Computerized Dynamic Posturography (for Pennsylvania Only)

Policy Number: CS023PA.Q
Effective Date: April 1, 2026

Instructions for Use

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Related Policies
None

Application

This Medical Policy only applies to the state of Pennsylvania. Any requests for services that do not meet criteria set in the PARP will be evaluated on a case-by-case basis. Refer to Pennsylvania Exceptions, Pennsylvania Code, Title 55, Chapter 1101.

Coverage Rationale

Computerized dynamic posturography testing, also called balance board testing or equilibrium platform testing, is unproven and not medically necessary for evaluating any condition including but not limited to balance disorders due to insufficient evidence of efficacy.

Applicable Codes

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by federal, state, or contractual requirements and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Guidelines may apply.

CPT Code	Description
92548	Computerized dynamic posturography sensory organization test (CDP-SOT), 6 conditions (i.e., eyes open, eyes closed, visual sway, platform sway, eyes closed platform sway, platform and visual sway), including interpretation and report
92549	Computerized dynamic posturography sensory organization test (CDP-SOT), 6 conditions (i.e., eyes open, eyes closed, visual sway, platform sway, eyes closed platform sway, platform and visual sway), including interpretation and report; with motor control test (MCT) and adaptation test (ADT)

Description of Services

Computerized dynamic posturography, also known as moving platform posturography or dynamic posturography, uses a

platform device for evaluating an individual's ability to maintain balance. Computerized dynamic posturography has been used to measure an individual's ability to maintain balance under varying conditions when the usual cues that one relies on to remain upright, vision, proprioception, and vestibular function are manipulated. The goal of testing is to isolate vestibular symptoms to a specific cause that can often be treated. Standard diagnostic tests include electronystagmography and rotational chair tests, which evaluate eye movements in response to a number of different stimuli, including the position and rotation of the head.

Clinical Evidence

Overall, there is weak evidence in the peer-reviewed literature regarding the efficacy of computerized dynamic posturography (CDP) for evaluating vestibular and other types of disorders. There is a lack of well-designed trials to demonstrate the diagnostic utility of CDP compared with that of standard tests. Furthermore, there is insufficient evidence demonstrating consistent and beneficial effects of CDP testing on patient-relevant outcomes.

David and Shahnaz (2024) conducted a single-center randomized controlled trial with crossover that compared a rehabilitative CDP protocol, computerized vestibular retraining therapy (CVRT), with a home exercise program (HEP) in participants with confirmed unilateral vestibular deficits. There were 37 participants enrolled, of whom 20 were randomized to CVRT and 17 to HEP. Of the 17 participants randomized to HEP, 12 participants completed HEP, and 11 completed the crossover. The outcome measures included the Sensory Organization Test (SOT), Dizziness Handicap Inventory (DHI) score, Activities-Specific Balance Confidence (ABC) Scale, and Falls Efficacy Scale-International (FES-I). Participants in the CVRT group completed 12 twice-weekly sessions of CVRT in a clinic, and participants in the HEP group were given a validated exercise booklet that was reviewed and demonstrated by the principal investigator and were asked to perform the exercises twice daily for 6 weeks. After completion of HEP, participants completed assessments in the clinic and were invited to cross over to CVRT. The SOT composite score improved by 14.3 in the CVRT group, while there was no significant change in the HEP group ($p = 0.04$). There was no difference between groups in the Static Equilibrium Score ($p = 0.84$). The Dynamic Equilibrium Score improved by 20.0 after CVRT, while there was no significant change after HEP ($p = 0.04$). Both groups demonstrated improvement in all three participant-reported measures. The DHI improved by a mean of 11.8 points in the HEP group and 18.2 points in the CVRT group. ABC Scale scores improved by a mean of 8.2 points in the HEP group and 15.1 points in the CVRT group. FES-I scores improved by a mean of 6.3 points in the HEP group and 6.6 in the CVRT group. These changes were not different between treatment groups (DHI: $p = 0.26$; ABC: $p = 0.36$; FES-I: $p = 0.96$). For those participants in the HEP group who completed the CVRT protocol in the crossover, the SOT score improved after adding CVRT compared with baseline and post-HEP scores. Completing HEP alone was associated with an improved DHI and FES-I. When adding CVRT, the DHI and ABC had a significant improvement over HEP alone, while there was no significant benefit for FES-I. Limitations include the small number of participants, human error in randomization of one participant, lack of therapist supervision and customization of the control group, and higher withdrawal rate in the HEP group.

