Bibliography

[1] Ranavalo, A., Ajoudani, A., Cherubini, A., Bianchi, M., Fritzsche, L., Iavicoli, S., Sartori, M., Silvetti, A., Vanderborght, B., Varrecchia, T., Draicchio, F. The Sensor-Based Biomechanical Risk Assessment at the Base of the Need for Revising of Standards for Human Ergonomics. Sensors (Basel). 2020, 20(20):5750 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/s20205750

[2] Alberto, R., Draicchio, F., Varrecchia, T., Silvetti, A., Iavicoli, S. Wearable Monitoring Devices for Biomechanical Risk Assessment at Work: Current Status and Future Challenges—A Systematic Review. Int. J. Environ. Res. Public Health 2018, 15(11), 2001; Erratum in 2018, 15(11):2569 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/ijerph15112569

[3] Ranavolo, A., Draicchio, F., Varrecchia, T., Silvetti, A., Iavicoli, S. Erratum: Alberto, R. Wearable Monitoring Devices for Biomechanical Risk Assessment at Work: Current Status and Future Challenges—A Systematic Review. Int. J. Environ. Res. Public Health 2018, 15(11):2569 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/ijerph15112569

[4] Kim, W., Garate V.R., Gandarias, J., Lorenzini, M., Ajoudani, A. A Directional Vibrotactile Feedback Interface for Ergonomic Postural Adjustment. IEEE Trans Haptics. 2022, 15(1), 200-211 [viewed 2023-08-03]. Available at: 10.1109/TOH.2021.3112795

[5] Varrecchia, T., De Marchis, C., Draicchio, F., Schmid, M., Conforto, S., Ranavolo, A. Lifting Activity Assessment Using Kinematic Features and Neural Networks. Appl. Sci, 2020, 10(6), 1989 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/app10061989

[6] Varrecchia, T., De Marchis, C., Rinaldi, M., Draicchio, F., Serrao, M., Schmid, M., Conforto, S., Ranavolo, A. Lifting Activity Assessment Using Surface Electromyographic Features and Neural Networks. International Journal of Industrial Ergonomics. 2018, 66, 1-9 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/j.ergon.2018.02.003

[7] Ajoudani, A., Albrecht, P., Bianchi, M., Cherubini, A., Del Ferraro, S., Fraisse, P., Fritzsche, L., Garabini, M., Ranavolo, A., Rosen, P.H., Sartori, M., Tsagarakis, N., Vanderborght, B., Wischniewski, S. Smart Collaborative Systems for Enabling Flexible and Ergonomic Work Practices [Industry Activities]. IEEE Robotics & Automation Magazine. 2020, 27(2), 169-176 [viewed 2023-08-03]. Available at: 10.1109/MRA.2020.2985344

[8] Bernard, B.P., Musculoskeletal Disorders and Workplace Factors: A Critical Review of Epidemiologic Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremity, and Lower Back. DHHS (NIOSH) Publication, 1997, 97-141. Washington, DC, USA. [viewed 2023-08-03] Available at: https://stacks.cdc.gov/view/cdc/21745

[9] Bao, S., Howard, N., Lin, J.-H. Are work-related Musculoskeletal Disorders Claims Related to Risk Factors in Workplaces of the Manufacturing Industry? Ann. Work. Expo. Heal. 2020, 64, 152–164 [viewed 2023-08-03]. Available at: 10.1093/annweh/wxz084

[10] Shalev-Shwartz, S., and Ben-David, S. Understanding Machine Learning. 2014. Published 2014 by Cambridge University Press [viewed 2023-08-03]. Available at: https://www.cs.huji.ac.il/~shais/UnderstandingMachineLearning/

[11] Picerno, P., Iosa, M., D'Souza, C., Benedetti, M.G., Paolucci, S., Morone, G. Wearable Inertial Sensors for Human Movement Analysis: A Five-year Update. Expert Rev Med Devices. 2021, 18(sup1), 79-94 [viewed 2023-08-03]. Available at: 10.1080/17434440.2021.1988849

[12] Prasanth, H., Caban, M., Keller, U., Courtine, G., Ijspeert, A., Vallery, H., von Zitzewitz, J. Wearable Sensor-Based Real-Time Gait Detection: A Systematic Review. Sensors (Basel). 2021, 21(8):2727 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/s21082727

