

Tom Buurke
SMART Movements (SMART)



Employment

SMART Movements (SMART)

University of Groningen
Netherlands
1-Apr-2022 → present

Research outputs

Narrow-based gait in people with Parkinson's disease: Its mechanisms explored

Jansen, J. A., Buurke, T. J., van de Venis, L., Weerdesteyn, V., Keijsers, N. & Nonnekes, J., 2-Feb-2025, (E-pub ahead of print) In: *Journal of Parkinson's Disease*.

The relationship between walking speed, step parameters, and margins of stability in individuals after stroke

Ettema, S., Blokland, I. J., Buurke, T. J. W. & Houdijk, H., Jan-2025, In: *Clinical Biomechanics*. 121, 7 p., 106377.

Beyond conventional rehabilitation: an observational study on RYSEN body weight supported gait training in individuals after stroke and spinal cord injury

Ettema, S., Pennink, G. H., Buurke, T. J. W., David, S., van Bennekom, C. A. M. & Houdijk, H., 2-Dec-2024, (E-pub ahead of print) In: *Disability and Rehabilitation*. 9 p.

What impedes us makes us stronger: The effect of impeding and assisting forces on body weight supported gait after stroke.

Ettema, S., Buurke, T. J. W., David, S., van Bennekom, C. & Houdijk, H., 8-Nov-2024.

Mini-symposium - Improved diagnostics through digital twins: Neuromusculoskeletal modeling and simulations for clinical rehabilitation

Buurke, T. J. W., Refai, M. I., Greve, C., Veerkamp, K. & van der Kruk, E., 7-Nov-2024.

PredSim: A Framework for Rapid Predictive Simulations of Locomotion

D'Hondt, L., Falisse, A., Gupta, D., van den Bosch, B., Buurke, T. J. W., Febrer-Nafria, M., Vandekerckhove, I., Afschrift, M. & De Groote, F., Oct-2024, *2024 10th IEEE RAS/EMBS International Conference for Biomedical Robotics and Biomechanics (BioRob)*. IEEE, p. 1208-1213 6 p.

Speed-dependent changes in spatiotemporal gait parameters and margins of stability in response to optic flow perturbation in healthy young adults

Wu, C., Buurke, T. J. W., den Otter, R., Lamothe, C. & Veldman, M., 13-Sept-2024.

Clinical indications and protocol considerations for selecting initial body weight support levels in gait rehabilitation: a systematic review

Ettema, S., Pennink, G. H., Buurke, T. J. W., David, S., van Bennekom, C. A. M. & Houdijk, H., 7-Jun-2024, In: *Journal of Neuroengineering and Rehabilitation*. 21, 12 p., 97.

Dribble Like Robben: What Determines Successfulness in 1-vs-1 Actions in Elite Soccer?

Onk, A., Buurke, T. J. W., Kempe, M. & Lemmink, K. A. P. M., 3-Jun-2024.

Simply swing like a pendulum: A research paradigm to probe the elevated cost of walking in people with neurological disorders

Buurke, T. J. W., Van Can, E. & Houdijk, H., 28-May-2024.

Kinetic comparison between drop jump and horizontal drop jump in elite jumpers and sprinters

Montoro-Bombú, R., Miranda-Oliveira, P., Valamatos, M. J., João, F., Buurke, T. J. W., Cupido Santos, A. & Rama, L., 30-Apr-2024, In: Applied Sciences. 14, 9, 11 p., 3833.

Notes on the margin of stability

Curtze, C., Buurke, T. J. W. & McCrum, C., 13-Mar-2024, In: Journal of biomechanics. 166, 8 p., 112045.

Quadriceps-hamstrings muscle co-activation during the swing phase of walking is modulated by task constraints in healthy adults

Van Can, E., Houdijk, H. & Buurke, T. J. W., 4-Mar-2024, BioRxiv.

Spatiotemporal variables comparison between drop jump and horizontal drop jump in elite jumpers and sprinters

Montoro-Bombú, R., Miranda-Oliveira, P., Valamatos, M. J., João, F., Buurke, T. J. W., Santos, A. C. & Rama, L., 26-Feb-2024, In: PeerJ. 12, 14 p., e17026.

