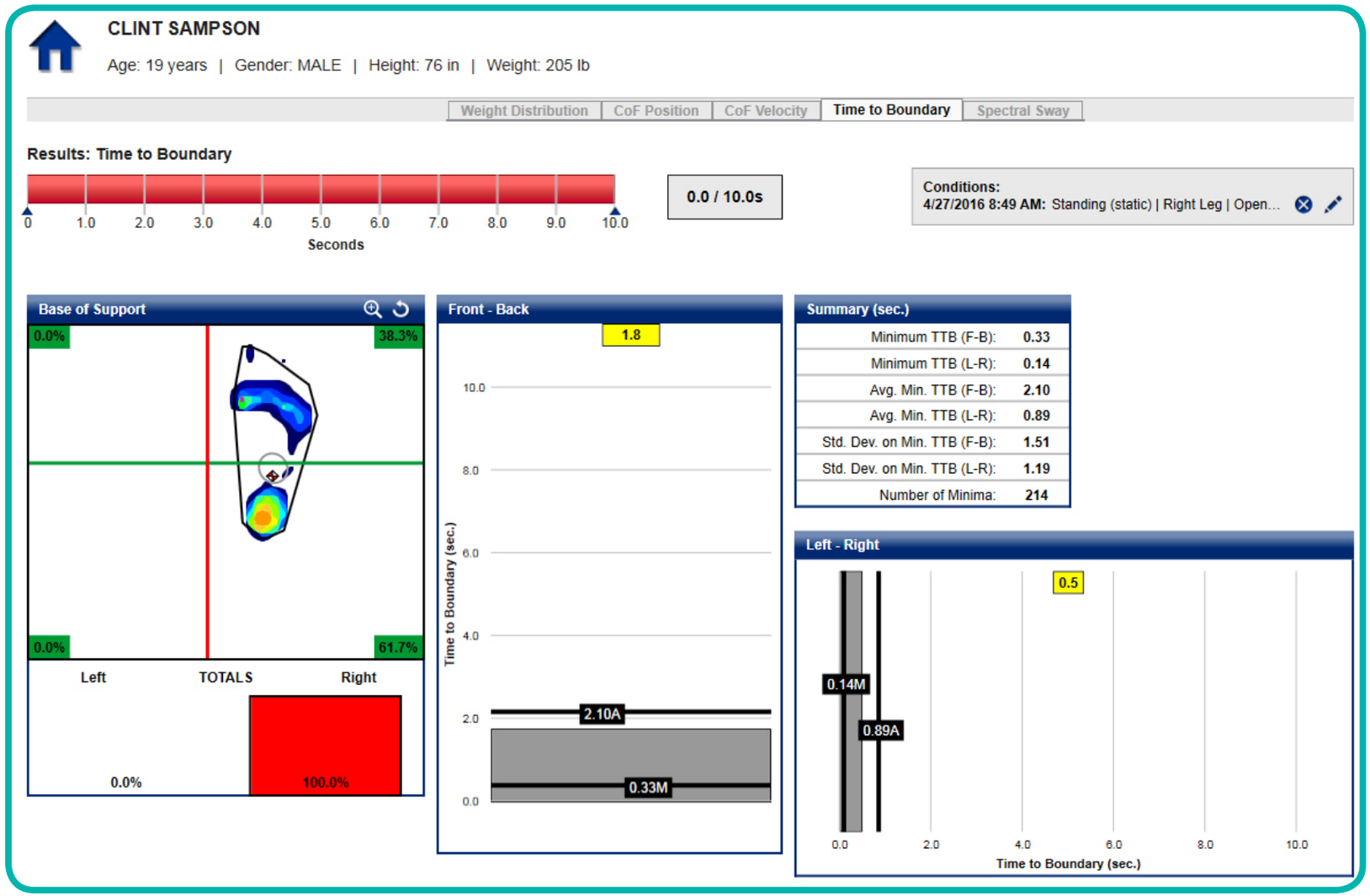
- BAREFOOT
- SINGLE-LEG
- STANDING

HAVE SUBJECT FOCUS ON VISUAL TARGET

Chronic Ankle Instability Management CONTINUED

In this screenshot from SportsAT, you can see the base of support for the subject's right foot. The left and right side are divided by the red line, and clear anterior and posterior regions are separated by the green line. With the CoF feature, you can monitor any change in direction of the CoF motion.





