



Nordic Walking
Nova Scotia

Nordic Pole Walking Nova Scotia

Clinical & Scientific Studies on Nordic Pole Walking

General Studies:

1. **Comparison of treadmill and over-ground Nordic walking** Dr. Gail Dechman, Appleby, Carr, & Haire. School of Physiotherapy, Dalhousie University - European Journal of Sport Science , January 2012; 12(1): 36-42
2. **NPW engages more than 90% of Body Muscles** Dr. Henrike Ottenjahn Bachfischer K. MMW Fortschr Med. 2005 Jul 21;147 (29-30):19. Germany
3. **NPW versus walking without poles:**
 - **Percentage of Body Muscles involved**
 - **Calorie Burning Rate per hour**Dr. Henrike Ottenjahn Bachfischer K. MMW Fortschr Med. 2005 Jul 21;147(29-30):19. Germany
4. **Nordic Walking -- "Whole body sport".** Dr. Henrike Ottenjahn Bachfischer K. MMW Fortschr Med. 2005 Jul 21;147(29-30):19. Germany
5. **Comparison of kinematic and kinetic parameters between the locomotion patterns in Nordic walking, walking and running.** Kleindienst FI, Michel KJ, Schwarz J, Krabbe B. Sportverletz Sportschaden. 2006 Mar;20(1):25-30. German. PMID: 16544213
6. **Effects of Nordic Pole Walking on Functional Capacity in Patients with Moderate to Severe Heart Failure.** ML Keast, R Reid, M Slovynec-D'Angelo, L McDonnell Minto Prevention & Rehabilitation Centre, Ottawa, 2010
7. **Exploring Muscle Activation during Nordic Walking: A Comparison between Conventional and Uphill Walking** CeRiSM (Research Centre of Mountain Sport and Health), University of Verona, Department of Neurological and Movement Sciences, University of Verona, Verona, Italy,
3 Barbara Pellegrini 1,2 , Leonardo Alexandre Peyré-Tartaruga 3, Chiara Zoppirolli 1,2, Lorenzo Bortolan 1,2 , Elisabetta Bacchi 4 , H el ene Figard-Fabre 1,5 , Federico Schena 1,2

Cardiovascular System

- 1.1 **Influence on Coronary Diseases and Peripheral Vascular Diseases**
(Walter et.al.,1996; Stroughton, Larkin, Karawan, 1992 Parkatti et.al.,2003; Koskinen et.al.,2003 and others)
- 1.2. **Influence on High Blood Pressure: How NPW decreases High Blood Pressure**
(Ishikawa et. al.,1999. C. Diehm, 2007)

1.3 Effects of Nordic Walking and Pilates exercise programs on blood glucose and lipid profile in overweight and obese postmenopausal women in an experimental, nonrandomized, open-label, prospective controlled trial Journal North American Menopause Society. Vol. 22, No. 11, pp. 1215-1223 Magdalena Hagner-Derengowska, PT, PhD, 1 Krystian Kałuzny, 2 Bartosz Kochanski, PT, 2 Wojciech Hagner, MD, PhD, 2 Alina Borkowska, MD, PhD, 1 Andrzej Czamara, PT, PhD, 3 and Jacek Budzynski, MD, PhD

Musculoskeletal System

2.1. Diminishing Neck- and Shoulder Tension/Pain (Anttila et al., 1999)

2.2. Chronic Joint Problems - Load Reduction on Lower Back, Hips and Knees (Mayo Clinic, 2008), Wilson, 2001), Young-Hoo Kwon, 2008)

2.3. Less Impact on Joints: Mechanics of Pole Walking in subject with Chronic Knee Problem
(Willson et al., 2001; Young-Hoo Kwon, Lori R. Bolt, and Jackun Shi Ball State University, Muncie, Indiana, USA, 2008)

2.4. Nordic Poles immediate improve Walking Distance in Patients with Intermitted Claudication

(C. Oakleya , I. Zwiersk, G. Tew, J.D. Beard and J.M. Saxton, 2008. University, Sheffield, S10 2BP, UK
Sheffield Vascular Institute, Northern General Hospital, Sheffield, S5 7AU, UK)

2.5 Posture Enhancement & Segmental Stability (Koskinen et al. 2003)

2.6. Lower Trunk and Posture Control (Koskinen et al., 2003)

2.7. Functional Benefits (Parkatti et al., 2002)

2.8. Gait modification strategies for altering medial knee joint load: A systematic review.
Simic M, Hinman RS, Wrigley TV, Bennell KL, Hunt MA. Arthritis Care Res (Hoboken). 2010 Oct 27.