PredSim: A Framework for Rapid Predictive Simulations of Locomotion

D'hondt, L., Falisse, A., Gupta, D., Van Den Bosch, B., Buurke, T. J. W., Febrer-Nafria, M., Vandekerckhove, I., Afschrift, M. & De Groote, F., 2024, *2024 10th IEEE RAS/EMBS International Conference for Biomedical Robotics and Biomechatronics, BioRob 2024*. IEEE Computer Society, p. 1208-1213 6 p. (Proceedings of the IEEE RAS and EMBS International Conference on Biomedical Robotics and Biomechatronics).

RYSEN body weight support versus conventional gait training: an observational study

Ettema, S., Pennink, G. H., Buurke, T. J. W., David, S., van Bennekom, C. A. M. & Houdijk, H., 20-Oct-2023.

Swing it! Selective Motor Control and Energy Consumption of Isolated Swinging of the Leg in Healthy Adults

van Can, E., Buurke, T. J. W. & Houdijk, H., 20-Oct-2023.

Instrumented selective control assessment of the lower extremity to identify neural constraints in muscle co-activation during treadmill walking after stroke

Buurke, T. J. W., Febrer-Nafria, M., Verheyden, G. & De Groote, F., Sept-2023, In: Gait & Posture. 106, S1, p. S31-S32 2 p.

PREDSIM: A framework for rapid predictive simulations of locomotion

D'Hondt, L., Gupta, D., Van Den Bosch, B., Buurke, T. J. W., Afschrift, M., Febrer-Nafria, M., Vandekerckhove, I. & De Groote, F., 27-Jul-2023.

The effect of walking with reduced trunk motion on dynamic stability in healthy adults

Buurke, T. J. W., van de Venis, L., Keijsers, N. & Nonnekens, J., Jun-2023, In: Gait & Posture. 103, p. 113-118 6 p.

Notes on the margin of stability

Curtze, C., Buurke, T. J. W. & McCrum, C., 23-May-2023, OSF Preprints, 18 p.

Comparison of ground reaction force and marker-based methods to estimate mediolateral center of mass displacement and margins of stability during walking

Buurke, T. J. W., van de Venis, L., den Otter, R., Nonnekens, J. & Keijsers, N., 1-Jan-2023, In: Journal of biomechanics. 146, 4 p., 111415.

A different kind of gait: The transition from normal to very slow walking

Buurke, T. J. W. & Houdijk, H., 2023.

RYSEN 3D body weight support: de loopbrug voorbij

Ettema, S., Buurke, T. J. W., David, S., van Bennekom, C. A. M. & Houdijk, H., 2023.

RYSEN body weight support versus conventional gait training: an observational study

Ettema, S., Pennink, G. H., Buurke, T. J. W., David, S., van Bennekom, C. A. M. & Houdijk, H., 2023.

The effects of age and physical activity level on spatiotemporal gait parameters under optic flow perturbations in healthy adult walking

Wu, C., Veldman, M., Buurke, T. J. W., den Otter, R. & Lamoth, C., 2023.

The effect of walking with reduced trunk motion on dynamic stability in healthy adults

Buurke, T. J. W., van de Venis, L., Keijsers, N. & Nonnekes, J., 3-Nov-2022, BioRxiv.

Musculoskeletal simulations capture the experimentally observed response to ankle-foot-orthosis use in a healthy subject

Febrer-Nafría, M., Buurke, T. J. W., D'Hondt, L., de Waele, L., Van Campenhout, A., Desloovere, K. & De Grootte, F., Sept-2022, In: Gait & Posture. 97, p. S34-S35

Split-belt walking: An experience that is hard to forget

Buurke, T. J. W., Sharma, N., Swart, S., van der Woude, L. H. V., den Otter, R. & Lamoth, C., Sept-2022, In: Gait & Posture. 97, p. 184-187 12 p.

The Current State of the Margin of Stability

Curtze, C., Buurke, T. J. W. & McCrum, C., 7-Jul-2022.

Walking with a rigid trunk reduces step width, but not the margin of stability in healthy adults

Buurke, T. J. W., van de Venis, L., Keijsers, N. & Nonnekes, J., 5-Jul-2022.

