

## REFERENCES

- Abd Al-razaq, I. R., Resan, K. K., & Ibrahim, Y. K. (2016). Modular socket system versus vacuum technique in trans-tibial prosthetic socket. *International Journal of Energy and Environment*, 7, 457.
- A. Bennett Wilson, Digital Resource Foundation for the Orthotics & Prosthetics , Virtual Library, Century College, Charles King, CP.
- Agrawal, S. K., Kang, J., Chen, X., Kim, M. J., Lee, Y. M., Kong, S., & Park, G. J. (2013). Case studies of a robot enhanced walker for training of children with cerebral palsy. *2013 IEEE/RSJ International Conference on Intelligent Robots and Systems*, (pp. 4243–4248).
- Aherwar, A., Singh, A., & Patnaik, A. (2013). A review paper on rapid prototyping and rapid tooling techniques for fabrication of prosthetic socket. *High value manufacturing: advanced research in virtual and rapid prototyping*, 345–353.
- Alazem, H., McCormick, A., Nicholls, S. G., Vilé, E., Adler, R., & Tibi, G. (2019). Development of a robotic walker for individuals with cerebral palsy. *Disability and Rehabilitation: Assistive Technology*.
- Ali, M. H., Smagulov, Z., & Otepbergenov, T. (2021). Finite element analysis of the CFRP-based 3D printed ankle-foot orthosis. *Procedia Computer Science*, 179, 55–62.
- Alkhatib, F., Mahdi, E., & Cabibihan, J.-J. (2019). Design and analysis of flexible joints for a robust 3D printed prosthetic hand. *2019 IEEE 16th International Conference on Rehabilitation Robotics (ICORR)*, (pp. 784–789).
- Al-Khazraji, K., Kadhim, J., & Ahmed, P. S. (2012). Tensile and fatigue characteristics of lower-limb prosthetic socket made from composite materials. *Proceedings of the 2012 International Conference on Industrial Engineering and Operations Management Istanbul, Turkey*, (pp. 847–852).
- Almohammadi, A. A., Alnashri, M. M., Harun, R. A., Alsamiri, S. M., & Alkhatieb, M. T. (2022). Pattern and type of amputation and mortality rate associated with diabetic foot in Jeddah, Saudi Arabia: A retrospective Cohort Study. *Annals of Medicine and Surgery*, 73, 103174.
- Altenbach, H., Altenbach, J., & Kissing, W. (2004). Classification of composite materials. In *Mechanics of composite structural elements* (pp. 1–14). Springer.
- Antoniac, I. V. (2016). *Handbook of bioceramics and biocomposites*. Springer Berlin, Germany.
- Anuar, A., Selvam, T. P., & Mahamud, F. (2016). Design of an assistive-rehabilitative walker for children with cerebral palsy. *APRN Journal of Engineering and Applied Science*, 11, 10871–10876.
- Bagheri, H., Rezvani, O., Zeinali, S., Asgari, S., Aqda, T. G., & Manshaei, F. (2020). Electrospun nanofibers. In *Solid-Phase Extraction* (pp. 311–339). Elsevier.
- Balaramakrishnan, T. M., Natarajan, S., & Srinivasan, S. (2020). Roll-over shape of a prosthetic foot: a finite element evaluation and experimental validation. *Medical & Biological Engineering & Computing*, 58, 2259–2270.
- Balaramakrishnan, T. M., Natarajan, S., & Sujatha, S. (2021). Biomechanical design framework for prosthetic feet: Experimentally validated non-linear finite element procedure. *Medical Engineering & Physics*, 92, 64–70.
- Barbero, E. J. (2010). *Introduction to composite materials design*. CRC press.

- Baronio, G., Volonghi, P., & Signoroni, A. (2017). Concept and design of a 3D printed support to assist hand scanning for the realization of customized orthosis. *Applied bionics and biomechanics*, 2017.
- Bartkus, E. K., Colvin, J. M., & Arbogast, R. E. (1994). Development of a novel lower limb prosthesis using low cost composite materials. *Journal of Reinforced Plastics and Composites*, 13, 301–313.
- Bartlett, C. (2017). *Designing a pediatric recreational walker for use on uneven terrain*. Ph.D. dissertation, Georgia Institute of Technology.
- Baumann, F., Bugdayci, H., Grunert, J., Keller, F., & Roller, D. (2016). Influence of slicing tools on quality of 3D printed parts. *Computer-Aided Design and Applications*, 13, 14–31.
- Beattie, N., Bock, N., Anderson, T., Edgeworth, T., Kloss, T., & Swanson, J. (2021). Effects of Build Orientation on Mechanical Properties of Fused Deposition Modeling Parts. *Journal of Materials Engineering and Performance*, 30, 5059–5065.
- Behrend, C., Reizner, W., Marchessault, J. A., & Hammert, W. C. (2011). Update on advances in upper extremity prosthetics. *The Journal of hand surgery*, 36, 1711–1717.
- Black, J., & Hastings, G. (2013). *Handbook of biomaterial properties*. Springer Science & Business Media.
- Blanco, I. (2020). The use of composite materials in 3D printing. *Journal of Composites Science*, 4, 42.
- Bose, S., Vahabzadeh, S., & Bandyopadhyay, A. (2013). Bone tissue engineering using 3D printing. *Materials today*, 16, 496–504.
- Brodsky, J. W., Pollo, F. E., Cheleuitte, D., & Baum, B. S. (2007). Physical properties, durability, and energy-dissipation function of dual-density orthotic materials used in insoles for diabetic patients. *Foot & ankle international*, 28, 880–889.
- Buckle, P. (2005). Ergonomics and musculoskeletal disorders: overview. *Occupational medicine*, 55, 164–167.
- Cahill, B. J. (2016). Development and evaluation of custom prosthetic devices for a companion animal utilizing additive manufacturing.
- Campbell, T., Williams, C., Ivanova, O., & Garrett, B. (2011). Could 3D printing change the world. *Technologies, Potential, and Implications of Additive Manufacturing*, Atlantic Council, Washington, DC, 3.
- Cantrell, J. T., Rohde, S., Damiani, D., Gurnani, R., DiSandro, L., Anton, J., et al. (2017). Experimental characterization of the mechanical properties of 3D-printed ABS and polycarbonate parts. *Rapid Prototyping Journal*.
- Carroll, W. O. (2021). *Design and Validation of an Improved Wearable Foot-Ankle Motion Capture Device Using Soft Robotic Sensors*. Ph.D. dissertation, Mississippi State University.
- Cash, J. J., van Werkhoven, H., Cole, K. J., & Needle, A. R. (2022). The effects of 72 h of dynamic ankle immobilization on neural excitability and lower extremity kinematics. *Gait & Posture*, 93, 198–204.
- Cazon, A., Kelly, S., Paterson, A. M., Bibb, R. J., & Campbell, R. I. (2017). Analysis and comparison of wrist splint designs using the finite element method: Multi-material three-dimensional printing compared to typical existing practice with thermoplastics. *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine*, 231, 881–897.
- Cha, Y. H., Lee, K. H., Ryu, H. J., Joo, I. W., Seo, A., Kim, D.-H., & Kim, S. J. (2017). Ankle-foot orthosis made by 3D printing technique and automated design software. *Applied bionics and biomechanics*, 2017.

