VESTIBULAR technologies

HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

Printed in the United States of America

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Welcome to the Vestibular Technologies Products Catalog

Again this year, like it is becoming our custom, we are introducing new and exciting products to keep offering our customers the best complete solutions for screening, diagnosing, and/or rehabilitating patients that suffer from dizziness, balance problems, vestibular disorders, hearing loss, and vision deficits … all reflecting our company focus on old fashioned customer service and support coupled with cutting edge technology.

We are also pleased to announce that we moved our headquarters, research and development, manufacturing, and product support to a new facility in Wyoming, and our sales, accounting, and administration to Southern Illinois. These two central locations allow us to better serve our customers throughout North America.

Among the products introduced in this catalog are:

- A new **VENG 20/20®** package combining easy to use, cutting edge, easy to carry products for your electrooculographic and nystagmographic diagnostic testing, and consisting of:
  - **VAT®**, a unique electrode-based hardware and software for the acquisition, analysis and plotting of horizontal and vertical vestibulo-ocular reflex (VOR);
  - **ENG*Plus*™** allowing you to investigate your patient's saccadic gaze, tracking ability, and optokinetic, positional, Hallpike and caloric response nystagmus. It includes a full surround optokinetic stimulator and a self-calibrating, green laser diode oculomotor tracker;
  - **VarioAir™**, the finest bi-thermal air caloric irrigator you can buy, very easy to use and featuring an extremely precise temperature control and an exact dosage of airflow.

- An improved version of our **CAPS™** (Patent Pending), to quickly and easily screen and identify persons who may be at increased risk of falling, have hearing losses, vision deficits, and/or abnormal body mass indices. We improved our **force platform**, to make it the most accurate and sensitive on the market, and to make the hearing screening faster, we have added the **Echocheck™**, a portable, hand-held otoacoustics emission tester.

While this catalog contains a great deal of information about our products, please feel free to contact us for more information. We will gladly assist you in selecting the solution that best satisfies your needs.

At Vestibular Technologies we value our customers.
Thank you for considering us and our products.

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HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

Our Company

We are a closely held manufacturer and distributor of innovative, cutting-edge medical products designed to be used in the identification, assessment, diagnosis and treatment of dizziness and balance disorders and in helping prevent falls. In connection with the sale of our products, we also provide extensive training in the identification, assessment and treatment of balance patients.

The company was founded in the spring of 1996, starting business as a medical products distributor, marketing products manufactured by others. Five years later, in early 2001, we decided to shift our focus to the research, development and manufacturing of our own innovative, patented products - products that would not be available anywhere else in the world. The CEO of the company disagreed with that philosophy and left to form a new distribution company.

The company was then reorganized, and Bob Henderson, J.D. was named as CEO, Guido Pagnacco, Ph.D. became VP/Engineering, and Elena Oggero, Ph.D. became VP/Research & Development. In 2002 we obtained our Establishment Registration with the FDA and we then began manufacturing an exciting new series of FDA Listed products, all based on our unique, patented 3-component force platform. Making that transition has provided us with the flexibility to meet the ongoing, ever changing needs of our customers and to better serve the many millions of people who have balance problems. To better serve our customers' needs and to accommodate our growing business, in late 2003 the company moved its headquarters, research and development, manufacturing, and product support to a new facility in Wyoming, and its sales, accounting and administration to Southern Illinois.

In 2002 we witnessed the beginnings of a nationwide effort to address and to prevent the tragedy of falls among older Americans:

- the CDC and NSC began to publicize the **staggering cost of falls** and to advance the premise that **as many as 50% of falls can be prevented**;
- a bill to address the prevention of falls (The Elder Fall Prevention Act of 2003, S. 1217) was introduced in the United States Senate;
- a study released by the University of North Carolina-Chapel Hill pegged the annual cost of accidents at home at over $380 billion per year, and said that **falls were the number one cause of such accidents**;
- a **Clinical Practice Guideline** released by a joint committee of the American Geriatrics Society, British Geriatrics Society and American Academy of Orthopaedic Surgeons began to receive widespread recognition. That Guideline recommends that **all physicians routinely assess all older patients for risk of falling**.

Clearly, helping to prevent falls among older persons is a "hot" topic that will be at the forefront of medicine for the next several years. And Vestibular Technologies has the **only** product made (CAPS™) (Patent Pending) that **can identify a person who is at increased risk of falling in less than 60 seconds**, providing the clinician with immediate, quantified, age-based norms and automatically "flagging" patients who fail the balance test, calling the physician's attention to that patient's problem so that the physician can decide if further assessment is needed.

The CAPS™ even reminds physicians of usual and standard medical protocol in such cases by either automatically generating outside referral forms or internal scheduling reminders for focused history, visual acuity testing, audiometric testing and physical evaluation. Using our CAPS™ and applying our new paradigm (Patent Pending) allows the physician to make an informed medical decision about the proper clinical pathway for each individual patient.

We are also pleased to announce that beta testing of the latest, radically different versions of our BalanceTRAK® computerized posturography diagnostic system is almost complete. Those products will be followed by RehabTRAK™, our new patient rehabilitation product that combines both biofeedback and retraining protocols. And because all these products use the same hardware, our customers will be able to progress from screening to assessment to diagnosis to rehabilitation by simply upgrading their software!

We pride ourselves on the superior quality and the high tech features of our products, on our flexibility in assembling components and packages to provide the products that meet our customers' individual needs, and on the great value we provide. Unlike our competitors, we invite our prospective customers to "shop around" and compare features, services, and overall value, because **we know that no other manufacturer or distributor can match what we deliver to our customers**.

But when prospective customers shop around, we caution them to carefully consider and then check out with independent experts what they are told about such things as reimbursement rates and multiple billing of CPT codes, because it is their livelihood and reputation (and even their personal liberty) they will be risking if they follow bad advice and improperly bill Medicare and others.

For example, some sellers of video nystagmographic equipment advise prospective customers that they can bill CPT 92547 when using video. But according to an opinion of the CPT Coding Section of the AMA, CPT 92547 cannot legally be billed when using video. It can only be billed when an electrode based system is used.

Our mission statements reflect our commitment to you and your patients:

- *to improve the quality of life of elderly persons by developing and marketing products and services aimed at identifying, assessing, diagnosing and treating conditions affecting balance and equilibrium, thereby helping prevent falls*
- *to provide health care professionals with comprehensive solutions to help them identify persons with an increased risk of falling and/or balance disorders, to diagnose the specific conditions and origins of such problems, and to implement and manage appropriate rehabilitation therapies to help improve the quality of life of such persons*

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Our Products

CAPS™

The world's best practice and income builder! The only product in the world that allows any entry-level employee to assess the patient's risk of falling in less than 60 seconds!

Component	Description
ScreenTRAK™ [Part # WS1B; WS1V; WS1H; WS10]	Our unique, comprehensive, user friendly software that allows you to quickly and easily assess and identify persons who may be at increased risk of falling, have hearing losses, vision deficits, and/or abnormal body mass indices, and immediately obtain quantified, printed results in usually 3-5 minutes per patient.
Three Component Force Platform [Part # P31D]	Our unique, patented, plug-&-play, self-leveling, truly portable, automatically-calibrating, 3-component force platform, powered just by the computer via a USB connection.
Foam Cushion [Part # PF10]	The companion of our force platform, used to provide a non-compliant surface so that you may obtain a better evaluation of a patient's ability to maintain balance by isolating and testing the patient's vestibular function.
Force Platform Carrying Bag [Part # BP10]	The custom designed bag for carrying around our three component force platform and foam cushion.
NEW EchoCheck™ Otoacustic Emission Test Equipment [Part # AH1E]	A hand-held, easy to use otoacustic emission test equipment allowing you to administer hearing screening. Each ear is tested independently, and the screening takes only about 15 seconds per ear. The results are presented in a pass-fail type score for each ear.
HistoTRAK™ [Part # WH10]	Our new, easy to use patient history software, designed with a multi-disciplinary focus on the factors often present in connection with balance disorders, hearing loss, dizziness, vertigo, tinnitus, and falls.

