	Study	Population	Age	Gender	Assessment of DN	Postural balance	Recording of falls	Activities of daily living	Conclusions
1	P.R. Cavanagh (1992) Diabetic Medicine	**DN** n=39 **Non-DN** n=41	DN (Years ± SD) 32.9 ± 2.5	DN Males N=18	VPT NCS	x	Telephone interview fall related injuries over past 4 years during walking worried about slipping, tripping or falling.	x	Individuals with DN reported significantly more fall related injuries than individuals without DN.
2	G.G. Simoneau (1994) Diabetes Care	**DN** N=17 **Non-DN** N=17 **Healthy control** N=17	DN (Years ± SD) 55 ±7.9	DN Males N=13	VPT NCS Monofilament	Stability platform. Center of pressure (CoP), force platform, Kistler)	x	x	Patients with DN have more postural instability despite a lack of complaints of instability.
3	P. Boucher (1995) Diabetes Care	**DN** N=12 **Healthy control** N=7	DN (Years ± SD) 62.5 ± 7.4	DN Males N=9	mNDS Valk severity scale NCS	Kistler piezoelectric force platform displacement of the center of foot pressure (CoP).	x	x	Alterations in body sway correlate to the severity of neuropathy.
4	L. Uccioli (1995) Diabetes Care	**DN** N=10 **Non-DN** N=23 **HC** N=21	DN (Years ± SD) 35 ± 1.9	DN N=4 Female N= 6 Male	NCS VPT	Computerized static posturography Platform (S.Ve.P-Amplaid, Bologna, Italy).	x	x	The trace surface was significantly larger in the DN. A direct relationship was found between the parameters of posturography and some parameters of the nerve conduction velocity.
5	J.B. Dingwell (1999) Gait and Posture	**DN** N=17 **Non- DN** N=17 **HC** N=17	In all groups age range 40-70 years	x	VPT -Monofilaments	Gait kinetics with camera automatic digitizing software (Peak Performance, Englewood, CO).	x	x	Increased kinematic variability and decreased swing-phase toe clearance in the DP group suggest that under less restricted or more challenging circumstances, afferent input is likely to play an important role in the control of locomotion
6	H. Corriveau, (2000) Diabetes care	**DN** N=15 **HC** N=15	DN (Years ± SD) 68.8 ± 5.5	DN Female N=6, Male N=9	VPT Monofilament	Stability Measure (Cop-COM)	x	x	The severity of neuropathy was correlated with COP-COM (postural stability) amplitude in both directions.
7	R. Yamamoto (2001)	**DN** N=32	DN (Years ± SD) 59.2 ± 9.2	DN Female N=14 Male	NCV	Static Posturography (Anima, GRAVICHART)	x	x	Parameters of GRAVICHART and electrophysiological tests

	Diabetes Research and Clinical Practice	**Non-DN** N=123 **HC** N=55		N=18					and parameters of heart rate variability correlated. Individuals with DN had more postural instability
8	H.E Resnick (2002) Muscle & Nerve	**DN** N=14 **Non-DN** N=13 **Healthy Control** N=12	DN (Years ± SD) 74.5 ± 3.2	DN Female N=7 Male N=7	NCV VPT Monofilament	Tandem stand and unipedal stand. 2-min walk.	x	x	Diabetic Neuropathy subjects performed significantly worse on tests of walking speed, static, dynamic balance and coordination.
9	A. Nardone, (2003) International Federation of Clinical Neurophysiology.	**DN** N=22 **HC** N=13	DN (Years ± SD) 65.1 ±9.6	DN Female N=10 Male N=12	NDS NCS	Dynamometric platform (Kistler, type 9281B, Switzerland)	x	x	Individuals with DN had an abnormal control of stance. Postural instability measured by sway was related to the impairment of sensory, rather than motor fibers.
10	H.B Menz (2004) Arch Phys Med Rehabil	**DN** N=30 **HC** N=30	Age range in all groups (55 to 91) years	DN Female N=8 Male N=22	VPT Tactile sensitivity, Proprioception	Postural sway measured by a sway meter, displacements of the body at the waist.	x	x	DN had decreased postural stability, altered gait pattern, compared to HC.
11	A. Cimbiz (2004) Journal of Diabetes and Its Complications	**DN** N=30 **HC** N=30	DN (Years ± SD) 57.6±3.9	DN Female N=11 Male N=19	Clinical examination	One leg stand test	x	x	Diabetic neuropathy disturbed the balance on the dominant leg and physical fitness.
12	L. Vileikyte (2005) Diabetes Care	**DN=** 494	DN (Years) 62	DN Male 70%	NDS VPT	x	x	ADL	DN was associated with depressive symptoms which were partially mediated by symptom unpredictability and the lack of treatment control and restrictions in ADLs and changes in social self-perception.
13	Z. Sawacha (2008) Clinical Biomechanics	**DN** N=26 **Non-DN** N=21 **HC** N=20	DN (Years ± SD) 63.2± 5.6	DN Female 42.3% Male 57.7%	MNSI-Q Physical examination. EMG	BTS motion capture system synchronized with two Bertec force plates.	x	x	Trunk and lower limb joint mobility, velocity were more reduced in individuals with diabetes in both individuals with and without DN.

