Accelerate the Path to Peak Performance

Transforming clinical and research evaluations through pressure measurement systems

Tekscan™

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Tekscan™

Introduction

Accelerate the Path to Peak Performance

The ways in which we depend on our lower limbs are innumerable. Whether you are an athlete training for a goal, a patient recovering from surgery or just trying to recover from an injury set-back, everyone wants to operate at the highest functioning physical level possible.

But the question remains, how do you know when someone has reached or returned to peak performance? How can you effectively enhance your comprehensive evaluations and treatment programs?

In this eBook, you will learn more about the tools available for insight into **Gait Analysis**, **Balance and Stability**, and **Sports Performance**.

Drive your Decisions with Data Using Tekscan's Objective Measurement Tools

Whether in clinic or in a lab, Tekscan offers several solutions that provide information that:

- You can trust. It's research validated technology.
- Is simple to understand and easy to access. With a few clicks of a button, you see intuitive results.
- Tracks progression over time. Comparing data sets is simple, whether you are looking pre/post treatment or over multiple samples for a research study.

Boost your confidence in your treatment or validate data/treatments with objective measurement tools.

Gait Analysis

Keep Moving in the Right Direction

Gather accurate, comprehensive gait timing and plantar pressure data

Gait issues may indicate underlying health problems, which is why it's critical to identify and address any abnormalities and asymmetries. Gait analysis systems range from traditional methods (observation with the naked eye) to technology solutions such, as force plates or motion capture systems.

Most people take for granted the motion of walking, but gait is very complex. These small movements happen rapidly. With a Tekscan solution, you can immediately determine if asymmetries exist, evaluate gait timing and segment the individual motions (heel strike, midstance, etc.) to optimize the movement.

Make the best decisions based on objective data

It is important to use an objective means of analyzing gait to eliminate errors due to human observation. Designed with both clinician and patient in mind, Tekscan's software is easy-to-use and allows for quick comparison of pre/post-conditions to monitor treatment progression.

"I use [the F-Scan] to perform running analyses to perform running shoe and orthotic prescription in long distance runners… I look at the different 3-box plot analyses and center of pressure to determine how they run. After I perform a running shoe and orthotic prescription that will transfer their center of pressure faster during the stance phase. The main advantage is that we can look at kinematic variables in free-living (functional) tasks without restricting the subjects to the area of the force plates."

Alexis Ortiz , PT, PhD, SCS, CSCS, FACSM

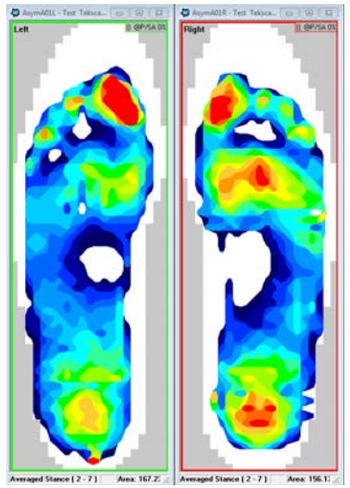
Gait Analysis

Keep Moving in the Right Direction

Automated calculations allow you to quickly interpret data for valuable insights

Identify High Pressure

Quickly identify areas of the foot with high pressure (red areas)



Gait Timing Insights

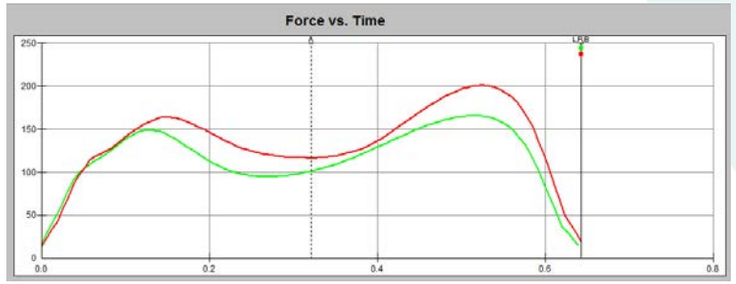
Easily view timing information and bilateral comparisons in the gait cycle

Gait Cycle Table (sec)	Subject1		
	Left	Right	R-L Diff
Gait Cycle Time	1.48	1.48	0.00
Stance Time	1.00	1.02	0.02
Swing Time	0.48	0.46	-0.02
Single Support Time	0.43	0.45	0.02
Initial Double Support Time	0.26	0.32	0.06
Terminal Double Support Time	0.32	0.26	-0.06
Total Double Support Time	0.58	0.58	0.00
Heel Contact Time	0.73	0.80	0.07
Foot Flat Time	0.56	0.45	-0.11
Midstance Time	0.45	0.48	0.03
Propulsion Time	0.27	0.21	-0.05
Active Propulsion Time	0.01	0.03	0.03
Passive Propulsion Time	0.26	0.31	0.05

Pinpoint Gait Cycle Issues

Easily and visually identify asymmetries in forces

(Notice right side, indicated by the red curve, has significantly higher forces)



Gait Analysis

Keep Moving in the Right Direction

Trusted proven solutions

Tekscan has a portfolio of products that address gait analysis applications.

