

# COMPUTERIZED DYNAMIC POSTUROGRAPHY

**Policy Number:** DIAGNOSTIC 008.19 T2

**Effective Date:** December 1, 2018

[Instructions for Use](#) ⓘ

|   |             |
|---|-------------|
| <b>Table of Contents</b>                                    | <b>Page</b> |
| <a href="#">APPLICABLE LINES OF BUSINESS/PRODUCTS</a> ..... | 1           |
| <a href="#">NON-COVERAGE RATIONALE</a> .....                | 1           |
| <a href="#">APPLICABLE CODES</a> .....                      | 1           |
| <a href="#">DESCRIPTION OF SERVICES</a> .....               | 1           |
| <a href="#">CLINICAL EVIDENCE</a> .....                     | 1           |
| <a href="#">U.S. FOOD AND DRUG ADMINISTRATION</a> .....     | 3           |
| <a href="#">REFERENCES</a> .....                            | 3           |
| <a href="#">POLICY HISTORY/REVISION INFORMATION</a> .....   | 4           |
| <a href="#">INSTRUCTIONS FOR USE</a> .....                  | 4           |

## Related Policies

None

## APPLICABLE LINES OF BUSINESS/PRODUCTS

This policy applies to Oxford Commercial plan membership.

## NON-COVERAGE RATIONALE

**Computerized dynamic posturography (CDP) testing, also called balance board testing or equilibrium platform testing (EPT), 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 the member specific benefit plan document 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 may apply.

| CPT Code | Description                        |
|----------|------------------------------------|
| 92548    | Computerized dynamic posturography |

*CPT® is a registered trademark of the American Medical Association*

## DESCRIPTION OF SERVICES

Computerized dynamic posturography (CDP), also known as moving platform posturography or dynamic posturography, uses a platform device for evaluating a patient's ability to maintain balance. CDP has been used to measure a patient's ability to maintain balance under varying conditions when the usual cues that one relies upon 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

The evidence in the published peer-reviewed medical literature examining the safety and effectiveness of CDP includes mostly older studies, some poorly designed, with inconsistent results (Morgan, et al., 2002; Di Fabio, 1996; Di Fabio, 1995). Additional evidence evaluating the use of CDP is primarily in the form of prospective and retrospective case series and validation studies with patient populations ranging from 20 to 216 (Palm et al., 2014; Ebersbach, et al.,

2011; Mockford, et al., 2010; Gouveris, et al., 2007; Mbongo, et al., 2005; Sataloff, et al., 2005; Soto, et al., 2004; Artuso, et al., 2004; Amin; et al., 2002). Studies included patients with various disorders including vertigo, vestibular schwannoma, and Ménière's disease. Overall, small sample sizes and poor study design limit the generalizability of study results. The data do not reliably demonstrate beneficial effects of CDP evaluation on patient outcomes.

Ahmed et al. (2017) performed a study to evaluate the relation between gait parameters and postural stability in early and late stages of Parkinson's disease (PD). Forty-one PD patients were divided into two groups. Group A (n=20) were considered early stage PD and group B (n=21) were considered late stage ambulant PD. A control group (n = 18) consisted of eighteen healthy elderly subjects. The individuals were evaluated for postural stability by computerized dynamic posturography (CDP) device and gait analysis using an 8 m-camera Vicon 612 data capturing system set. The study results found postural instability in early PD and late PD groups with a significant decline of composite equilibrium score and Unified Parkinson Disease Rating Scale motor part score in early PD and late PD groups as compared with control group. The authors concluded that this suggests that particularly highly mobile PD patients benefit from visual feedback-based balance training in early PD and that computerizing dynamic posturography assists in the analysis of the functional aspects of the body imbalance, treatment and prognosis of PD. There was 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 on 30 participants with MS. A 2-week-interval, repeated-measures design was implemented to investigate test-retest reliability of the CDP-SOT and the ability of the CDP-SOT to discriminate between participants with lower versus higher disability. The CDP-SOT had excellent reliability for composite scores. Composite scores were significantly greater in the lower-disability group versus 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 identified was 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.

