

Curriculum Vitae

Pranab Kumar Nag
B.Sc (Hons), M.Sc., Ph.D., D.Sc

NAME: **Pranab Kumar Nag**

DATE OF BIRTH: 22nd February 1951

CURRENT POSITION: Professor,
School of Environment & Disaster Management

Ramakrishna Mission Vivekananda University
Belur Math, Howrah 711202, West Bengal

*(IRDM Faculty Centre, Ramakrishna Mission
Ashrama, Narendrapur, Kolkata 700103)*

*Former Director & Scientist G
National Institute of Occupational Health (ICMR)
Ahmedabad & Regional Occupational Health
Centres (Southern - Bangalore, and Eastern -
Kolkata, India)*

Research Interest in Climate Change: To elucidate human physiological, biophysical and behavioural responses to climatic variables in different seasons of the year. To develop predictive model for human susceptibility/vulnerability limits of people at work and rest under different climatic extremes, and to integrate human data with geo-spatial and environmental information in mapping health outcomes and disorders with reference to projected climate change.

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EDUCATION

D.Sc	1991	Univ of Calcutta:	Ergonomics: A new perspective of work organization in traditional agriculture
Ph.D	1977	Univ of Calcutta:	An ergonomics evaluation of different types of manual work in relation to productivity
M.Sc	1972	Univ of Calcutta: Physiology (Ergonomics)	1st class (2nd in order of merit)
B.Sc (Hons)	1970	MBB College, Agartala (Univ of Calcutta)	

EMPLOYMENT

<u>Grade/Post</u>	<u>From</u>	<u>To</u>	<u>Inst/centre/Hqrs</u>
Full Professor	Current position	-	Ramakrishna Mission Vivekananda University
Director & Scientist 'G'	2008	Feb., 2013	NIOH, ROHC (S & E)
Director-in-charge	October 2007	July 2008	NIOH, ROHC (S & E)
Deputy Director, Senior Grade (Scientist 'F')	2000	July 2008	NIOH (Ergonomics & Physiology Div)
Deputy Director (Sc. E)	1995	2000	NIOH (as above)
Asst. Director	1990	1995	NIOH (as above)
Senior Res Officer	1984	1990	NIOH (as above)
Research Officer	1976	1984	NIOH (as above)

TEACHING AND RESEARCH EXPERIENCE — 37 YEARS

Specialization: Climate change, Ergonomics, Cognitive Science, Health & Safety

Teaching and Research in the field of Environmental Health, Ergonomics, Human Factors, Biomechanics, Occupational Health and Safety, Cognitive Science – psycho-social stress, Established laboratories: Human Computer Interaction, Usability, Biomechanics – motion analysis, Environmental study – walk-in heat chamber, Acoustic chambers, Environmental Monitoring, Work Physiology, Anthropometry – 3D whole body scanning; Computational Biology, Analytical Laboratory.

- Faculty: Ramakrishna Mission Vivekananda University, Belur Math,

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- Faculty: National Institute of Occupational Health, Ahmedabad, India
- Faculty: Mahatma Gandhi Labour Institute, Ahmedabad; India
- **Visiting Faculty:** National Institute of Fashion Technology, Gandhinagar; IIT Mumbai (Industrial Design Centre), Sardar Patel University, ISTAR, (Industrial Hygiene & Safety), Vallabhvidyanagar, National Institute of Design (Ergonomics), Ahmedabad, Entrepreneurship Development Institute, Gandhinagar; Gujarat University (Environmental Science), Ahmedabad, Nirma Institute of Management (Occupational Health), Ahmedabad, Tamil Nadu Agricultural University (Ergonomics), Coimbatore, National Institute of Design (Ergonomics), Ahmedabad, IPCL Management Institute (Ergonomics), Baroda, NITIE (Ergonomics), Mumbai

RESEARCH AND DEVELOPMENT in multi-disciplinary areas, such as Ergonomics in Industry – steel, manufacturing, garment, textile. Tertiary Services (Telecommunication, BPO; Ergonomics and work design), Energy sector – Thermal power plants, Informal Industries - Health hazards, work (re) design), Environmental and biological monitoring, Agriculture – Farm methods, conditions and practices (rural development), Climate Change: Hot environment and Human Health, Quality, Environment, Health & Safety Management (ISO 9001; ISO 14001; OHSAS 18001)

THESIS

1. **D.Sc.** Nag PK, *Ergonomics: A new perspective of work organization in traditional agriculture*, pp. 331, D.Sc. thesis, Calcutta University (Calcutta, India), 1991
2. **PhD.** Nag PK, *An ergonomics evaluation of different types of manual work in relation to productivity*, pp. 225, PhD. thesis, Calcutta University, 1977