Key Insights:

- The larger the TTB number, the more stable the subject
- The ideal weight distribution is 50% left vs. 50% right
- The ideal weight distribution is 40% front vs. 60% back
- The faster the CoF velocity is moving, the more unstable the subject

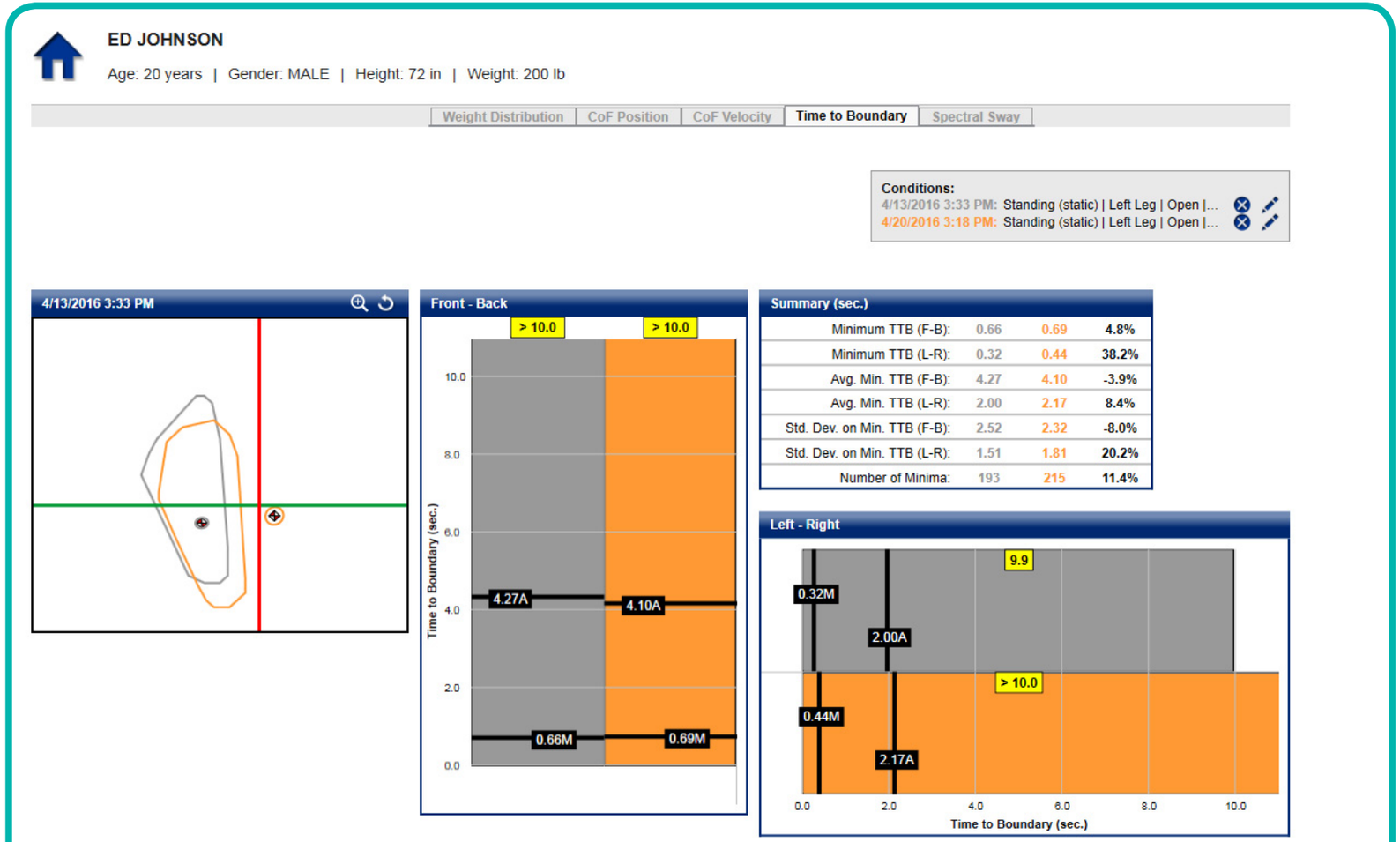
Chronic Ankle Instability Management CONTINUED

The Importance of Established Stability

During the rehabilitation process, you'll compare benchmark and baseline information to determine if a patient has returned to normal, pain-free function. With SportsAT, you're able to collect this baseline stability data, then test patients after a wrapping, bracing, surgery, etc., to ensure you've made quantifiable improvements—enough so as to confidently return your players to sport without risk of reinjury.

