

Nancy Lee Black – Curriculum Vitae for IEA VPSG role
Full Professor, Department of Mechanical Engineering (Industrial – Ergonomics)
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Summary:

- Active in the ergonomics community, nationally and internationally,
 - Chaired the International Ergonomics Association's (IEA's) *Science, Technology and Practice* standing committee (with two international co-chairs and 25+ Technical Committee chairs 2021-2024)
 - Co-chaired IEA 2021 Triennial World Congress Scientific program (hosted by Association of Canadian Ergonomists / Association Canadienne d'ergonomie, ACE)
 - ACE president in 2017 and represented ACE at IEA council meetings 2016, 2017, 2018.
- Canadian Certified Professional Ergonomist (CCPE); Professional Engineer (Association of Professional Engineers and Geoscientists of New Brunswick), member of ACE, Human Factors and Ergonomics Society, Institute of Industrial & Systems Engineers, Canadian Engineering Education Association.
- Bilingual English – French. Some knowledge of Spanish, Portuguese.

EDUCATION

- 1995 - 2001 Ph.D. (Mechanical Engineering), University of New Brunswick, Fredericton, New Brunswick,
 - Supervised by Dr. Ed Biden, and Professor Jeremy Rickards at the Institute of Biomedical Engineering
 - Thesis: Mechanical Energy Measurement Applied to Upper Limb Powered Prostheses
- 1991 - 1994 Master of Applied Science in Industrial Engineering, Dalhousie University, Halifax, Nova Scotia
 - Supervised by Dr. Biman Das; Thesis: Strength in the Workspace of Wheelchair-Mobile Paraplegics
- 1984 - 1989 Honours Bachelor of Applied Science (Systems Design Engineering) University of Waterloo, Waterloo, Ontario; obtained with First Class honours.

RELEVANT WORK EXPERIENCE

- 2022-2027 Vice-doyenne (Assistant Dean), Faculté d'ingénierie, Université de Moncton (5-year term).
 - Responsible for student dossiers (Undergraduate, Master's and Ph.D. levels), including cooperative education, Occupational Safety and Health dossiers, and support of Dean's and secretariat work.
 - Led 2023-4 external evaluation of Applied Science graduate programs, Université de Moncton.
- 2023 – present Full Professor. Faculté d'ingénierie, Université de Moncton, Mechanical Engineering.
- 2008 - 2023 Professor Faculté d'ingénierie, Université de Moncton, Associate in Mechanical Engineering, Associate (2004-2008), Assistant (1997-2004) in Industrial Engineering.
- 2021 Six-month sabbatical, Moncton. Organized Technical programming for IEA2021.
- 2011-2012 Sabbatical with IFSTTAR, in Bron, France: Evaluating musculoskeletal disorder risk through biomechanics and work study during industrial assembly tasks to improve understanding of discomfort.
- 2015-2019, 2020; 2024 Temporary professor, **Ergonomics** Module, *Department of Hygiène, sécurité et environnement, IUT Université de Bordeaux*, France (1 week intensive annually – January or March)
- 1994 - 1996 Lecturer, École de génie, Université de Moncton, Moncton, New Brunswick
 - Developed and taught: Work study and design, Occupational Health, Safety and Ergonomics, Occupational Biomechanics, Human - Machine Interfaces, Ergonomic design ; *Ergonomics* Laboratory
- 2003-2004 Sabbatical researching alternative measurement and evaluation systems for the Prevention services - Ergonomics group WorkSafe NB, New Brunswick

Relevant RESEARCH GRANTS OBTAINED (selected since 2000)

- **Centre of Research Expertise for the prevention of Musculoskeletal Disorders (CRE-MSD)** seed grant (Principal applicant Patrick Neumann, co-applicant Fil Salustri of Toronto Metropolitan University),

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Examining Undergraduate Engineering Curricula for the Presence of MSD related knowledge and content. \$12,425. 2023-4.

- **Natural Sciences and Engineering Research Council (NSERC) of Canada – Alliance Grant** (\$42,809, 2021-2) ALLRP 561353-20 Sit-stand and under-the-desk-bicycle with gamified interface on productivity.
 - NSERC Alliance Grant industrial partner Ergonomyx Technologies Inc. \$28,383, 2021-2.
- **New Brunswick Innovation Foundation Equipment grant**, industrial partner Ergonomyx: \$10,042, 2021
- **Natural Sciences and Engineering Research Council (NSERC) of Canada**, Discovery Grant Impact of workstation and wearable technologies on musculoskeletal disorder risk in computer intensive environments. \$26 000 / year x 5 years (2020-2025)

PUBLICATIONS AND SEMINARS

Patent: Workstation having Automated and Powered Height, Depth and Rotational adjuster, US9167894 B2 (Oct. 27, 2015), CA2899233 A1 et WO 2014113873 A1 (July 31, 2014). Co-inventor with Léon DesRoches. Assigned to SmartPODS Inc. December 8, 2014.