[13] Faisal ,A.I., Majumder, S., Mondal, T., Cowan, D., Naseh, S., Deen, M.J. Monitoring Methods of Human Body Joints: State-of-the-Art and Research Challenges. Sensors (Basel). 2019, 19(11):2629 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/s19112629

[14] Shahabpoor, E., Pavic, A. Measurement of Walking Ground Reactions in Real-Life Environments: A Systematic Review of Techniques and Technologies. Sensors (Basel). 2017, 17(9):2085 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/s17092085

[15] The Institute of Electricaland Electronics Engineers, Inc. Surface Electromyography. Physiology, engineering and applications. IEEE Press, J. Wiley, Edited by Merletti, R., and Farina, D. 2016 [viewed 2023-08-03]. Available at: https://onlinelibrary.wiley.com/doi/book/10.1002/9781119082934

[16] Nova Biomedical. Surface Electromyography. Fundamentals, computational techniques and clinical applications. Nova Science Publishers Inc. Edited by Mitchell, D. 2016. ISBN: 978-1-53610-202-4

[17] Institute of Electrical and Electronics Engineers. Electromyography. Physiology, Engineering, and Noninvasive Applications. IEEE Press, J. Wiley, Edited by Merletti R and Parker PA. 2004. ISBN:9780471675808

[18] Edizioni Universitarie Romane. Principi di Elettromiografia di Superficie. Edited by Ranavolo, A. 2021. ISBN 976-88-6022-396-8

[19] Merletti, R. Non Invasive Electromyography. [viewed 2023-06-14]. Available at: https://www.robertomerletti.it

[20] Hermens, H.J., Freriks, B., Merletti, R., Stegeman, D., Blok, J., Rau, G., Disselhorst-Klug, C., Hagg, G. European recommendations for surface electromyography. 8th Deliverable of the SENIAM Project. 1999. ISBN 90-75452-15-2

[21] Barbero, M., Merletti, R., Rainoldi, A.. Atlas of Muscle Innervation Zones: Understanding Surface Electromyography and its Applications. Springer, New York. 2012 [viewed 2023-08-03]. Available at: https://doi.org/10.1007/978-88-470-2463-2

[22] Ringelberg, J.A. EMG and force production of some human shoulder muscles during isometric abduction. Journal of Biomechanics, 1985, 18(12), 939-947 [viewed 2023-08-03]. Available at: 10.1016/0021-9290(85)90037-5

[23] Muller, A., Mecheri, H., Corbeil, P., Plamondon, A., Robert-Lachaine, X. Inertial Motion Capture-Based Estimation of L5/S1 Moments during Manual Materials Handling. Sensors (Basel). 2022, 22(17):6454 [viewed 2023-08-03] Available at: https://doi.org/10.3390/s22176454

[24] Donisi, L., Cesarelli, G., Pisani, N., Ponsiglione, A.M., Ricciardi, C., Capodaglio, E. Wearable Sensors and Artificial Intelligence for Physical Ergonomics: A Systematic Review of Literature.

Diagnostics (Basel). 2022, 12(12):3048 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/diagnostics12123048

[25] Rattanakoch, J., Samala, M., Limroongreungrat, W., Guerra, G., Tharawadeepimuk, K., Nanbancha, A., Niamsang, W., Kerdsomnuek, P., Suwanmana, S. Validity and Reliability of Inertial Measurement Unit (IMU)-Derived 3D Joint Kinematics in Persons Wearing Transtibial Prosthesis. Sensors (Basel). 2023, 23(3):1738 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/s23031738

[26] Riek, P.M., Best, A.N., Wu, A.R. Validation of Inertial Sensors to Evaluate Gait Stability. Sensors (Basel). 2023, 23(3):1547 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/s23031547

[27] Perotto, A.O. Anatomical guide for the electromyographer: the limbs and trunk. Charles C Thomas Publisher. 2011

[28] Ranavolo, A., Varrecchia, T., Iavicoli, S., Marchesi, A., Rinaldi, M., Serrao, M., Conforto, S., Cesarelli, M., Draicchio, F. Surface electromyography for risk assessment in work activities designed using the “revised NIOSH lifting equation”. International Journal of Industrial Ergonomics. 2018, 68:34-45 [viewed 2023-08-03]. Available at: doi: https://doi.org/10.1016/j.ergon.2018.06.003