PUBLICATIONS

BOOKS

1. Nag PK, *The Management Systems — Quality, Environment, Health and Safety: ISO 9000:2000, ISO 14001, OHSAS 18001*, pp. 683 (Mumbai: Quest Publications), 2002
2. Nag PK, *Ergonomics and Work Design (Emerging Issues in Organizational Sciences)*. (New Delhi: New Age International Publication, formerly Wiley Eastern), p396, 1996
3. Mital A, MM Ayoub, S Kumar, MJ Wang, K Landau, PK Nag (Eds), *Industrial and Occupational Ergonomics: Users' Encyclopaedia* (CD-

ROM), ISBN 0-9654506-0-0), 1999

4. Ray, GG, Nag, PK and Ganguli, A. (editors) *Humanizing Work and Work Environment*, (Mumbai, Quest Publications), 2003
5. Nag PK, et al. (editors), *NIOH Dialogue – Occupational and Environmental Health*, NIOH (ICMR), pp. 152, 2011
6. **International Labour Office, Geneva – Publication under process: Guidance on Exposure and Diagnostic Criteria of Occupational Disease (Niu, S., Colosio, C., Nag PK, Adisesh A., Min Zhang, Kgalatomo S.), (expected publication date: Mid 2014)**

PEER REVIEW PUBLICATIONS

7. Nag PK, Dutta P., Chorsiya V. and Nag A., GIS Visualization of Climate Change and Prediction of Human Responses. In: *Computational intelligence techniques in earth and environmental sciences* (Springer, New York; Springer Science, New York, 93-115, 2014
8. Nag, PK, Chorsiya, V. and Nag A., EMG Activation Pattern During Voluntary Bending and Donning Safety Shoes, In: *Applications, Challenges, and Advancements in Electromyography Signal Processing* (edited by: Ganesh R Naik (New York: IGIGLOBAL) (accepted 2014)
9. Nag PK, P Dutta, A Nag, Critical body temperature profile as indicator of heat stress vulnerability, *Industrial Health*, 51, 113–122, 2013
10. Nag PK, H Vyas, A Nag, Postural stability in women sitting. *Int J Occup Safety and Ergonomics (JOSE)* 19 (4) 583–595, 2013
11. Nag A, H Vyas, P Shah, PK Nag, Risk Factors and the Musculo-skeletal Disorders Among Women Workers Performing Fish Processing, *Am J Indus Med.* 55: 833-843, 2012
12. Sinha SN and Nag PK, Air pollution from solid fuels. In: *Nriagu JO (Ed.) Encyclopedia of Environmental Health* 1, 46 (Elsevier) 2011
13. Nag PK, A Nag, P Sekhar, P Shah, Perceived heat stress and strain of workers. *Asian Pacific Newsletter on Occupational Health and Safety* 10: 18-20, 2011
14. Nag PK, Nag A, Shah, P, Vyas H. Influence of footwear on stabilometric dimensions and muscle activity, *Footwear Science*, 3: 179-188, 2011
15. Nag PK, P Dutta, A Nag, & T Kjellstrom, Extreme Heat Events: Perceived Thermal Response of Indoor and Outdoor Workers, *Int J. Current Res. & Rev.* (in press; 2013) (IC: 4.5).
16. Nag PK, A. Nag, H. Vyas, P. Shah, Disparity of seat cushion and its

- influence on postural control, *International Journal of Occupational Safety and Ergonomics (JOSE)* 19 (4), 573–581, 2013
17. Nag PK, Nag A, Vyas H, Shah P, Postural control in different load handling tasks, *J. Work* 1-8, 2013 (in press)
 18. Nag A. H Vyas and PK Nag, Gender differences, work stressors and musculo-skeletal disorders in weaving industries. *Industrial Health*, 48: 339-348, 2010
 19. Nag PK, Situational Analysis of Occupational Skin Manifestations: India, Workshop on Occupational Skin Diseases, WHO (Geneva), 2010
 20. Nag PK, Extreme heat events – a community calamity, *Industrial Health*, Editorial. 131-133, 48, 2010
 21. Nag PK and A Nag, “Vulnerability to heat stress: scenario in western India (Pages 87), WHO, New Delhi 2009; http://www.whoindia.org/LinkFiles/Climate_Change_Vulnerability_to_Heat_Stress_Scenario_in_Western_India.pdf
 22. Nag PK, Nag A and Vyas H, Non-fatal accident analysis of textile industries in India, In: *Ergonomics in Developing Countries*, (ed. Pat Scott, Taylor and Francis, UK), 2009
 23. Nag, PK, S. Pal, A. Nag, H. Vyas, Influence of arm and wrist support on forearm and back muscle activity in computer keyboard operation. *Applied Ergonomics*, 40:286-291, 2009
 24. Nag, PK and S. Pal, Arm and back muscle activity and upper arm joint angle analysis in computer keyboard operations. *Proc. International Congress on Ergodesign, Sao Luis Brazil*, 2008
 25. Nag, PK, S. Pal, S. M. Kotadiya, A. Nag, K. Gosai, Human-seat interface analysis of upper and lower body weight distribution, *International Journal of Industrial Ergonomics (Elsevier publ)*, 38: 539-546, 2008
 26. Nag PK, Vyas H, Nag A. and Pal, S., Applying stabilometry in characterizing floor-sitting modes of women. *International Journal of Industrial Ergonomics*, 38: 984-991, 2008
 27. Nag PK, Nag A, and Ashtekar SP. Thermal limits of men in moderate to heavy work in tropical farming. *Industrial Health* 45: 107-117, 2007
 28. Nag PK and A Nag, Hazards and health complaints associated with fish processing activities in India — evaluation of a low-cost intervention. *International Journal of Industrial Ergonomics*, 37: 125-132, 2007
 29. Nag PK, Nag A, Vyas H, Shah P, Disparity of seat cushion and its influence on postural control. *Int J Occup Safety and Ergonomics* (in

press)