Kamieniarz et al. (2021) conducted a cross-sectional study to quantify balance changes in early- and moderate-stage Parkinson disease (PD) and compare the values with those in healthy controls (HCs) using clinical assessments of balance and posturography. Study participants included 15 adults with early PD, 15 with moderate PD, and 15 age-matched controls. Participants with PD were tested during the "ON period" of their usual antiparkinsonian medication (at least 1 hour after they took their medication), and none of the participants exhibited any dyskinesia or dystonia signs during testing. A clinical assessment was done as well as clinical tests of balance on a force platform. The authors quantified the spatiotemporal parameters of the center of pressure (COP), the sample entropy, and power spectral density of the COP. The results showed that the power spectral density of the COP differentiated PD-II from HCs from 0 to 0.5 Hz and PD-II from PD-III from 0.5 to 1 Hz. Specifically, PD-II and PD-III manifested greater power than HCs from 0 to 0.5 Hz, whereas PD-III exhibited greater power than PD-II and HCs from 0.5 to 1.0 Hz ($p < 0.05$). However, there were no significant differences between PD-II and HCs in all clinical tests and in spatiotemporal parameters of the COP ($p > 0.05$). Although the sample entropy was significantly lower in the PD groups ($p < 0.05$), entropy failed to differentiate PD-II from PD-III. The authors concluded that the low-frequency modulation of the COP in this small cohort differentiated early PD from HCs and from moderate PD and shows that there are early balance deficits in PD. This study is limited by a small number of participants.

Pilkar et al. (2021) conducted a test validation study to evaluate the probability of a robotic, posturography-based fall-risk assessment to objectively measure the risk of falls in individuals with traumatic brain injury (TBI). Five individuals with chronic TBI performed the fall-risk assessment on Hunova, which is a commercial robotic platform for assessing and training balance. The single assessment considers multifaceted fall-driving components, including static and dynamic balance, sit to stand, limits of stability, responses to perturbations, gait speed, and history of previous falls, and provides a composite score for risk of falls, called the silver index (SI), which uses a number between 0 (no risk) and 100 (high risk) based on a machine learning–based predictive model. The SI score in individuals with TBI was 66 ±32.1 (min, 32; max,

100), categorized as a medium to high risk of falls. The construct validity of SI outcome was performed by evaluating its relationship with clinical outcomes of functional balance and mobility (Berg Balance Scale, Timed Up and Go, and gait speed) as well as posturography outcomes (COP area and velocity). The bivariate Pearson correlation coefficient, although not statistically significant, suggested the presence of linear relationships ($0.52 > r > 0.84$) between the SI and functional and posturography outcomes, supporting the construct validity of the SI. Conventionally, the assessments of fall risks are based on questionnaires that might be deficient in objectivity, consistency, and accuracy. The authors found that the preliminary evidence from this study suggests that it is reasonable to use the SI for assessing the risk of falls in individuals with TBI; however, the study is limited by an extremely small sample size. Therefore, the results should be taken cautiously. Furthermore, this study did not address the clinical utility of the test in the care of individuals with TBI.

A Hayes Evolving Evidence Review (2021; updated 2023) focused primarily on the clinical validity (in terms of diagnostic performance) and clinical utility (in terms of impact on diagnostic decision-making) of CDP for diagnosing vestibular disorders. There were no studies that met the inclusion criteria. There was one systematic review published in 1996 that did not indicate any potential benefit or advantage to the individual for diagnosing vestibular disorders. There were two guidelines identified, but there was weak support for CDP for diagnosing vestibular disorders; this weak support was based on expert opinion rather than robust clinical studies.