- Chamis, C. C. (1984). Mechanics of composite materials: past, present and future. *21st annual meeting of the society for engineering science*.
- Chawla, K. K. (2012). *Composite materials: science and engineering*. Springer Science & Business Media.
- Che, D., Saxena, I., Han, P., Guo, P., & Ehmann, K. F. (2014). Machining of carbon fiber reinforced plastics/polymers: a literature review. *Journal of Manufacturing Science and Engineering*, 136.
- Chen, B., Zi, B., Wang, Z., Li, Y., & Qian, J. (2021). Development of Robotic Ankle-foot orthosis with series elastic actuator and magneto-rheological brake. *Journal of Mechanisms and Robotics*, 13.
- Chen Cheng & Wang (2020). Additive Manufacturing of Piezoelectric Materials, Advanced Functional Materials.
- Chen, L., He, Y., Yang, Y., Niu, S., & Ren, H. (2017). The research status and development trend of additive manufacturing technology. *The International Journal of Advanced Manufacturing Technology*, 89, 3651–3660.
- Chen, R. K., Chen, L., Tai, B. L., Wang, Y., Shih, A. J., & Wensman, J. (2014). Additive manufacturing of personalized ankle-foot orthosis. *Proceedings of transactions of the North American manufacturing research institution of SME (NAMRC42)*.
- Chen, R. K., Jin, Y.-a., Wensman, J., & Shih, A. (2016). Additive manufacturing of custom orthoses and prostheses—A review. *Additive manufacturing*, 12, 77–89.
- Cherelle, P., Grosu, V., Flynn, L., Junius, K., Moltedo, M., Vanderborght, B., & Lefeber, D. (2017). The Ankle Mimicking Prosthetic Foot 3—Locking mechanisms, actuator design, control and experiments with an amputee. *Robotics and Autonomous Systems*, 91, 327–336.
- Choo, Y. J., & Chang, M. C. (2021). Commonly used types and recent development of ankle-foot orthosis: A narrative review. *Healthcare*, 9, p. 1046.
- Choo, Y. J., Boudier-Revéret, M., & Chang, M. C. (2020). 3D printing technology applied to orthosis manufacturing: narrative review. *Annals of Palliative Medicine*, 9, 4262–4270.
- Chu, C.-H., Wang, I.-J., Sun, J.-R., & Liu, C.-H. (2022). Customized designs of short thumb orthoses using 3D hand parametric models. *Assistive Technology*, 34, 104–111.
- Cipriani, C., Controzzi, M., & Carrozza, M. C. (2011). The SmartHand transradial prosthesis. *Journal of neuroengineering and rehabilitation*, 8, 1–14.
- Clausen, A. V. (2019). Prosthetic foot with enhanced stability and elastic energy return, Retrieved from <https://patents.google.com/patent/US10369019B2>.
- Clyne, T. W., & Hull, D. (2019). *An introduction to composite materials*. Cambridge university press.
- Colombo, G., Facoetti, G., Regazzoni, D., & Rizzi, C. (2013). A full virtual approach to design and test lower limb prosthesis: This paper reports a software platform for design and validation of lower limb prosthesis in a completely virtual environment, potentially replacing current manual process. *Virtual and Physical Prototyping*, 8, 97–111.
- Colombo, P. , et al. (2014). Development of a virtual testing laboratory for lower limb prosthesis. *Scuola di dottorato di ricerca in ingegneria industriale. Indirizzo: ingegneria chimica, dei materiali e della produzione. Ciclo*, 26, 133.
- Cordella, F., Ciancio, A. L., Sacchetti, R., Davalli, A., Cutti, A. G., Guglielmelli, E., & Zollo, L. (2016). Literature review on needs of upper limb prosthesis users. *Frontiers in neuroscience*, 10, 209.

- Cuellar, J. S., Smit, G., Breedveld, P., Zadpoor, A. A., & Plettenburg, D. (2019). Functional evaluation of a non-assembly 3D-printed hand prosthesis. *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine*, 233, 1122–1131.
- Culham, E. G., Peat, M., & Newell, E. (1986). Below-knee amputation: a comparison of the effect of the SACH foot and single axis foot on electromyographic patterns during locomotion. *Prosthetics and Orthotics International*, 10, 15–22.
- Current, T. A., Kogler, G. F., & Earth, D. G. (1999). Static structural testing of trans-tibial composite sockets. *Prosthetics and orthotics international*, 23, 113–122.
- Dal Maso, A., & Cosmi, F. (2019). 3D-printed ankle-foot orthosis: a design method. *Materials Today: Proceedings*, 12, 252–261.
- Daniel, I. M., Ishai, O., Daniel, I. M., & Daniel, I. (2006). *Engineering mechanics of composite materials* (Vol. 1994). Oxford university press New York.
- Darwish, L. R., Al-Qady, A., El-Wakad, M. T., Farag, M. M., & Darwish, R. R. (2022). Trends in 3D Printing Implants for Medical and Dental Applications. *Ref. Modul. Mater. Sci. Mater. Eng.*
- Dawood, A., Marti, B. M., Sauret-Jackson, V., & Darwood, A. (2015). 3D printing in dentistry. *British dental journal*, 219, 521–529.
- Dayal Udai, A., & Nath Sinha, A. (2017). A quantitative error map generation for modification of manual socket for below-knee amputee. In *Advances in Computational Intelligence* (pp. 383–391). Springer.
- De Souza, M. A., Schmitz, C., Pinhel, M. M., Setti, J. A., & Nohama, P. (2017). Proposal of custom made wrist orthoses based on 3D modelling and 3D printing. *2017 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, (pp. 3789–3792).
- DeBoer, B., Hosseini, A., & Rossa, C. (2022). A Discrete Non-Linear Series Elastic Actuator for Active Ankle-Foot Orthoses. *IEEE Robotics and Automation Letters*, 7, 6211–6217.
- Decker, J., McMahon, K. R., Foley, R. E., & Nassar, V. A. (1919). *Redesigning the Posterior Pediatric Walker*. Ph.D. dissertation, Worcester Polytechnic Institute.
- Decuir, F., Phelan, K., & Hollins, B. C. (2016). Mechanical strength of 3-D printed filaments. *2016 32nd Southern Biomedical Engineering Conference (SBEC)*, (pp. 47–48).
- DelVecchio, S. M. (2021). *Women in 3D Printing*. Springer.
- Dhokia, V., Bilzon, J., Seminati, E., Talamas, D. C., Young, M., & Mitchell, W. (2017). The design and manufacture of a prototype personalized liner for lower limb amputees. *Procedia CIRP*, 60, 476–481.
- Dillingham, T. R., Kenia, J. L., Shofer, F. S., & Marschalek, J. S. (2022). A Prospective Assessment of an Adjustable, Immediate Fit, Subischial Transfemoral Prosthesis. *Archives of rehabilitation research and clinical translation*, 4, 100200.
- Dizon, J. R., Espera Jr, A. H., Chen, Q., & Advincula, R. C. (2018). Mechanical characterization of 3D-printed polymers. *Additive manufacturing*, 20, 44–67.
- Doane, N. E., & Holt, L. E. (1983). A comparison of the SACH and single axis foot in the gait of unilateral below-knee amputees. *Prosthetics and orthotics international*, 7, 33–36.
- Dobson, F., Morris, M. E., Baker, R., & Graham, H. K. (2007). Gait classification in children with cerebral palsy: a systematic review. *Gait & posture*, 25, 140–152.
- Dollar, A. M., & Herr, H. (2007). Active orthoses for the lower-limbs: *challenges* and state of the art. *2007 IEEE 10th International Conference on Rehabilitation Robotics*, (pp. 968–977).
- Dollar, A. M., & Herr, H. (2008). Lower extremity exoskeletons and active orthoses: Challenges and state-of-the-art. *IEEE Transactions on robotics*, 24, 144–158.

