

## DAFTAR PUSTAKA

- Andersen, S. O. (2009). Exoskeleton. In *Encyclopedia of Insects* (pp. 339–342). Elsevier. <https://doi.org/10.1016/B978-0-12-374144-8.00103-X>
- Batista, D., da Silva, H. P., Fred, A., Moreira, C., Reis, M., & Ferreira, H. A. (2019). Benchmarking of the BITalino biomedical toolkit against an established gold standard. *Healthcare Technology Letters*, 6(2), 32–36. <https://doi.org/10.1049/HTL.2018.5037>
- Bernard, T. E. (2012). Static Work 1 Design of Static Effort. *University of South Florida*.
- Borg, G. (1998). Borg's perceived exertion and pain scales. Vancouver. *Human Knetics*.
- Butler, T., & Wisner, D. (2017). *Exoskeleton Technology: Making Workers Safer and More Productive*. OnePetro. <https://dx.doi.org/>
- CDC. (2023). *Hierarchy of Controls | NIOSH | CDC*. <https://www.cdc.gov/niosh/topics/hierarchy/>
- Chae, U. R., Kim, K., Choi, J., Hyun, D. J., Yun, J., Lee, G. H., Hyun, Y. G., Lee, J., & Chung, M. (2021). Systematic usability evaluation on two harnesses for a wearable chairless exoskeleton. *International Journal of Industrial Ergonomics*, 84, 103162. <https://doi.org/10.1016/J.ERGON.2021.103162>
- Chuan, T. K., Hartono, M., & Kumar, N. (2010). Anthropometry of the Singaporean and Indonesian populations. *International Journal of Industrial Ergonomics*, 40(6), 757–766. <https://doi.org/10.1016/j.ergon.2010.05.001>
- Cieza, A., Causey, K., Kamenov, K., Hanson, S. W., Chatterji, S., & Vos, T. (2020). Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, 396(10267), 2006–2017. [https://doi.org/10.1016/S0140-6736\(20\)32340-0](https://doi.org/10.1016/S0140-6736(20)32340-0)
- de Looze, M. P., Bosch, T., Krause, F., Stadler, K. S., & O'Sullivan, L. W. (2016). Exoskeletons for industrial application and their potential effects on physical work load. *Ergonomics*, 59(5), 671–681. <https://doi.org/10.1080/00140139.2015.1081988>
- Du, Z., Yan, Z., Huang, T., Bai, O., Huang, Q., & Han, B. (2021). Mechanical Design with Experimental Verification of a Lightweight Exoskeleton Chair.

*Journal of Bionic Engineering*, 18, 319–332. <https://doi.org/10.1007/s42235-021-0028-9>

Eurofound. (2012). 5th European Working Conditions Survey - Technical Report. *UK Data Archive*.

Gleichmann, N. (2020). *Paired vs Unpaired T-Test: Differences, Assumptions and Hypotheses* | *Technology Networks*. Technology Network Informatics. <https://www.technologynetworks.com/informatics/articles/paired-vs-unpaired-t-test-differences-assumptions-and-hypotheses-330826>

Gopura, R. A. R. C., & Kiguchi, K. (2009). Mechanical designs of active upper-limb exoskeleton robots state-of-the-art and design difficulties. *2009 IEEE International Conference on Rehabilitation Robotics, ICORR 2009*, 178–187. <https://doi.org/10.1109/ICORR.2009.5209630>

Groos, S., Fuchs, M., & Kluth, K. (2020). Determination of the Subjective Strain Experiences During Assembly Activities Using the Exoskeleton “Chairless Chair.” *Advances in Intelligent Systems and Computing*, 962, 72–82. [https://doi.org/10.1007/978-3-030-20467-9\\_7](https://doi.org/10.1007/978-3-030-20467-9_7)

Hamberg-van Reenen, H. H., van der Beek, A. J., Blatter, B. M., van der Grinten, M. P., van Mechelen, W., & Bongers, P. M. (2008). Does musculoskeletal discomfort at work predict future musculoskeletal pain? *Ergonomics*, 51(5), 637–648. <https://doi.org/10.1080/00140130701743433>