VENG 20/20®

Our portable, easy to use, electrooculographic equipment to assess your patient's vestibular functions, and document their horizontal and vertical vestibulo-ocular reflex, saccadic gaze, tracking abilities, and optokinetic, positional, Hallpike and caloric nystagmus

Component	Description
VAT® system Vestibular Autorotation Test [Part # NE1V]	The VAT®, manufactured for us by Western System Research, is a unique electrode-based hardware and software for the acquisition, analysis and plotting of horizontal and vertical vestibulo-ocular reflex. In the laptop configuration, it is a truly portable system with its own padded carrying case.
ENG*Plus*™ Electronystagmography [Part # NE1E]	The ENG*Plus*™ complements the VAT® and allows you to investigate your patient's saccadic gaze, tracking ability, and optokinetic, positional, Hallpike and caloric (if you purchased the caloric irrigator) nystagmus, with a full surround optokinetic stimulator and a self-calibrating, green laser diode oculomotor tracker.
VarioAir™ Bithermal Air Caloric Irrigator [Part # AN1I]	Vestibular Technologies is an authorized distributor for the ATMOS VarioAir™, the finest bi-thermal air caloric irrigator you can buy, very easy to use and with an extremely precise temperature control and an exact dosage of airflow.

Other

Product	Description
BalanceTRAK® [Part # WB30]	If you are interested in quantifying a patient's sway, fall risk, and limits of stability and comparing the results to standards then our BalanceTRAK® is the right tool for you.
Training [Part # AT2D]	At Vestibular Technologies we take great pride in including in our standard package the finest, most comprehensive training and support available, including onsite equipment unpacking, installation and setup, two consecutive days of onsite training in all aspects of vestibular assessment, equipment usage, testing techniques, test interpretation, vestibular disorders and diagnosis, 90 days of technical support., and 90 days of instructional assistance with interpretations.

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Publications

Journal Articles

Girardi M, Konrad HR, Amin M and Hughes LF (2001) "Predicting Falls Risks in an Elderly Population: Computer Dynamic Posturography vs. Electronystagmography Test Results", *Laryngoscope*, 111:1528-1532

Amin M, Girardi M, Konrad HR and Hughes LF (2002) "A comparison of ENG results with posturography findings from the BalanceTrak 500", *Otology and Neurotology*, 23(4):488-493

Girardi M, Amin M, Konrad HR, Hughes LF, Hock L, and Jones K (2002) "Medical Profile of a Group of Elderly Fallers," *Otology and Neurotology (accepted for publication)*

Conference Proceedings

Amin, M., Girardi, M., Konrad, H.R. and Hughes, L.F. (Feb. 20-24, 2000) "Clinical Application of the BalanceTrak 500", *ARO Midwinter Meeting, St. Petersburg Beach, FL*

Amin, M., Girardi, M., Konrad, H.R. and Hughes, L.F. (April 26, 2000) "Clinical Application of the BalanceTrak 500", *SIU-SM Combined Research Symposium, Springfield, IL*

Amin, M., Girardi, M., Konrad, H.R. and Hughes, L.F. (May 13-14, 2000) "A comparison of ENG results with posturography findings from the BalanceTrak 500", *American Otological Society Meeting, Orlando, FL*

Amin, M., Girardi, M., Konrad, H.R. and Hughes, L.F. (Sept. 24-27, 2000) "Normative Data for the BalanceTrak 500", *American Academy of Otolaryngology Head and Neck Surgery Found. Annual Meeting, Washington, DC*

Girardi M, Konrad HR, Amin M and Hughes LF (Jan. 19-21, 2001) "Predicting Falls Risks in an Elderly Population: Computer Dynamic Posturography vs. Electronystagmography Test Results", *Middle Section of the Triological Society, Chicago, IL*

Girardi M, Amin M, Konrad HR, Jones K, and Hughes LF (Feb. 4-8, 2001) "Can a sport that requires balance skills (sail boarding) improve equilibrium for older adults?", *Association for Research in Otolaryngology, St. Petersburg, FL*

Girardi M, Amin M, Konrad HR and Hughes LF (May 12, 2001) "Medical Profile of a Group of Elderly Fallers", *American Otological Society, Palm Dessert, CA*

Amin M, Krishna S, Girardi M, Konrad HR and Hughes LF (Sept 9-12, 2001) "CDP-Determined falls risks for patients with BPPV", *American Academy of Otolaryngology Head and Neck Surgery Foundation Annual Meeting, Denver, CO*

Girardi M, Amin M, Neill ME and Konrad HR (March 14-16, 2002) "Utilizing ENG and Posturography in Treating Elderly Balance Disorder Patients" *American Auditory Society, Scottsdale, AZ*

McCann M, Girardi M, Konrad, HR and Hughes LF. (May 15-17, 2002) "Vestibular and Balance Deficits and Motor Coordination Dysfunctions in Children with ADHD", *American Triological Society, Boca Raton, FL*

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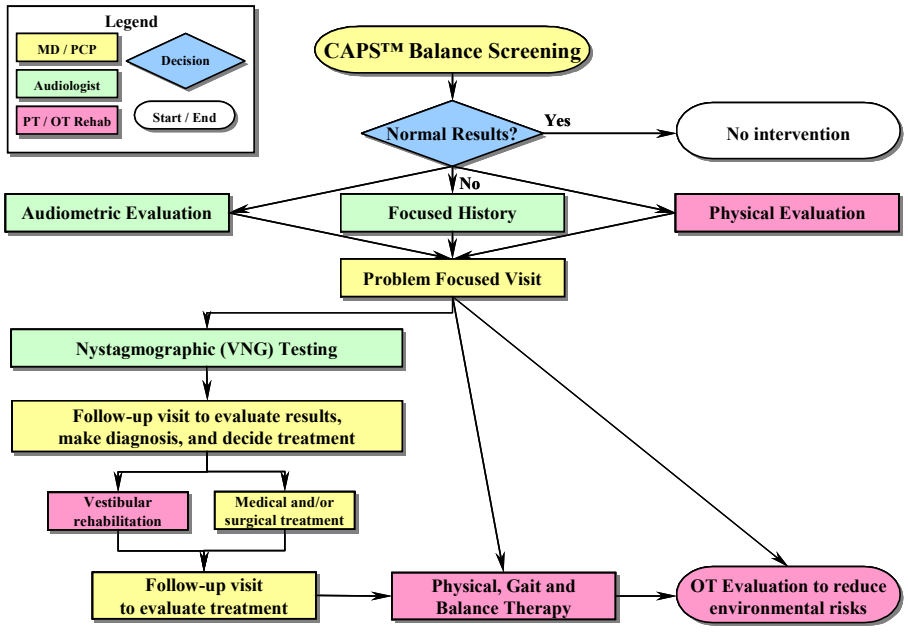
Our Effective Balance Patient Management

Balance disorders are the least understood, least treated problems addressed by the medical community. This is partly due to the fact that assessing a balance or dizziness problem is very time consuming. The information gathering process involves lengthy questionnaires and patient measurements. It is a multidisciplinary approach involving the primary care physician, the audiologist, physical and occupational therapists. The process often includes other specialists including otorhinolaryngologists (ENTs), neurotologists, and cardiologists.

At Vestibular Technologies, we have been actively involved with fall prevention and balance disorders management for many years. We have been gathering information and collaborating with several leading authorities from various universities and other health care professionals actively involved in this field. Based on this corporate expert experience, we believe we have developed an effective fall prevention, balance and dizziness management model, specifically tailored to the clinical profession, that will benefit the patient and the entire healthcare community. It is a novel treatment paradigm (Patent Pending) based on team involvement as highlighted in this flowchart.



For more information, visit our web site or contact us

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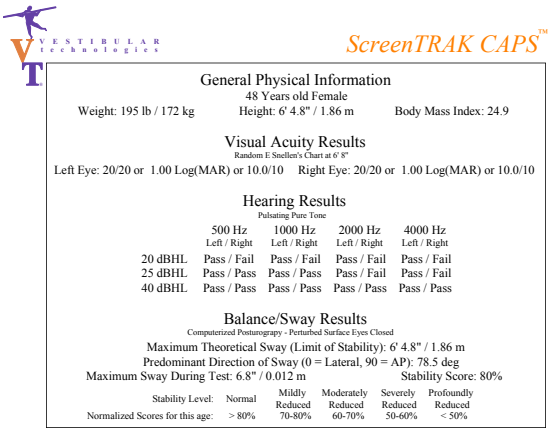
HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

CAPS™

Our brand new Comprehensive Assessment of Postural Systems ("CAPS™") system (US and foreign patents pending), incorporates exciting new cutting-edge technology including the latest ScreenTRAK™ software and the unique, patented, self-leveling, truly portable, 3-component force platform powered by the computer via a USB connection (no more messy cables and transformers!).

It is designed to allow quick and easy screening and identification of patients who may be at increased risk of falling, have hearing losses, vision deficits, and/or abnormal body mass indices, and to immediately provide you with quantified, printed results without having to use expensive specially trained personnel.

We recognize that there are many medical products and services to treat patients for balance, hearing, vision or weight problems. However "before you can *treat* them, you have to *identify* them!" And very often, you also have to make the patients aware that they actually *have* a problem. The CAPS™ is the *only* fully integrated screening product of its kind that can help you do just that while replacing the old fashioned physician's scale.