Strideway™

- Low-profile platform that captures multiple footsteps in a single pass
- Measuring parameters that provide a 3-dimensional analysis of the gait cycle

Strideway

F-Scan™

- Ultra-thin, flexible sensors placed inside the shoe
- Provides detailed information about what's occurring inside footwear

F-Scan

Balance and Stability

Develop Control from the Ground Up

Improve balance, increase agility, develop muscle tone & treat a variety of pathologies

There are a wide assortment of balance tests used in clinical practices and research. Balance and stability are critical factors to evaluate injury prevention or fall risk assessments, but are also essential factors to monitor during the rehabilitation process. However, collecting objective and repeatable balance information that is simple to understand for the patient and clinician can be challenging.

Make the best decisions, based on objective data

It's important to use objective methods for analyzing balance to eliminate or reduce the common rater error/bias seen in visual observation. Designed with both clinician and patient in mind, Tekscan's software is easy-to-use and allows for quick comparison of pre/post-conditions to monitor treatment progression.

Balance Simplified

Tekscan's intuitive software provides a simple display to easily see:

- Weight-bearing information. Real-time immediate feedback helps patients during rehab training.
- Improvements in balance, strength, and weight bearing. Quickly compare pre/post videos to monitor progress.
- Indications that a player might not be ready to return to sport after a concussion or injury. Compare against baseline measures to monitor improvement.

Reduce Rater Error and Bias

According to Brenton-Rule, et. al., using one of our automated systems reduces the rater error, 'due to postural sway values being captured by the measuring system and not the examiner, rater error and bias, which may be present in non-computerized tools, such as the swaymeter, was minimized'.[1]

[1.] Brenton-Rule, A., et. al. 2012. 'Reliability of the Tekscan MatScan Systems for the Measurement of Postural Stability in Older People with Rheumatoid Arthritis.' Journal of Foot and Ankle Research (August).

Balance and Stability

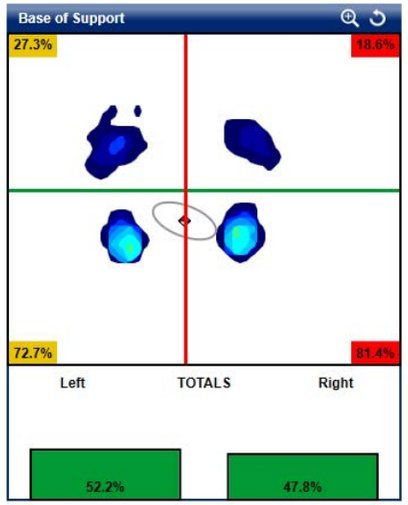
Develop Control from the Ground Up

REHABILITATION – INJURY PREVENTION – FALL PREVENTION

Weight Bearing

Quick insights into asymmetries with weight bearing information

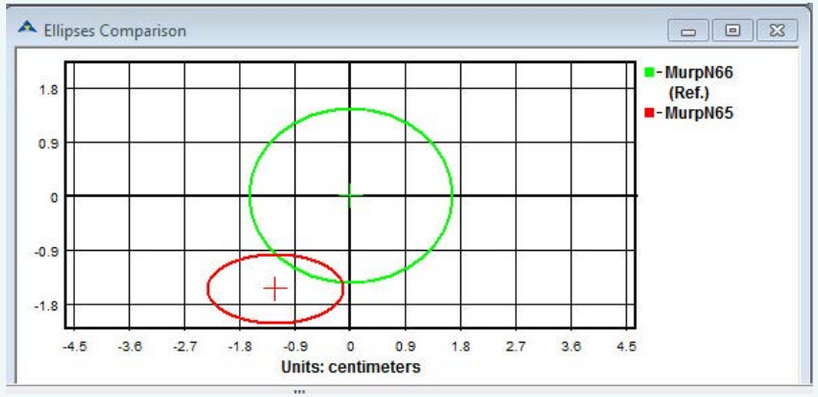
Automated time-to-boundary calculations simplify ankle instability evaluations