30. Saha A, Nag A and Nag PK. Occupational injury proneness in Indian women: a survey in fish processing industries. *Journal of Occupational Medicine and Toxicology*, 1:23, pp 5, 2006
31. Nag PK, Nag A, and Vyas H. Scope of OSH management development in informal sectors of industry. In: *Diversity in Ergonomics*, IEA 2006, Maashtrecht, Netherlands.
32. Nag PK, Pal S, Poddar E and Nag A. Approach to work analysis in the telecom services. In: *Diversity in Ergonomics*, IEA 2006, Maashtrecht, Netherlands. 2006
33. Nag, PK, E Poddar and A Nag, *Principal Components Analysis on Aspects of Work in Telecom Services*, ed: Thatcher A., James J. & Todd A., *Cyber Ergonomics — CybErg 2005*, 586-594, Johannesburg, (IEA Press), ISBN 0 9577485-2-3, 2005
34. Nag A, K Elgstrand, A Saha and Nag PK. Dermal injuries in hands among women in fish processing works. CDC website, *Occupational and Environmental Exposures of Skin to Chemicals 2005*, pp.5
35. Nag, PK, E Poddar and A Nag, *Work stressors of women VDT operators in call centers and telecom exchanges*, HCI International 2005
36. Nag PK and S. Pal, *Musculo-skeletal risk factors among computer keyboard users*, 195-207 (ed. Jayakumar G and Retneswari M, *Occupational Health for health care professionals*, Malayasin Medical Association, Kuala Lumpur, 2008
37. Nag PK and A Nag, *World Trends in Occupational Health and Safety Management Systems*, In: *Handbook on Standards and Guidelines in Ergonomics and Human Factors*, Chapter 25, 442-468, Ed. W. Karwowski, (New Jersey, Lawrence Erlbaum), 2005
38. Nag PK and S. Hsiang, *Spinal loading in MMH tasks*, *International Journal of Industrial Engineering, Industrial and Occupational Ergonomics: Users' Encyclopaedia (CD-ROM)*, ISBN 0-9654506-0-0), p.11, 1999
39. Nag PK, *Human heat tolerance*, *International Journal of Industrial Engineering, Industrial and Occupational Ergonomics: Users' Encyclopaedia (CD-ROM)*, ISBN 0-9654506-0-0), p. 7, 1999
40. Nag PK and SP Ashtekar, *Hyperhydration*, *International Journal of Industrial Engineering, Industrial and Occupational Ergonomics: Users' Encyclopaedia (CD-ROM)*, ISBN 0-9654506-0-0), p. 5, 1999
41. Nag PK, *Work systems - checklists*, In: *ILO Encyclopaedia of Occupational Health and Safety (4th Edition)*, Chapter 29, 'Ergonomics', 29.14-29.24, (ILO, Geneva) 1998

42. Nag PK, Manual Operations in Farming, In: ILO Encyclopaedia of Occupational Health and Safety (4th Edition), Chapter 64, Agriculture and Natural Resource Based Industries, 64.23-64.29, (ILO, Geneva) 1998
43. Nag PK, 'Biomechanics', In: Understanding Medical Physiology, ed. R.L. Bijlani, (New Delhi: Jaypee Bros), Chapter 11.8, 1995 (revision 1997)
44. Nag PK, 'Ergonomics', In: Understanding Medical Physiology, ed. R.L. Bijlani, (New Delhi: Jaypee Bros), Chapter 11.9, 1995 (revision 1997)
45. Nag PK, Agricultural Ergonomics - Preface, (Guest Editor), International Journal of Industrial Ergonomics (Elsevier, USA), 10 (4): 263-264, 1992 (1991-92)
46. Nag PK, Influence of posture in muscle contraction behaviour in arm and leg ergometry, In: The Ergonomics of working posture, ed. EN Corlett, J Wilson and I Manenica, Chapter 16, 155-167 (Philadelphia: Taylor & Francis), 1986
47. Nag PK, Ergonomics: A conceptual and operational approach in agricultural development, In: Production and Marketing of farm equipment in India (Ed.) Sharan, G., S. Kayastha, (Ahmedabad: Indian Inst of Management), 104-110, 1986
48. Nag PK, SP Ashtekar and A Nag, Human tolerance to hot environment: Hydration effects of glycerol-water ingestion, Industrial Health (accepted)
49. Nag PK and A. Nag, Drudgery, Accidents and Injuries in Indian Agriculture, Industrial Health, 42 (2): 149-162, 2004
50. Nag A and PK Nag, Do the Work Stress Factors of Women Telephone Operators Change with the Shift Schedules? International Journal of Industrial Ergonomics, (USA), 33(5): 449-461, 2004
51. Nag, A, PK Nag, H. Desai, Hand Anthropometry of Indian Women, Ind. J. Med. Res, 117: 260-269, 2003.
52. Nag PK and A Nag, A National Priority of Occupational Health and Safety Management System, ICMR Bulletin, 33(11-12), 2004
53. Nag PK and A. Nag, Head Injury — The Primary Factor to Fatalities in Indian Industries, In: Ergonomics in the Digital Age, (IEA: Seoul), Vol.3, ISBN 89-90838-10-X-98530 2003
54. Nag PK and A Nag, A Multi-method Ergonomic Review Technique for Work Analysis and Design in Farming, In: Ergonomics in the Digital Age, (IEA: Seoul), Vol.2, ISBN 89-90838-10-X-98530, 2003
55. Nag PK and A Nag, Shiftwork in the hot environment, Journal of Human Ergology 30(1/2): 161-166, 2003