Common muscle co-activation patterns in isolated knee extension flexion movements and treadmill walking in people post-stroke

Buurke, T. J. W., Verheyden, G. & De Grootte, F., 4-Jul-2022.

getComGRF

Buurke, T. J. W. (Developer), 20-Jan-2022

The relationship between the anteroposterior and mediolateral margins of stability in able-bodied human walking

Buurke, T. J. W. & den Otter, R., Oct-2021, In: Gait & Posture. 90, p. 80-85 6 p.

Long-term savings of locomotor adaptation in human split-belt treadmill walking

Sharma, N., Buurke, T. J. W., van der Woude, L. H. V., den Otter, R. & Lamoth, C., 2021.

Predictive simulations of hemiparetic gait to explore the effects of muscle weakness on walking asymmetry and energetics

Buurke, T. J. W., Verheyden, G. & De Grootte, F., 2021.

Maintaining sagittal plane balance compromises frontal plane balance during reactive stepping in people post-stroke

Buurke, T. J. W., Liu, C., Park, S., den Otter, R. & Finley, J. M., Dec-2020, In: Clinical Biomechanics. 80, 10 p., 105135.

Adaptive Control of Dynamic Balance across the Adult Lifespan

Vervoort, D., Buurke, T. J. W., Vuillerme, N., Hortobagyi, T., den Otter, R. & Lamoth, C., Oct-2020, In: Medicine and Science in Sports and Exercise. 52, 10, p. 2270-2277 8 p.

Adaptive control of dynamic balance during human gait: ...what happens when you assist a person's balance during gait rehabilitation?

Buurke, T. J. W., 24-Apr-2020

Do gait and muscle activation patterns change at middle-age during split-belt adaptation?

Vervoort, D., den Otter, R., Buurke, T. J. W., Vuillerme, N., Hortobágyi, T. & Lamothe, C., 23-Jan-2020, In: Journal of biomechanics. 99, 10 p., 109510.

Adaptive control of dynamic balance in human walking

Buurke, T. J. W., 2020, [Groningen]: University of Groningen. 149 p.

Bilateral temporal control determines mediolateral margins of stability in symmetric and asymmetric human walking

Buurke, T. J. W., Lamothe, C., van der Woude, L. H. V., Hof, A. L. & den Otter, R., 29-Aug-2019, In: Scientific Reports. 9, 12494, 10 p., 12494.

Handrail Holding during Treadmill Walking Reduces Locomotor Learning in Able-Bodied Persons

Buurke, T. J. W., Lamothe, C., van der Woude, L. H. V. & den Otter, R., 14-Aug-2019, In: IEEE Transactions on Neural Systems and Rehabilitation Engineering. 27, 9, p. 1753-1759 8 p.

Effects of Aging and Task Prioritization on Split-Belt Gait Adaptation

Vervoort, D., den Otter, A. R., Buurke, T. J. W., Vuillerme, N., Hortobágyi, T. & Lamothe, C. J. C., 29-Jan-2019, In: Frontiers in Aging Neuroscience. 11, 10, 12 p.

After-effect magnitude predicts retention in split-belt gait adaptation.

Buurke, T. J. W., Lamothe, C., van der Woude, L. H. V. & den Otter, R., 2019.

Changes in muscle activation patterns underlie split-belt gait adaptation.

Vervoort, D., den Otter, R., Buurke, T. J. W., Vuillerme, N., Hortobágyi, T. & Lamothe, C., 2019.

Locomotor savings of split-belt gait adaptation indicate long-term adaptation processes.

Buurke, T. J. W., Lamothe, C., van der Woude, L. H. V. & den Otter, R., 2019.

Singular Spectrum Analysis for the detection of adaptation rates in split-belt data.

den Otter, R., Buurke, T. J. W. & Lamothe, C., 2019.

The effects of handrail holding on split-belt adaptation.

Buurke, T. J. W., Lamothe, C., van der Woude, L. H. V. & den Otter, R., 2019.

Gait adaptation differs from explicit perception of split-belt speed differences in young and middle-aged adults

Vervoort, D., den Otter, R., Buurke, T. J. W., Vuillerme, N., Hortobágyi, T. & Lamothe, C., 23-Nov-2018.