Example: This patient was tested immediately after an injury, then again after his ankle was wrapped and had time to heal. In the SportsAT screenshot to the right, you'll notice TTB values have increased. This validates that the patient is making improvements in stability, as higher TTB values correlate with greater stability.

Post data represented in orange

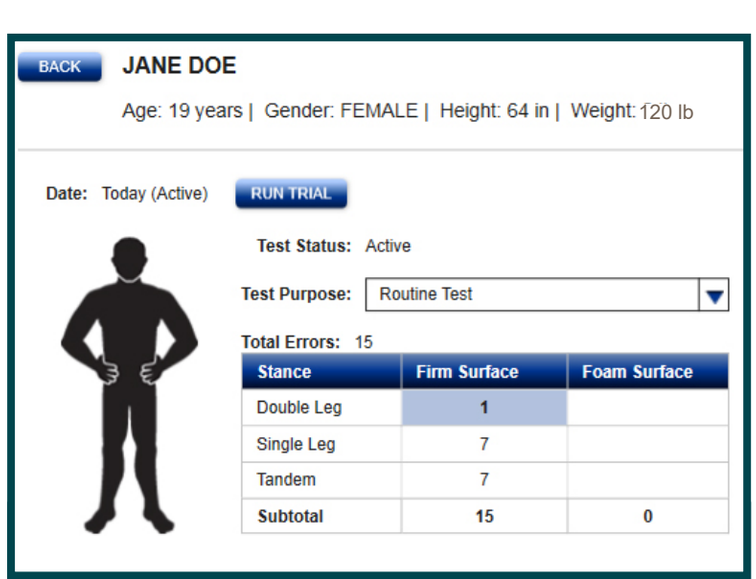


Concussion Evaluations

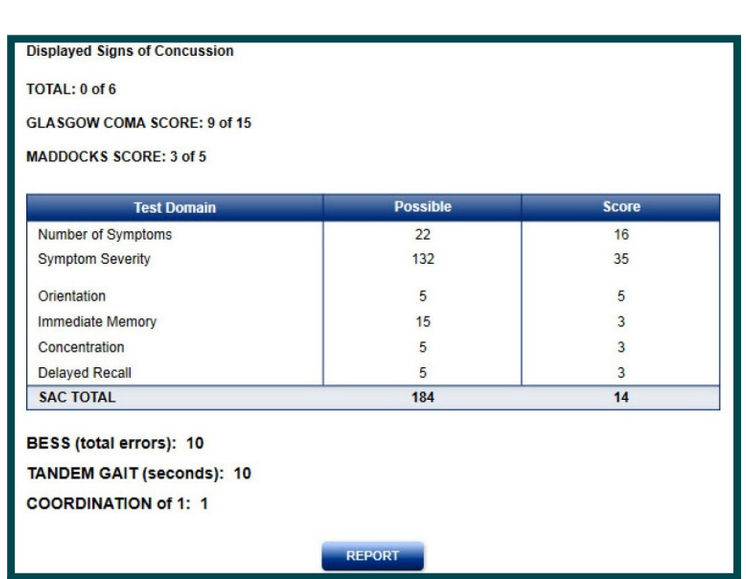
Traditional methods for concussion evaluations include the Balance Error Scoring System (BESS), which relies on the eyes of the clinician or independent observer. This leaves room for error and little room for objective, documented progress.

With the help of SportsAT and the objective data it collects, you can feel even more confident in your post-concussion, return-to-sport decisions.