56. Nag PK and P Bandyopadhyay, Biophysical Modeling of Human Heat Exchange Phenomena, In: Humanizing Work and Work Environment, Edited: Ray, GG, Nag, PK and Ganguli, A., Proc. International Congress HWWE 2001 (Mumbai, Quest Publications), 2003
57. Nag PK and Nag A, Psychophysical Stress Factors as Determinants of Human-Computer Interaction Incompatibility, In: Humanizing Work and Work Environment, Edited: Ray, GG, Nag, PK and Ganguli, A., Proc. International Congress HWWE 2001 (Mumbai, Quest Publications), 2003
58. Nag PK, Preparing for ISO 9000:2000. Industry 2.0, 1 (12): 59-60, 2002 (Jasubhai Media, Mumbai)
59. Nag PK, Ergonomics research in India, Indian J. Industrial Engineering, 25:1-4, 2001
60. Nag PK and A Nag, Anthropometry and Man-machine Compatibility-Where does the Asians Stand? In: Ergonomics for the new millennium, (IEA, San Diego CA, USA), 307-310, 2000
61. Nag PK, S Hsiang, Ergonomics in manual materials handling tasks, ICMR Bulletin, 30 (8): 67-76, 2000
62. Nag PK, CK Pradhan, A Nag, SP Ashtekar and H Desai, Efficacy of water-cooled garment for auxiliary body cooling in heat. Ergonomics (UK) 41(2): 179-187, 1998
63. Nag PK and VG Patel, Work accidents among shiftworkers in industry. International Journal of Industrial Ergonomics (USA) 21: 275-281, 1998
64. Nag PK, SP Ashtekar, A Nag, D Kothari, P Bandyopadhyay and H Desai, Human heat tolerance in simulated environment. Indian J Med Res, 105: 226-234, 1997
65. Nag PK, P Bandopadhaya, SP Ashtekar, D Kothari, H Desai, A Nag, Human work capacity in combined stress of work and heat, J. Human Ergol. 25: 105-114, 1996
66. Nag PK and A Nag, Ageing: Working capacity and job pattern in informal sectors, In: From Experience to Innovation, IEA'97, Helsinki (Vol 5, 492-494), 1997
67. Nag PK, P Bandopadhaya, SP Ashtekar, D Kothari, H Desai, A Nag, Human work capacity in combined stress of work and heat, J. Human Ergol. 25: 105-114, 1996
68. Nag PK, et al., Criteria for recommended standards for human exposure to environmental heat — A REPORT (Ministry of Environ & Forests, Govt of India, 1992-95), pp 109, 1996
69. Nag PK and A Nag, A multi-method ergonomics review technique (MMERT) in work systems analysis and design. In: Human Aspects of