- Donatelli, R., Hurlbert, C., Conaway, D., & St. Pierre, R. (1988). Biomechanical foot orthotics: a retrospective study. *Journal of Orthopaedic & Sports Physical Therapy*, 10, 205–212.
- Dubey, N. K., & Gangwar, S. (2021). Comparative Analysis of Different Composites for Ankle Foot Orthosis: A Review. *Advances in Engineering Materials*, 305–317.
- Eddison, N., Healy, A., Buchanan, D., & Chockalingam, N. (2022). Standardised classification system for bespoke thermoplastic ankle foot orthoses. *The Foot*, 101924.
- Eiliat, H. (2018). *Development of optimal material extrusion additive manufacturing tool path parameters for minimizing void regions using contemporary tool path solutions*. Ph.D. dissertation, University of Windsor (Canada).
- Essien, S. K., Kopriva, D., Linassi, A. G., & Zucker-Levin, A. (2022). Trends of limb amputation considering type, level, sex and age in Saskatchewan, Canada 2006–2019: an in-depth assessment. *Archives of Public Health*, 80, 1–9.
- Farhan, M., Wang, J. Z., Bray, P., Burns, J., & Cheng, T. L. (2021). Comparison of 3D scanning versus traditional methods of capturing foot and ankle morphology for the fabrication of orthoses: a systematic review. *Journal of Foot and Ankle Research*, 14, 1–11.
- Farooqui, R. M., & Shahu, R. (2016). Analysis of anthropometric dimensions for sitting posture and chair design. *Int J Innov in Eng Technol A Rev*, 6, 221–4.
- Fernandez-Vicente, M., Calle, W., Ferrandiz, S., & Conejero, A. (2016). Effect of infill parameters on tensile mechanical behavior in desktop 3D printing. *3D printing and additive manufacturing*, 3, 183–192.
- Ferris, D., Sawicki, G., & Domingo, A. (2005). Powered lower limb orthoses for gait rehabilitation. *Topics in spinal cord injury rehabilitation*, 11, 34–49.
- Fischer, F. (2011). Thermoplastics: the best choice for 3D printing. *White Paper, Stratasys Inc., Edn Prairie, MN*.
- Font-Llagunes, J. M., Pàmies-Vilà, R., Alonso, J., & Lúgrís, U. (2011). Simulation and design of an active orthosis for an incomplete spinal cord injured subject. *Procedia IUTAM*, 2, 68–81.
- Franks, C. I., Betts, R. P., & Duckworth, T. (1983). Microprocessor-based image processing system for dynamic foot pressure studies. *Medical and Biological Engineering and Computing*, 21, 566–572.
- Friel, K. (2005). Componentry for lower extremity prostheses. *JAAOS-Journal of the American Academy of Orthopaedic Surgeons*, 13, 326–335.
- Friesen, J. (2020, September). Retrieved from <https://patents.google.com/patent/US10772741B2>
- Fry, S. C. (1986). Cross-linking of matrix polymers in the growing cell walls of angiosperms. *Annual review of plant physiology*, 37, 165–186.
- Gallooly, N. (2021). Principles of foot and ankle orthoses. In *Essentials of Foot and Ankle Surgery* (pp. 40–49). CRC Press 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742.
- Garg, M., Pathak, C., Tangri, S. B., Gupta, A., et al. (2016). Prosthetic rehabilitation of an amputated finger. *Indian Journal of Dental Sciences*, 8, 163.
- Gebhardt, A., Schmidt, F.-M., Hötter, J.-S., Sokalla, W., & Sokalla, P. (2010). Additive manufacturing by selective laser melting the realizer desktop machine and its application for the dental industry. *Physics Procedia*, 5, 543–549.
- Geierlehner, A., Malferrari, S., & Kalaskar, D. M. (2019). The optimization of a 3D scanning technique applied for 3D printing of bespoke medical devices. *Journal of 3D printing in medicine*, 3, 71–82.



- Geil, M. D. (2002). An iterative method for viscoelastic modeling of prosthetic feet. *Journal of Biomechanics*, 35, 1405–1410.
- George, C., Levin, W., & Ryan, J. M. (2020). The use and perception of support walkers for children with disabilities: a United Kingdom survey. *BMC pediatrics*, 20, 1–11.
- Ghomi, E. R., Khosravi, F., Neisiany, R. E., Singh, S., & Ramakrishna, S. (2021). Future of additive manufacturing in healthcare. *Current Opinion in Biomedical Engineering*, 17, 100255.
- Gibson, I., Rosen, D. W., Stucker, B., Khorasani, M., Rosen, D., Stucker, B., & Khorasani, M. (2021). *Additive manufacturing technologies* (Vol. 17). Springer.
- GOSAKAN, H. S. (2020). Pyramidal prosthetic foot, Retrieved from <https://patents.google.com/patent/WO2020012504A1>.
- Greene, S., Lipson, D., Soe, A. H., & Mercado, A. (2016). Design and manufacture of a scalable prosthetic hand through the utilization of additive manufacturing. *Undergraduate Thesis for Worcester Polytechnic Institute*.
- Guo, N., & Leu, M. C. (2013). Additive manufacturing: technology, applications and research needs. *Frontiers of mechanical engineering*, 8, 215–243.
- Gupta, N., Weber, C., & Newsome, S. (2012). Additive manufacturing: status and opportunities. *Science and Technology Policy Institute, Washington*.
- Guvendiren, M., Molde, J., Soares, R. M., & Kohn, J. (2016). Designing biomaterials for 3D printing. *ACS biomaterials science & engineering*, 2, 1679–1693.
- Hajdarević, S., & Busuladžić, I. (2015). Stiffness analysis of wood chair frame. *Procedia Engineering*, 100, 746–755.
- Hamad, Q. A., Oleiwi, J. K., & Abdulrahman, S. A. (2021). Tensile properties of laminated composite prosthetic socket reinforced by different fibers. *Materials Today: Proceedings*.
- Hamill, J., & Knutzen, K. M. (2006). *Biomechanical basis of human movement*. Lippincott Williams & Wilkins.
- Harte, D. (2020). The “Pizza Slice” orthosis: A noninvasive and low-profile dynamic traction orthosis for complex phalangeal fractures. *Journal of Hand Therapy*, 33, 602–606.
- Hawes, S. P., Wentworth, A., & Ma, A. W. (2017). Prosthesis Development Utilizing Additive Manufacturing and Low-Cost Electronics.”.
- Heinrich, M. A., Liu, W., Jimenez, A., Yang, J., Akpek, A., Liu, X., et al. (2019). 3D bioprinting: from benches to translational applications. *Small*, 15, 1805510.
- Hench, L. L., & Polak, J. M. (2002). Third-generation biomedical materials. *Science*, 295, 1014–1017.
- Hollaway, L. C. (2003). The evolution of and the way forward for advanced polymer composites in the civil infrastructure. *Construction and Building Materials*, 17, 365–378.
- Hsu, J. D., Michael, J., & Fisk, J. (2008). *AAOS Atlas of orthoses and assistive devices e-book*. Elsevier Health Sciences.
- Hsu, L. H., Huang, G. F., Lu, C. T., Hong, D. Y., & Liu, S. H. (2010). The development of a rapid prototyping prosthetic socket coated with a resin layer for transtibial amputees. *Prosthetics and orthotics international*, 34, 37–45.
- Hsueh, M.-H., Lai, C.-J., Chung, C.-F., Wang, S.-H., Huang, W.-C., Pan, C.-Y., et al. (2021). Effect of Printing Parameters on the Tensile Properties of 3D-Printed Polylactic Acid (PLA) Based on Fused Deposition Modeling. *Polymers*, 13, 2387.
- Huang, J., Qin, Q., & Wang, J. (2020). A review of stereolithography: Processes and systems. *Processes*, 8, 1138.