2.9. Does moderate-to-high intensity Nordic walking improve functional capacity and pain in fibromyalgia? A prospective randomized controlled trial.
Mannerkorpi K, Nordeman L, Cider A, Jonsson G., Arthritis Res Ther. 2010 Oct 13;12(5):R189

2.10. Supervised and non-supervised Nordic walking in the treatment of chronic low-back pain: a single blind randomized clinical trial. Hartvigsen J, Morsø L, Bendix T, Manniche , BMC Musculoskelet Disord. 2010 Feb 10;11:30.PMID: 20146793

2.11. Inverse dynamic analysis of the lower extremities during Nordic Walking, Walking, and Running. Stief F, Kleindienst FI, Wiemeyer J, Wedel F, Campe S, Krabbe B. J Appl Biomech. 2008 Nov;24(4):351-9.PMID: 19075304

2.12. Nordic walking--is it suitable for patients with fractured vertebra? Wendlova J. Bratisl Lek Listy. 2008;109(4):171-6.PMID: 18814434

2.13. Nordic walking and chronic low back pain: design of a randomized clinical trial.

Morsø L, Hartvigsen J, Puggaard L, Manniche C. BMC Musculoskeletal Disorder. 2006 Oct 2;7:77.PMID: 17014731

Effect on Metabolism

3.1 Physiological responses to Nordic walking, walking and jogging.

Schiffer T, Knicker A, Hoffman U, Harwig B, Hollmann W, Strüder HK. Eur J Appl Physiol. 2006 Sep;98(1):56-61. Epub 2006 Jun 24.PMID: 16799817

3.2 Energy expenditure and comfort during Nordic walking with different pole lengths.

Hansen EA, Smith G J Strength Cond Res. 2009 Jul;23(4):1187-94.PMID: 19528847

3.3 Effects of Nordic Walking and exercise in type 2 diabetes mellitus: a randomized controlled trial.

Gram B, Christensen R, Christiansen C, Gram J. Clin J Sport Med. 2010 Sep;20(5):355-61

3.4 Weight Loss through Nordic Pole Walking (Heikkilä et al., 2004)

3.5 Intensity of Nordic Walking in young females with different peak O₂ consumption.

Jürimäe T, Meema K, Karelson K, Purge P, Jürimäe J. Clin Physiol Funct Imaging. 2009 Sep;29(5):330-4. Epub 2009 May 14.PMID: 19469785.

3.6 Menopause: Changes in level of VO₂max, blood lipids, and waist circumference in the response to moderate endurance training as a function of ovarian aging. Hagner W, Hagner-Derengowska M, Wiacek M, Zubrzycki IZ.

3.7 Energy cost and pole forces during Nordic walking under different surface conditions.

Schiffer T, Knicker A, Dannöhl R, Strüder HK. Med Sci Sports Exerc. 2009 Mar;41(3):663-8.PMID: 19204583

3.8 Field-testing of physiological responses associated with Nordic Walking.

Church TS, Earnest CP, Morss GM. Res Q Exerc Sport. 2002 Sep;73(3):296-300.PMID: 12230336

Mental Health

4.1 Nordic Pole Walking and Depression

(C. Willemer, K. Krüger, F.C. Mooren, K. Völker, S. Knecht and A. Flöel, University of Muenster, Germany, 2008

4.2 Physical activity of depressed patients and their motivation to exercise: Nordic Walking in family practice. Suija K, Pechter U, Kalda R, Tähepõld H, Maaros J, Maaros HI.

Int J Rehabil Res. 2009 Jun;32(2):132-8.PMID: 19065108

4.3 Effects of exercise on aerobic capacity and fatigue in women with primary Sjogren's syndrome. Strömbeck BE, Theander E, Jacobsson LT. Rheumatology (Oxford). 2007

May;46(5):868-71. Epub 2007 Feb 17.PMID: 17308315

4.4 Physiological and perceptual responses to Nordic walking in obese middle-aged women in comparison with the normal walk. Figard-Fabre H, Fabre N, Leonardi A, Schena F.