You can benefit from the CAPS™ by providing your patients with screenings for hard to detect medical conditions with a large impact on their quality of life. Just consider that, for persons age 65 and over, dizziness is the number one reason for visiting a physician, and about 11 million physician visits every year involve complaints of dizziness or loss of balance. With the CAPS™ you can help your patients and show them you care!

For its capabilities, the CAPS™ is perfect for physicians' offices, hospitals, nursing homes, chiropractors, audiologists, physical therapists and mobile screening services.

For information on the individual components of the CAPS™, see the ScreenTRAK™, the Three-Component Force Platform, and the Foam Cushion flyers.
For more information, visit our web site or contact us

Part #: PKCPB; PKCPV; PKCPH; PKCP0

The CAPS™ is perfect for ...

Hospitals and physicians' offices

To significantly increase your practice's income through increased patient visits and procedures

To provide better patient care, with documented evidence of your evaluation of your patients' balance/fall risk, hearing, vision and body mass index

To help you identify some easy to miss medical conditions that often require additional evaluation and treatment

Chiropractors, audiologists, physical therapists, and CORFs

To identify subjects who will benefit from your services

To develop an effective patient lead and referral program

To have printed evidence of post-treatment progress

Mobile screening services

For testing subjects in the field, and for identifying those in need of further medical attention

To generate patient leads and referrals by providing a free screening service that is universally welcomed by elderly persons everywhere. Take it to malls, pharmacies, senior centers, health fairs and more

As a fee-for-service program, providing nursing homes, assisted living centers, residential care homes, community living centers, etc., with valuable evidence of their programs of fall prevention screenings and identification of patients as well as evidence of residents' improvements as a result of the facility's fall prevention and other therapy programs

Nursing homes

For routine patient intake screening to provide better care, with documented evaluation of hearing, vision, body mass index, weight and balance; to help identify easy to miss medical conditions, such as balance problems, hearing loss or vision deficits that often require additional evaluation and treatment

For use in conjunction with an ongoing fall prevention program to document regular screening of residents and to obtain and maintain printed, objective evidence of their initial and subsequent evaluations and their improvements in conjunction with your program

To minimize the cost of initiating and maintaining an ongoing fall prevention program (we can also provide you with the training to help you establish one)

To help hold down the ever-escalating cost of general and professional liability insurance, litigation and damage awards and minimize the cost of regulatory sanctions

To help maximize earnings by helping to minimize the amount of income lost to patient falls and hospitalizations

To show your patients and their families that you care, that *your* facility utilizes the latest technology to help prevent falls, and that you provide important health services your competition doesn't offer

Available configurations

CAPS Base [Part # PKCPB], for screening for balance deficiencies and abnormal body mass indices

CAPS Base & Vision [Part # PKCPV], for screening for balance and vision deficiencies and abnormal body mass indices

CAPS Base & Hearing [Part # PKCPH], for screening for balance deficiencies, hearing losses, and abnormal body mass indices

CAPS Complete [Part # PKCP0], for screening for balance and vision deficiencies, hearing losses, and abnormal body mass indices. Also included are MAAMA & VEDA Individual Memberships

Add-on Components

Wall-mounted panel PC [Part # AC1P; Option # AM1W/ AM1D]with CPU and LCD monitor in the same slim housing - the perfect solution if you are looking for a fixed installation. If you have space problems in your office, you can mount it in a hallway: without taking up precious space

Standard desktop [Part # AC1D] with a small profile, high-tech LCD monitor - the ideal solution if you do not want a fixed installation, but you are planning to use the CAPS™ only in your office. You can place the monitor on a desk or a shelf, with the computer underneath, and screen your patients for hearing losses and vision deficits while they are seated, asking them to stand only while you are screening their balance. This is the perfect solution for your elderly patients

Laptop [Part # AC1L] offering you a completely portable configuration so that you can easily move your CAPS™ from facility to facility, going where your patients (or potential patients) are located instead of their having to come to you. This solution gives you the best combination because you can use it in your office just like the standard desktop configuration but you can also pack everything into its own carrying case (included in the package) and go

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HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

CAPS™ Solutions

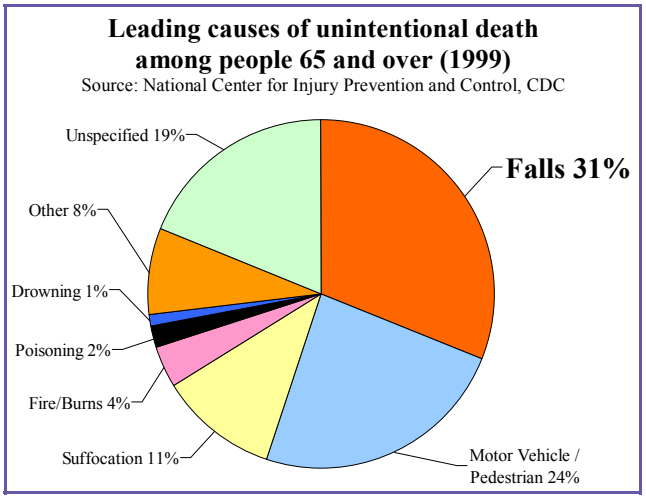
The Facts:

"Because falls patients either may not know or may not tell their physician when they have a balance problem

*... **all physicians should routinely assess all older patients for falls risk**, ...*

even if those patients exhibit no symptoms and do not complain of any balance/falls risk problems."

[New AGS/BGS/AAOS Clinical Practice Guideline]



Our Solution:

We have developed an effective fall prevention, balance and dizziness management model, specifically designed for the medical and allied medical professions, that benefits both the patient and the entire healthcare community. The model is built around the unique "virtual balance center" team described in our new **paradigm for the management of dizziness and balance disorder patients - a different multidisciplinary approach**.

And to make it easier for you to implement the first step of the paradigm, the patient's screening, we have put together a turn-key solution that includes not only the CAPS™, but also a computer and high-speed laser printer, as well as an easily moveable compact cart that lets you roll the system to wherever it is needed for patient screenings. Turn the page to see each different solution.

For more information, visit our web site or contact us.

Part #: SYSCPB; SYSCPV; SYSCPH; SYSCP0

Turn-key solutions for the CAPS™

CAPS™ Base

Patient Identification System [Part # SYSCPB], for screening for balance deficiencies and abnormal body mass index. It includes:

- CAPS™ Base (3-Component Force Platform, Foam Cushion, ScreenTRAK™ Base, and Remote Control);
- Book-sized desktop PC, with keyboard and mouse;
- 15" LCD monitor;
- Height-adjustable, compact computer cart;
- Laser printer and printer cable;
- Surge protector;
- CAPS™ Automatic Referral Form Generation Module*;
- HistoTRAK™ patient history software;
- On-site installation/training.

CAPS™ Base & Vision

Patient Identification System [Part # SYSCPV], for screening for balance and vision deficiencies and abnormal body mass index. It includes:

- CAPS™ Base & Vision (3-Component Force Platform, Foam Cushion, ScreenTRAK™ Base & Vision, and Remote Control);
- Book-sized desktop PC, with keyboard and mouse;
- 15" LCD monitor;
- Height-adjustable, compact computer cart;
- Laser printer and printer cable;
- Surge protector;
- CAPS™ Automatic Referral Form Generation Module*;
- HistoTRAK™ patient history software;
- On-site installation/training.

CAPS™ Base & Hearing

Patient Identification System [Part # SYSCPH], for screening for balance deficiencies, hearing losses, and abnormal body mass index. It includes:

- CAPS™ Base & Hearing (3-Component Force Platform, Foam Cushion, ScreenTRAK™ Base & Hearing, and Remote Control);
- Book-sized desktop PC, with keyboard and mouse;
- 15" LCD monitor;
- Height-adjustable, compact computer cart;
- Laser printer and printer cable;
- Surge protector;
- CAPS™ Automatic Referral Form Generation Module*;
- HistoTRAK™ patient history software;
- On-site installation/training.

CAPS™ Complete

Patient Identification System [Part # SYSCP0], for screening for balance and vision deficiencies, hearing losses, and abnormal body mass index. It includes:

- CAPS™ Complete (3-Component Force Platform, Foam Cushion, ScreenTRAK™ Complete, and Remote Control);
- Book-sized desktop PC, with keyboard and mouse;
- 15" LCD monitor;
- Height-adjustable, compact computer cart;
- Laser printer and printer cable;
- Surge protector;
- CAPS™ Automatic Referral Form Generation Module*;
- HistoTRAK™ patient history software;
- On-site installation/training;
- MAAMA & VEDA Individual Memberships.