Mallinson et al. (2019) analyzed 180 patients referred for chronic vestibular disease (persistent symptoms for more than 1 year) who received a full battery of vestibular assessments. The vestibular evoked myogenic potential (VEMP) results were correlated with CDP. CDP results were “normal” in 102 patients (57%), were “nonspecifically abnormal” in 53 patients (29%), and showed a “vestibular abnormality pattern” in 25 patients (14%). The rate of VEMP abnormalities was the same in patients with normal CDP and those with abnormal CDP. In some patients, all assessments were abnormal, but in some patients, only one assessment was abnormal, suggesting that these modalities measure different things. The authors concluded that the results show that cervical VEMP and ocular VEMP abnormalities do not correlate with CDP findings; as variables in chronically dizzy patients, they are independent of each other.

Ahmed et al. (2017) performed a study to evaluate the relation between gait parameters and postural stability in the early and late stages of PD. Overall, 41 participants with PD were divided into two groups. Group A (n = 20) was considered early-stage PD, and group B (n = 21) was considered late-stage ambulant PD. A control group (n = 18) consisted of 18 healthy, elderly participants. The participants were evaluated for postural stability by CDP device and gait analysis using an 8 m-camera Vicon 612 data capturing system set. The study results found postural instability in the early-PD and late-PD groups, with a significant decline in Composite Equilibrium Score and Unified Parkinson’s Disease Rating Scale motor part score in the early-PD and late-PD groups compared with the control group. The authors concluded that this suggests that particularly highly mobile individuals with PD benefit from visual feedback–based balance training in early PD and that CDP assists in the analysis of the functional aspects of the body imbalance, treatment, and prognosis of PD. There were insufficient data for the long follow-up effect of visual feedback–based balance training for PD.

Hebert and Manago (2017) performed a study to determine the reliability and discriminant validity of the Computerized Dynamic Posturography Sensory Organization Test (CDP-SOT) in people with multiple sclerosis (MS). The CDP-SOT was performed in 30 participants with MS. A 2-week–interval, repeated-measures design was implemented to investigate the test-retest reliability of the CDP-SOT and the ability of the CDP-SOT to discriminate between participants with lower vs higher disability. The CDP-SOT had excellent reliability for composite scores. Composite scores were significantly greater in the lower-disability group vs the higher-disability group at session 1 (70.89 vs 48.60) and session 2 (74.82 vs 48.85). The authors concluded that the CDP-SOT is a reliable measure of balance and accurately differentiates disability status in people with MS. A study limitation that was identified is the recognition that smaller sample sizes can lead to large variances in measures, prohibiting valid minimal detectable change analyses. Larger, longitudinal studies investigating clinically meaningful changes in CDP-SOT scores due to the natural course of MS and in response to treatment need to be conducted. Furthermore, this study did not address the clinical utility of the test in the care of individuals with MS.

A single-center retrospective review was conducted by Morisod et al. (2018) to look for a specific posturographic pattern among patients diagnosed with chronic subjective dizziness and to visualize improvement after vestibular rehabilitation. The study included 114 patients who underwent CDP. Overall, 62% of the assessment posturographies were abnormal. The most affected subitems were limit of stability and composite score of SOTs. In the 42 patients who had vestibular rehabilitation and postrehabilitation posturography, the proportion of abnormal posturography significantly dropped from 79% to 33%. The authors concluded that individuals with chronic subjective dizziness have a high rate of abnormal posturography but without a specific pattern. The findings of this study need to be validated by well-designed studies. Furthermore, this study did not address the clinical utility of the test.