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 (CSD) and to visualize improvement after vestibular rehabilitation. The study included 114 patients who underwent computerized dynamic posturography (CDP). Sixty-two percent of the assessment posturographies were abnormal. The most affected sub-items were limit of stability and composite score of sensory organization tests. In the 42 patients who had vestibular rehabilitation and a post rehabilitation posturography, the proportion of abnormal posturography significantly dropped from 79% to 33%. The authors concluded that patients with CSD 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.

A study was conducted by Buster et al. (2016) which compared Computerized Dynamic Posturography (CDP) scores from individuals with traumatic brain injuries (TBI) to 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). Participants performed the Berg Balance Test, Dynamic Gait Index and three trials of a standardized balance assessment during each session. Dynamic Movement Analysis (DMA) 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 compared to 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 small sample size and short follow-up period.

Smoot et al (2015) conducted a feasibility study with ten children; five with autism spectrum disorder (ASD) and five with typical development (TD) using posturography to monitor changes following vestibular input. Each child participated in a 10 min vestibular swing activity with pre- and post-intervention evaluations under four different sensory testing conditions. Sway ranges, mean sway velocity, sway root mean square (RMS), and sample entropy were calculated from center of pressure (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 RMS and a decrease in anterior/posterior sample entropy post-intervention in the eyes closed, foam pad condition and eyes open, 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.

## **Professional Societies**

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

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

- Static platform posturography
- Computerized static platform posturography
- Computerized dynamic platform posturography
- Dynamic (or moving) 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, 2017)

## **U.S. FOOD AND DRUG ADMINISTRATION (FDA)**

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. All manufacturers are, however, required to register their establishment and submit a "Device Listing" form; these records can be viewed in the Device Listing Database. See the following Web site for more information: <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPCD/classification.cfm>. (Accessed February 2, 2018)

## **REFERENCES**

The foregoing Oxford policy has been adapted from an existing UnitedHealthcare national policy that was researched, developed and approved by UnitedHealthcare Medical Technology Assessment Committee. [2018T0208Q]

Ahmed M, Mosalem D, Alfeeli A, et al. Relationship between gait parameters and postural stability in early and late Parkinson's disease and visual feedback-based balance training effects. *Open Access Maced J Med Sci*. 2017 Apr 15; 5(2):207-214.

American Academy of Otolaryngology - Head and Neck Surgery (AAO-HNS) [Internet]. Posturography position statement. Revised September 20, 2014.

Amin M, Girardi M, Konrad HR, et al. A comparison of electronystagmography results with posturography findings from the BalanceTrak 500. *Otol Neurotol*. 2002 Jul;23(4):488-93.

Artuso A, Garozzo A, Contucci AM, et al. Role of dynamic posturography (Equitest) in the identification of feigned balance disturbances. *Acta Otorhinolaryngol Ital*. 2004 Feb;24(1):8-12.

Bhattacharyya N, Baugh RF, Orvidas L, et al. Clinical Practice Guideline: Benign paroxysmal positional vertigo (Update). *Otolaryngology Head and Neck Surgery* 2017, Vol. 156(3S) S1-S47.

Buster TW, Chernyavskiy P, Harms NR, et al. Computerized dynamic posturography detects balance deficits in individuals with a history of chronic severe traumatic brain injury. *Brain Inj*. 2016;30(10):1249-55.

Di Fabio RP. Meta-analysis of the sensitivity and specificity of platform posturography. *Arch Otolaryngol Head Neck Surg*. 1996;122(2):150-156.

Di Fabio RP. Sensitivity and specificity of platform posturography for identifying patients with vestibular dysfunction. *Phys Ther*. 1995 Apr;75(4):290-305.

