A new system available to the medical profession is the TherEx 
AT-1 Computerized Ataximeter for precise evaluation 
of posture and balance disturbances that commonly 
accompany neurological and musculoskeletal disorders. 
Manufactured by TherEx, Inc., Woodside, California, 
it is a commercial spinoff 
from a system developed for 
Ames Research Center studies of changes in posture and 
balance that occur after exposure to weightlessness, a 
potential problem of long 
duration space flight. According to TherEx president Dr. John M. Medeiros, the 
AT-1 has wide applicability 
in identifying and treating balance disturbances associated with such conditions as 
sport, orthopaedic and neuro-
ological injury, or age-
related declines in postural stability.

The AT-1 makes visible otherwise imperceptible actions of the body, enabling a clinician to establish precisely the patient's level of stability, then plan a treatment program. The system serves as an assessment tool, a 
treatment monitor and a re-
habilitation training device. It allows the clinician to doc-
ument quantitatively the outcome of treatment and to analyze data over time to de-
velop outcome standards for several classifications of pa-
tients. The AT-1 can be 
used to evaluate specifically the effects of surgery, drug 
treatment, physical therapy or prosthetic devices.

The complete system, 
shown above, includes two 
strain-gauged footplates, sig-
nal conditioning circuitry a 
computer, monitor, printer, 
and a stand-alone tiltable 
balance platform. The system 
is available in stationary and 
portable versions. The foot-
plates are shown in closeup at right above. They are four independent vertical force-
measuring transducers for measuring the pressure on the ball and heel of each foot. The footplates were separately developed by Keith H. MacFarland, president of Straindyne Engineering Company, Los Altos, California, based on his own technological expertise and 
an earlier development by the Hebrew University in Israel.

The footplates can be moved to adapt to various posture forms, such as standing with feet together, with feet in tandem, standing at ease or standing on a tilting platform. The footplates measure weight displacements that reflect the amount and direction the patient sways in forward-
backward or left-right move-
ments. A typical test se-
quence involves standing on 
a stable base, first with eyes open, then closed, followed by 
standing on the tilting 
platform with eyes open, 
then closed.

AT-1 results are displayed on the monitor in a simple graphics format. Movement of the instantaneous center of pressure over the 25-second data collection period is plot-
ted with respect to each of the four footplate quadrants. The degree of postural insta-
ability is displayed as a single number that expresses the sway pattern, allowing easy comparison of different tests. The monitor also shows the center of pressure in terms of percent of body weight, which enables comparisons among different patients with different weights.

TherEx has licensed the tech-
nology to Chattecx Corporation, Chattanooga, Tennessee for world-wide sales and 
marketing.