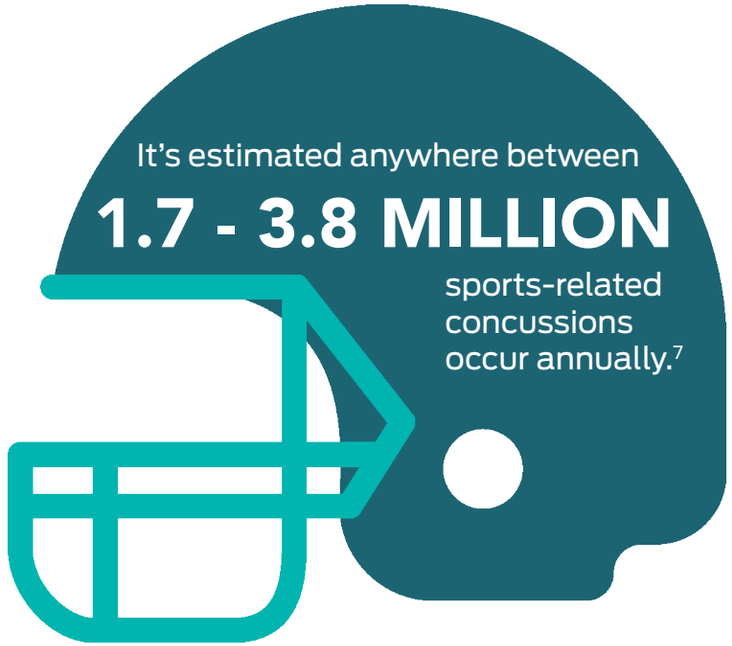
Automated BESS and SCAT3™ scoring within the SportsAT software allows you to evaluate patients consistently despite any changes in testing personnel, location, or visit dates.



BESS Scorecard in SportsAT



SCAT3 Data in SportsAT



Balance Error Scoring System (BESS)

Developed by researchers at the University of North Carolina for objective baseline and post-concussion balance testing.

Sport Concussion Assessment Tool

3rd edition (SCAT3) from the Concussion in Sports Group (CIGS) to evaluate injured athletes for concussion and collect post-event neurocognitive data.

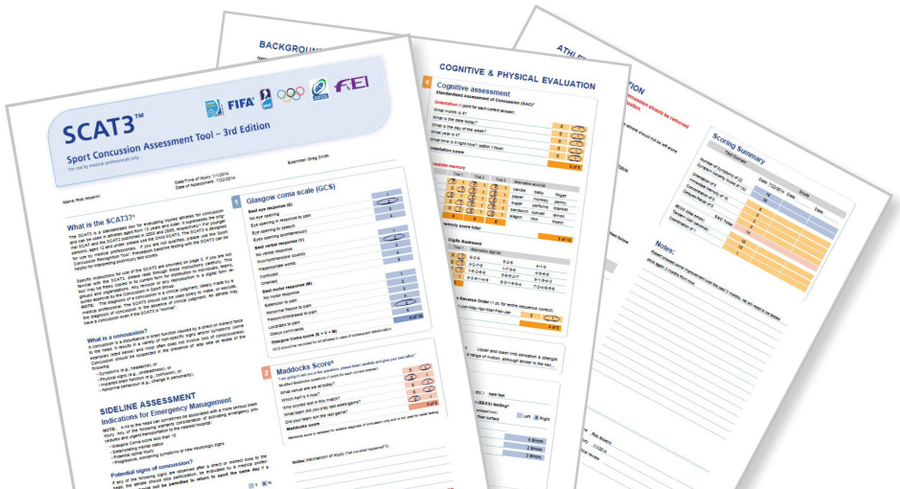
SportsAT scores as reliably as human scorers, and can therefore be used confidently by clinicians as an effective alternative in scoring the BESS test.[8]

Concussion Evaluations CONTINUED

When it comes to accurately performing concussion evaluations, the goal of SportsAT software is to eliminate the inter/intra-rater reliability problems the market faces today.

Key Software Features for Concussion Test:

- Performs objective, consistent and reliable balance error scoring independent of the tester's training and experience
- Provides easy access to your database so you can compare initial baseline testing to subsequent recordings
- Automates BESS and SCAT testing to simplify evaluations
- Generates reports for patient records



"We use the Tekscan MobileMat™ with SportsAT exclusively with all of our research projects that involve a balance assessment component. The ease of using this technology eliminates any of the guesswork usually associated with visual (manual) scoring of the BESS. We strongly feel that the information provided is accurate and reliable, as well as easily reproducible."