Multiple balance mechanisms to keep you upright while split-belt walking

Buurke, T. J. W., 3-Oct-2018

Adaptive control of dynamic balance in human gait on a split-belt treadmill

Buurke, T. J. W., Lamothe, C. J. C., Vervoort, D., van der Woude, L. H. V. & den Otter, R., Jul-2018, In: Journal of Experimental Biology. 221, 13, 10 p., 174896.

Gait adaptation differs from explicit perception of split-belt speed differences in young and middle-aged adults

Vervoort, D., den Otter, R., Buurke, T. J. W., Vuillerme, N., Hortobágyi, T. & Lamothe, C., 13-Jun-2018.

Changes in mediolateral dynamic balance control during imposed gait asymmetry on a split-belt treadmill are strongly dependent on passive dynamics in gait

Buurke, T. J. W., Lamothe, C., Vervoort, D., van der Woude, L. H. V. & den Otter, R., 2018.

Effects of handrail holding on split-belt adaptation

Buurke, T. J. W., Lamothe, C., van der Woude, L. H. V. & den Otter, R., 2018.

Gait analysis and adaptations: using new ideas to tackle old problems in gait classification and training

van Keeken, H., Buurke, T. J. W., den Otter, R., Zhou, Y., Lamothe, C., Greve, C., Hijmans, J., Hagoort, I., de Beus, M., Hortobagyi, T. & Weiland, S., 2018, p. 44-45. 2 p.

Handrail holding affects split-belt gait adaptation

Buurke, T. J. W., Lamothe, C., van der Woude, L. H. V. & den Otter, R., 2018.

Handrail holding on a split-belt treadmill reduces locomotor learning

Buurke, T. J. W., Lamothe, C., van der Woude, L. H. V. & den Otter, R., 2018.

Long-term retention of split-belt walking reveals differences in spatiotemporal gait adaptation and dynamic balance control

Buurke, T. J. W., Lamothe, C., Vervoort, D., van der Woude, L. H. V. & den Otter, R., 2018.

Muscle synergies during split-belt walking in young and middle-aged adults

Vervoort, D., den Otter, R., Buurke, T. J. W., Hortobagyi, T. & Lamothe, C., 1-Dec-2017.

Muscle synergies during split-belt walking in young and middle-aged adults

Vervoort, D., den Otter, R., Buurke, T. J. W., Hortobagyi, T. & Lamothe, C., 17-Nov-2017.

Long-term retention of single exposure to split-belt walking: preliminary results

Buurke, T. J. W., Lamothe, C., van der Woude, L. H. V. & den Otter, R., 2017.

Relation between Dynamic Balance Control and Metabolic Cost during Split Belt Adaptation

Buurke, T. J. W., Lamothe, C., van der Woude, L. H. V. & den Otter, R., 2017.

Three week retention of a single split-belt adaptation session: Effects on gait symmetry and balance control

Buurke, T. J. W., Lamothe, C., Vervoort, D., van der Woude, L. H. V. & den Otter, R., 2017.

Synergistic Structure in the Speed Dependent Modulation of Muscle Activity in Human Walking

Buurke, T. J. W., Lamothe, C. J. C., van der Woude, L. H. V. & Otter, den, A. R., 1-Apr-2016, In: PLoS ONE. 11, 4, 19 p., e0152784.

Energieverbruik en Dynamische Balans Controle tijdens Split-Belt Adaptatie

Buurke, T. J. W., den Otter, R., Lamothe, C. & van der Woude, L. H. V., 2016.

Activities

Publieksfestival Iedereen in beweging!

Buurke, T. (Chair), Nijenhuis, B. (Organiser), Gilde, I. (Organiser), de Jonge, M. (Organiser), Tankink, T. (Organiser), Keizer, M. (Organiser), Kraaijenbrink, C. (Organiser), Caljouw, S. (Organiser), Murgia, A. (Organiser), Kompagnie, N. (Organiser), Benjaminse, A. (Organiser), Elferink-Gemser, M. (Organiser), van Keeken, H. (Organiser) & Plaggenmarsch, C. (Organiser)

11-Oct-2024

Bewegingsanalyse en de impact op de revalidatie.

Buurke, J. H. (Keynote speaker) & Buurke, T. (Keynote speaker)

21-Apr-2023

Motor Control (Journal)

Buurke, T. (Editorial board member)

1-Apr-2023 → ...