- Advanced Manufacturing: Agility & Hybrid Automation, (ed. W. Karwaski), 1996
70. Nag PK, Occupational health hazards of farm women: Strategic ergonomics for development. In: Women in Agriculture. National Commission on Women, (Hyderabad, National Institute of Agricultural Management), 1994
 71. Nag PK and CK Pradhan, A computer-assisted model for biomechanical testing of manual materials handling tasks. In: Occupational and Environmental Ergonomics. (Calcutta: ISE) 35-39, 1993
 72. Nag PK and CK Pradhan, Influence of air flow on skin temperature, J. Human Ergology (Japan) 22 (2): 151-161, 1993
 73. Nag PK and CK Pradhan, Ergonomics of hoeing operation, Intern. J. Indus. Ergonomics (USA), 10 (4): 341-350, 1992
 74. Nag A, PK Nag and H Desai, Work Stresses of women in sewing machine operation, J. Human Ergol. (Japan) 21: 56-64, 1992
 75. Nag A and PK Nag, Heat stress of women doing manipulative work, Amer. J. Indus. Hyg. (USA), 53 (12), 751-756, 1992
 76. Nag PK and CK Pradhan, WORKMAN - A biomechanical human model for ergonomics application, Ind. J. Physiol. All. Sci. 46: 165-172, 1992
 77. Nag PK, Endurance limits in different modes of load holding, Applied Ergonomics (U.K.), 22(3): 185-188, 1991
 78. Nag PK, Planning work-rest allowances for better HRM in industry: A critical appraisal, Ind. J. Soc. Work, 52: 515-526, 1991
 79. Nag PK, CK Pradhan and SP Ashtekar, Computer-aided interference pattern analysis of electromyogram, Ind. J. Physiol. All. Sci. 44: 150-160, 1990
 80. Nag PK, An overview on rest allowance criteria in manual materials handling, Workshop: Ergonomics, Occupational Health, Safety & Environment, (Bombay: IIT), 58-63, 1990
 81. Pradhan CK, A Goswami, SP Ashtekar and PK Nag, Postural stress and discomfort in railway gangmen, Ind. J. Occup. Health, 32: 6-12, 1989
 82. Pradhan CK, A Goswami, SP Ashtekar and PK Nag, Use of wire-claws in railway track maintenance work, J. Human Ergology. (Japan), 17: 37-42, 1988
 83. Nag PK, A Goswami, SP Ashtekar and CK Pradhan, Ergonomics in sickle operation, Appl. Ergonomics (U.K.), 19: 233-239, 1988
 84. Nag PK, SP Ashtekar and CK Pradhan, Ergonomics in manual materials handling: Criteria and optimization, In: Designing for

- everyone, Vol 1, 194-196,(Ed.) Y. Queinnec et al. (London: Taylor & Francis), 1991
85. Nag PK, S Chintharia, S Saiyed and A Nag, EMG signals in sitting work posture, In: Ergonomics in Developing Countries, Occup. Safety and Health Series, No. 58, 105-111, (Geneva: International Labour Office), 1987
 86. Pradhan CK, A Goswami, SN Ghosh and PK Nag, Ergodesign and physiological valuation of different types of spade work, In: Ergonomics in developing countries, Occup. Safety and Health Series No. 58 (Geneva: ILO), 436-444, 1987
 87. Nag PK, Maximal oxygen uptake of agricultural men and women in India, Amer. J. Phys. Anthropol. (USA), 74: 149-153, 1987
 88. Nag A, PK Nag and S Chintharia, Anthropometry of small scale industrial workers, Ind. J. Med. Res., 86: 237-245, 1987
 89. Nag PK, A Goswami, CK Pradhan and SP Ashtekar, Convergence of surface and deep body temperature in combined stress of metabolic and environmental warmth, Ind. J. Med. Res., 84: 418-423, 1986
 90. Pradhan CK, A Goswami, SN Ghosh and PK Nag, Evaluation of working with spade in agriculture, Ind. J. med. Res., 84: 424-429, 1986
 91. Ghosh SN and PK Nag, Muscular strains in different modes of load handling, Clin. Biomechanics (U.K.), 1: 64-70, 1986
 92. Nag PK, S Chintharia, S Saiyed and A Nag, EMG analysis of sitting work postures in women, Appl. Ergonomics (U.K.), 17: 195-197, 1986
 93. Nag PK, CK Pradhan, A Goswami, Muscle activity and cardio-respiratory responses in static, dynamic and combined work, J. Human Ergol (Japan), 15: 73-77, 1986
 94. Nag PK, Organization of work in traditional agriculture in India, In: Ergonomics International 85, (ed.) Brown ID, R Goldsmith, K Coombes, MA Sinclair (London: Taylor and Francis), 1985
 95. Nag PK and CK Pradhan, Body temperature changes during transitional phases of work at different environmental warmth, Ind. J. Med. Res., 82: 65-71, 1985
 96. Nag PK, CK Pradhan and A Goswami, Ergonomics in railway track maintenance. Sponsored by Ministry of Railways, RDSO, 1985
 97. Nag PK and A Nag, Effect of limb position on the muscle activity about the elbow joint, Ind. J. Inst. Engg. 65: 49-51, 1985
 98. Pradhan CK, MG Malvankar and PK Nag, Work evaluation of gangmen in railway track maintenance, Ind. J. Physiol. All. Sci. 38:

61-64, 1984

99. Nag PK, Convective and evaporative heat transfer coefficients of the persons in different activities, *J. Human Ergol. (Japan)* 13: 43-48, 1984
100. Nag PK, Circulo-respiratory responses in different muscular exercises, *Europ. J. Appl. Physiol. (Germany)* 52: 393-399, 1984
101. Nag PK, Muscle contraction behaviour in combined isotonic and isometric exercise, *Ind. J. Physiol. All. Sci.*, 1983
102. Ramanathan NL, PK Nag, Energy cost of human labour, *ASCI J Management* 11: 110-132, 1982
103. Nag PK, JT Panikar, MG Malvankar, CK Pradhan and SK Chatterjee, Performance evaluation of lower extremity disabled people with reference to hand-cranked tricycle propulsion, *Applied Ergonomics (U.K.)*, 13: 171-176, 1982
104. Nag PK, Influence of posture and speed of arm and leg work with reference to physiological responses, *J. Sports Med (Italy)*, 22: 426-432, 1982
105. Nag PK and SK Chatterjee, Physiological reactions of female workers in Indian agricultural work, *Human Factors (USA)*, 23: 607-614, 1981
106. Nag PK, Predicting maximal oxygen uptake of workers engaged in agricultural tasks, *J. Human Ergol. (Japan)* 10: 25-31, 1981
107. Ray GG, RN Sen, PK Nag, A De and S Basu, Relationship between segmental and whole body weights and volumes of Indians, *J. Human Ergol. (Japan)* 10: 35-48, 1981
108. Nag PK and SK Chatterjee, Voluntary muscular contraction with reference to agricultural tasks, *Ind. J. Med. Res.*, 74: 111-119, 1981
109. Nag PK, NC Sebastian and MG Malvankar, Effective heatload on agricultural workers during summer season, *Ind. J. Med. Res.* 72: 408-415, 1980
110. Nag PK, NC Sebastian and MG Malvankar, Occupational workload in Indian agricultural workers, *Ergonomics (U.K.)*, 23: 91-102, 1980
111. Nag PK and P Dutt, Circulo-respiratory efficiency in some agricultural work, *Applied Ergonomics (U.K.)*, 111: 81-84, 1980
112. Nag PK and P Dutt, Effectiveness of some simple agricultural weeders with reference to physiological responses, *J. Human Ergol. (Japan)*, 8: 19-26, 1979
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114. Nag A, N Choudhuri, PK Nag, Relative viscosity of human seminal fluid: Influence of sperm concentration, motility and biochemical ingredients, *Andrologia* (Germany), 11: 478-482, 1979
115. Sen RN and PK Nag, Optimal workload for Indians performing different repetitive heavy manual work, *Ind. J. Physiol. All. Sci.*, 33: 18-25, 1979
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119. Pickford RW, R Pickford, J Bose, BS Joarder, PK Nag, GG Ray and RN Sen, Incomplete achromatopsia in Bishnupur, In: *Modern problems in Ophthalmology*, Vol 19, 232-235, (Basel: Documenta Ophthalmologica), 1978
120. Sen RN, GG Ray and PK Nag, Relationship between segmental and whole body weights of some Indian subjects, In: *Physical fitness assessment*, (Ed) RJ Shepherd and H Lavelle, Chapter 37, 384-391, (Springfield: C.C. Thomas), 1978
121. Nag PK, R.N Sen, GG Ray, D Chakraborti, Nutritional and energy metabolic status of Indian workers performing heavy manual jobs, *J. Madurai Univ.* 7: 47-52, 1978
122. Nag PK, NC Sebastian, NL Ramanathan and SK Chatterjee, Maximum oxygen uptake of Indian agricultural workers with reference to age and sex, *J. Madurai Univ.* 7(1); 69-74, 1978
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126. Ray (Nag) A, N Choudhuri and PK Nag, Inconsistent influence of sperm concentration on the viscosity of human seminal fluid, *J. Expt. Biol.* 15: 792-794, 1977
127. Nag PK, What is new in Cybernetics? *N.I.O.H. Letter* (Ahmedabad) 1(7): 2-3, 1977

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130. Sen RN and PK Nag, Are the Calcutta public buses ergonomically designed? Ind. J. Physiol. All. Sc. 27: 156-157, 1973

TECHNICAL REPORTS

131. Nag PK et al., Supreme Court Report - Occupational Health and Safety issues in coal-fired thermal power plants, 2011 (ref: Writ Petition (Civil) No.79 of 2005; judgment of SC, Jan 2011)
132. Nag PK, A Nag, PK Ganguli, J Majumder, S. Ravichandran, et al., Community Health Indicators for Risk Assessment at Ganjam (CHIRAG), Odisha, - A NIOH (ICMR) report, pp. 162, 2012
133. Nag A and PK Nag, Work Practices and Health Hazards of Women in Fish Processing Works in the Coastal Regions (Pages 74), Indian Council of Agricultural Research, Govt of India, 2010
134. Nag A and PK Nag, Identifying programme elements for OSH development in selected informal occupations in rural India (Pages 106), WHO, New Delhi 2009
135. Nag PK, To study and analyze the health impact of climate change and to provide new evidence that can be used in health impact assessment within member countries of the South-east Asia regions (WHO-SEARO) 2009
136. Nag PK, Status Report on Asbestos Related Diseases in India, WHO APW report, pp.58, 2008
137. Nag PK, Situational Analysis of Occupational Skin Manifestations: India, Workshop on Occupational Skin Diseases, WHO (Geneva), 2010
138. Nag PK and Anjali Nag, Ergonomics of Human – Computer interaction Compatibility Assessment (Pages 172), Dept of Science & Technology, Govt of India, 2008
139. Nag PK and A Nag, Biomechanics of sitting — influence of seat features and modes of sitting, Council of Scientific & Industrial Research, New Delhi, 2007
140. Nag PK, A Nag, Pal, S, Ergonomics of human-computer interaction compatibility assessment, NIOH Annual Report (2005-06).
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161. Nag PK, A Nag K Gosai, S Kotadiya, Analyzing wavelets in time-scale representation of arm and back muscles in low level activation, J Electromyo Kinesiology (under process)
162. Nag PK, P Dutta, A Nag, Seasonal variation of thermal responses of open field stone quarry workers in tropical environment, Industrial Health (under process)
163. Nag PK, Dutta P., Chorsiya V. and Nag A., Perceived Thermal Response of stone quarry workers in hot environment. (Communicated), Journal of Occupational Health (2013)
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Environment (SHE) Programme components and their applicability for Indian informal sector, Intern J Workplace Health Manag (communicated).