*A convenient feature to help you manage your patients. When you print their CAPS™ screening results, if the patient failed any of the CAPS™ screening protocols, ScreenTRAK™ automatically generates specific referral forms, pre-printed with your name and contact information and with the names and contact information of local health care providers to whom you can send your patients (as medically necessary) if you choose to do so. If you decide to refer the patient to that specific provider for further evaluation, you just have to write the patient's name and other information, then sign and date the form.

For information on the individual components, see the CAPS™, ScreenTRAK™, HistoTRAK™, Three-Component Force Platform, and Foam Cushion flyers.

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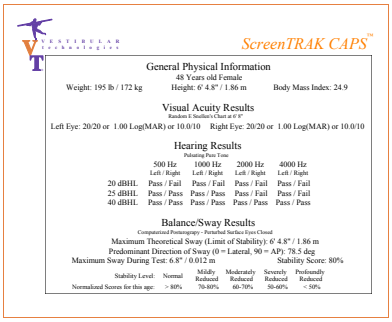
ScreenTRAK™

Our unique, comprehensive, user-friendly software that allows you to quickly and easily screen and identify persons who may be at increased risk of falling, have hearing losses, vision deficits, and/or abnormal body mass indices, and immediately obtain quantified, printed results in usually 3-5 minutes per patient.

ScreenTRAK™ offers three screening protocols, each one testing specific problems. All or any one of them may be utilized during the screening:


ScreenTRAK CAPS™

General Physical Information
48 Years old Female
Weight: 195 lb / 172 kg Height: 6' 4.8" / 1.86 m Body Mass Index: 24.9

Visual Acuity Results
Random E Snellen's Chart at 6' 0"
Left Eye: 20/20 or 1.00 Log(MAR) or 10.0/10 Right Eye: 20/20 or 1.00 Log(MAR) or 10.0/10

Hearing Results
Pulsating Pure Tone

	500 Hz Left / Right	1000 Hz Left / Right	2000 Hz Left / Right	4000 Hz Left / Right
20 dBHL	Pass / Pass	Pass / Pass	Pass / Pass	Pass / Pass
25 dBHL	Pass / Pass	Pass / Pass	Pass / Fail	Pass / Fail
40 dBHL	Pass / Pass	Pass / Pass	Pass / Pass	Pass / Pass

Balance/Sway Results
Computerized Posturography - Perturbed Surface Eyes Closed
Maximum Theoretical Sway (Limit of Stability): 6' 4.8" / 1.86 m
Predominant Direction of Sway (0 = Lateral, 90 = AP): 78.5 deg
Maximum Sway During Test: 6.8" / 0.012 m Stability Score: 80%

Stability Level:	Normal	Mildly Reduced	Moderately Reduced	Severely Reduced	Profoundly Reduced
Normalized Scores for this age:	> 80%	70-80%	60-70%	50-60%	< 50%

- Vision protocol, for testing the visual acuity using universal "tumbling E" symbols
- Hearing protocol, a pass/fail screening for hearing deficiencies according to the ANSI-ISO 8253-1:1989 standard
- Balance protocol, to assess ability to maintain balance, and conversely the risk of falling, comparing the patient's results with age and sex matched normative data. The patient's weight and body mass index (BMI) are also automatically calculated in this protocol

ScreenTRAK™ is the core of our CAPS™ product. Coupled with our force platform and standard audiometric headphones to administer the hearing protocol, it provides you with a unique tool to show your patients you care.

ScreenTRAK™ requires precise video and audio calibrations to operate properly, and in order to prevent possible software conflicts and inaccurate calibrations and results, no other applications should be installed on the same computer.

For your convenience, in addition to the usual keyword and mouse input devices, ScreenTRAK™ comes complete with an infrared USB remote control that allows you to enter data and navigate the software. This arrangement is especially useful when screening subjects who have poor equilibrium and may require steadying during the balance protocol.

For more information, visit our web site or contact us

Part #: WS1B; WS1V; WS1H; WS10

Detailed Features

General Info

Patient's information such as height, age, sex, and zip code are required to be entered to calculate and compare the patient's balance assessment results with age, height and sex matched normative data.

Vision protocol

The vision test is administered using universal "tumbling E" symbols, testing first the left, then the right eye. The software automatically adjusts the size of the screening fonts based on the size of the monitor used. It also advises how far from the monitor patients should stand for a valid procedure. The patient's visual acuity is expressed, for each eye, in "1/20", in Log(MAR), and "1/10".

Hearing protocol

The hearing test is administered using standard audiometric screening headphones and the procedures defined by the ANSI-ISO 8253-1:1989 standard. Several separate tones are emitted for each ear, at different frequencies (500, 1000, 2000, 4000 Hz), and the patients are asked to specify if they are able to hear the tones. The sound level can be customized depending on the age of the subject by choosing between three different sound level (20, 25, 40 dBHL). Pass-fail type scores for each ear are obtained for each combination of sound frequency and level.

Balance protocol

To assess patients' ability to maintain their balance, and conversely their risk of falling, patients are asked to remove their shoes and step onto the force platform where the foam cushion has been positioned to make it more difficult for them to maintain their balance. Patients then just stand quietly, with eyes closed, for 20 seconds. Since there is the risk that a patient with poor equilibrium might fall, ALWAYS be ready to assist them while administering the balance protocol.

The patient's weight and body mass index are also automatically calculated in this protocol. To ensure a correct reading, position the foam cushion on the force platform and wait at least 10 seconds before asking the subject to step on it (this will allow the plate to automatically compensate for the weight of the cushion, assuming this feature has been activated in the ScreenTRAK™ settings).

Report

A simple, easy to read report can be viewed and printed once the protocols are completed. Because the software is designed to protect patient privacy and there is no way to identify the patient, results are available for only the most recently screened patient. To keep a record of the screening outcome, you should print the report to either a local or network printer and record the patient's name and/or ID. or manually record the results in the patient's medical chart.

Software Setup

The ScreenTRAK™ software may be easily customized by changing the following settings:

- The measurement units used by the software in the on-screen instructions and in the report
- The default zip code (useful when most tests are performed in one location)
- The test protocols utilized during the screening; whether they will be mandatory for each patient; whether to proceed automatically from one protocol to the next or to allow the operator to select the order in which the protocols are utilized
- Whether to hide the mouse cursor (useful when using the remote, so the cursor does not distract the patient)
- Whether to shut down the computer when exiting ScreenTRAK™ or not
- For the vision protocol, the distance from the screen at which to position the patient (must be equal to or larger than the minimum suggested distance), the time interval between each symbol, the number of symbols presented for each test size, and how many correct responses are needed to receive a "pass" score for each test size
- For the hearing protocol, the age range for each sound level. You may decide who is tested at which of each of the three sound levels by changing the age range

Minimum System Requirements:

Microsoft Windows 98 SE, ME, 2000, XP

Intel Pentium II or Celeron

32 MB of RAM

2 USB ports, each providing 500 mA (3 USB ports or an external USB Hub if you are using your own computer)

Video resolution of 800x600 at 16k colors

20 MB of available hard disk space

Available configurations

ScreenTRAK™ Base [Part # WS1B], with balance protocol

ScreenTRAK™ Base & Vision [Part # WS1V], with balance and vision protocols

ScreenTRAK™ Base & Hearing [Part # WS1H], with balance and hearing protocols

ScreenTRAK™ Complete [Part # WS10], with balance, vision, and hearing protocols

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Doc. #: PUB-2PF-VTI_ST-Flyer; Rev. #: 1.2

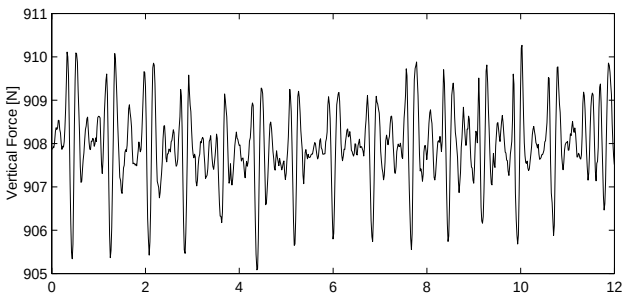
VESTIBULAR technologies

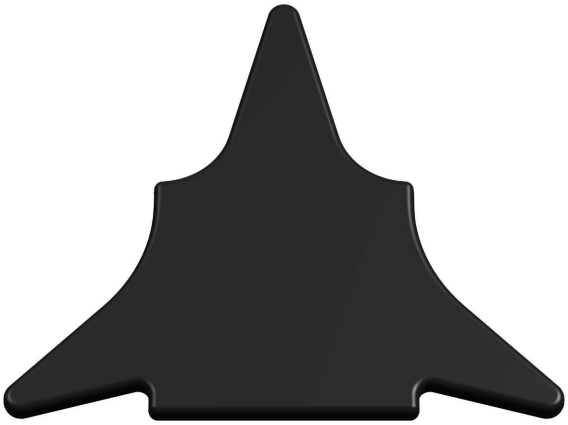
HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