- Hukins, D. W., Leahy, J. C., & Mathias, K. J. (1999). Biomaterials: defining the mechanical properties of natural tissues and selection of replacement materials. *Journal of Materials Chemistry*, 9, 629–636.
- Huot, G. (2020). Prosthetic foot, Retrieved from <https://patents.google.com/patent/WO2020012319A1>
- Ikeda, T., Mamiya, J.-i., & Yu, Y. (2007). Photomechanics of liquid-crystalline elastomers and other polymers. *Angewandte Chemie International Edition*, 46, 506–528.
- International, A. (1987). *Engineering Materials Handbook*. ASM International.
- Ismail, A. M. (2012). *Design and analysis of wheelchair in term of daily usage*. Ph.D. dissertation, UMP.
- Jaimes, E. S., Botía, G. P., Rodrigues, P. H., Reis, G., Rubio, J. C., & Lana, M. V. (2018). Comparison of a transtibial socket design obtained by additive manufacturing and reverse engineering and a traditional model. *Journal of Physics: Conference Series*, 1126, p. 012016.
- Jain, M. L., Dhande, S. G., & Vyas, N. S. (2011). Virtual modeling of an ankle foot orthosis for correction of foot abnormality. *Robotics and Computer-Integrated Manufacturing*, 27, 257–260.
- Javanmard, A., Mohammadi, F., & Mojtahedi, H. (2020). Reconstruction of a total rhinectomy defect by implant-retained nasal prosthesis: a clinical report. *Oral and Maxillofacial Surgery Cases*, 6, 100141.
- Jin, Y., He, Y., & Shih, A. (2016). Process planning for the fuse deposition modeling of ankle-foot-orthoses. *Procedia Cirp*, 42, 760–765.
- John, W., Dean, M., & Karyn, L. (1986). engineers Guide to composite materials. *American society for metals*.
- Jones, K. A., Cancio, J. M., Stanley, B., Truax, C., & Gower, J. T. (2021). Design and fabrication of the radial and ulnar wrist articulating control orthoses. *Journal of Hand Therapy*, 34, 47–52.
- Jones, R. M. (2018). *Mechanics of composite materials*. CRC press.
- Jweeg, M. J., Al-Beiruti, A. A., & Al-Kinani, K. K. (2007). Design and Analysis of New Prosthetic Foot. *Al-Khwarizmi Engineering Journal*, 3, 12–25.
- Kalami, H., Khayat, A., & Urbanic, R. J. (2016). Investigating ‘Exo-skeleton’ design and fabrication challenges for the hand region using material extrusion processes. *IFAC-PapersOnLine*, 49, 30–35.
- Kandil, A. H. (2016). Finite element based model of modified Niagara foot and its effect on stiffness. *International Journal of Computer Applications*, 134.
- Kanthi, M. (2015). Fuzzy logic-based intelligent control system for active ankle foot orthosis. In *Fuzzy expert systems for disease diagnosis* (pp. 248–279). IGI Global.
- Karlovich, R. J. (2020). Mobility assistance device, Retrieved from <https://patents.google.com/patent/US20200281801A1>
- Kaveh, M., Badrossamay, M., Foroozmehr, E., & Etefagh, A. H. (2015). Optimization of the printing parameters affecting dimensional accuracy and internal cavity for HIPS material used in fused deposition modeling processes. *Journal of materials processing technology*, 226, 280–286.
- Kaw, A. K. (2005). *Mechanics of composite materials*. CRC press.
- Keagy, B. A., Schwartz, J. A., Kotb, M., Burnham, S. J., & Johnson Jr, G. (1986). Lower extremity amputation: the control series. *Journal of vascular surgery*, 4, 321–326.
- Kegel, B., Carpenter, M. L., & Burgess, E. M. (1978). Functional capabilities of lower extremity amputees. *Archives of physical medicine and rehabilitation*, 59, 109–120.

- Kermen, E., & Mohammadi, H. (2021). Mechanics of foot orthotics: material properties. *Journal of Medical Engineering & Technology*, 45, 627–641.
- Kirkup, J. (2007). *A history of limb amputation*. Springer.
- Kumar, A., & Chhabra, D. (2022). Adopting additive manufacturing as a cleaner fabrication framework for topologically optimized orthotic devices: Implications over sustainable rehabilitation. *Cleaner Engineering and Technology*, 100559.
- Kumar, P., & others. (2020). Emerging trend in manufacturing of 3D biomedical components using selective laser sintering: A review. *E3S Web of Conferences*, 184, p. 01047.
- Kumar, R., & Sarangi, S. K. (2022). Design, applications, and challenges of 3D-printed custom orthotics aids: a review. *Proceedings of the International Conference on Industrial and Manufacturing Systems (CIMS-2020)*, (pp. 313–328).
- Kung, T. A., Bueno, R. A., Alkhalefah, G. K., Langhals, N. B., Urbanchek, M. G., & Cederna, P. S. (2013). Innovations in prosthetic interfaces for the upper extremity. *Plastic and reconstructive surgery*, 132, 1515–1523.
- Laferrier, J. Z., & Gailey, R. (2010). Advances in lower-limb prosthetic technology. *Physical Medicine and Rehabilitation Clinics*, 21, 87–110.
- Landel, R. F., & Nielsen, L. E. (1993). *Mechanical properties of polymers and composites*. CRC press.
- Lecomte, C., Ármannsdóttir, A. L., Starker, F., Tryggvason, H., Briem, K., & Brynjolfsson, S. (2021). Variable stiffness foot design and validation. *Journal of Biomechanics*, 122, 110440.
- Leddy, M. T., Belter, J. T., Gemmell, K. D., & Dollar, A. M. (2015). Lightweight custom composite prosthetic components using an additive manufacturing-based molding technique. *2015 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, (pp. 4797–4802).
- Lee, K. H., Kim, D. K., Cha, Y. H., Kwon, J.-Y., Kim, D.-H., & Kim, S. J. (2019). Personalized assistive device manufactured by 3D modelling and printing techniques. *Disability and Rehabilitation: Assistive Technology*, 14, 526–531.
- Lehmann, J. F., Price, R., Boswell-Bessette, S., Dralle, A., & Questad, K. (1993). Comprehensive analysis of dynamic elastic response feet: Seattle Ankle/Lite Foot versus SACH foot. *Archives of physical medicine and rehabilitation*, 74, 853–861.
- LeMoyné, R. (2016). Amputations and Prostheses, a Topic of Global Concern. In *Advances for Prosthetic Technology* (pp. 1–13). Springer.
- LeMoyné, R. (2016). Future and advanced concepts for the powered prosthesis. In *Advances for Prosthetic Technology* (pp. 127–130). Springer.
- Lenka, P. K., Choudhury, A. R., et al. (2011). Analysis of trans tibial prosthetic socket materials using finite element method. *Journal of Biomedical Science and Engineering*, 4, 762.
- Lenka, P., & Kumar, R. (2010). Gait comparisons of trans tibial amputees with six different prosthetic feet in developing countries. *Indian J Phys Med Rehabil*, 21, 8–14.
- Lestari, N. T., Susmartini, S., & Herdiman, L. (2020). Redesign paediatric walker for children with spastic cerebral palsy using TRIZ Method. *Journal of Physics: Conference Series*, 1450, p. 012117.
- Letcher, T., & Waytashek, M. (2014). Material property testing of 3D-printed specimen in PLA on an entry-level 3D printer. *ASME international mechanical engineering congress and exposition*, 46438, p. V02AT02A014.
- Levangie, P. K., & Norkin, C. C. (2011). *Joint structure and function: a comprehensive analysis*. FA Davis.