[29] Ranavolo, A., Chini, G., Silvetti, A., Mari, S., Serrao, M., Draicchio, F. Myoelectric manifestation of muscle fatigue in repetitive work detected by means of miniaturized sEMG sensors. Int J Occup Saf Ergon. 2018, 24(3):464-474 [viewed 2023-08-03]. Available at: https://doi.org/10.1080/10803548.2017.1357867

[30] Ranavolo, A., Varrecchia, T., Rinaldi, M., Silvetti, A., Serrao, M., Conforto, S., Draicchio, F. Mechanical lifting energy consumption in work activities designed by means of the "revised NIOSH lifting equation". Ind Health. 2017, 55(5):444-454 [viewed 2023-08-03]. Available at: 10.2486/indhealth.2017-0075

[31] Ranavolo, A., Mari, S., Conte, C., Serrao, M., Silvetti, A., Iavicoli, S., Draicchio, F. A New Muscle Co-activation Index For Biomechanical Load Evaluation in Work Activities. Ergonomics. 2015, 58(6):966-79 [viewed 2023-08-03]. Available at: 10.1080/00140139.2014.991764

[32] Chini, G., Varrecchia, T., Tatarelli, A., Silvetti, A., Fiori, L., Draicchio, F., Ranavolo, A. Trunk Muscle Co-activation and Activity in One- and Two-person Lifting. International Journal of Industrial Ergonomics, 2022, 89 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/j.ergon.2022.103297

[33] Varrecchia, T., Conforto, S., De Nunzio, A.M., Draicchio, F., Falla, D., Ranavolo, A. Trunk Muscle Coactivation in People with and without Low Back Pain during Fatiguing Frequency-Dependent Lifting Activities. Sensors 2022, 22(4), 1417 [viewed 2023-08-03]. Available at: https://doi.org/10.3390/s22041417

[34] Varrecchia, T., Ranavolo, A., Conforto, S., De Nunzio, A.M., Arvanitidis, M., Draicchio, F., Falla, D. Bipolar versus High-density Surface Electromyography for Evaluating Risk in Fatiguing Frequency-dependent Lifting Activities. Appl Ergon. 2021, 95:103456 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/j.apergo.2021.103456

[35] D'Anna, C., Varrecchia, T., Ranavolo, A., De Nunzio, A.M., Falla, D., Draicchio, F., Conforto, S. Centre of Pressure Parameters For the Assessment of Biomechanical Risk in Fatiguing Frequency-dependent Lifting Activities. PLoS One. 2022, 17(8) [viewed 2023-08-03]. Available at: 10.1371/journal.pone.0266731

[36] Potvin, J.R. An equation to predict maximum acceptable loads for repetitive tasks based on duty cycle: evaluation with lifting and lowering tasks. Work. 2012, 41(Supplement 1), 397-400 [viewed 2023-08-03]. Available at: 10.3233/WOR-2012-0189-397

[37] Potvin, J.R. Predicting maximum acceptable efforts for repetitive tasks: an equation based on duty cycle. Human factors. 2012, 54(2), 175-188 [viewed 2023-08-03]. Available at: 10.1177/0018720811424269

[38] Hägg, G.M., Luttmann, A., Jäger, M. Methodologies for evaluating electromyographic field data in ergonomics. Journal of electromyography and kinesiology. 2000 10(5), 301-312 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/S1050-6411(00)00022-5

[39] Fazio, P., Granieri, G., Casetta, I., Cesnik, E., Mazzacane, S., Caliandro, P., Pedrielli, F., and Granieri, E. Gait Measures with a Triaxial Accelerometer among Patients with Neurological Impairment. Neurological Sciences. 2013, 34(4), 435-440 [viewed 2023-08-03]. Available at: 10.1007/s10072-012-1017-x

[40] Sakata, K., Kogure, A., Hosoda, M., Isozaki, K., Masuda, T., and Morita, S. Evaluation of the Age-related Changes in Movement Smoothness in the Lower Extremity Joints During Lifting. Gait & posture. 2010, 31(1), 27-31 [viewed 2023-08-03]. doi: https://doi.org/10.1016/j.gaitpost.2009.08.239

[41] Zatsiorsky, V.M., Seluyanov, V.N., Chugunova, L.G. Methods of Determining Massinertial Characteristics of the Main Segments of the Human Body. Biomechanics VIII-B, Edited by Matsui, H. and Kobayashi, K., 1990. Human Kinetic, Illinois, 1152-1159.