Three-Component Force Platform

Our unique, patented, 3-component force platform specifically designed to work with our software products. It measures the vertical force and the two horizontal moments, yielding both the load applied to the plate and its point of application. Here are some of its features:

- Built using aerospace high-tech fiber composite material, with a weight of 6.6 kg (14.5 lb), and with a triangular shape of 0.746 m x 0.85 m (29.4" x 33.5"), it is a lightweight, truly portable force platform. It comes with its own carrying case and, unlike our competitors' metal products, it will not conduct electricity. It is splash-proof, so it can be used outdoors, and, since it is made of composite material, it will not rust. Using a high strength composite material allowed us to achieve excellent mechanical performance: 10 kN (1 ton) capacity (you can weigh your car on it), 0.1 N (0.4 oz) resolution (you can see your weight change as your heart beats)





- Its unique patented shape (U.S. Patents 6,510,749 and D447,968S, other patents pending), combining a 0.41 m (16.1") square within a larger triangle, allowed us to design a product that contacts the floor only in three points, making the force platform self-leveling, with no need for an adjustable foot to prevent rocking (unlike our competitors' products). Because it is triangular, it is always level, no matter on what surface it is used. Furthermore, it provides a larger surface for positioning the subject's feet: along the center line of the force platform, there is enough room to position one foot in front of the other, in the typical tandem position required, for instance, by the heel-to-toe Romberg Test

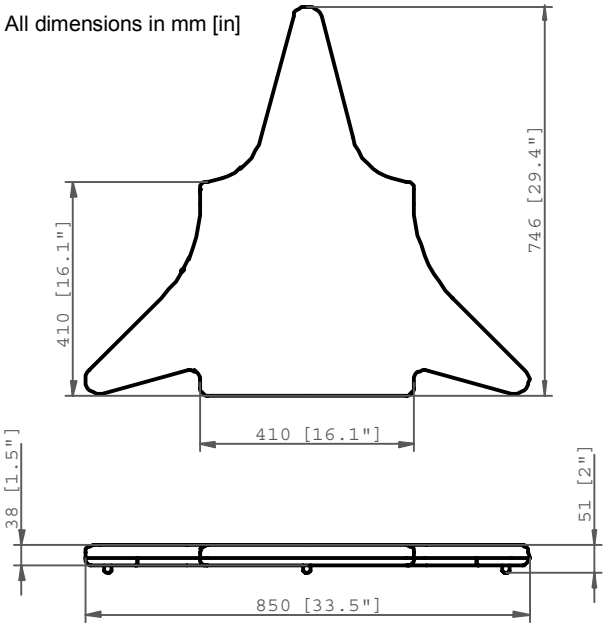
(Continued over …)

Part #: P31D

- Unlike our competitors' products, our force plate is digital, so there is no need for any additional data acquisition card. The signals go directly to the computer for processing through a USB connection, allowing the force plate to sample and transfer data using a faster rate than what is possible with a serial or parallel connection. Taking full advantage of the USB connection, the force plate is even USB powered, and requires no external power source at all. As long as it is connected to a computer that has power, our force platform will operate. And it is truly plug-&-play. Just plug in the force platform and as soon as the device is recognized and configured by the computer as a USB Device (this usually takes less than 5 seconds), it is ready to go. It does not require any lengthy warm-up, and if you accidentally unplug the platform while any of our software is running, the computer will not crash, it will simply recognize that the platform is no longer connected and warn you. And our force platform can be programmed to be self-zeroing, automatically zeroing itself in less than 5 seconds so you can be sure the instrument is always ready to collect data. Furthermore, the calibration matrix is stored inside the force platform, so you can have more than one plate yet always have the right calibration matrix

For more information, visit our web site or contact us

Technical Specifications



U.S. Patents 6,510,749 and D447,968S
Other patents pending

Property	Typical Value
Mass	6.6 kg [14.5 lb]
First Natural Frequency	220 Hz
Overload Capacity in Fz	20 kN [4500 lbf]
Operating Temperature	10°-40°C [50°-104°F]
Warm-up Time	< 60 s
Threshold in Fz	0.1 N [0.02 lbf]
Range in Fz	0-10 kN [0-2250 lbf]
Resolution in Fz	0.1N [0.02 lbf]
Accuracy	2 N [0.45 lbf]
Linearity	0.2%
Hysteresis	—
Maximum Acquisition Frequency	900 Hz
Type of Connector	USB
Supply Voltage	0-5 V DC
Supply Current	500 mA max
Power Consumption	2.5 W max

To clean the surface of your force platform, spray the top surface with mild detergent or disinfectant, and immediately wipe it clean. DO NOT IMMERSE it in any liquid, as doing so will result in permanent damage and void your warranty.

Vestibular Technologies

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Doc. #: PUB-2PF-VTI_Plate-Flyer; Rev. #: 1.1

VESTIBULAR technologies

HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

Foam Cushion

The companion to our force platform, our special foam cushion provides a non-compliant surface to allow you to better evaluate a patient's ability to maintain his or her balance by making it possible for you to isolate and test the patient's vestibular function. The foam simulates conditions such as those where patients are standing in thick grass, in sand or on thick carpet and cannot feel a firm surface under their feet.

The foam cushion is ideal for identifying proprioceptive and vestibular system problems, as well as postural muscle weakness. Patients with any of these problems have a very difficult time maintaining their balance while standing on this foam cushion, particularly once they close their eyes and shut off their visual sensory input.

Our foam cushion is very easy to use. All you do is just position it on top of your force platform, and if you have enabled the "self-zeroing" feature of your software, in just 5 seconds you are ready to test your patients' ability to maintain their balance on non-compliant surfaces.

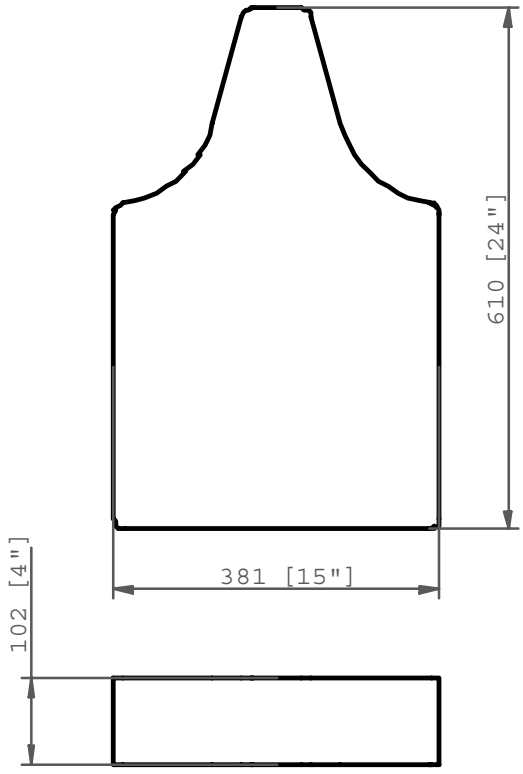
Just like our force platform, our foam cushion provides your patients with a larger surface for positioning their feet: along the center line of the foam cushion, there is enough room for patients to position one foot in front of the other, in the tandem position typically required, for instance, by the heel-to-toe Romberg Test.

For more information, visit our web site or contact us

Part #: PF10

Technical Specifications

All dimensions in mm [in]



Property	Value
Mass	1.5 kg [3.3 lb]
Cover material	Vinyl Synthetic Leather Silk Screened
Filling material	70280 Foam (Meets or exceeds requirements of California Bureau of Home Furnishings Technical Bulletin #117 Sec. A Part I and Sec. D Part II)
Operating Temperature	10°-40°C [50°-104°F]

To clean the surface of your foam cushion, spray the top surface with mild detergent or disinfectant, and immediately wipe it clean. DO NOT IMMERSE it in any liquid, as doing so will result in permanent damage and void your warranty.

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VESTIBULAR technologies

HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

Carrying Case

Our custom designed carrying case is shaped to perfectly fit our state of the art posturographic equipment - our balance platform (the new 3-component force platform) and its matching foam cushion.

Its unique triangular shape has been designed to accommodate both the force platform and the perturbing foam cushion. To reflect the high-tech feel of our balance plate, the carrying case is made of rugged, extremely durable, commercial grade ballistic nylon, with industrial strength zippers that allow it to open up completely for easy insertion and removal of the force platform and foam cushion.