Stability Assessments

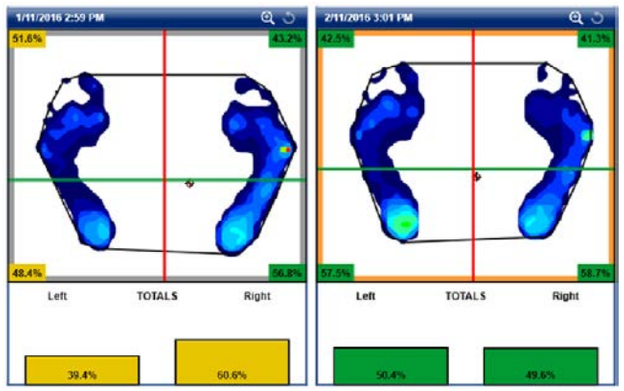
Evaluate progress in stability and monitor for improvements with area and distance of sway in the elipse

(Note how the green elipse has shifted closer to center line – indicating patient is more stable)



Asymmetries

Measure and record data over time to evaluate effectiveness of programs or treatment



Progression Tracking

Tables provide pre/post comparisons for CoF values

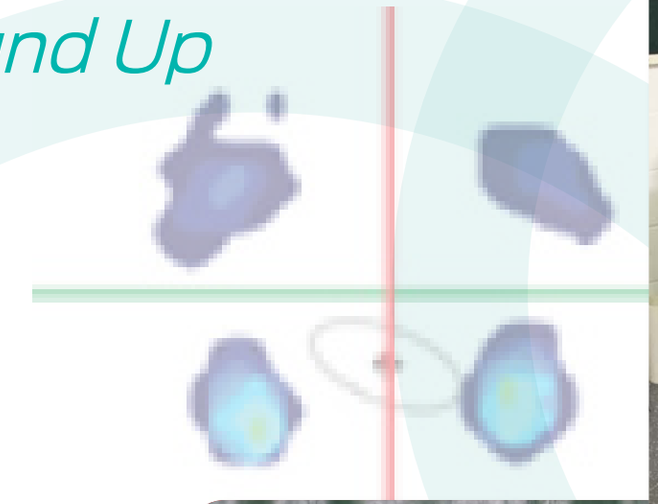
Summary			
Length of CoF Path (in):	9.99	9.85	-1.4%
95% Confidence Area (in²):	0.39	0.36	-6.4%
Base of Support Area (in²):	170.0	162.1	-4.7%
CoF Excursion F-B (in):	1.26	0.99	-21.8%
CoF Excursion L-R (in):	0.73	0.44	-39.4%
CoF Frame Variance (in):	0.0001	0.0001	-10.5%

Balance and Stability

Develop Control from the Ground Up

Collect objective data, stabilize your results

Tekscan's pressure measurement mats are designed to perform an objective and complete balance assessment in minutes… every time.



MobileMat

SB Mat

MobileMat™

- A portable mat that can travel with you for testing on and off the field

SB Mat™

- A portable, durable platform with a large surface area for dynamic testing

Sports Performance

Return-To-Play Decisions with Data

Gain unmatched insight into athletes' biomechanics and balance

Your athletes need to train and compete at peak performance…so do the tools you use to evaluate their progress. Athletes are always mentally ready to compete, but are they physically? Quick, objective data needs to be efficiently and effectively collected in a dynamic environment where every second can make a difference.

High Performing Systems

Tekscan systems provide insights into:

- Dysfunctions in the gait cycle
- Return-to-play decisions following injuries
- High pressure areas on the foot potentially indicative of stress fractures
- Ineffective treatment programs
- Disproportionate pressures and forces
- Asymmetries in weight distribution which might go unseen otherwise

Make the best decisions based on objective data

"We use the Tekscan MobileMat with SportsAT exclusively with all of our research projects that involve a balance assessment component."