[42] de Leva, P. Adjustments to Zatsiorsky-Seluyanov'ssegment Inertia Parameters. J Biomech. 1996, 29(9), 1223– 30 [viewed 2023-08-03]. Available at: 10.1016/0021-9290(95)00178-6

[43] Plamondon, A., Gagnon, M., Desjardins, P. Validation of two 3-D Segment Models to Calculate the Net Reaction Forces and Moments at the L5S1 Joint in Lifting. Clinical Biomechanics. 1996, 11(2) [viewed 2023-08-03]. Available at: https://doi.org/10.1016/0268-0033(95)00043-7

[44] Jäger, M. The Dortmund Lumbar Load Atlas. A Contribution to Objectifying Lumbar Load and Load-Bearing Capacity for an Ergonomic Work Design of Manual Materials Handling. 2023

[45] Arjmand, N., Plamondon, A., Shirazi-Adl, A., Larivière, C., Parnianpour, M. Predictive Equations to Estimate Spinal Loads in Symmetric Lifting Tasks. J. Biomech. 2011, 44, 84–91 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/j.jbiomech.2010.08.028

[46] Mientjes, M.I.V., Norman, R.W., Wells, R.P., Mcgill, S.M. Assessment of an EMG-based Method for Continuous Estimates of Low Back Compression During Asymmetrical Occupational Tasks. Ergonomics. 1999, 42, 868–879 [viewed 2023-08-03]. Available at: https://doi.org/10.1080/001401399185342

[47] Bazrgari, B., Shirazi-Adl, A., Arjmand, N. Analysis of Squat and Stoop Dynamic Liftings: Muscle Forces and Internal Spinal Loads. Eur. Spine J. 2007, 16, 687–699 [viewed 2023-08-03]. Available at: https://doi.org/10.1007/s00586-006-0240-7

[48] Cholewicki, J., McGill, S.M., Norman, R.W. Comparison of Muscle Forces and Joint Load From an Optimization and EMG Assisted Lumbar Spine Model: Towards Development of a Hybrid Approach. J. Biomech. 1995, 28 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/0021-9290(94)00065-C

[49] Kim, H.K., Zhang, Y. Estimation of Lumbar Spinal Loading and Trunk Muscle Forces During Asymmetric Lifting Tasks: Application of Whole-body Musculoskeletal Modelling in OpenSim. Ergonomics. 2017, 60, 563–576 [viewed 2023-08-03]. Available at: https://doi.org/10.1080/00140139.2016.1191679

[50] von Arx, M., Liechti, M., Connolly, L., Bangerter, C., Meier, M.L., Schmid, S. From Stoop to Squat: A Comprehensive Analysis of Lumbar Loading Among Different Lifting Styles. Front. Bioeng. Biotechnol. 2021, 9, 1–13 [viewed 2023-08-03]. Available at: https://doi.org/10.3389/fbioe.2021.769117

[51] Lloyd, D.G., Besier, T.F. An EMG-driven Musculoskeletal Model to Estimate Muscle Forces and Knee Joint Moments in Vivo. J. Biomech. 2003, 36, 765–7760 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/S0021-9290(03)00010-1

[52] Moya-Esteban, A., van der Kooij, H., Sartori, M., Robust Estimation of Lumbar Joint Forces in Symmetric and Asymmetric Lifting Tasks via Large-scale Electromyography-driven Musculoskeletal Models. J. Biomech. 2022a, 144, 111307 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/j.jbiomech.2022.111307

[53] Sartori, M., Reggiani, M., Farina, D., Lloyd, D.G. EMG-Driven Forward-Dynamic Estimation of Muscle Force and Joint Moment about Multiple Degrees of Freedom in the Human Lower Extremity. PLoS One. 2012, 7(12) [viewed 2023-08-03]. Available at: https://doi.org/10.1371/journal.pone.0052618

[54] Butler, H.L., Newell, R., Hubley-Kozey, C.L., Kozey, J.W. The Interpretation of Abdominal Wall Muscle Recruitment Strategies Change When the Electrocardiogram (ECG) is Removed from the Electromyogram (EMG). Journal of Electromyography and Kinesiology. 2009, 19(2), e102-e113 [viewed 2023-08-03]. Available at: 10.1016/j.jelekin.2007.10.004