Relevant publications (since 2018):

1. Black, N.L., Neumann, W.P., Noy, I., Dewis, C. (2023) Applying ergonomics and human factors to congress organization in uncertain times, Applied Ergonomics, vol. 106, 103862 (13 pages)
2. Black, N.L., Tremblay, M., Ranaivosoa, F. (2022). Different sit:stand time ratios within a 30-minute cycle change perceptions related to musculoskeletal disorders. Applied Ergonomics. 99: 103605 (12 pages).
3. Black, N.L., St-Onge, S. (2022) Measuring pandemic home-work conditions to determine ergonomic recommendation relevance, WORK: A Journal of Prevention, Assessment & Rehabilitation. 71(2):299-308.
4. Zare, M., Black N, Sagot J.-C., Hunault, G., Roquelaure, Y., 2020. Ergonomics interventions to reduce musculoskeletal risk factors in a truck manufacturing plant. International Journal of Industrial Ergonomics, 75: 102896 (12 pages).

Other relevant refereed contributions (at conferences):

At Association canadienne d'ergonomie / Association of Canadian Ergonomists (ACE) Annual Conference, Burlington, ON. 3-4 Oct. 2023. One page peer-reviewed and poster presented

1. **Klein, A.**, Black, N.L., Ergonomics and Human Factors comparison: Canada and Brazil.
2. **Clavet, E.**, Black, N.L., **Langis Michaud, R.**, **Samping, J.**, Comparison between pain felt and RULA scores in the trunk and neck.
3. Black, N.L., Neumann, W.P., Vahlas, G., Kahle, H. Undergraduate engineering students get little or no exposure to ergonomics / human factors in Canada
4. **Anselot, M.**, Black, N.L. Effet sur l'angulation des épaules de différents pourcentages assis/debout pour un poste bureautique
5. Black, N.L., Neumann, W.P., Vahlas, G., Kahle, H. (2023) Does Engineering Undergraduate Education Under-utilize Human Factors / Ergonomics? Canadian Engineering Education Association 2023 conference, June 2023 Kelowna BC, 8 pp.

At Association of Canadian Ergonomists (ACE) Virtual Symposium. 18-19 Oct. 2022

6. **Samping, J.***, Black, N.L., **Michaud Langis, R.**, Effect of using gamified app with sit-stand desk and under the desk bike heart rate variability (HRV), Oral presentation; Master's competition.
7. **Michaud Langis, R.***, Black, N.L., **Samping, J.**, Effect of using gamified app with sit-stand desk and under the desk bicycle on activity level. Poster competition, Undergraduate.
8. **Michaud Langis, R.***, Black, N.L., **Samping, J.** Perceived value of innovative height adjusting desk and under-the-desk bike with smartphone app in office work environments. Annual conference Canadian Association for Research on Work and Health (ACRST/ CARWH) virtuelle. 16 Sept. 2022

At Canadian Society of Biomechanics biennial conference, Montreal, August 2021 (posters).

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9. Black N, Tremblay M, **Ranaivosoa F** (2021) Heart Rate Variability during office work with regular periodic sit-stand changed.
10. Black N, **Hébert M**, Tremblay M (2021) Musculoskeletal risk associated with upper arm deviation varies when alternating regularly between sitting and standing postured during office work.
11. Hamilton-Wright A, Raymond K, Black N (2020) Machine-Learning Insights for Postural Pattern Analysis, accepted for presentation at the XXIII International Society of Electrophysiology and Kinesiology (ISEK) Virtual conference, July 12-14. <https://isek.org/2020-congress/>

At 50th Annual Conference of the Association of Canadian Ergonomists (ACE): New Horizons, St John's NL. Aug. 13 -15 2019

12. * Black N.L., Tremblay M, **Ranaivosoa F., Adjado A., Brossard M., McGrath M.,** Moynihan T. (2019). In French: 'The best standing duration during office work, according to perception'
13. Raymond K, Hamilton-Wright A, Black N. (2019). Postural State Sequence Duration and Musculoskeletal Disorder Marker Perception at Sit-Stand Workstations.
14. * Black N, Hoodless K, Qureshi S. (2019). IEA2021: Opportunities for Canada on the World Stage of Ergonomics.

At 49th Annual Conference of the Association of Canadian Ergonomists (ACE) and 6th Conference of the Centre for Research in Occupational Safety and Health (CROSH), Oct. 15 - 18. Sudbury, Canada. 2-pages peer-reviewed

15. Black N, Hamilton-Wright, A., Lange, J., **Bouet, C.,** Martin Shein, M., 2018. Matching Postural State Sequences with Fatigue and Pain Experienced to distinguish low and high risk at sitting and Sit-Stand Workstations.
16. * Black N.L., Tremblay, M., **Mougnol, G., McGrath, M. et Kengne, P.,** 2018. Challenges of controlled measures in real Office environments: Impact of workstation stand-sit height variations.
17. Hamilton-Wright, A., Black N.L., Lange, J., **Bouet, C.,** Martin Shein, M., **Samson, M., Lecanelier, M.** 2018. Postural position sequences correlate to perceived pain and fatigue Postural position sequences correlate to perceived pain and fatigue. Presented orally at International Society of Electrophysiology and Kinesiology (ISEK) 2018 conference, Dublin.