14	R, J. Schilling (2009) Transactions on Biomedical Energineering	**DN** N=28 **Non-DN** N=10 **HC** N=39 **PN** N=22	DN (Years ± SD) 60.1±6.8	DN Female N=7 Male N=21	NCS	SLIP–FALLS system, a sliding linear investigative platform, which measures COP of lower limb stability.	x	x	The quiet standing indexes of the PN and DN groups showed statistically significant increases compared to the healthy control group.
15	A. A Emam (2009) Singapore Med J	**DN** N=54 **Non-DN** N=18	DN (Years ± SD) 63.96 ± 3.45	x	NCS	Composite equilibrium score by dynamic posturography	Number of falls in past six months.	x	DN suffered from significantly more falls, had more postural instability, which correlated to poor glycemic control.
16	L. Vileikyte (2009) Diabetologia	**DN** N= 338	DN (Years) 61	DN Male 73%	VT NDS	x	x	ADL	DN generates pain and unsteadiness. Unsteadiness was associated to depression, which was linked to diminished perceptions of self-worth as a result of inability to perform social roles.
17	G.D Fulk (2010) Journal of NeuroEngineering and Rehabilitation	**DN** N=18 **Non-DN** N=7 **PN** N=14 **HC** N=30	DN (Years ± SD) 60.8 ±6.6	x	NCS Monofilament	SLIP-FALLS System, force platform, sway calculated, BBS	x	x	A there was abnormal postural control in individuals with diabetes both with and without DN. DN may not be the only cause of impaired balance in people with diabetes.
18	A.N. Onodera (2011) Muscle & Nerve	**DN** N=23 **HC** N=23	DN (Years ± SD) 55.6 ± 7.6	DN Male 39%	MNSI-Q	Electrogoniometer (Stance phase of stair ascent and Descent) EMG	x	x	DN individuals had biomechanical deficits In stair descent, DN individuals had reduced plantarflexion.
19	T. Ghanavati (2011) Diabetes Research and Clinical Practice	**DN** N=14 **HC** N=14	DN (Years ± SD) 73.86 ± 3.96	DN Female N=2 Male N=12	~~Diabetic Neuropathy Examination (~~DNE~~)~~	~~Berg Balance Scale (~~BBS~~)~~	x	x	DN results in a functional imbalance that becomes more severe as the severity of neuropathy aggravate.

20	L. Allet (2012) Muscle & Nerve	**DN** N=25 **HC** N=16	DN age range 50 - 85 years	x	NCV MDNS	~~Unipedal stance time (~~UST~~)~~	x	x	Frontal plane hip strength was the single best predictor of UST and appeared to compensate for less precise ankle proprioceptive thresholds.
21	P. Lalli (2013) Journal of Diabetes and its Complications	**DN No pain** N=20 **DN with pain** N=22 **DM** N=20 **HC** N=20	DN (Years ± SD) 62.6±9.5	DN Female N=9 Male N=11	TCNS UENS	x	Retrospectively reported the number of falls and related injuries, injuries leading to hospitalization over the past 12 months.	x	Neuropathic pain contributes to gait variability, potentially contributing to the risk of falling in DM patients. There was no difference in the number of falls among the groups.
22	T. Melai (2013) Human Movement Science	**DN** N=94 **Non-DN** N=39 **HC** N= 19	DN (Years ± SD) 67± 8	DN Female N=14 Males N=80	Clinical Neurological Examination	Dynamic wooden walkway was available with embedded a pressure platform.	x	x	DN patients did not show imposed gait velocity. There was no increase in displacement of COP or forefoot loading in individuals with DN.
23	C. Kelly (2013) Journal of the American Podiatric Medical Association	**DN** N=16 **Non-DN** N=18	DN (Years ± SD) 73 ± 8	DN Males 63%	VPT	Dynamic balance during walking; wearable sensor technology (LEGSys; BioSensics LLC, Cambridge, Massachusetts).	x	x	Nonsignificant trends were observed across most gait parameters, suggesting poorer gait performance as the concern about falling Increased in DN group.
24	F.H. Palma (2013) Arq Bras Endocrinol Metab.	**DN** N=10 **Non-DN** N=10	DN (Years ± SD) 49.4 ± 3.44	DN Female N=1 Males N=9	DNE	Static balance measured by a Center of Pressure mean ratio on a Wii Balance Board.	x	x	Patients showing DN demonstrated worse static balance than patients without DN in the closed eyes condition.
25	M.M. Vaz (2013) Archives of Physical Medicine and Rehabilitation	**DN** N=13 **DC** N=19 **HC** N=30	DN (Years ± SD) 54.6±5.5	DN Females N=7 Males N=6	Clinical tests NCS	Upright balance, evaluated in 4 situations on a wooden fixed platform BBS FTSST	Asked about falls in the last 12 months	x	Subjects with diabetes with or without DN, showed deficits in postural control and functional strength compared with healthy individuals of the same age group. DN reported more falls compared to non-DN.