- Li, S., & Burstein, A. H. (1994). Ultra-high molecular weight polyethylene. The material and its use in total joint implants. *JBJS*, 76, 1080–1090.
- Lipskin, R. (1971). Materials in orthotics. *Bull Prosthet Res*, 10, 107–122.
- Lipson, H., & Kurman, M. (2013). *Fabricated: The new world of 3D printing*. John Wiley & Sons.
- Lochner, S. J., Huissoon, J. P., & Bedi, S. S. (2012). Parametric design of custom foot orthotic model. *Computer-Aided Design and Applications*, 9, 1–11.
- Lubin, G. (2013). *Handbook of composites*. Springer Science & Business Media.
- Lusardi, M. M., Jorge, M., & Nielsen, C. C. (2013). *Orthotics and prosthetics in rehabilitation-e-book*. Elsevier Health Sciences.
- Madu, C. N. (2022). *Handbook of environmentally conscious manufacturing*. Springer Nature.
- Mahamood, S., Khader, M. A., & Ali, H. (2016). Applications of 3-D printing in orthodontics: a review. *International Journal of Scientific Study*, 3, 267–270.
- Maji, P. K., Banerjee, A. J., Banerjee, P. S., & Karmakar, S. (2014). Additive manufacturing in prosthesis development—a case study. *Rapid Prototyping Journal*, 20, 480–489.
- Masiero, S., Mastrocostas, M., & Musumeci, A. (2018). Orthoses in older patients. In *Rehabilitation Medicine for Elderly Patients* (pp. 133–145). Springer.
- McCormick, A., Alazem, H., Morbi, A., Beranek, R., Adler, R., Tibi, G., & Vilé, E. (2016). Power walker helps a child with cerebral palsy. *International Conference on Control, Dynamic Systems, and Robotics*.
- McDonald, K. A., Teater, R. H., Cruz, J. P., Kerr, J. T., Bastas, G., & Zelik, K. E. (2021). Adding a toe joint to a prosthesis: walking biomechanics, energetics, and preference of individuals with unilateral below-knee limb loss. *Scientific Reports*, 11, 1–10.
- Meier, R. H., & Melton, D. (2014). Ideal functional outcomes for amputation levels. *Physical Medicine and Rehabilitation Clinics*, 25, 199–212.
- Meinel, C., & Leifer, L. (2012). Design thinking research. In *Design thinking research* (pp. 1–11). Springer.
- Mellor, S., Hao, L., & Zhang, D. (2014). Additive manufacturing: A framework for implementation. *International journal of production economics*, 149, 194–201.
- Merlette, J. B. (1991). The Springlite Foot; the Marriage of Dissimilar Materials and Innovative Fabrication Techniques to Produce a Competitive High Performance Lower Limb Foot Prosthesis. *How Concept Becomes Reality*, 36, 161–172.
- Michael, J. W., & Bowker, J. H. (2004). *Atlas of amputations and limb deficiencies: surgical, prosthetic, and rehabilitation principles*. American Academy of Orthopaedic Surgeons Rosemont, IL.
- Mohr, J. G., Oleesky, S. S., Shook, G. D., & Meyer, L. S. (1973). SPI handbook of technology and engineering of reinforced plastics/composites. *New York, Van Nostrand Reinhold Co.*, 1973. 401 p.
- Mokhtari, M., Taghizadeh, M., & Mazare, M. (2021). Hybrid adaptive robust control based on CPG and ZMP for a lower limb exoskeleton. *Robotica*, 39, 181–199.
- Molitch-Hou, M. (2018). Overview of additive manufacturing process. In *Additive manufacturing* (pp. 1–38). Elsevier.
- Morgan, A. (2020). A support frame, Retrieved from <https://patents.google.com/patent/US20200000673A1>
- Nair, A., Hanspal, R. S., Zahedi, M. S., Saif, M., & Fisher, K. (2008). Analyses of prosthetic episodes in lower limb amputees. *Prosthetics and orthotics international*, 32, 42–49.

- Naseri, A., Mohammadi Moghaddam, M., Gharini, M., & Ahmad Sharbafi, M. (2020). A Novel Adjustable Damper Design for a Hybrid Passive Ankle Prosthesis. *actuators*, 9, p. 74.
- Nguyen, T. T., Le, H. G., Dao, T.-P., & Huang, S.-C. (2017). Evaluation of structural behaviour of a novel compliant prosthetic ankle-foot. *2017 International Conference on Mechanical, System and Control Engineering (ICMSC)*, (pp. 58–62).
- Nicolais, L., Meo, M., & Milella, E. (2011). *Composite materials: a vision for the future*. Springer Science & Business Media.
- Niinomi, M. (2002). Recent metallic materials for biomedical applications. *Metallurgical and materials transactions A*, 33, 477–486.
- O'Brien, L., Cho, E., Khara, A., Lavranos, J., Lommerse, L., & Chen, C. (2021). 3D-printed custom-designed prostheses for partial hand amputation: Mechanical challenges still exist. *Journal of Hand Therapy*, 34, 539–542.
- Olabisi, O., & Adewale, K. (2016). *Handbook of thermoplastics* (Vol. 41). CRC press.
- Olewi, J. K., & Hadi, A. N. (2021). Properties of materials and models of prosthetic feet: A review. *IOP Conference Series: Materials Science and Engineering*, 1094, p. 012151.
- Omasta, M., Paloušek, D., Návrát, T., & Rosický, J. (2012). Finite element analysis for the evaluation of the structural behaviour, of a prosthesis for trans-tibial amputees. *Medical engineering & physics*, 34, 38–45.
- Palisano, R., Rosenbaum, P., Walter, S., Russell, D., Wood, E., & Galuppi, B. (1997). Gross motor function classification system for cerebral palsy. *Dev Med Child Neurol*, 39, 214–23.
- Palm-Vlasak, L. (2022). *Evaluating Design and Function of Total Knee Arthroplasty: In Vivo and Computational Studies*. Ph.D. dissertation, University of Florida.
- PANDALAI, K. A. (2018). *Composite materials and structures*. Indian academy of sciences.
- Park, K., Ahn, H.-J., Lee, K.-H., & Lee, C.-H. (2020). Development and performance verification of a motorized prosthetic leg for stair walking. *Applied bionics and biomechanics*, 2020.
- Park, S., Shou, W., Makatura, L., Matusik, W., & Fu, K. K. (2022). 3D printing of polymer composites: Materials, processes, and applications. *Matter*, 5, 43–76.
- Pascual, J.-P., & Williams, R. J. (2013). Thermosetting polymers. *Handbook of Polymer Synthesis, Characterization, and Processing*, 519–533.
- Patel, P., & Gohil, P. (2022). Custom orthotics development process based on additive manufacturing. *Materials Today: Proceedings*, 59, A52–A63.
- Paterson, A., & Bourell, D. (2012). Evaluation of a digitised splinting approach with multi-material functionality using additive manufacturing technologies. *Twenty-Third Annual International Solid Freeform Fabrication Symposium*.
- Pernica, J., Sustr, M., Dostal, P., Brabec, M., Dobrocky, D., et al. (2021). Tensile Testing of 3D Printed Materials Made by Different Temperature. *Manufacturing Technology*, 21, 398–404.
- Perry, J., Boyd, L. A., Rao, S. S., & Mulroy, S. J. (1997). Prosthetic weight acceptance mechanics in transtibial amputees wearing the Single Axis, Seattle Lite, and Flex Foot. *IEEE transactions on rehabilitation engineering*, 5, 283–289.
- Piyush Patel, Piyush Gohil (August 2021). Role of additive manufacturing in medical application COVID-19 scenario: India case study”, *Journal of Manufacturing Systems*, Volume 60, 2021, Pages 811-822.
- Plettenburg, D. H. (1998). Basic requirements for upper extremity prostheses: the WILMER approach. *Proceedings of the 20th Annual International Conference of the IEEE Engineering*