At International Ergonomics Association triennial conference. Aug 26-30, 2028 Florence, Italy. 6-page articles published 2019 in Bagnara S., Tartaglia R., Albolino S., Alexander T., Fujita Y. (eds) Proceedings of the 20th Congress of the International Ergonomics Association (IEA 2018). IEA 2018. Advances in Intelligent Systems and Computing,

18. * Black N, Hamilton-Wright, A., Lange, J., **Bouet, C.,** Martin Shein, M., **Samson, M., Lecanelier, M.** Postural Deviation Gestures Distinguish Perceived Pain and Fatigue Particularly in Frontal Plane
19. * Black N, Village, J. Human Factors/Ergonomics Education and Certification: The Canadian Experience. Abstract evaluated. Poster presented.
20. * Robertson M.M., Black N., Jacobs K., Dickinson C., Tey F., Szabó G. Global Ergonomics Month: Experiences, Stories and Initiatives Around the World.

Articles without peer review

1. Black, N.L. (2022), Human factors and ergonomics in an interconnected world: Promising directions for the future – introduction to the IEA2021 special issue. (editorial) WORK. DOI:10.3233/WOR-223646. Nov.

AWARDS AND HONOURS since 2021

- Professor contributing most to student life Award, 2023-2024, Université de Moncton
- Adjunct Associate Professor, Industrial Engineering Department, Dalhousie University, 2004-present
- Honorary Research Associate (HRA), School of Graduate Studies, University of New Brunswick, since 2005

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Invited keynote Presentations (since 2018)

1. Black, N.L., Invited keynote : *Valeur ajoutée de la science et la pratique d'E/HF (ergonomie / facteurs humains) au monde en 2022 et au futur*. Symposium virtuel de l'Association canadienne d'ergonomie. Oct. 17 2022 (1 h).
2. Black, N.L., Invited keynote: Ergonomics and the Transformation of work with Industry 4.0 – 5.0. 10th conference of the Ergonomics Society of Nigeria (ESN). Conference theme "Human Factor and Artificial Intelligence - The Evolution of Work", Dec. 2, 2021. (1 h).
3. Black N.L., Invited keynote: Ergonomics in the World and in Our Own Backyards, Atlantic regional Association of Canadian Ergonomists Conference, Moncton, Nov. 17, 2018.

PROFESSIONAL MEMBERSHIPS

- Member, Association of Professional Engineers and Geoscientists of New Brunswick, 1994-present
- Member, Association of Canadian Ergonomists (formerly Human Factors Association of Canada) 1993-
- Senior Member (since 2007), Member (2002-2007) and student member (1996-2002), Institute of Industrial & Systems Engineers (Formerly Institute of Industrial Engineers)
- Member (since 2004) and student member (1996-2003), Human Factors and Ergonomics Society
- Student member, Canadian Medical and Biological Engineering Society, 1996-2001.
- Member (2011) of Ergonomics Society, Société d'ergonomie de la langue française (SELF)
- Member Canadian Engineering Education Association – *Association Canadienne d'éducation en genie* (CEEAA-ACEG), since 2023

COMMUNITY AND PROFESSIONAL INVOLVEMENT (Particularly since 2019, relevant activities)

- Chair, Science Technology & Practice Standing committee, International Ergonomics Association, 2021-4.
- Technical program co-chair for 2021 Triennial World Congress of International Ergonomics Association in Vancouver (June 13-18 2021) with Dr. Patrick Neumann. 3-year commitment. 80-person International Scientific Committee.
- *Lead Guest Editor*, Special Issue of the Journal WORK: **Human Factors and Ergonomics in an Interconnected World: Directions for the future**, communications from IEA2021. 2021-2. Supported by 3 international co-editors. Managed evaluation of 31 soumissions.
- Past president (2010-present), President (2008-2010), President-elect (2006-8), Member at large (2004-6) for ACE Atlantic region.
- Member, ergo@large Committee of Association of Canadian Ergonomists (2021- present)
- Radio Interviews – Radio Canada: "*Le mois mondial de l'ergonomie*" (Global ergonomics month), l'Heure de pointe avec Marc-Samuel Larocque, 16h34 Oct. 6, 2023. 10 minutes.; Ergonomics issues of working from home for an extended period (French), Moncton, Dec. 27, 2021. (10 minutes); Regard 9 - Ici première segment 'Revu et corrigé': *Vaut mieux travailler debout qu'assis* (Rethink and correct: better to work standing than seated), April 16 2019; (15-minutes)
- Written Media Interviews: with AC Schilton of New York Times, resulting article "Three Stretches to Tend to the Aches and Pains of Working from home" published May 19, 2020.
- Journal Article reviewer (upon request): Applied Ergonomics, Ergonomics, Exploration of Medicine, HFES Annual meeting submissions, Interacting with Computers, International Journal of Human-Computer Interaction, International Journal of Industrial Ergonomics, International Journal of Occupational Safety and Ergonomics, International Journal of Production Research, International Journal of Sports Medicine, PLOS one, Procedia Manufacturing, Occupational Ergonomics, Theoretical issues in Ergonomics, WORK.
- PhD & Master's thesis examiner (3 each since 2019).