26	I. M. Fahmy (2014) J Neurol Psychiat Neurosurg	**DN** N=30 **HC** N=30	DN (Years ± SD) 43.83±2.39	DN Female N=8 Male N=22	NCS	Postural Stability by Balance Master system. BBS	x	x	BBS were significantly lower in DN. Stability test in all directions, decrease in movement velocity, end excursion and directional control were all altered in the DN group.
27	E. Maranesi, (2014) Gait & Posture	**DN** N=37 **Non-DN** N=17	DN (Years ± SD) 60 ± 11	DN Male N=29 Females N=8	Diabetic Neuropathy Symptom score, NCS	The centre of gravity was defined as the projection of the whole body centre of mass on a force platform.	x	x	There were no statistically significant differences between the control group and DN subjects.
28	J.C. Handsaker (2014) Diabetes Care	**DN** N=21 **Non-DN** N=21 **HC** N=21	DN (Years ± SD) 57.6±9.4	x	mNDS VPT	Dynamic camera motion capture system, and force platforms measuring ground reaction forces	x	x	Patients with DN were slower at generating strength at the ankle and knee than control participants during walking up and down stairs.
29	L. Allet (2014) Journal of Diabetes and its Complications	**DN** N=26 **Healthy control** N=16	DN (Years ± SD) 69.07±8.36	Total Female N=21 Male N=21	Clinical Examination NCV MDNS	Step length perturbation Optotrak optoelectric motion analysis system (Northern Digital Inc., Waterloo, ON, Canada)	Survey: Falls within 12 months. 12 month follow up prospective.	x	DN reported falls and fall related injuries to a higher degree compared to HC.
30	J.K. Richardson (2014) Muscle Nerve	**DN** N=19 **PN** N=13	DN (Years ± SD) 69.7±8.8	DN Female N=7 Male N=12	MDNS ≥10 NCS	x	Tinetti et al, calender Each subject was given 26 calendars, each of which recorded a 2-week span.	x	Fall and injury risk in the population studied is related inversely to hip and ankle strength. Fallers had higher DN scores.
31	S.J. Brown (2014) Journal of Biomechanics	**DN** N=20 **Non-DN** N=33 **HC** N=27	DN (Years ± SD) 51±19	x	mNDS VPT	10 camera Vicon motion capture system (Vicon, OxfordUK) positioned around an 8-m walkway.	x	x	Maximum joint strengths at the knee was decreased in both individuals with and without DN and for the DN at the ankle. Individuals with diabetes walk with reduced lower limb joint torques.

32	S. J. Brown (2015) Diabetes Care	**DN** N=22 **Non-DN** N=39 **HC** N=28	DN (Years ± SD) 57±9	DN Female N=7 Male N=15	mNDS VPT	Stair ascent and descent Postural Sway During Quiet Standing. 10-camera motion-capture system (Vicon, Oxford, U.K.)	x	x	Individuals with DN have marked impairments in dynamic sway during gait activities, which become more evident with increasing gait task complexity.
33	M.R. Camargo (2015) Diabetes & metabolic Syndrome: Clinical Research & Reviews	**DN** N=30 **HC** N=30	DN (Years ± SD) 59 ± 8	**DN** Females N=14 Male N=16	MNSI Monofilaments	~~Functional Reach (~~FRT~~)~~ ~~Time Up and Go (~~TUG~~)~~	x	x	Gait spatiotemporal, functional mobility, balance performance and ankle muscle strength was affected in individuals with DN.
34	N. Toosizadeh, (2015) PLOS ONE	**DN** N =18 **HC** N=18	DN (Years ± SD) 65±8	DN Females N=7 Males N=11	Monofilament VPT	Triaxial Gyroscope, (BalanSens, BioSensics, LLC, MA, USA) Body center of mass on the ground surface.	Falls were recorded retrospectively over 1 year.	x	Individuals with DN had more postural instability compared to HC. Adaptation mechanisms using sensory feedback depended on the level of neuropathy and the history of diabetes. Individuals with DN reported falling to a higher degree.
35	J. C. Handsaker (2015) Diabetic Medicine	**DN** N=14 **Non-DN** N=12 **HC** N=10	DN (Years ± SD) 57.7 ± 9.9	x	mNDS VPT	10-camera motion capture system recording at 120 Hz (Vicon Nexus, Vicon, Oxford, UK).	x	x	Patients with DNN were slower at generating strength at the ankle and knee compared to HC during walking up and down stairs.
36	B. Timar (2016) PLOS ONE	**DN N=57 PN N=32**	DN (Years ± SD) 64.5±10.5	DN Males N=25	MNSI	~~Berg Balance Scale (~~BBS~~),~~ ~~Timed-up-and-Go test (~~TUG~~),~~ ~~Single-Leg-Stand test (~~SLS~~)~~	x	x	The presence of DN in in individuals with diabetes was associated with impaired balance and with a consecutively increase in the risk of falls.