Han, Y., Liu, Y., & Zhang, W. (2021). Design of a Passive Exoskeleton Chair with an Auxiliary Support Mechanism for Assembly Tasks. *2021 IEEE International Conference on Robotics and Biomimetics, ROBIO 2021*, 199–203. <https://doi.org/10.1109/ROBIO54168.2021.9739312>

Hidayah, R., Sui, D., Wade, K. A., Chang, B.-C., & Agrawal, S. (2021). Passive knee exoskeletons in functional tasks: Biomechanical effects of a *SpringExo* coil-spring on squats. *Wearable Technologies*, 2, e7. <https://doi.org/10.1017/wtc.2021.6>

Kalita, B., Narayan, J., & Dwivedy, S. K. (2021). Development of Active Lower Limb Robotic-Based Orthosis and Exoskeleton Devices: A Systematic Review. *International Journal of Social Robotics*, 13(4), 775–793. <https://doi.org/10.1007/S12369-020-00662-9>

Kawahira, H., Nakamura, R., Shimomura, Y., Oshiro, T., & Okazumi, S. (2018). Clinical Use of a Wearable Lower Limb Support Device for Surgeries Involving Long Periods of Standing. *Journal of Japan Society of Computer Aided Surgery*, 20(3), 121–125. <https://doi.org/10.5759/jscas.20.121>

- Kim, H. J., Noh, J., & Yang, W. (2020). Knee-Assistive Robotic Exoskeleton (KARE-1) Using a Conditionally Singular Mechanism for Industrial Field Applications. *Applied Sciences* 2020, Vol. 10, Page 5141, 10(15), 5141. <https://doi.org/10.3390/APP10155141>
- Kim, K.-S., Park, J.-K., & Kim, D.-S. (2010). Status and Characteristics of Occurrence of Work-related Musculoskeletal Disorders. *Journal of the Ergonomics Society of Korea*, 29(4), 405–422. <https://doi.org/10.5143/JESK.2010.29.4.405>
- Kong, Y. K., Park, C. W., Cho, M. U., Kim, S. Y., Kim, M. J., Hyun, D. J., Bae, K., Choi, J. K., Ko, S. M., & Choi, K. H. (2021). Guidelines for working heights of the lower-limb exoskeleton (Cex) based on ergonomic evaluations. *International Journal of Environmental Research and Public Health*, 18(10). <https://doi.org/10.3390/ijerph18105199>
- Kong, Y.-K., Choi, K.-H., Cho, M.-U., Kim, S.-Y., Kim, M.-J., Shim, J.-W., Park, S.-S., Kim, K.-R., Seo, M.-T., Chae, H.-S., & Shim, H.-H. (2022). Ergonomic Assessment of a Lower-Limb Exoskeleton through Electromyography and Anybody Modeling System. *International Journal of Environmental Research and Public Health*, 19(13), 8088. <https://doi.org/10.3390/ijerph19138088>
- Konrad, P. (2005). *The ABC of EMG A Practical Introduction to Kinesiological Electromyography*. [www.noraxon.com](http://www.noraxon.com)
- Kuber, P. M., Alemi, M. M., & Rashedi, E. (2023). A Systematic Review on Lower-Limb Industrial Exoskeletons: Evaluation Methods, Evidence, and Future Directions. *Annals of Biomedical Engineering*, 51(8), 1665–1682. <https://doi.org/10.1007/S10439-023-03242-W/TABLES/5>
- Lee, C. G. (2012). Work-related musculoskeletal disorders in Korean farmers. *Journal of the Korean Medical Association*, 55(11), 1054–1062. <https://doi.org/10.5124/JKMA.2012.55.11.1054>
- Lee, H., Kim, W., Han, J., & Han, C. (2012). The technical trend of the exoskeleton robot system for human power assistance. *International Journal of Precision Engineering and Manufacturing*, 13(8), 1491–1497. <https://doi.org/10.1007/S12541-012-0197-X/METRICS>
- Li, Z., Zhang, T., Xue, T., Du, Z., & Bai, O. (2019). Effect evaluation of a wearable exoskeleton chair based on surface EMG. *Chinese Control Conference, CCC, 2019-July*, 4638–4642. <https://doi.org/10.23919/CHICC.2019.8865673>
- Lim, V., Haryanto, W. E., & Salvirah. (2023). *Elektromiografi (EMG) - Fungsi, Prosedur dan Efek Samping*. Artikel Siloam Hospital.

