



**RESEARCH PROVEN BENEFITS
FOR SPECIAL POPULATIONS**

POPULATION RESEARCH

- 
- Lower Back
 - Knees
 - Ankles
 - Shoulders
 - Fall Prevention
 - Metabolic Syndrome
 - Osteopathic
 - More

CHRONIC CONDITIONS RESEARCH

COPD

Power Plate improves exercise capacity and muscle power output in those with COPD.

Multiple Sclerosis

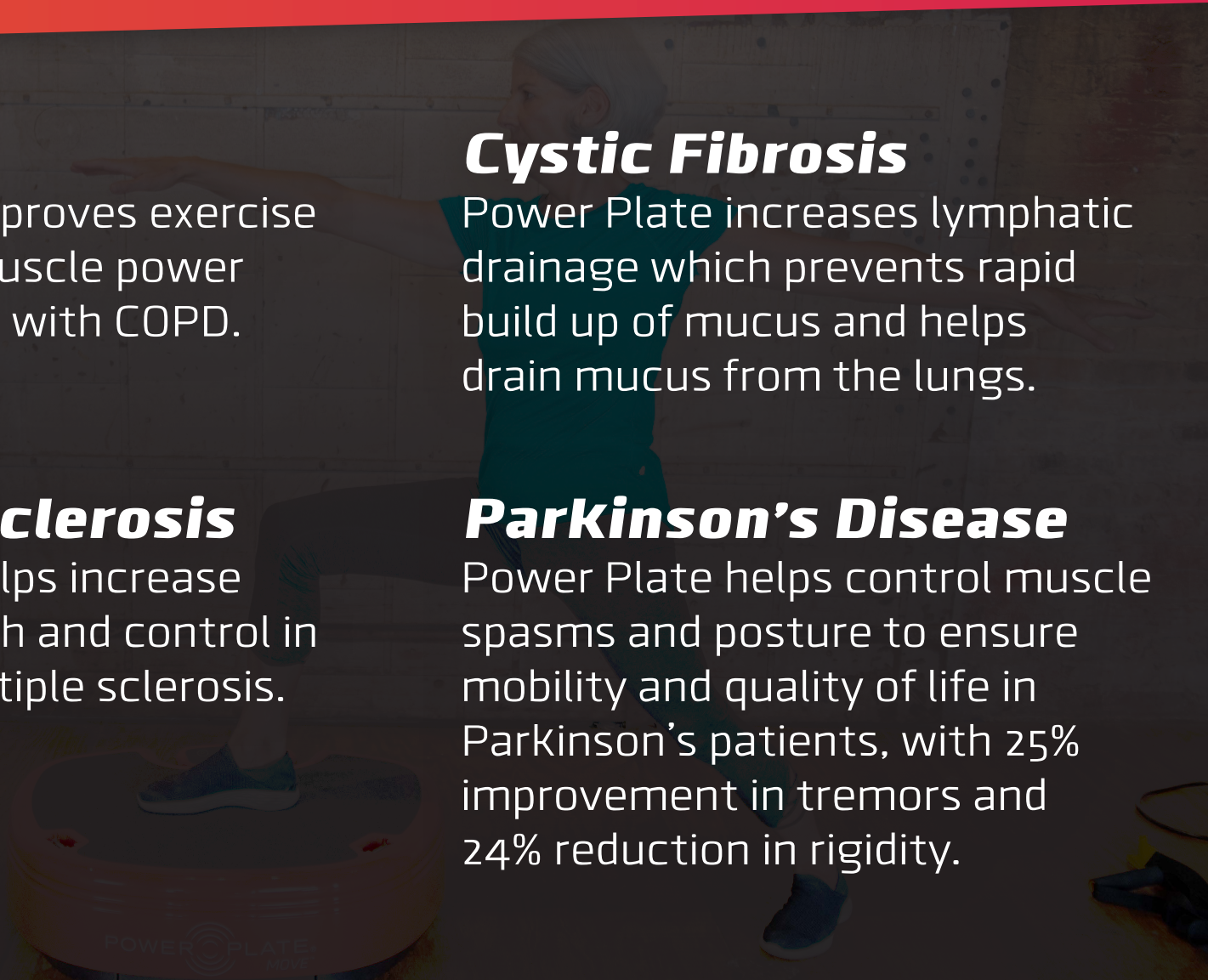
Power Plate helps increase muscle strength and control in those with multiple sclerosis.