- in *Medicine and Biology Society. Vol. 20 Biomedical Engineering Towards the Year 2000 and Beyond (Cat. No. 98CH36286)*, 5, pp. 2276–2281.
- Poole, M., Simkiss, D., Rose, A., & Li, F.-X. (2018). Anterior or posterior walkers for children with cerebral palsy? A systematic review. *Disability and Rehabilitation: Assistive Technology*, 13, 422–433.
- Portnoy, S., Barmin, N., Elimelech, M., Assaly, B., Oren, S., Shanan, R., & Levanon, Y. (2020). Automated 3D-printed finger orthosis versus manual orthosis preparation by occupational therapy students: Preparation time, product weight, and user satisfaction. *Journal of Hand Therapy*, 33, 174–179.
- Prakash, K. S., Nancharaih, T., & Rao, V. S. (2018). Additive manufacturing techniques in manufacturing-an overview. *Materials Today: Proceedings*, 5, 3873–3882.
- Radosh, A., Kuczko, W., Wichniarek, R., & Górski, F. (2017). Prototyping of cosmetic prosthesis of upper limb using additive manufacturing technologies. *Advances in Science and Technology. Research Journal*, 11.
- Ramakrishna, S., Mayer, J., Wintermantel, E., & Leong, K. W. (2001). Biomedical applications of polymer-composite materials: a review. *Composites science and technology*, 61, 1189–1224.
- Ramesh, M., Rajeshkumar, L., & Balaji, D. (2021). Influence of process parameters on the properties of additively manufactured fiber-reinforced polymer composite materials: a review. *Journal of Materials Engineering and Performance*, 30, 4792–4807.
- Ranjan, R., Kumar, D., Kundu, M., & Moi, S. C. (2022). A critical review on Classification of materials used in 3D printing process. *Materials Today: Proceedings*.
- Razzouk, R., & Shute, V. (2012). What is design thinking and why is it important? *Review of educational research*, 82, 330–348.
- Redwood, B., Schöffner, F., & Garret, B. (2017). *The 3D printing handbook: technologies, design and applications*. 3D Hubs.
- Rengier, F., Mehndiratta, A., Von Tengg-Kobligh, H., Zechmann, C. M., Unterhinninghofen, R., Kauczor, H.-U., & Giesel, F. L. (2010). 3D printing based on imaging data: review of medical applications. *International journal of computer assisted radiology and surgery*, 5, 335–341.
- Resan, K. K., Ali, H., Hilli, A., & Ali, M. M. (2011). Design and analysis of a new prosthetic foot for people of special needs. *the Iraqi Journal for Mechanical and Material Engineering*, 11.
- Rhyne, B. J., Post, B. K., Chessier, P., Roschli, A., & Love, L. J. (2017). Reverse engineering a transhumeral prosthetic design for additive manufacturing. *2017 International Solid Freeform Fabrication Symposium*.
- Roberts, A., Wales, J., Smith, H., Sampson, C. J., Jones, P., & James, M. (2016). A randomised controlled trial of laser scanning and casting for the construction of ankle-foot orthoses. *Prosthetics and Orthotics International*, 40, 253–261.
- Rochlitz, B., & Pammer, D. (2017). Design and analysis of 3D printable foot prosthesis. *Periodica Polytechnica Mechanical Engineering*, 61, 282–287.
- Rochlitz, B., Pammer, D., & Kiss, R. (2018). Functionality and load-bearing analysis of 3D-printed prosthetic feet. *Materials Today: Proceedings*, 5, 26566–26571.
- Rodríguez-Costa, I., De la Cruz-López, I., Fernández-Zárate, I., Maldonado-Bascón, S., Lafuente-Arroyo, S., & Nunez-Nagy, S. (2021). Benefits of a low-cost walking device in children with cerebral palsy: a qualitative study. *International Journal of Environmental Research and Public Health*, 18, 2808.

- Rosicky, J., Grygar, A., Chapcak, P., Bouma, T., & Rosicky, J. (2016). Application of 3D scanning in prosthetic & orthotic clinical practice. *Proceedings of the 7th international conference on 3D body scanning technologies*, (pp. 88–97).
- Roy, K., Debnath, S. C., Pongwisuthiruchte, A., & Potiyaraj, P. (2021). Recent advances of natural fibers based green rubber composites: Properties, current status, and future perspectives. *Journal of Applied Polymer Science*, 138, 50866.
- Safai, L., Cuellar, J. S., Smit, G., & Zadpoor, A. A. (2019). A review of the fatigue behavior of 3D printed polymers. *Additive manufacturing*, 28, 87–97.
- Sagias, V. D., Giannakopoulos, K. I., & Stergiou, C. (2018). Mechanical properties of 3D printed polymer specimens. *Procedia Structural Integrity*, 10, 85–90.
- Salomão, G. V., Santos, F. T., & Junior, S. A. (2019). The importance of prosthetic planning for implant-supported dentures in esthetic zones—A case report. *International Journal of Surgery Case Reports*, 54, 15–19.
- Sarker, D. I., Karim, M. U., Ahamed, M. S., Sultana, F. A., & Islam, Z. A. (2020). A Walker Designed for Parkinson's Disease Patients Based on a Survey in Dhaka, Bangladesh. *Strojnícky časopis-Journal of Mechanical Engineering*, 70, 55–66.
- Sarma, T., Saxena, K. K., Majhi, V., Pandey, D., Tewari, R. P., & Sahai, N. (2020). Development of active ankle foot orthotic device. *Materials Today: Proceedings*, 26, 918–921.
- Sato, S., Togo, N., & Yamanaka, S. (2016). Designing Functional Beauty through Additive Manufacturing: Prototyping of Running-Specific Prostheses Using Selective Laser Sintering. *2016 International Solid Freeform Fabrication Symposium*.
- Schmid, M., Amado, A., & Wegener, K. (2014). Materials perspective of polymers for additive manufacturing with selective laser sintering. *Journal of Materials Research*, 29, 1824–1832.
- Schmitz, C., Mori, Y. T., Gamba, H. R., Nohama, P., & de Souza, M. A. (2019). Development and Evaluation of a Customized Wrist-Hand Orthosis using 3D Technology for a Child with Cerebral Palsy-A Case Study. *2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, (pp. 1476–1479).
- Scholz, M.-S., Blanchfield, J. P., Bloom, L. D., Coburn, B. H., Elkington, M., Fuller, et al. (2011). The use of composite materials in modern orthopaedic medicine and prosthetic devices: A review. *Composites Science and Technology*, 71, 1791–1803.
- Schuind, F. (2021). Production of a custom medical splint or brace for immobilization of a selected region of a patient's body part, Retrieved from <https://patents.google.com/patent/US20210298937A1>.
- Seepersad, C. C. (2014). Challenges and opportunities in design for additive manufacturing. *3D Printing and Additive Manufacturing*, 1, 10–13.
- Semasinghe, C. L., Prasanna, J. L., Kandamby, H. M., Ranaweera, R. K., Madusanka, D. G., & Gopura, R. A. (2016). Transradial prostheses: Current status and future directions. *2016 Manufacturing & Industrial Engineering Symposium (MIES)*, (pp. 1–7).
- Sengeh, D. M., & Herr, H. (2013). A variable-impedance prosthetic socket for a transtibial amputee designed from magnetic resonance imaging data. *JPO: Journal of Prosthetics and Orthotics*, 25, 129–137.
- Seymour, R. B. (1991). *Reinforced plastics: properties & applications*. Asm International.
- Shahar, F. S., Sultan, M. T., Lee, S. H., Jawaid, M., Shah, A. U., Safri, S. N., & Sivasankaran, P. N. (2019). A review on the orthotics and prosthetics and the potential of kenaf composites as alternative materials for ankle-foot orthosis. *Journal of the mechanical behavior of biomedical materials*, 99, 169–185.