Thomas Kaminski, PhD, ATC, FNATA, FACSM, RFSA
Director of Athletic Training Education at University of Delaware

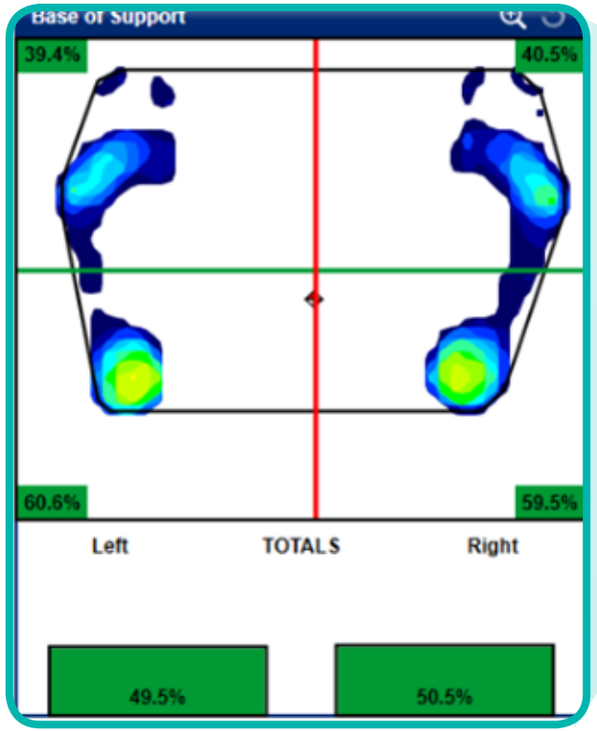
Pressure & Weight Distribution Evaluations

Typically, asymmetries in pressure and weight distribution aren't visible to the naked eye. However, in order to properly address lower-extremity issues, you'll need insight into these imbalances and how they impact a patient's normal function.

With SportsAT in your tool kit, you can instantly obtain weight-bearing and pressure information to uncover bilateral asymmetries.

- Identify potential complications due to disproportionate weight distribution between left and right sides

- High pressure areas on the foot can be indicative of potential stress fractures



Use the portable MobileMat™ with SportsAT software to detect pressure and weight asymmetries that may not appear during observational evaluations.

Additional Resources

Visit **www.Tekscan.com/Medical** to Download these Free Resources

WHITEPAPER

Learn more about Time-to-Boundary (TTB) and how you can use it to objectively assess and manage chronic ankle instability.

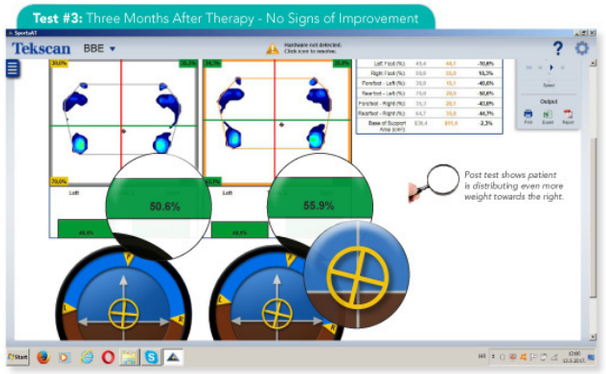
E-BOOK

How do you know when someone has reached or returned to peak performance?

Download this eBook to explore objective tools available for insight into Gait Analysis, Balance and Stability, and Sports Performance.

CASE STUDIES

View two different case studies in which clinicians use SportsAT data to inform treatment plans, tailor rehab programs, and improve outcomes.



SportsAT data in action! In this case study, a clinician was able to modify treatment plans after a patient showed no signs of post-rehab improvement.

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Conclusion

Whether you're faced with pre/post-surgery patients, the elderly at risk of falling, people recovering from injuries, high-level athletes, or weekend warriors who shoot hoops at the local court, you can use the **SportsAT System to objectively and consistently evaluate these populations.**

By providing unmatched data and quantitative measurements, SportsAT can transform the way you see patients, thereby enhancing treatment outcomes and improving patients' lives—which is what truly places you a **step above the rest.**

Visit ***www.tekscan.com/medical*** or call 1.617.464.4282 for more information.

Tekscan™