37	F. Spolaor, (2016) Journal of Electromyography and Kinesiology	**DN** N=20 **Non-DN** N=20 **HC** N=10	DN (Years ± SD) 60±8	DN Female N=33 Male N=67	MNSI-Q VPT NCS Index of Winsor	Kinematics. A motion capture system (6 cameras, 60–120 Hz), 2 Bertec force plates (FP4060-10).	x	x	Results showed an association between earlier activation of lower limb muscles and reduced speed in subjects with DN.
38	K. Zurales (2016) American Journal of Physical Medicine & Rehabilitation	**DN** N=16 **Non-DN** N=11	DN (Years ± SD) 69.2±8.4	**DN** Female N=11 Male N=5	m~~M~~DNS NCS	Walkway toward an optoelectronic camera system (Optotrak 3020, Northern Digital Corp.,Waterloo, ON, Canada).	Falls and fall-related injuries were recorded Prospectively during 1 year as described by Tinetti et al.	x	Fallers had higher DN scores. DN correlated to altered kinematics.
39	V. Bokan-Mirković (2017) Acta Clin Croat	**DN** N=48	Age range 35 and 70 years of age	DN Female N=12 Male N=16	MNSI-Q Monofilament	~~Functional Reach Test.~~FRT	Patients were asked whether they had sustained a fall in the last three years.	x	Fallers had decreased walking speed and an increased duration of diabetes and DN.
40	J.K. Richardson, (2017) Am J Phys Med Rehabil	**DN** N=26 **Non-DN** N=16	DN (Years ± SD) 69.8 ± 8.1	DN Female N=11 Male N=15	MDNS NCS	Reaction time UST ~~Unipedal Stance Time~~.	Falls and fall-related injuries were recorded through 1 year of follow-up	x	Older adults with DN there was relationships between unipedal stance time, frontal plane gait variability on an uneven surface, and major prospective fall-related injuries
41	T. Riandini (2018) Acta Diabetologica	**DN** N=80 **Non-DN** N=80	DN (Years ± SD) 64 ± 6	DN Female N=34 Male N=46	MNSI	Functional Reach Test. Five time sit to stand test Time up to go Body sway velocity	x	International Physical Activity Questionnaire (IPAQ) Health-related quality of life (HRQoL).	Mobility, balance, self-care, usual activities, and anxiety were associated with DN.
42	Eneida Yuri Sudaa, (2019) Gait & Posture	**DN mild** N=21 **severe** N=22 **Non-DN** N=26 **HC** N=15	Severe DN (Years ± SD) 59.9 ±4.2	Severe DN Males 35%	VPT M~~m~~onofilament~~,~~ MNSI	Kinematics 6 cameras at 100 Hz (OptiTrack/Natural Point, Corvallis, USA).	x	x	Severe-DN subjects showed a more complex pattern of overall foot-ankle trajectory in swing phase compared to controls.

Table S1. Diabetic Neuropathy (DN); Individuals with diabetes without diabetic neuropathy (Non-DN); Vibration perception threshold (VPT); Neurology Disability Score (NDS); Michigan Diabetes Neuropathy Score (MDNS); Michigan Neuropathy Screening Instrument (MNSI); Michigan Neuropathy Screening Instrument Questionnaire (MNSI-Q); modified Neuropathy Disability Score (mNDS); Semmes-Weinstein Monofilaments (monofilament); Diabetic Neuropathy Examination (DNE), Toronto Clinical Neuropathy Score (TCNS); Utah Early Neuropathy Scale (UENS); Berg Balance Scale (BBS), Timed-up and Go test (TUG), Single Leg Stand test (SLS). Functional Reach Test (FRT), Unipedal stance time (UST) x indicates lack of data.