Ebersbach G, Gunkel M. Posturography reflects clinical imbalance in Parkinson's disease. *Mov Disord*. 2011 Feb 1;26(2):241-6.

Fife TD, Tusa RJ, Furman JM, et al. Assessment: vestibular testing techniques in adults and children: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology*. 2000 Nov 28;55(10):1431-41.

Gouveris H, Helling K, Victor A, et al. Comparison of electronystagmography results with dynamic posturography findings in patients with vestibular schwannoma. *Acta Otolaryngol*. 2007 Aug;127(8):839-42.

Hebert JR, Manago MM. Reliability and validity of the computerized dynamic posturography sensory organization test in people with multiple sclerosis. *Int J MS Care*. 2017 May-Jun;19(3):151-157.

Mbongo F, Patko T, Vidal PP, et al. Postural Control in Patients with Unilateral Vestibular Lesions Is More Impaired in the Roll than in the Pitch Plane: A Static and Dynamic Posturography Study. *Audiol Neurootol*. 2005 May 30;10(5):291-302.

Mockford KA, Mazari FA, Jordan AR, et al. Computerized dynamic posturography in the objective assessment of balance in patients with intermittent claudication. *Ann Vasc Surg.* 2011 Oct 2. Feb;25(2):182-90.

Morgan SS, Beck WG, Dobie RA. Can posturography identify informed malingerers? *Otol Neurotol.* 2002 Mar;23(2):214-7.

Morisod B, Mermod M, Maire R. Posturographic pattern of patients with chronic subjective dizziness before and after vestibular rehabilitation. *J Vestib Res.* 2018;27(5-6):305-311.

National Institute on Deafness and Other Communication Disorders (NIDCD) [Internet]. Balance disorders. January 2000. Updated April 2014.

Palm HG, Lang P, Strobel J, et al. Computerized dynamic posturography: the influence of platform stability on postural control. *Am J Phys Med Rehabil.* 2014 Jan;93(1):49-55.

Sataloff RT, Hawkshaw MJ, Mandel H, et al. Abnormal computerized dynamic posturography findings in dizzy patients with normal ENG results. *Ear Nose Throat J.* 2005 Apr;84(4):212-4.

Smoot Reinert S, Jackson K, et al. Using posturography to examine the immediate effects of vestibular therapy for children with autism spectrum disorders: A feasibility study. *Phys Occup Ther Pediatr.* 2015;35(4):365-80.

Soto A, Labella T, Santos S, et al. The usefulness of computerized dynamic posturography for the study of equilibrium in patients with Meniere's disease: correlation with clinical and audiologic data. *Hear Res.* 2004 Oct;196(1-2):26-32.

#### POLICY HISTORY/REVISION INFORMATION

| Date       | Action/Description  |
|------------|---|
| 12/01/2018 | <ul style="list-style-type: none"><li>Simplified non-coverage rationale (no change to guidelines)</li><li>Archived previous policy version DIAGNOSTIC 008.18 T2</li></ul> |

#### INSTRUCTIONS FOR USE

This Clinical Policy provides assistance in interpreting UnitedHealthcare Oxford standard benefit plans. When deciding coverage, the member specific benefit plan document must be referenced as the terms of the member specific benefit plan may differ from the standard plan. In the event of a conflict, the member specific benefit plan document governs. Before using this policy, please check the member specific benefit plan document and any applicable federal or state mandates. UnitedHealthcare Oxford reserves the right to modify its Policies as necessary. This Clinical Policy is provided for informational purposes. It does not constitute medical advice.

The term Oxford includes Oxford Health Plans, LLC and all of its subsidiaries as appropriate for these policies. Unless otherwise stated, Oxford policies do not apply to Medicare Advantage members.

UnitedHealthcare may also use tools developed by third parties, such as the MCG™ Care Guidelines, to assist us in administering health benefits. UnitedHealthcare Oxford Clinical 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.