<https://www.siloamhospitals.com/informasi-siloam/artikel/apa-itu-elektromiografi>

Luger, T., Cobb, T. J., Seibt, R., Rieger, M. A., & Steinhilber, B. (2019). Subjective Evaluation of a Passive Lower-Limb Industrial Exoskeleton Used During simulated Assembly. *IIE Transactions on Occupational Ergonomics and Human Factors*, 7(3–4), 175–184.  
<https://doi.org/10.1080/24725838.2018.1560376>

Luger, T., Seibt, R., Cobb, T. J., Rieger, M. A., & Steinhilber, B. (2019). Influence of a passive lower-limb exoskeleton during simulated industrial work tasks on physical load, upper body posture, postural control and discomfort. *Applied Ergonomics*, 80, 152–160.  
<https://doi.org/10.1016/j.apergo.2019.05.018>

McDonough, K. (2024). Lumbar spine (Benchmark exam). In *University of Washington*.

McDonough, M. (2023). *ANOVA | Definition & Facts | Britannica*. Britannica.  
<https://www.britannica.com/topic/variance-analysis-statistics>

Merriam-Webster. (2024). *Kinematics Definition & Meaning - Merriam-Webster*. Merriam-Webster.Com. <https://www.merriam-webster.com/dictionary/kinematics>

Noonee. (2019). *Noonee-Chairless-Chair-Rückansicht2.png (509×800)*. Noonee.Com. <https://www.noonee.com/wp-content/uploads/2019/07/Noonee-Chairless-Chair-R%C3%BCckansicht2.png>

Onofrejova, D., Balazikova, M., Glatz, J., Kotianova, Z., & Vaskovicova, K. (2022). Ergonomic Assessment of Physical Load in Slovak Industry Using Wearable Technologies. *Applied Sciences (Switzerland)*, 12(7).  
<https://doi.org/10.3390/app12073607>

Phan, L. T., Lee, Y. H., Kim, D. Y., Lee, H., & Choi, H. R. (2017). Stable running with a two-segment compliant leg. *Intelligent Service Robotics*, 10(3), 173–184. <https://doi.org/10.1007/S11370-017-0218-9>

Pillai, M. V., Van Engelhoven, L., & Kazerooni, H. (2020). Evaluation of a Lower Leg Support Exoskeleton on Floor and Below Hip Height Panel Work. *Human Factors*, 62(3), 489–500. <https://doi.org/10.1177/0018720820907752>

Pyhsio-Pedia. (2024). *Introduction to Human Biomechanics - External Forces - Physiopedia*. Pyhsio-Pedia.Com. [https://www.physio-pedia.com/Introduction\\_to\\_Human\\_Biomechanics\\_-\\_External\\_Forces](https://www.physio-pedia.com/Introduction_to_Human_Biomechanics_-_External_Forces)

Ranaweera, R. K. P. S., Gopura, R. A. R. C., Jayawardena, T. S. S., & Mann, G. K. I. (2018). Development of A Passively Powered Knee Exoskeleton for

Squat Lifting. *Journal of Robotics, Networking and Artificial Life*, 5(1), 45.  
<https://doi.org/10.2991/jrnal.2018.5.1.11>