Understanding gait deviations and improving walking function through neuromechanical experiments and simulations.

Buurke, T. (Invited speaker)

15-Feb-2023

Adult Neurology at European Society for Movement Analysis and Children

Buurke, T. (Session chair)

2023

Mentor in the ISPGR mentorship program, International Society for Posture and Gait

Buurke, T. (Other)

2023

Society for Movement Analysis Laboratories in the Low Lands

Buurke, T. (Contributor)

2023 → 2025

From simple to complex and back again: Understanding dynamic balance control in human walking through experiments and models

Buurke, T. (Invited speaker)

22-Sept-2022

Stabiliteit tijdens het lopen, stapje voor stapje.

Buurke, T. (Invited speaker)

17-Jun-2022

The neuromechanics of adaptive dynamic balance control in human walking

Buurke, T. (Invited speaker)

25-Jul-2021 → 29-Jul-2021

XXVIII Congress of the International Society of Biomechanics

Buurke, T. (Chair)

25-Jul-2021 → 29-Jul-2021

Presentation for the VVBN thesis prize 2020 competition

Buurke, T. (Invited speaker)

26-Mar-2021

Frontiers in Sports and Active Living (Journal)

Buurke, T. (Editorial board member)

2021 → ...

Presentation for the Van Swinderen Prize competition

Buurke, T. (Invited speaker)

15-Dec-2020

University of Southern California

Buurke, T. (Visiting researcher)

13-Jan-2019 → 29-Mar-2019

Society for Movement Analysis Laboratories in the Low Lands - Social Media Team (External organisation)

Buurke, T. (Member of board)

1-Jan-2019 → ...

Adaptive dynamic balance control – An overview of dissertation work

Buurke, T. (Invited speaker)

2019

Adaptive dynamic balance control during human locomotion

Buurke, T. (Invited speaker)

2019

SMALLL | Society for Movement Analysis Laboratories in the Low Lands

Lamoth, C. (Organiser), den Otter, R. (Organiser), Buurke, T. J. W. (Organiser), Vervoort, D. (Organiser) & Hijmans, J. (Organiser)

22-Nov-2018 → 23-Nov-2018

PhD representative - Department of Human Movement sciences

Buurke, T. (Other) & Leving, M. (Other)

1-Sept-2017 → 1-Sept-2018

Prizes

Best oral presentation - VVBN PhD Day

Buurke, T. (Recipient), 1-Dec-2017

Carlo de Luca Emerging Scientist Award

Buurke, T. (Recipient), 2021

FWO Junior postdoctoral fellowship

Buurke, T. (Recipient), 2021

KU Leuven postdoctoral mandate

Buurke, T. (Recipient), 2020

Researcher of the Year Award - PhD Student Category

Buurke, T. (Recipient), 12-Mar-2019

Social media prize - 6th International RehabMove State-of-the-Art Congress

Buurke, T. (Recipient), 1-Dec-2018

Society for Movement Analysis Laboratories in the Low Lands (SMALLL) Award

Buurke, T. (Recipient), 1-Dec-2016

Top publication award - Research institute SHARE

Buurke, T. (Recipient), 14-Nov-2019

Travel award winner - De Luca Foundation for World Congress of Biomechanics

Buurke, T. (Recipient), 1-Jul-2018

Van Swinderen Prijs 2020

Buurke, T. (Recipient), 15-Dec-2020

VVBN thesis prize 2020

Buurke, T. (Recipient), 2021

Press/Media**Bewegingswetenschappen bestaat 40 jaar en houdt je fit in Forum Groningen**

Elferink-Gemser, M., Buurke, T., Janssen, R. & van der Bijl, F.

11/10/2024

1 Media contribution

Public festival in the forum

Buurke, T. & Kompagnie, N.

01/10/2024

1 Media contribution

Tom Buurke's fascination with balance - Walking is actually falling

Buurke, T.

14/01/2020

2 items of Media coverage

What is the use of the knee jerk reflex?

Buurke, T.

16/07/2020

2 Media contributions

Why do people wave their arms when walking?

Buurke, T.

03/05/2024

1 Media contribution

Why marching in one place blindfolded doesn't work

Buurke, T.

15/01/2025

1 Media contribution

Awards