Cystic Fibrosis

Power Plate increases lymphatic drainage which prevents rapid build up of mucus and helps drain mucus from the lungs.

Parkinson's Disease

Power Plate helps control muscle spasms and posture to ensure mobility and quality of life in Parkinson's patients, with 25% improvement in tremors and 24% reduction in rigidity.



LOW BACK INJURY & PAIN RECOVERY

Power Plate improves the following in those with LBP:

- **Lumbar Proprioception**
- **Trunk Extension**
- **Strength**
- **Posture & Balance Scores**

Effect of 12-Week Whole-Body Vibration Exercise on Lumbopelvic Proprioception and Pain Control in Young Adults with Nonspecific Low Back Pain.

Zheng YL, Wang XF, Chen BL, Gu W, Wang X, Xu B, Zhang J, Wu Y, Chen CC, Liu XC, Wang XQ. Med Sci Monit. 2019 Jan 15;25:443-452.

Effect of Whole Body Horizontal Vibration Exercise in Chronic Low Back Pain Patients: Vertical Versus Horizontal Vibration Exercise. Kim H, Kwon BS, Park JW, Lee H, Nam K, Park T, Cho Y, Kim T. Ann RehabilMed. 2018 Dec;42(6):804-813.

Comparison of 2 Multimodal Interventions With and Without Whole Body Vibration Therapy Plus Traction on Pain and Disability in Patients With Nonspecific Chronic Low Back Pain. Maddalozzo GF, Kuo B, Maddalozzo WA, Maddalozzo CD, Galver JW. J Chiropr Med. 2016 Dec;15(4):243-251.

KNEE INJURY RECOVERY

Power Plate improves the following in those with Knee Injuries:

- **Muscle Strength**
- **Muscle Endurance**
- **Balance & Stability**
- **Reduced Joint & Patellofemoral Pain**

Effects of whole body vibration training on isokinetic muscular performance, pain, function, and quality of life in female patients with patellofemoral pain: a randomized controlled trial.

Corum M, Basoglu C, Yakal S, Sahinkaya T, Aksoy C. J Musculoskelet Neuronal Interact. 2018 Dec 1;18(4):473-484.

Whole-Body Vibration Improves Early Rate of Torque Development in Individuals With Anterior Cruciate Ligament Reconstruction. Pamukoff DN, Pietrosimone B, Ryan ED, Lee DR, Brown LE, Blackburn JT. J Strength Cond Res. 2017 Nov;31(11):2992-3000.

Therapeutic effects of whole-body vibration training in knee osteoarthritis: a systematic review and meta-analysis. Zafar H, Alghadir A, Anwer S, Al-Eisa E. Arch Phys Med Rehabil.

2015 Aug;96(8):1525-32.

Effects of whole body vibration on pain, stiffness and physical functions in patients with knee osteoarthritis: a systematic review and meta-analysis. Wang P, Yang X, Yang Y, Yang L,

Zhou Y, Liu C, Reinhardt JD, He C. Clin Rehabil. 2015 Oct;29(10):939-51.

CHRONIC ANKLE INSTABILITY

Power Plate improves the following in those with CAI:

- **Balance**
- **Peroneal Activation**
- **Motor Cortex Excitability**

Whole-Body-Vibration Training and Balance in Recreational Athletes With Chronic Ankle Instability. Sierra-Guzmán R, Jiménez-Díaz F, Ramírez C, Esteban P, Abián-Vicén J. *J Athl Train.* 2018 Apr;53(4):355-363.

Effects of Synchronous Whole Body Vibration Training on a Soft, Unstable Surface in Athletes with Chronic Ankle Instability. Sierra-Guzmán R, Jiménez JF, Ramírez C, Esteban P, Abián-Vicén J. *Int J Sports Med.* 2017 Jun;38(6):447-455

Study protocol: the effect of whole body vibration on acute unilateral unstable lateral ankle sprain- a biphasic randomized controlled trial. Baumbach SF, Fasser M, Polzer H, Sieb M, Regauer M, Mutschler W, Schieker M, Blauth M. *BMC Musculoskelet Disord.* 2013 Jan 14;14:22.

Acute effects of Achilles tendon vibration on soleus and tibialis anterior spinal and cortical excitability. Lapole T, Deroussen F, Pérot C, Petitjean M. *Appl Physiol Nutr Metab.* 2012 Aug;37(4):657-63.