- Rashedi, E., Kim, S., Nussbaum, M. A., & Agnew, M. J. (2014). Ergonomic evaluation of a wearable assistive device for overhead work. *Ergonomics*, 57(12), 1864–1874. <https://doi.org/10.1080/00140139.2014.952682>
- Rokoko. (2021). *What is Motion Capture, and How Does it Work in 2022?* Rokoko.Com. <https://www.rokoko.com/insights/what-is-motion-capture-and-how-does-it-work-in-2022>
- Spada, S., Ghibaudo, L., Carnazzo, C., Di Pardo, M., Chander, D. S., Gastaldi, L., & Cavatorta, M. P. (2019). Physical and Virtual Assessment of a Passive Exoskeleton. *Advances in Intelligent Systems and Computing*, 825, 247–257. [https://doi.org/10.1007/978-3-319-96068-5\\_28](https://doi.org/10.1007/978-3-319-96068-5_28)
- Steinhilber, B., Seibt, R., Rieger, M. A., & Luger, T. (2022). Postural Control When Using an Industrial Lower Limb Exoskeleton: Impact of Reaching for a Working Tool and External Perturbation. *Human Factors*, 64(4), 635–648. <https://doi.org/10.1177/0018720820957466>
- Tan, C. K., Kadone, H., Miura, K., Abe, T., Koda, M., Yamazaki, M., Sankai, Y., & Suzuki, K. (2019). Muscle synergies during repetitive stoop lifting with a bioelectrically-controlled lumbar support exoskeleton. *Frontiers in Human Neuroscience*, 13, 428429. <https://doi.org/10.3389/FNHUM.2019.00142/BIBTEX>
- Tu, Y., Zhu, A., Song, J., Zhang, X., & Cao, G. (2022). Design and Experimental Evaluation of a Lower-Limb Exoskeleton for Assisting Workers With Motorized Tuning of Squat Heights. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 30, 184–193. <https://doi.org/10.1109/TNSRE.2022.3143361>
- Vlachos, E., Jochum, E., & Demers, L. P. (2018). HEAT: The Harmony Exoskeleton Self - Assessment Test. *RO-MAN 2018 - 27th IEEE International Symposium on Robot and Human Interactive Communication*, 577–582. <https://doi.org/10.1109/ROMAN.2018.8525775>
- Wang, Z., Wu, X., Zhang, Y., Chen, C., Liu, S., Liu, Y., Peng, A., & Ma, Y. (2021). A Semi-active Exoskeleton Based on EMGs Reduces Muscle Fatigue When Squatting. *Frontiers in Neurobotics*, 15, 625479. <https://doi.org/10.3389/FNBOT.2021.625479/BIBTEX>
- Wijegunawardana, I. D., Kumara, M. B. K., De Silva, H. H. M. J., Viduranga, P. K. P., Ranaweera, R. K. P. S., Gopura, R. A. R. C., & Madusanka, D. G. K. (2019). ChairX: A Robotic Exoskeleton Chair for Industrial Workers. *IEEE*

... *International Conference on Rehabilitation Robotics : [Proceedings]*, 2019, 587–592. <https://doi.org/10.1109/ICORR.2019.8779501>

Yan, Z., Han, B., Du, Z., Huang, T., Bai, O., & Peng, A. (2021). Development and testing of a wearable passive lower-limb support exoskeleton to support industrial workers. *Biocybernetics and Biomedical Engineering*, 41(1), 221–238. <https://doi.org/10.1016/j.bbe.2020.12.010>

Yu, S., Huang, T. H., Wang, D., Lynn, B., Sayd, D., Silivanov, V., Park, Y. S., Tian, Y., & Su, H. (2019). Design and Control of a High-Torque and Highly-Backdrivable Hybrid Soft Exoskeleton for Knee Injury Prevention during Squatting. *IEEE Robotics and Automation Letters*, 4(4), 4579–4586. <https://doi.org/10.1109/LRA.2019.2931427>

Zhu, A., Shen, Z., Shen, H., & Song, J. (2018). Design and preliminary experimentation of passive weight-support exoskeleton. *2018 IEEE International Conference on Information and Automation, ICIA 2018*, 761–765. <https://doi.org/10.1109/ICInfA.2018.8812412>