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

Sports Performance

Return-To-Play Decisions with Data

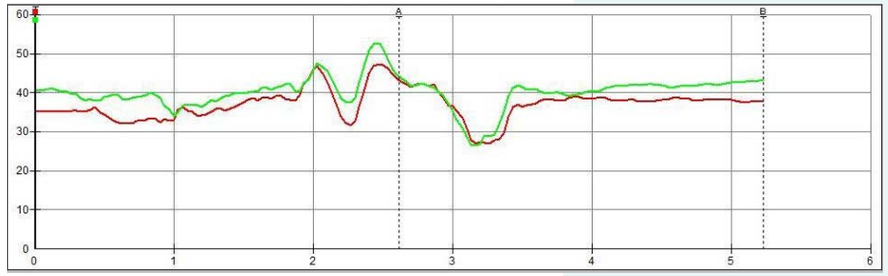
Simple ways to look at complex data

Tekscan offers several solutions to collect dynamic data objectively through balance and sports activity.

Let objective data drive your decisions

Injury Risk Assessments

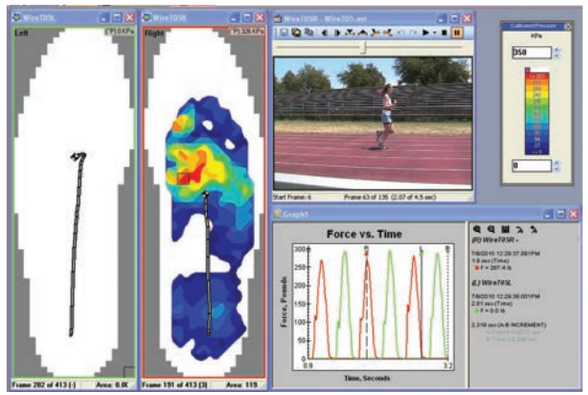
Easily identify asymmetries between left and right sides during squatting and other functional movements



Accurately evaluate ankle instabilities and lower extremity injuries

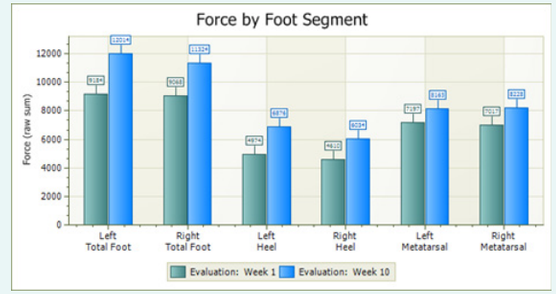
Optimized Data Analysis

Seamlessly synchronize with other technologies to analyze different kinds of data for the same activity side-by-side

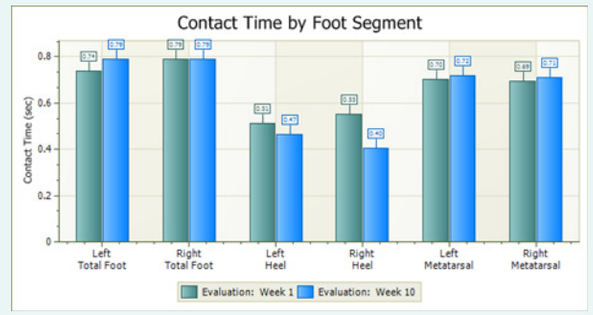


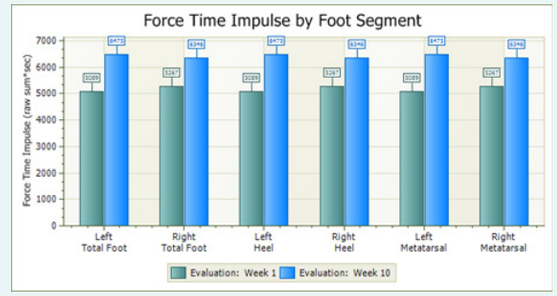
Documentation & Education

Educate and increase compliance by showing pre/post-comparisons



Quickly and easily develop reports for documentation or referring physicians





Sports Performance

Return-To-Play Decisions with Data

Your athletes don't settle, neither should you

Tekscan offers several solutions designed to meet your needs both on and off the field.

SportsAT

SportsAT™

- SportsAT offers unlimited possibilities for lower extremity injury assessments

SB Mat

SB Mat™

- A large active sensing area making it ideal for dynamic movements like squatting, hopping and take-off assessments

F-Scan

F-Scan™

- Ultra-thin, flexible sensors placed inside the shoe to optimize footwear and/or insoles

Conclusion

Tekscan provides accurate information empowering clinicians and researchers to increase the validity and effectiveness of your services and/or research. Regardless of which system you choose, you are obtaining accurate, repeatable data for a broad range of tests and insights.

- Data you can trust – Backed by research
- Versatile use for many evaluations
- Accurate, repeatable, objective data

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

Tekscan™