For your convenience, we also added a large padded external pocket, specifically designed to accommodate the largest laptop computer currently on the market, so you can pack in one bag everything you need to do a balance screening in the field! The smaller padded pocket can be used to store the computer transformer, power cord and USB cable. The Velcro® strips on both pockets hold everything securely in place.

To make it easier to carry, our custom made case features an adjustable, removable shoulder strap that has extra padding to make it more comfortable. The case may also be carried by its convenient handle, if you prefer.

The bag is very rugged, and well padded on the top, bottom and every side, with thick foam padding for extra protection, making it ideal for safely transporting your posturographic equipment by motor vehicle, rail or air.

For more information, visit our web site or contact us

Part #: BP10

To pack your posturographic equipment into your custom made carrying case:

- **ALWAYS** put the plate in upside down so that the three feet are pointing up at you (that protects the feet).
- Put the cushion on top of the plate to prevent any movement of the plate inside the bag.
- Store the USB cable for the plate in one of the external pockets.

If traveling by air, the airline will ask you to remove the shoulder strap before checking the bag. Just unsnap it and store it in the pocket with the USB cable.

After the bag and its contents have been checked by airline security, you may want to use a small "luggage" lock to lock the zippers together and help prevent unauthorized access to the equipment.

Note: do not check the bag with your laptop stored in the external pocket of the bag (that's much too tempting to a thief).

Technical Specifications

Property	Value
Mass	1.93kg [4.25lb]
Overall dimensions	0.864m x 0.787m x 0.178m [34"x31"x7"]
Large pocket dimensions	0.381m x 0.330m x 0.051m [15"x13"x2"]
Small pocket dimensions	0.152m x 0.203m x 0.051m [6"x8"x2"]
Cover material	Shell:1050 ballistic nylon Lining: 420-nylon packcloth
Operating temperature	10° - 40°C [50° - 104°F]

To clean your carrying case, use a rag soaked in mild soap and water

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Doc. #: PUB-2PF-VTI_Bag-Flyer; Ver. #: 1.1

VESTIBULAR technologies

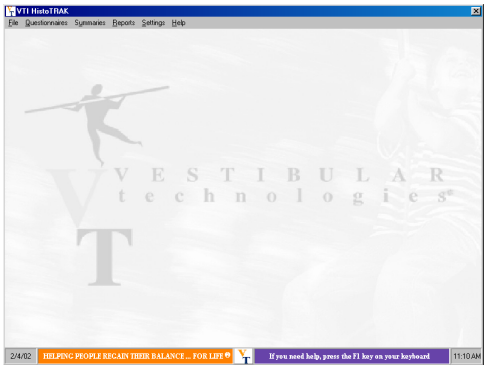
HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

HistoTRAK™

Our new, easy-to-use patient history software, designed with a multi-disciplinary focus on the factors often present in connection with:

- balance disorders
- hearing loss
- dizziness
- tinnitus
- falls

Intuitive instructions guide the user through the simple interface screens, where a series of questions is presented and an immediate check assures that all important information has been collected before proceeding to the next screen.



HistoTRAK™ simplifies and streamlines the often complex process of obtaining a proper patient history. Based on the patient's answers, HistoTRAK™ uses an intelligent built-in decision tree to dynamically present only those questions that are appropriate for that specific patient's medical history and symptoms. This allows physicians to assign the often time-consuming task of gathering and entering the data to personnel who have had only a modest amount of training.

HistoTRAK™ provides physicians with the detailed patient medical history that is essential for addressing balance disorders, dizziness, tinnitus and falls in the elderly, but that can frequently be extremely difficult, even tedious, to obtain. After all information has been recorded, a detailed summary of the data gives the physician a comprehensive picture of the health and well-being of the patient, to better formulate appropriate diagnosis and treatment.

For the patient, a report can be printed that contains tips on simple things they can do to help prevent falls and improve their overall health.

For more information, or to receive a complimentary evaluation copy of HistoTRAK™, please visit our website or contact us

Part #: WH10

Detailed Features

General Information

Patient's Information and Clinical Contacts: patient's demographic information and the following clinical contacts:

- Operator: the person entering the patient's information in HistoTRAK™
- Referred By: the physician who sent the patient
- Send Results To: the physician to receive a copy of the HistoTRAK™ reports (this can be the same as the Referred By physician, just select the same name from the drop-down box)

Physical Information: height, weight, body mass index (automatically calculated), if the patient is legally blind or deaf, physically impaired, and (depending on age and sex of the patient) if she is pregnant

Preliminary Screening: to assess the patient's spatial and temporal awareness, thus determining if they are able to continue the process alone or if they need help. If they need help and someone is readily available, fill in that person's information; if not ask the patient to come back at another time accompanied by someone who can answer the questions

General Information: if the patient uses eyeglasses, hearing aids, walking aids, or has allergies

Dietary and Other Habits: if the patient smokes, drinks coffee or alcohol, and how often and how much

General health and medical history

in connection with falling, dizziness, balance disorders, hearing loss and tinnitus**:**

Family Health History: information regarding the genetic parents and siblings

Personal Health Problems—Part I and II: a list of possible problems the patient has now or had in the past

Symptoms: symptoms relating to falling, balance disorders, hearing loss, tinnitus, and dizziness the patient experienced in the last 12 months

Risk Factors: patient's exposure to factors that could contribute to an increased risk of falling, balance disorders, hearing loss, tinnitus, and dizziness

Summaries

Pathologies Summary: for each of the pathologies that the patient has or had, when they occurred and what kind of treatment the patient received or is receiving

Surgeries Summary: for all the surgeries the patient had, hospitalization type and length, and type of anaesthesia

Hospitalizations Summary: all the hospitalizations the patient had, including date and length of stay

Doctors Summary: the list of all the doctors that the patient has seen in the last 12 months, the reason for such visit, and if still under their care

Medications Summary: the list of all the medications/ supplements the patient has taken in the last year, with reason for taking it, dosage, frequency, if prescribed by a physician, and if still taking it at present time

Additional Questionnaires

(presented only if the patient indicated related symptoms or problems)

Falls/Near Falls History and Description: information regarding each fall/near fall event in the last 12 months

Fear of Falling: with the fall efficacy score and the fear of falling score

Hearing Loss Questionnaire: to determine if the patient may need aural rehabilitation

Tinnitus Questionnaire: information to assist in better understanding the problem

Dizziness Questionnaire: symptoms and other data to help identify the cause of the dizziness

Lifestyle Questionnaire: general information to help in understanding the lifestyle of the patient and suggesting an appropriate therapy

Reports

Physician Report: a comprehensive report that includes all relevant information collected with HistoTRAK™

Patient Report: containing some tips on how to prevent falls and improve overall health

Minimum System Requirements:

Microsoft Windows 98 SE, ME, 2000, XP

Intel Pentium II or Celeron

32 MB of RAM

CD ROM to install software

Video resolution of 800x600

10 MB of hard disk to install the software, and about 100 kB of disk space per patient file

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Doc. #: PUB-2PF-VTI_HT-Flyer; Rev. #: 1.1

VESTIBULAR technologies

HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

VENG 20/20®

If you want to assess your patient's vestibular functions, documenting their horizontal and vertical vestibulo-ocular reflex, saccadic gaze, tracking abilities, optokinetic, positional, Hallpike and caloric nystagmus, then our portable, easy to use, electrooculographic equipment is the tool of your choice.

There are three components to our **VENG 20/20®** solution: the **VAT®**, the **ENG*Plus*™**, and the **Atmos VarioAir** air caloric irrigator. Depending on the type of testing you are interested in offering your patients, you can buy each component separately or bundle them together as a complete package:

- The **VAT®** allows you to quickly and easily perform vesibulo-ocular testing on location, and also makes it easy to quantify therapy outcomes. In 15-20 minutes you can test the patient's vestibular ocular reflex (VOR), while the software algorithms quickly and automatically analyze eye and head velocities to determine VOR gain and phase. And Medicare national average allowable charges are over $390 for that 15 minutes.

- For more detailed diagnostic information about your patient's vestibular and ocular motor systems, just combine our **VAT®** and **ENG*Plus*™**. In 45-60 minutes you can have detailed eye movement information, with data about both your patient's VOR and his/her vestibular and central system, with Medicare national average allowable charges totaling nearly $650.

- To get the most information about your patient's balance system, combine **VAT®** and **ENG*Plus*™** with calorics: adding an **Atmos VarioAir™ Air Caloric Irrigator** to your equipment package allows you to do bi-thermal calorics with virtually no patient discomfort. It takes just 60-75 minutes for a full battery of tests and Medicare national average allowable is over $750.