- Shahar, F. S., Sultan, M. T., Shah, A. U., & Safri, S. N. (2020). A comparative analysis between conventional manufacturing and additive manufacturing of ankle-foot orthosis. *Applied Science and Engineering Progress*, 13, 96–103.
- Sharma, M., & Bajracharya, S. (2021). Low Cost Modified Reverse Walker to Assist Children with Cerebral Palsy in Hands-free Walking: A Pilot Study. *RGUHS Journal of Allied Health Sciences*, 1.
- Shurr, D. G., Michael, J. W., & Cook, T. M. (2002). *Prosthetics and orthotics*. Prentice Hall Upper Saddle River, NJ, USA.
- Siddharth. (n.d.). Brochure.cdr. Retrieved from [www.auprtime.com](http://www.auprtime.com).
- Singh, I. (2017). NPTEL Course: processing of polymers and polymer composites, Lecture 2 “Engineering Materials and Processing Techniques”; Retrieved from [https://archive.nptel.ac.in/courses/112/107/112107221/\(textofvideo.nptel.iitm.ac.in/112107086/lec1.pdf\)](https://archive.nptel.ac.in/courses/112/107/112107221/(textofvideo.nptel.iitm.ac.in/112107086/lec1.pdf)).
- Singh, S., Ramakrishna, S., & Berto, F. (2020). 3D Printing of polymer composites: A short review. *Material Design & Processing Communications*, 2, e97.
- Sions, J. M., Beisheim, E. H., Manal, T. J., Smith, S. C., Horne, J. R., & Sarlo, F. B. (2018). Differences in physical performance measures among patients with unilateral lower-limb amputations classified as functional level K3 versus K4. *Archives of physical medicine and rehabilitation*, 99, 1333–1341.
- Šljivic, M., Pavlovic, A., Krašnik, M., & Ilić, J. (2019). Comparing the accuracy of 3D slicer software in printed enduse parts. *IOP conference series: materials science and engineering*, 659, p. 012082.
- Smith, K. (2016). The Mechanical Response and Parametric Optimization of Ankle-Foot Devices.
- Song, R., Murphy, M., Li, C., Ting, K., Soo, C., & Zheng, Z. (2018). Current development of biodegradable polymeric materials for biomedical applications. *Drug design, development and therapy*, 12, 3117.
- Spears, T. G., & Gold, S. A. (2016). In-process sensing in selective laser melting (SLM) additive manufacturing. *Integrating Materials and Manufacturing Innovation*, 5, 16–40.
- Srikanth, S. A., & Bharanidaran, R. (2017). Design of a Compliant Mechanism Based Prosthetic Foot. *International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)*, 7, 33–42.
- Srivatsan, T. S., & Sudarshan, T. S. (2015). Additive manufacturing: innovations, advances, and applications.
- Stier, B., Simon, J.-W., & Reese, S. (2015). Numerical and experimental investigation of the structural behavior of a carbon fiber reinforced ankle-foot orthosis. *Medical Engineering & Physics*, 37, 505–511.
- Stuart Mason Dambrot, Chemistry Helps Athlete Keep Moving, May 2016.
- Surmen, H. K., & Arslan, Y. Z. (2021). Evaluation of various design concepts in passive ankle-foot orthoses using finite element analysis. *Engineering Science and Technology, an International Journal*, 24, 1301–1307.
- Susmartini, S., Herdman, L., & Priadythama, I. (2021). SHIP model: redesign the assistive walker for children cerebral palsy with the concept of useability, safety, and efficiency. *IOP Conference Series: Materials Science and Engineering*, 1070, p. 012118.
- Symington, M. C., Banks, W. M., West, O. D., & Pethrick, R. A. (2009). Tensile testing of cellulose based natural fibers for structural composite applications. *Journal of composite materials*, 43, 1083–1108.