SHOULDER INJURY RECOVERY

Power Plate improves the following in those with shoulder injuries:

- **Rotator Cuff Activation**
- **Myoelectrical Activity**
- **Muscle Performance**

The effects of whole body vibration on EMG activity of the upper extremity muscles in static modified push up position. Ashnagar Z, Shadmehr A, Hadian M, Talebian S, Jalaei S. J Back Musculoskelet Rehabil. 2016 Aug 10;29(3):557-63. doi: 10.3233/BMR-160657.

Whole-body vibration applied during upper body exercise improves performance. Marín PJ, Herrero AJ, Milton JG, Hazell TJ, García-López D. J Strength Cond Res. 2013 Jul;27(7):1807-12. doi: 10.1519/JSC.ob013e3182772f00.

A comparison of whole-body vibration and resistance training on total work in the rotator cuff. Hand J, Verscheure S, Osternig L. J Athl Train. 2009 Sep-Oct;44(5):469-74.

FALL PREVENTION

Power Plate decreases risks of falling by improving the following in the highest risk populations:

- **Core Muscle Strength**
- **Exercise Capacity**
- **Muscle Endurance**

Effect of whole-body vibration exercise in preventing falls and fractures: a systematic review and meta-analysis. Jepsen DB, Thomsen K, Hansen S, Jørgensen NR, Masud T, Ryg J. BMJ Open. 2017 Dec 29;7(12):e018342.

Effect of whole-body vibration on reduction of bone loss and fall prevention in postmenopausal women: a meta-analysis and systematic review. Ma C, Liu A, Sun M, Zhu H, Wu H. J Orthop Surg Res. 2016 Feb 17;11:24.

Effects of bioDensity Training and Power Plate Whole-Body Vibration on Strength, Balance, and Functional Independence in Older Adults. Smith DT, Judge S, Malone A, Moynes RC, Conviser J, Skinner JS. J Aging Phys Act. 2016 Jan;24(1):139-48.

Effects of whole body vibration training on postural control in older individuals: a 1 year randomized controlled trial. Bogaerts A, Verschueren S, Delecluse C, Claessens AL, Boonen S. Gait Posture. 2007 Jul;26(2):309-16.

OBESITY & DIABETES MANAGEMENT

Power Plate improves the following in the Obese and those with Type 2 Diabetes:

- **Insulin Sensitivity**
- **Glycemic Regulation**
- **Cardiac Function**
- **Lower Resting Blood Glucose**
- **Reduce Fat Mass**

Effects of Whole-Body Vibration in Older Adult Patients With Type 2 Diabetes Mellitus: A Systematic Review and Meta-Analysis. Gomes-Neto M, de Sá-Caputo DDC, Paineiras-Domingos LL, Brandão AA, Neves MF, Marin PJ, Sañudo B, Bernardo-Filho M. Can J Diabetes. 2019 Mar 27. pii: S1499-2671(18)30696-8.

Whole-body vibration training in obese subjects: A systematic review. Zago M, Capodaglio P, Ferrario C, Tarabini M, Galli M. PLoS One. 2018 Sep 5;13(9):e0202866

The effects of whole body vibration in patients with type 2 diabetes: a systematic review and meta-analysis of randomized controlled trials. Robinson CC, Barreto RP, Sbruzzi G, Plentz RD. Braz J Phys Ther. 2016 Jan-Feb;20(1):4-14.

BONE MINERAL DENSITY

Power Plate improves the following in Bone Mineral Density:

- ***Osteoporotic Development***
- ***Osteopenia Rates***
- ***Bone Resorption***

Whole body vibration versus magnetic therapy on bone mineral density in elderly osteoporotic individuals. Shanb AA, Youssef EF, Muaidi QI, Alothman AA. J Back Musculoskelet Rehabil. 2017 Aug 3;30(4):903-912.

Whole Body Vibration Treatments in Postmenopausal Women Can Improve Bone Mineral Density: Results of a Stimulus Focussed Meta-Analysis. Fratini A, Bonci T, Bull AM. PLoS One. 2016 Dec 1;11(12):e0166774. doi: 10.1371/journal.pone.0166774. eCollection 2016.