For information on the individual components of the VENG 20/20®, see the VAT®, the ENG*Plus*™, and the Air Caloric Irrigator flyers. For more information, visit our web site or contact us

Part #: PKVD1

Why sell an electrode based system?

Sometimes a prospective customer will ask us, "Why do you sell an electrode based (ENG) system? Aren't electrode systems out of date? Isn't video better?"
The answer is "No, video is not better. It's just different. And many clinicians still prefer to use an electrode system, for many reasons" Here are some of those reasons:

- **Billing and income are about $350-$400 higher** (Medicare rates) per test
- The VAT® and ENGplus™ components of our VENG 20/20® test battery sample patient data at 500Hz (which is the **ANSI standard**), while video only samples at 60Hz. Generally speaking, the greater the sampling rate, the more accurate the data.
- Eye blinks, eye makeup, contact lenses and droopy eyes often result in faulty or even non-existent data with video. Our VAT® and ENGplus™ continue to **monitor electrical polarity even if the patient shuts his/her eyes**.
- The **amount of set-up time required is essentially the same**. Electrodes can be properly placed in 5 minutes or less, and properly aligning the interpupilary distance when video is used will take about the same amount of time.
- VAT® and ENGplus™ offer **total portability**, making the systems ideal for bedside testing in hospitals and nursing homes, for multi-office use and for mobile diagnostic services. You can load the VAT® and ENGplus™ software on as many computers as you want, and you can easily change the header information for different clinics.
- **No video system on the market today can give you the accurate VOR data/test results necessary for a thorough evaluation of a patient's VOR**, including gain, phase and asymmetry.

Why our VENG 20/20® is superior to other vestibular testing products?

- **Our equipment meets ANSI standards**, which require data to be sampled at a minimum of 500 Hz. Our VENG 20/20® electrode based system samples at 500 Hz. Video samples at 60 Hz.
- **Our equipment accurately tests the vestibulo-ocular reflex** (VOR), measuring gain, phase and symmetry. Abnormal phases are equally important as gain is for diagnostic screening, because both abnormal gains and phases induce oscillopsia. In the VAT® test of the VOR the patient moves his head at speeds of between 2-6 Hz in rhythm to an alternating tone while keeping his eyes fixed on a target. The frequency range of 2-6 Hz most closely approximates normal locomotion and accompanying head movement speed in a patient's daily life. The VAT® is based on the natural VOR stimulation that results from a patient moving his/her head from side to side and up and down. The VAT® measures the factors of gain, phase, eye velocity, head velocity and eye position. **Data patterns are computed that indicate typical central or peripheral vestibular pathologies**.
- **The VAT® portion of the VENG 20/20® is well established and clinically well accepted.** The VAT® was developed in 1986 by Dr. Dennis and Linda O'Leary and their collaborators. It is now used daily in some 300 clinics throughout the world for clinical diagnostic screening, and is also used in many research applications. Dr. O'Leary was the originator of pseudorandom rotary chair testing, the use of cross-correlation and spectral analysis for system identification of VOR responses and other innovations, including combined rotary chair and optokinetic testing.
- **Monetary considerations**: the CPT Coding Section of the American Medical Association, the body responsible for the drafting, publication and interpretation of CPT Codes ruled, on September 11, 2003, that it would be inappropriate for any provider to report CPT Code 92547 if that provider was using video to conduct ENG testing. That same body had previously ruled, on July 11, 2003, that a provider who used an electrode based system and recorded and interpreted from the vertical electrodes as part of CPT 92541, 92542, 92544, 92545 and 92546 could legitimately report (charge for) CPT Code 92547 five (5) times. Using Medicare National Average Values, that means a provider can legitimately **charge over $255 more** using our system than when using a video system. In fact, our VENG 20/20® system allows providers to legitimately bill over $445 more per test with our VENG 20/20® than they can bill with video systems.

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VESTIBULAR technologies

HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

WSR VAT®

If you are you interested in offering your patients a vestibulo-ocular reflex testing, then our VAT® is the right tool for you. Manufactured for us by Western System Research, the VAT® is a unique electrode-based hardware and software for the acquisition, analysis and plotting of horizontal and vertical vestibulo-ocular reflex (VOR). In the laptop configuration, this lightweight equipment is a truly portable system with its own padded carrying case.

Vestibular Autorotation Test (VAT®) was developed several years ago as a method of accurately evaluating the vestibulo-ocular reflex (VOR). Unlike rotational chair, which can test at head speeds only up to 1 Hz, VAT® tests at head speeds of 2-6 Hz, the range of head motion speeds people use in their normal, everyday life. VAT®is now in wide use at leading clinics and universities around the globe. How important is the VOR? It's critical. There are four oculomotor systems that help maintain clear vision and consequently, balance. Three are controlled by the brain: the smooth pursuit system, the saccadic system and the Optokinetic system. The fourth one, the VOR, is controlled by the inner ear. When head motions are above 2 Hz (two back and forth motions in one second) the VOR is essential to helping you maintain your balance, because when head motions reach that speed, the brain essentially switches off the other 3 oculomotor systems and the VOR takes over. With the VAT®, the patient looks at a target and moves his/her head back and forth and then up and down in order to test the VOR.

The VAT® Is Your Choice to obtain accurate and complete diagnostic information, to monitor vestibular rehabilitation, to design a solid treatment plan, to monitor the effects of ototoxic medication, to do quick and easy pediatric screening, to use in sports medicine and quickly isolate head injuries, and to obtain objective documentation. Its main attributes are:

- High frequency (2-6 Hz) VOR test (range of normal everyday locomotion)
- 18 second active head rotation test that's simple to perform
- Unlike a rotational chair, VAT® tests both the horizontal and vertical canals
- Comfortable
- Portable
- Includes a built in report writer

For more information, visit our web site or contact us

Part #: NE1V

Why the VAT®

The VAT® component of our VENG 20/20® equipment gives clinicians absolutely essential diagnostic data that would otherwise be unavailable to them, because the VAT® accurately tests the VOR, measuring gain, phase and symmetry.

The Vestibular Autorotation Test (VAT®) is the only clinically available, accurate laboratory test of the high frequency range of the vestibular ocular reflex (VOR).

There are four oculomotor systems that help maintain clear vision and consequently, balance. Three of those systems are controlled by the brain. Those three are the smooth pursuit system, the saccadic system and the Optokinetic system. The fourth system, the vestibular ocular reflex (VOR), is controlled by the inner ear. When head motions are above 2 Hz (two back and forth motions in one second) the brain essentially "switches off" the other three oculomotor systems and the VOR takes over. It is therefore essential to be able to determine if a patient's VOR is functioning normally.

Everything but the VOR is tested by the oculomotor portion of a normal ENG test battery. Smooth pursuit is tested by having patients keep their head still while smoothly following a moving target with their eyes. Saccades are tested by having patients keep their head still while moving only their eyes from target to target (typically, the target will appear middle, then left, middle, then right etc.). Optokinetics are tested by having the patients keep their head still while trying to focus on stripes (targets) that move rapidly across the patients' field of vision, disappearing on one side and reappearing on the other.

In the VAT® test of the VOR the patient moves his head at speeds of between 2-6 Hz in rhythm to an alternating tone while keeping his eyes fixed on a target. The frequency range of 2-6 Hz was selected by the VAT® manufacturer, Western Systems Research, because it most closely approximates normal locomotion and accompanying head movement speed in a patient's daily life. For example, many (if not most) patients complain of dizziness or loss of balance when walking, bending over or quickly turning their heads.

The VAT® is based on the natural VOR stimulation that results from a patient moving his/her head from side to side and up and down. The horizontal (side to side) test stimulates response from one semicircular canal in each ear. The vertical (up and down) test stimulates response from the remaining two semicircular canals of each inner ear. The VAT® measures the factors of gain, phase, eye velocity, head velocity and eye position. Data patterns are computed that indicate typical central or peripheral vestibular pathologies.

The VAT® allows clinicians to perform high frequency (high speed) rotational testing, which in turn makes it possible for them to measure and analyze the more subtle but highly important vestibular and vestibular-ocular reflex findings that would otherwise be unobtainable.

In sum, the VAT® has 2 major advantages over other tests 1) it tests at the higher frequencies that are physiologically relevant to actual head movements in daily life, and 2) it tests both the horizontal and the vertical VOR systems, whereas "other ENG tests" address only the lateral canal (horizontal VOR) at ultra-low frequencies. Clinically, many patients show abnormal vertical VORs and normal horizontal VORs, along with normal "other ENG tests."