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166. Nag PK, Pal S, A Nag, Do the forearm and wrist supports reduce load on arm and back muscles in keyboard operation? (communicated)
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Patent filed

168. Water re-circulated garments for auxiliary body cooling for protection against high heat exposure (PK Nag & SP Ashtekar & A Nag) (Application No. 2746/DEL/2012, dated 5 Sept 2012)

Ph.D. students

1. Priya Sekhar (awarded 2014) - Biophysical and geo-spatial prediction of heat stress and strain with reference to climatic vulnerability of population in the region of western India. (Gujarat University)
2. Heer Vyas (awarded 2011) - Case analysis of Safety, Health and Environment programs (SHE) in informal sectors. (Gujarat University)
3. Swati Pal (Awarded 2010) - Human-computer interaction: Exploring the cognitive and physiological approaches. (Gujarat University)
4. Era Poddar (awarded 2008); Ergonomics of computer work station — an analysis of electromyographic, biomechanical and psychophysical aspects. (Gujarat University)
5. JB Vyas (2011), Heavy metal toxicity of children using different types of toys (Gujarat University; nearing completion)
6. Varsa Chorasias (2012), Postural control mechanism during different forms of perturbation (Gujarat University; project is ongoing)
7. Kishore Madhwani (2012), Corporate Ergonomics with reference to computer uses (Gujarat University; project is ongoing)
8. P Bandhopadhyay (awarded 2003); Biophysical evaluation and management of human exposure to tropical heat. (Gujarat University)

9. SP Ashtekar (awarded 2003) Applicability of thermal indices in human heat tolerance assessment. (Gujarat University)
10. CK Pradhan (awarded 1989); Ergonomic valuation of hand tools with reference to manual work performance (Calcutta University)

R&D Programmes (Designed & Executed)

DST (2012-14) (approved) NIHFW, New Delhi	Development of model of human susceptibility to extreme hot environment in the context of climate change (PK Nag, et al.) District Level Household and Facility Survey-4 (DLHS-4) - MOU signed (NIOH and NIHFW) to cover study area of 29 district of Gujarat, Daman, Diu and Dadranagar Haveli. (Rs 45 lakhs)
ICMR	Improvisation and efficacy validation of the personal cooling garment for use in extreme hot environment (Nag PK & Ashtekar SP)
Tata Steel (2011-12)	Community health indicators of risk assessment at Ganjam district, Orissa (PK Nag, et al.)
WHO 2009-10	Identifying programme elements for OSH development in selected informal occupations in rural India (Nag A and PK Nag)
WHO 2009-10	Vulnerability to Heat stress in Western India (PK Nag & A Nag)
ICMR (2012-14)	Development of knowledge discovery system for estimating pesticide consumption (PK Nag & LK Sharma)
ICMR (2011-13)	Quantitative detection of heavy metals and phthalates in toys (PK Nag, LJ Bhagia, S Perumal)
DST	Ergonomics of Human-Computer-Interaction Compatibility Assessment (PI) PI: Dr. PK Nag, Col: Dr. Anjali Nag; Psychophysical and other organizational stressors in VDT work in telecom services (intra-mural).
CSIR	Biomechanics of Sitting – Influence of Seat Features and Modes of Sitting (PI); Spinal and paraspinal muscle loading in different chair sitting modes (intra-mural)
ICAR	Work Practices and Health Hazards of Women in Fish Processing Works in Coastal Regions. PI: Dr. Anjali Nag, Col: Dr. PK Nag
ICMR SRF (student project)	Electromyographic and biomechanical analysis of VDU operators in relation to postural stress and musculoskeletal discomfort.
DOEn (1992-95)	Criteria for recommended standards for human exposure to environmental heat (PI)
RDSO - Ministry of Railways (1984-86)	Development and modernization of railway track tools based on modern principles of ergonomics (PI)
2006-2008	Postural stabilometry in evaluating computer work (PI); Low amplitude body oscillation during computer work and associated EMG activity of back and arm muscles (PI)