A study was conducted by Buster et al. (2016) that compared CDP scores in individuals with TBI with those in controls to determine if CDP could differentiate between the two groups and determine if there was a learning effect associated with testing that could be used to guide evaluation of baseline balance. Ten ambulatory individuals with a history of severe TBI and 10 individuals without participated in three CDP sessions (24-72 hours apart). Individuals performed the Berg Balance Test, Dynamic Gait Index, and three trials of a standardized balance assessment during each session. Dynamic Movement Analysis scores were recorded for each test. Individuals with TBI scored 93% higher (i.e., reflecting poorer balance) than the control group. The group with TBI exhibited 6.6 times more variability than the control group. A learning effect was detected in the group with TBI on the first day of testing. The authors concluded that the CDP system detected balance differences between individuals with TBI and controls, and given the documented learning effect, the best of three trials should be used to accurately assess baseline scores. The significance of this study is limited by a small sample size and short follow-up period. Furthermore, this study did not address the clinical utility of the test in the care of individuals with TBI.

Smoot et al. (2015) conducted a feasibility study in 10 children, five with autism spectrum disorder (ASD) and five with typical development, using posturography to monitor changes following vestibular input. Each child participated in a 10-minute vestibular swing activity, with pre- and postintervention evaluations under four different sensory testing conditions. Sway ranges, mean sway velocity, sway root mean square, and sample entropy were calculated from COP data. All five children with ASD demonstrated decreased mean sway velocity in the eyes open/flat plate condition post intervention. Four of the five children with ASD demonstrated an increase in root mean square and a decrease in anterior/posterior sample entropy post intervention in the eyes closed, foam pad condition and eyes open, and flat plate condition, respectively. The authors concluded that using posturography with sensory integration warrants further investigation. This is an uncontrolled study with a small sample size. Due to limited studies, small sample sizes, and weak study designs, there is insufficient evidence to conclude that CDP is useful for evaluating any condition. Further clinical trials demonstrating the clinical usefulness of CDP are needed.

Clinical Practice Guidelines

American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS)

In a 2014 position statement, the AAO-HNS recognized that the following tests or treatments are medically indicated and appropriate in the evaluation or treatment of persons with suspected balance or dizziness disorders:

- Computerized static platform posturography
- Computerized dynamic platform posturography
- Dynamic (or moving) platform posturography
- Static platform posturography

A 2017 clinical practice guideline for benign paroxysmal positional vertigo lists computerized posturography as one of the potential tools to consider for diagnosing this condition (Bhattacharyya et al., 2017).

U.S. Food and Drug Administration (FDA)

This section is to be used for informational purposes only. FDA approval alone is not a basis for coverage.

Devices for testing vestibular dysfunction are captured in the FDA 510(k) database under Product Code LXV (Vestibular Analysis Apparatus), IKN (Electromyograph, Diagnostic), and/or Product Code KHX (Force-Measuring Platforms). Note that devices in product categories LXV and KHX are Class I, 510(k)-exempt devices. Devices in product category IKN are Class II devices, which are also 510(k) exempt. Although many manufacturers have voluntarily submitted product information via the 510(k) process, it is not a requirement. However, all manufacturers are required to register their establishment and submit a Device Listing form; these records can be viewed in the Device Listing Database. Refer to the following website for more information: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPCD/classification.cfm. (Accessed November 11, 2025)

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Policy History/Revision Information

Date	Summary of Changes
04/01/2026	**Supporting Information** • Updated *Clinical Evidence* section to reflect the most current information • Archived previous policy version CS023PA.P

Instructions for Use

This Medical Policy provides assistance in interpreting UnitedHealthcare standard benefit plans. When deciding coverage, the federal, state or contractual requirements for benefit plan coverage must be referenced as the terms of the federal, state or contractual requirements for benefit plan coverage may differ from the standard benefit plan. In the event of a conflict, the federal, state or contractual requirements for benefit plan coverage govern. Before using this policy, check the federal, state or contractual requirements for benefit plan coverage. UnitedHealthcare reserves the right to modify its Policies and Guidelines as necessary. This Medical Policy is provided for informational purposes. It does not constitute medical advice.

UnitedHealthcare may also use tools developed by third parties, such as the InterQual® criteria, to assist us in administering health benefits. The UnitedHealthcare Medical Policies are intended to be used in connection with the independent professional medical judgment of a qualified health care provider and do not constitute the practice of medicine or medical advice.