Whole-body vibration effects on bone mineral density in women with or without resistance training. Humphries B, Fenning A, Dugan E, Guinane J, MacRae K. Aviat Space Environ Med. 2009 Dec;80(12):1025-31.

CHRONIC OBSTRUCTIVE PULMONARY DISORDER

Power Plate improves the following in those with COPD:

- **Exercise Capacity**
- **Balance**
- **Muscle Power Output**

Whole-body vibration training - better care for COPD patients: a systematic review and meta-analysis. Zhou J, Pang L, Chen N, Wang Z, Wang C, Hai Y, Lyu M, Lai H, Lin F. Int J Chron Obstruct Pulmon Dis. 2018 Oct 10;13:3243-3254. doi: 10.2147/COPD.S176229. eCollection 2018.

What's the secret behind the benefits of whole-body vibration training in patients with COPD? A randomized, controlled trial. Gloeckl R, Jarosch I, Bengsch U, Claus M, Schneeberger T, Andrianopoulos V, Christle JW, Hitzl W, Kenn K. Respir Med. 2017 May;126:17-24. doi: 10.1016/j.rmed.2017.03.014. Epub 2017 Mar 14.

Whole body vibration training in patients with COPD: A systematic review. Gloeckl R, Heinzelmann I, Kenn K. Chron Respir Dis. 2015 Aug;12(3):212-21. doi: 10.1177/1479972315583049. Epub 2015 Apr 22. Review.

PARKINSON'S DISEASE

Power Plate improves the following scores in those with Parkinson's Disease:

- **Balance**
- **Posture**
- **Gait**
- **Reduce Tremors**
- **Lower Exercise Recovery Time**

Whole body vibration and treadmill training in Parkinson's disease rehabilitation: effects on energy cost and recovery phases. Corbianco S, Cavallini G, Baldereschi G, Carboncini MC, Fiamingo FL, Bongioanni P, Dini M. *Neurol Sci.* 2018 Dec;39(12):2159-2168.

Whole body vibration versus conventional physiotherapy to improve balance and gait in Parkinson's disease. Ebersbach G, Edler D, Kaufhold O, Wissel J. *Arch Phys Med Rehabil.* 2008 Mar;89(3):399-403.

The effects of randomized whole-body-vibration on motor symptoms in Parkinson's disease. Haas CT, Turbanski S, Kessler K, Schmidtbleicher D. *NeuroRehabilitation.* 2006;21(1):29-36.

MULTIPLE SCLEROSIS

Power Plate improves the following in those with MS:

- **Core Muscle Strength**
- **Muscle Endurance**
- **Exercise Capacity**

Whole body vibration improves core muscle strength and endurance in ambulant individuals with multiple sclerosis: A randomized clinical trial. Abbasi M, Kordi Yoosefinejad A, Poursadeghfard M, Parsaei Jahromi F, Motealleh A, Sobhani S. *Mult Scler Relat Disord*. 2019 Apr 30;32:88-93.

The effects of whole body vibration on muscle strength and functional mobility in persons with multiple sclerosis: A systematic review and meta-analysis. Kang H, Lu J, Xu G. *Mult Scler Relat Disord*. 2016 May;7:1-7

Effects of long-term whole-body vibration training on mobility in patients with multiple sclerosis: A meta-analysis of randomized controlled trials. Kantele S, Karinkanta S, Sievänen H. *J Neurol Sci*. 2015 Nov 15;358(1-2):31-7

CYSTIC FIBROSIS

Power Plate improves the following in those with CF:

- **Functional Exercise Performance**
- **Muscle Strength & Power**
- **Muscle Coordination**

The effect of whole body vibration exposure on muscle function in children with cystic fibrosis: a pilot efficacy trial. O'Keefe K, Orr R, Huang P, Selvadurai H, Cooper P, Munns CF, Singh MA. J Clin Med Res. 2013 Jun;5(3):205-16.

Whole body vibration: a new therapeutic approach to improve muscle function in cystic fibrosis? Rietschel E, van Koningsbruggen S, Fricke O, Semler O, Schoenau E. Int J Rehabil Res. 2008 Sep;31(3):253-6.

Whole body vibration in cystic fibrosis--a pilot study. Roth J, Wust M, Rawer R, Schnabel D, Armbrecht G, Beller G, Rembitzki I, Wahn U, Felsenberg D, Staab D. J Musculoskelet Neuronal Interact. 2008 Apr-Jun;8(2):179-87



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