1995-99 & 2008-2010	Biophysical human modeling for heat stress and strain assessment (PI) Emphasis on surveillance and mapping of regions of Gujarat on heat stress vulnerability
1979-82 & 2006-2008	Occupational fatigue (PI); Time-frequency domains in surface EMG activity using wavelets transform — an alternative approach to muscle fatigue analysis.
1997-99	Ergonomic analysis of stresses of women working in telecommunication (PI)
1992-96	Human exposure limits to hot environments (PI)
1998-01	Analysis of industrial accident and structurization of database (PI)
1994-97	Development of Multi-method Ergonomics Review Technique for work analysis and design (PI); Macroergonomics principles in work safety analysis (PI)
1984-87	Ergo-design of agricultural hand tools (PI)
1990-93	WORKMAN - A human model for ergonomics application (PI)
1989-92	Manual Materials handling - electromyographic analysis (PI)
1987-90	Heat Protective garments in industry (PI)
1983-86	Engineering Anthropometry for ergonomics application (PI)
1984-86	Women in cottage industry - health & safety perspectives (CoI)
1983-85	Ergonomics in railways track maintenance work (PI)
1981-82	Mobility aids for the lower extremity disabled (PI)
1976-79	Ergonomics in traditional agriculture (PI); Human working capacity in the tropics (PI)

FELLOWSHIP

- Liberty Mutual Research Institute of Health & Safety, Hopkinton, Ma (USA), Visiting scholar (1997)
- Harvard University-Liberty Mutual Asia Fellowship (USA, 1996)
- International Labour Organization, Geneva (1985)
- World Health Organization, Geneva (1991)
- Veterans Administration, Philadelphia USA (1987)
- Veterans Administration, Philadelphia USA (1983)
- Council of Scientific and Industrial Research, India (1974)

EDITORSHIP

- Editorial Board, International Journal of Industrial Ergonomics (USA) (since 1993)
- Guest Editor - Agricultural Ergonomics, International Journal of Industrial Ergonomics (Elsevier Publ., USA), (1991-92)
- Editor - Book: Ergonomics and Work Design, New Age International Publ (formerly Wiley Eastern), New Delhi, 1996
- Associate Editor, Journal of Human Ergology (Academic Publ, Japan)
- Editor, Industrial and Occupational Ergonomics: Users' Encyclopedia, (ISBN 0-9654506-0-0), Editors-in-Chief (A Mital, MM Ayoub, S Kumar, MJ Wang, K Landau)

- Editorial Board, Indian Journal of Physiology & Allied Sciences (Calcutta)

Peer Review: Ind J Physiol & Allied Sci.; Asian J Ergonomics, Industrial Health, Ergonomics, Intl J Indust Ergonomics, Int J Agri Engineering, etc.

EXAMINERSHIP & GUIDESHIP:

- University of Calcutta (M.Sc., & Ph.D., Physiology)
- Gujarat University (Life Science & Environmental Science)
- Saurashtra University (Ph.D., Bioscience)
- Jamia Milia University, New Delhi (Ph.D., Production Engineering)
- SNDT Women's University (Ph.D., Home Science)
- Bengal Engineering College, Howrah, West Bengal (Ph.D, Health Management)
- Sardar Patel University, ISTAR, Vallabhvidyanagar (M.Sc., Industrial Hygiene & Safety; Ph.D. Home management)
- IIT Mumbai (Ph.D., & M Tech, Biomedical Engineering; M Des, Industrial Design Centre)
- SRM University, Chennai (Ph.D, Environmental Science);
- Vidyasagar University, Midnapur (Ph.D., Physiology & Life Science)

PROFESSIONAL AFFILIATIONS

- International Commission on Occupational Health (ICOH, Italy) (2012)
- International Society of Working Hours (2007)
- National Committee, International Union of Physiological Sciences (IPUS)
- Physiological Society of India, 1990
- Indian Assoc. Physiol. & Pharmacologists, 1989
- Indian Science Congress Association, 1989
- Federation of the Indian Physiological Societies
- Founder member, Indian Society of Ergonomics, 1987
- Tech. Comm. Ergonomics: Asian Assoc. Occupational Health, 1986
- Member, South East Asian Ergonomics Society, 1983
- Member, Ergonomics Society, UK, 1975

Peer review and assessment committee

- Dept of Science & Technology, Network on Climate Change, National Coordinator (2013-14)
- Food Safety Authority (FSSAI), New Delhi
- International Ergonomics Association (award review committee, 2003-08)
- Life Science Research Board (DRDO), (Member, expert panel)
- IIT (Industrial Design center), Bombay
- Indian Institute of Science (Industrial Production Engineering), Bangalore;
- Council of Scientific and Industrial Research

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- National Institute of Industrial Engineering (Mumbai)
- National Institute of Fashion Technology (Gandhinagar)