- Szostakowski, B., Smitham, P., & Khan, W. S. (2017). Plaster of Paris—short history of casting and injured limb immobilization. *The Open Orthopaedics Journal*, 11, 291.
- Takhakh, A. M., Jweeg, M. J., & Abbas, S. M. (2017). Characterization of materials used in manufacturing the ankle foot orthoses. *International Journal Of Energy And Environment*, 8, 291–298.
- Tao, Z., Ahn, H.-J., Lian, C., Lee, K.-H., & Lee, C.-H. (2017). Design and optimization of prosthetic foot by using polylactic acid 3D printing. *Journal of Mechanical Science and Technology*, 31, 2393–2398.
- Tappa, K., & Jammalamadaka, U. (2018). Novel biomaterials used in medical 3D printing techniques. *Journal of functional biomaterials*, 9, 17.
- Tay, F. E., Manna, M. A., & Liu, L. X. (2002). A CASD/CASM method for prosthetic socket fabrication using the FDM technology. *Rapid Prototyping Journal*.
- Ten Kate, J., Smit, G., & Breedveld, P. (2017). 3D-printed upper limb prostheses: a review. *Disability and Rehabilitation: Assistive Technology*, 12, 300–314.
- Torburn, L., Perry, J., Ayyappa, E., & Shanfield, S. L. (1990). Below-knee amputee gait with dynamic elastic response prosthetic feet: a pilot study. *J Rehabil Res Dev*, 27, 369–84.
- Toro, B., Nester, C., & Farren, P. (2003). A review of observational gait assessment in clinical practice. *Physiotherapy theory and practice*, 19, 137–149.
- Torrado, A. R., Shemelya, C. M., English, J. D., Lin, Y., Wicker, R. B., & Roberson, D. A. (2015). Characterizing the effect of additives to ABS on the mechanical property anisotropy of specimens fabricated by material extrusion 3D printing. *Additive Manufacturing*, 6, 16–29.
- Total, D., Kovalenko, I., Saez, M., & Barton, K. (2017). Manufacturing choices for ankle-foot orthoses: a multi-objective optimization. *Procedia CIRP*, 65, 145–150.
- Total, D., Menon, M., Gates, D. H., & Barton, K. (2021). Design and evaluation of the SMap: a stiffness measurement apparatus for ankle–foot orthoses. *Mechatronics*, 77, 102572.
- Tryggvason, H., Starker, F., Lecompte, C., & Jónsdóttir, F. (2017). Modeling and simulation in the design process of a prosthetic foot. *Proceedings of the 58th Conference on Simulation and Modelling (SIMS 58) Reykjavik, Iceland, September 25th–27th, 2017*, (pp. 398–405).
- Tsai, S. W., & Hahn, H. T. (2018). *Introduction to composite materials*. Routledge.
- Tschimmel, K. (2012). Design Thinking as an effective Toolkit for Innovation. *ISPIM Conference Proceedings*, (p. 1).
- Tucker, M. R., Olivier, J., Pagel, A., Bleuler, H., Bouri, M., Lambercy, O., et al. (2015). Control strategies for active lower extremity prosthetics and orthotics: a review. *Journal of neuroengineering and rehabilitation*, 12, 1–30.
- Türk, D.-A., Einarsson, H., Lecomte, C., & Meboldt, M. (2018). Design and manufacturing of high-performance prostheses with additive manufacturing and fiber-reinforced polymers. *Production Engineering*, 12, 203–213.
- Upender, V., Srikanth, E., Karthik, G., & Kumar, N. (2018). Design Modeling and Optimization of a “Prosthetic Runner Blade. *Natl. Tech. Res. Organ. India*, 5, 64–70.
- Van Der Klift, F., Koga, Y., Todoroki, A., Ueda, M., Hirano, Y., Matsuzaki, R., et al. (2016). 3D printing of continuous carbon fibre reinforced thermo-plastic (CFRTP) tensile test specimens. *Open Journal of Composite Materials*, 6, 18.
- Van Gaalen, J. B., Trejos, A. L., Nikolov, H. N., Ivanov, T. G., Pollman, S. I., & Holdsworth, D. W. (2016). Versatile smart hip implant technology using 3D metal printing. *2016 IEEE International Symposium on Circuits and Systems (ISCAS)*, (pp. 2731–2734).

- Vanaei, S., Parizi, M. S., Salemizadehparizi, F., & Vanaei, H. R. (2021). An overview on materials and techniques in 3D bioprinting toward biomedical application. *Engineered Regeneration*, 2, 1–18.
- Vignesh, M., Ranjith Kumar, G., Sathishkumar, M., Manikandan, M., Rajyalakshmi, G., Ramanujam, R., & Arivazhagan, N. (2021). Development of biomedical implants through additive manufacturing: A review. *Journal of Materials Engineering and Performance*, 30, 4735–4744.
- Vinay, B. S., Thinlay, T., Jayswal, S. K., Pradeep, S., Bais, M., Prasad, K. D., & Singh, J. I. (2022). Design and structural analysis of a passive ankle-foot prosthesis with manually adjustable stiffness and having two degrees of freedom. *Materials Today: Proceedings*, 65, 3496–3505.
- Vinson, J. R., & Chou, T.-W. (1975). Composite materials and their use in structures.
- Viswakumar, A., Rajagopalan, V., Ray, T., Gottipati, P., & Parimi, C. (2021). Development of a robust, simple, and affordable human gait analysis system using bottom-up pose estimation with a smartphone camera. *Frontiers in Physiology*, 12.
- Vyavahare, S., Teraiya, S., Panghal, D., & Kumar, S. (2019). Fused deposition modelling: a review. *Rapid Prototyping Journal*.
- Walbran, M., Turner, K., & McDaid, A. J. (2016). Customized 3D printed ankle-foot orthosis with adaptable carbon fibre composite spring joint. *Cogent engineering*, 3, 1227022.
- Wang, H., Dzul-Garcia, C., Bolding, R., & Raybon, B. (2019). Design consideration on pediatric walkers for children with cerebral palsy. *ASSISTIVE TECHNOLOGY*, 31, pp. 248–249.
- Wang, J. Z., Lillia, J., Farhan, M., Bi, L., Kim, J., Burns, J., & Cheng, T. L. (2021). Digital mapping of a manual fabrication method for paediatric ankle-foot orthoses. *Scientific Reports*, 11, 1–8.
- Wang, M. (2003). Developing bioactive composite materials for tissue replacement. *Biomaterials*, 24, 2133–2151.
- White, R. A., Weber, J. N., & White, E. W. (1972). Replamineform: a new process for preparing porous ceramic, metal, and polymer prosthetic materials. *science*, 176, 922–924.
- Whiteside, J. W. (2021). Flexible ankle foot orthosis, Retrieved from <https://patents.google.com/patent/US20210205109A1>.
- Wilson, A. B. (1974). Vacuum forming of plastics in prosthetics and orthotics. *Orth. and Pros*, 28, 12–20.
- Woern, A. L., Byard, D. J., Oakley, R. B., Fiedler, M. J., Snabes, S. L., & Pearce, J. M. (2018). Fused particle fabrication 3-D printing: Recycled materials' optimization and mechanical properties. *Materials*, 11, 1413.
- Wohlers, T., & Gornet, T. (2014). History of additive manufacturing. *Wohlers report*, 24, 118.
- Wong, K. V., & Hernandez, A. (2012). A review of additive manufacturing. *International scholarly research notices*, 2012.
- Xiang, G. (2021). Adjustable external fixing brace, Retrieved from <https://patents.google.com/patent/US20210187153A1>.
- Yan, T., Cempini, M., Oddo, C. M., & Vitiello, N. (2015). Review of assistive strategies in powered lower-limb orthoses and exoskeletons. *Robotics and Autonomous Systems*, 64, 120–136.
- Yan, Y., Chen, X., Cheng, C., & Wang, Y. (2022). Design, kinematic modeling and evaluation of a novel soft prosthetic hand with abduction joints. *Medicine in Novel Technology and Devices*, 15, 100151.

- Yang, L., Grottkau, B., He, Z., & Ye, C. (2017). Three dimensional printing technology and materials for treatment of elbow fractures. *International Orthopaedics*, 41, 2381–2387.
- Yoo, T. D., Kim, E., Han, J., & Bogen, D. K. (2005). Geometric and biomechanical analysis for computer-aided design of assistive medical devices. *Computer-Aided Design*, 37, 1521–1532.
- Zahedi, S., Sykes, A., Lang, S., & Cullington, I. (2005). Adaptive prosthesis—a new concept in prosthetic knee control. *Robotica*, 23, 337–344.
- Zhang, R., Ling, L., Han, D., Wang, H., Yu, G.,(2019). FEM analysis in excellent cushion characteristic of ostrich (*Struthio camelus*) toe pads. *Plos one*, 14, e0216141.
- Zhang, X., Fan, W., & Liu, T. (2020). Fused deposition modeling 3D printing of polyamide-based composites and its applications. *Composites Communications*, 21, 100413.
- Zweben, C. (1981). Advanced composites for aerospace applications: A review of current status and future prospects. *Composites*, 12, 235–240.