[55] Drake, J.D., Callaghan, J.P. Elimination of Electrocardiogram Contamination from Electromyogram Signals: An Evaluation of Currently Used Removal Techniques. J. Electromyogr. Kinesiol. 2006, 16(2), 175–187 [viewed 2023-08-03]. Available at: 10.1016/j.jelekin.2005.07.003

[56] Marras, W.S., and Davis, K.G. A non-MVC EMG Normalization Technique for the Trunk Musculature: Part 1. Method Development. Journal of electromyography and kinesiology, 2001, 11(1), 1-9 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/S1050-6411(00)00039-0

[57] Burden, A. How Should We Normalize Electromyograms Obtained From Healthy Participants? What We Have Learned from Over 25 Years of Research. Journal of electromyography and kinesiology. 2010, 20(6), 1023-1035 [viewed 2023-08-03]. Available at: 10.1016/j.jelekin.2010.07.004

[58] Farina, D., Leclerc, F., Arendt-Nielsen, L., Buttelli, O., Madeleine, P. The Change in Spatial Distribution of Upper Trapezius Muscle Activity is Correlated to Contraction Duration. J. Electromyogr. Kinesiol. 2008, 18(1), 16–25 [viewed 2023-08-03]. Available at: 10.1016/j.jelekin.2006.08.005

[59] Falla, D., Gizzi, L., Tschapek, M., Erlenwein, J., Petzke, F. Reduced Task-induced Variations in the Distribution of Activity Across Back Muscle Regions in Individuals with Low Back Pain. Pain. 2014, 155, 944–953 [viewed 2023-08-03]. Available at: 10.1016/j.pain.2014.01.027

[60] Stegeman, D.F., Kleine, B.U., Lapatki, B.G., Van Dijk, J.P. High-density Surface EMG: Techniques and Applications at a Motor Unit Level. Biocybern. Biomed. Eng. 2012, 32(3), 3–27 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/S0208-5216(12)70039-6

[61] Watanabe, K., Kouzaki, M., Merletti, R., Fujibayashi, M., & Moritani, T. Spatial EMG Potential Distribution Pattern of Vastus Lateralis Muscle During Isometric Knee Extension in Young and Elderly Men. J Electromyogr Kinesiol. 2012, 22(1), 74-79 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/j.jelekin.2011.09.010

[62] Falla, D., Cescon, C., Lindstroem, R., Barbero, M., X. Muscle Pain Induces a Shift of the Spatial Distribution of Upper Trapezius Muscle Activity During a Repetitive Task: A Mechanism for Perpetuation of Pain with Repetitive Activity? Clin. J. Pain. 2017, 33, 1006–1013 [viewed 2023-08-03]. Available at: 10.1097/AJP.0000000000000513

[63] Madeleine, P., Leclerc, F., Arendt-Nielsen, L., Ravier, P., Farina, D. Experimental Muscle Pain Changes the Spatial Distribution of Upper Trapezius Muscle Activity During Sustained Contraction. Clin. Neurophysiol. 2006, 117(11), 2436–2445 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/j.clinph.2006.06.753

[64] Abboud, J., Nougarou, F., Pagé, I., Cantin, V., Massicotte, D., & Descarreaux, M. Trunk Motor Variability in Patients with Non-specific Chronic Low Back Pain. Eur. J. Appl. Physiol. 2014, 114(12), 2645-2654 [viewed 2023-08-03]. Available at: 10.1007/s00421-014-2985-8

[65] ACGIH. TLVs and BEIs. 2015. 202-204 ISBN 978-1-607260-77-6.

[66] Luttmann, A., Jäger, M., Laurig, W. Electromyographical Indication of Muscular Fatigue in Occupational Field Studies. International journal of Industrial ergonomics. 2000, 25(6), 645-660 [viewed 2023-08-03]. Available at: https://doi.org/10.1016/S0169-8141(99)00053-0

[67] Rumelhart, D.E.; Hinton, G.E.; Williams, R.J. Learning internal representations by error propagation. In Parallel Distributed Processing; MIT Press: Cambridge, MA, USA, 1986, 1, 318–362.

ISO/IEC 22989:2022-07, *Information technology — Artificial intelligence — Artificial intelligence concepts and terminology*

ISO 29995:2021-05, *Education and learning services — Vocabulary*