Eur J Appl Physiol. 2010 Apr;108(6):1141-51. Epub 2009 Dec 20

Respiratory

5.1. Nordic Walking improves daily physical activities in COPD: a randomized controlled trial.

Breyer MK, Breyer-Kohansal R, Funk GC, Dornhofer N, Spruit MA, Wouters EF, Burghuber OC, Hartl S. *Respir Res.* 2010 Aug 22;11:112. PMID: 20727209

5.2. Up to 25% more oxygen uptake with Pole Walking than walking without poles (Pocari et al, 1997. Morss et al, 2001. Jordan, 2001)

Rehabilitation

6.1 Effects of Walking Poles on Shoulder Function in Breast Cancer Survivors

(L. K. Sprod, S.N. Drum, A.T. Bentz, S.D. Carter, C.M. Schneider University of Northern Colorado, Rocky Mountain Cancer Rehabilitation Institute, Greeley, Colorado, 2005)

6.2. Effects of Nordic Walking training on exercise capacity and fitness in men participating in early, short-term inpatient cardiac rehabilitation after an acute coronary syndrome -- a controlled trial. Kocur P, Deskur-Smielecka E, Wilk M, Dylewicz P. *Clin Rehabil.* 2009 Nov;23(11):995-1004. Epub 2009 Sep 28

6.3. Questions on "Whole body sport kind with drive". Nordic walking after disk prolapse, too? Bachfischer K, Modersohn-Meyer G, Niederhuber H, Schlüter J. *MMW Fortschr Med.* 2005 Sep 22;147(38):16, 18. German.

6.4. Effect of different walking aids on walking capacity of patients with post stroke hemiparesis.

Allet L, Leemann B, Guyen E, Murphy L, Monnin D, Herrmann FR, Schnider A. *Arch Phys Med Rehabil.* 2009 Aug;90(8)

6.5. Sports activity after total hip resurfacing. Banerjee M, Bouillon B, Banerjee C, Balthis H, Lefering R, Nardini M, Schmidt J. *Am J Sports Med.* 2010 Jun;38(6):1229-36. Epub 2010 Mar 11. PMID

6.6. Nordic walking. Also suitable in rehabilitation

Heinz M. *Sportverletz Sportschaden.* 2003 Jun;17(2):55. German.

Pregnancy

7.1. Physical activity in pregnancy and in breast-feeding period in obese mothers

Korsten-Reck U. *Z Geburtshilfe Neonatol.* 2010 Jun;214(3):95-102. Epub 2010 Jun 23. German

Seniors

8.1. Nordic walking: a new form of physical activity in the elderly

Turk Z, Vidensek S, Micetic Turk D. *Acta Med Croatica.* 2007;61 Suppl 1:33-6. Croatian. PMID: 18949923

8.2. Factors predicting dynamic balance and quality of life in home-dwelling elderly women.

Karinkanta S, Heinonen A, Sievanen H, Uusi-Rasi K, Kannus P. *Gerontology.* 2005 Mar-Apr;51(2):116-21. PMID: 15711078

8.3. Influence of NPW on functions important to everyday life for the elderly (Parkatti et al., 2002)

Parkinson's

9.1 Comparing exercise in Parkinson's disease--the Berlin LSVT®BIG study.

Ebersbach G, Ebersbach A, Edler D, Kaufhold O, Kusch M, Kupsch A, Wissel J.
Mov Disord. 2010 Sep 15;25(12):1902-8.PMID: 20669294

9.2 Nordic walking improves mobility in Parkinson's disease Nordic walking could provide a safe, effective, and enjoyable way to reduce physical inactivity in PD and to improve the quality of life Frank J.M. van Eijkeren, Ruud S.J. Reijmers, Mirjam J. Kleinveld, Angret Minten, Jan Pieterter Bruggen, Bastiaan R. Bloem Movement Disorders Volume 23, Issue 15 September 2008

Diabetes

10.1 Effects of Nordic Pole Walking and exercise in type 2 diabetes mellitus: a randomized controlled trial. Gram B, Christensen R, Christiansen C, Gram J. Clinic J Sport Med. 2010 Sep;20(5):355-61

10.2 Most effective for Diabetes: Influence of NPW on Medication with Patients suffering Diabetes Type 2 (Nischwitz et.al. Medical University Munich, 2006; Clinic Bad Wiessee,2006)

10.3 Physical Activity and Diabetes Type 2
(Siegmund,T., Clincum Munich, Clincum Bogenhausen, 2009)

Cancer

11.0 Nordic Pole Walking and Individuals with Cancer: Elise J. Cunningham, MHSc, BSc, Rkin. Dr Shilpa Dogra. Supervisor. Effects of NPW on individuals diagnosed with cancer. University of Ontario Institute of Technolog 2017

11.1 Nordic walking for women with breast cancer: A systematic review The low-impact exercise improved swelling, physical fitness, disability and quality of life Miguel A. Sánchez-Lastra, Jorge Torres, Iván Martínez-Lemos, Carlos Ayán. European Journal of Cancer 2019



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