The VAT® portion of the VENG 20/20® is well established and clinically well accepted

The VAT® was developed in 1986 by Dr. Dennis and Linda O'Leary and their collaborators. It is now used daily in clinics (approximately 300) throughout the world for clinical diagnostic screening, as opposed to research. Dr. O'Leary was the originator of pseudorandom rotary chair testing, the use of cross-correlation and spectral analysis for system identification of VOR responses and several other innovations, including combined rotary chair and optokinetic testing. The VAT® was developed by Dr. and Linda-Davis O'Leary because no existing methods of rotary chair testing could accomplish the effective (and essential) testing of the VOR in its natural operating range, i.e., during daily life activities, where almost all movements are above 2 Hz; nor could/can a rotary chair test the vertical VOR.

"Torsion swing" tests don't measure up clinically

The "torsion swing" tests promoted by many video manufacturers and distributors, which purport to measure gain, in reality use an uncontrolled stimulus that operates at low frequencies that are well below the physiological frequencies of the VAT®, and incorporate no accurate method of recording and/or analyzing head movements. As in rotary chair tests, such torsion swing tests are also corrupted by visual influences, imagined targets and/or soporific arousal states.

Vestibular Technologies

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Doc. #: PUB-2PF-VTI_VAT-Flyer; Rev. #: 1.0

VESTIBULAR technologies

HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

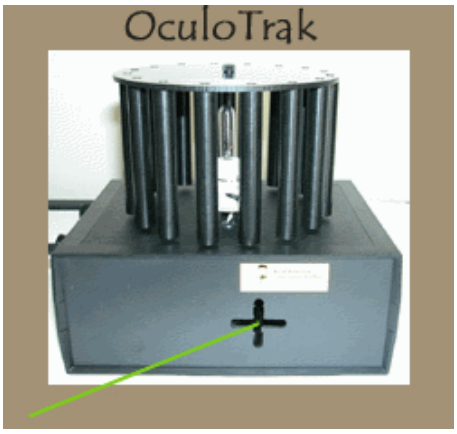
WSR ENG*Plus*™

If you want to offer your patients a full battery of vestibular testing, then you should consider our ENGPlus™.

It complements the VAT® and allows you to investigate your patient's saccadic gaze, tracking ability, and optokinetic, positional, Hallpike and caloric response (if you purchased the caloric irrigator) nystagmus, with a full surround optokinetic stimulator and a self-calibrating, green laser diode oculomotor tracker.

With our ENGplus™, you can do a complete ENG test battery, including:

- **Ocular Motor Screening/Testing**
  - **Saccadic Evaluation**, tested by having the patient keep their head still and move only their eyes from target to target (middle, left, middle, right etc.)
  - **Smooth Pursuit Tracking** tested by having the patient keep their head still and smoothly follow a target with their eyes.
  - **Optokinetic Nystagmus** tested by having the patient hold their head still while they try to focus on each of the moving stripes that are projected on the wall and move across their field of vision.
  - **Gaze Testing**



- **Positional and Positioning**
  - **6 Static Positions**
  - **3 Dynamic Positions**
  - **1 User Choice Position**
- **Caloric Testing**
  - **Reduced Vestibular Response**
  - **Directional Preponderance**
  - **Fixation Suppression**

For more information, visit our web site or contact us

Part #: NE1E

Why ENG of our VENG 20/20® system is superior to other vestibular testing products

Our equipment meets ANSI standards

ANSI standards require that data be sampled at a minimum of 500 Hz. Our VENG 20/20® electrode based ENG system samples at 500 Hz. Video samples at 60 Hz.

- The greater the sampling rate, the more representative the data
- A controversy continues to swirl around the use of video. Arguments have been made, and continue to be made, that Medicare and other insurers should not reimburse for tests that are not conducted according to ANSI standards.

Our equipment is:

- user-friendly - it even includes as standard equipment an easy to use report writer
- highly portable - we challenge you to find another system that's as portable as ours. Our VENG 20/20® runs on virtually any laptop with USB connections. You can install it on as many computers as you like, and take it wherever you like.
- competitively priced - when you consider all that we include in our standard package and all the support we provide, we're sure you'll conclude that the value we offer is far greater than what you can get from any "equipment salesperson."

Monetary considerations

The CPT Coding Section of the American Medical Association, the body responsible for the drafting, publication and interpretation of CPT Codes ruled, on September 11, 2003, that it would be inappropriate for any provider to report CPT Code 92547 if that provider was using video to conduct ENG testing.

That same body had previously ruled, on July 11, 2003, that a provider who used an electrode based system and recorded and interpreted from the vertical electrodes as part of CPT 92541, 92542, 92544, 92545 and 92546 could legitimately report (charge for) CPT Code 92547 five (5) times.

Also, a strong argument can be made that "torsion swing" tests used by most video (VNG) systems do not really test either the horizontal or the vertical VOR in conformance with the generally accepted standards and conventions for Sinusoidal Vertical Axis Rotational Testing. If so, a provider who uses such test protocols could not legitimately bill CPT 92546 at all.

All things considered, then, the additional reimbursement available to providers who use the VENG 20/20® amounts to several hundred dollars more than is legitimately billable with many video-based systems.

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VESTIBULAR technologies

HELPING PEOPLE REGAIN THEIR BALANCE ... FOR LIFE®

Atmos VarioAir™

Air Caloric Irrigator

We are an authorized distributor for the ATMOS VarioAir™, an air caloric irrigator so well made and so easy to use, we make it a part of our standard VENG 20/20® package.

The VarioAir™ is used for "dry" thermal examination of the vestibular organ by means of air. Special features are an extremely precise temperature control and an exact dosage of the air flow; with unchanged stimulation period, a constant level of the transmitted thermal energy is guaranteed. Thus, high reproducibility is achieved, making the VarioAir™ most suitable for use in all medical ranges where, for medical reasons, water cannot be used as stimulating medium or in rooms with no water connection.

Stimulation period can be preset from 1 to 99 seconds and air temperature may be adjusted to values between room temperature and 47°C.

Clearly arranged operating elements and easy operation of the VarioAir™ facilitate the vestibular examination.

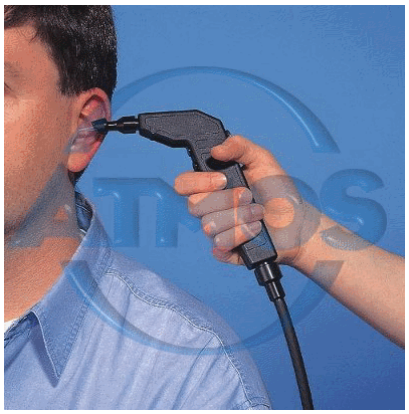
Its main features are:

- Easy handling and portability; can be used anywhere
- Clearly arranged operating elements and easy operation facilitate the vestibular examination
- High reproducibility of the stimulus
- Accurate control of the temperature
- Digital preselection of the two stimulation temperatures
- Stimulation period can be easily preset from 1 to 99 seconds.
- Air temperature may be adjusted to values between 20°C and 47°C.
- Automatic switching to standby mode
- Autoclavable tube tips to protect against infection

For more information, visit our web site or contact us

Part #: AN1I

Why choose an air caloric irrigator instead of a water caloric one?



These are just some of the advantages of using an air caloric irrigator instead of a water caloric irrigator:

- no risk of infections from nonsterile water
- no risks with tympanic perforation
- no need for a source of water
- no tanks to fill
- no water to recover after the irrigation
- no need for cleaning of tanks and tubing
- ability to visualize the tympanic membrane during irrigation

Furthermore, your patients will be less affected by the air caloric stimulation than they would be if using a water caloric irrigator. In fact, the air stimulation is more progressive and milder than water stimulation. The heat transfer from a flowing fluid to any surface is tens of times larger when the fluid is water compared to air. This can be experienced easily considering that the flow from a hair dryer, easily around 200°F, seems only warm, while water at the same temperature is scalding. For this reason, air caloric irrigators heat the endolymph of the ipsilateral horizontal semicircular canal in a slower, more progressive way than water irrigators. And a slower stimulus is less prone to get the patient too sick.

Technical Specifications

Property	Typical Value
Dimensions (H x W x D)	145 mm x 370 mm x 320 mm [5.7" x 14.6" x 12.6"]
Mass	3.7 kg [8.1lb]
Air flow	5l/min
Air temperature	between 20°C [68°F] and 47°C [116.6°F]
Lowest temperature	approximately 2°C [3.6°F] above room temperature
Temperature deviation	less than ±1°C [1.8°F]
Classification	protection class I, type B
Supply Voltage	100-240 V AC ±5% 50-60Hz
Power Consumption	80W

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