References

1. Kuo, A. D. Energetics of Actively Powered Locomotion Using the Simplest Walking Model. *J. Biomech. Eng.* **124**, 113–120 (2002). PMID: 11871597

2. Palmer, J., Verghese, P. & Pavel, M. The psychophysics of visual search. *Vision Res.* **40**, 1227–1268 (2000). PMID: 10788638

3. Smith, N. D., Glen, F. C. & Crabb, D. P. Eye movements during visual search in patients with glaucoma. *BMC Ophthalmol.* **12**, 45 (2012). PMID: 22937814

4. Matthis, J. S., Yates, J. L. & Hayhoe, M. M. Gaze and the Control of Foot Placement When Walking in Natural Terrain. *Curr. Biol.* **28**, 1224-1233.e5 (2018). PMID: 29657116

5. Hayhoe, M. M. & Matthis, J. S. Control of gaze in natural environments: effects of rewards and costs, uncertainty and memory in target selection. *Interface Focus* **8**, 20180009 (2018). PMCID: PMC6015808

6. Najemnik, J., Geisler, W. Optimal eye movement strategies in visual search. Nature 434, 387–391 (2005). PMID: 15772663

7. Jovancevic-Misic, J. & Hayhoe, M. Adaptive Gaze Control in Natural Environments. *J. Neurosci.* **29**, 6234–6238 (2009). PMID: 19439601

8. Tong, M. H., Zohar, O. & Hayhoe, M. M. Control of gaze while walking: Task structure, reward, and uncertainty. *J. Vis.* **17**, 28 (2017). PMCID: PMC5256682

9. Zhang, R. *et al.* Modeling sensory-motor decisions in natural behavior. *PLOS Comput. Biol.* **14**, e1006518 (2018). PMCID: PMC6219815

10. Hayhoe, M. & Ballard, D. Eye movements in natural behavior. *Trends Cogn. Sci.* **9**, 188–194 (2005). PMID: 15808501

11. Tatler, B. W., Hayhoe, M. M., Land, M. F. & Ballard, D. H. Eye guidance in natural vision: Reinterpreting salience. *J. Vis.* **11**, 5–5 (2011). PMCID: PMC3134223

12. Rothkopf, C. A., Ballard, D. H. & Hayhoe, M. M. Task and context determine where you look. *J. Vis.* **7**, 16 (2016).

13. Donelan, J. M., Kram, R. & Kuo, A. D. Mechanical work for step-to-step transitions is a major determinant of the metabolic cost of human walking. 11 (2002). PMID: 12409498

14. Selinger, J. C., O'Connor, S. M., Wong, J. D. & Donelan, J. M. Humans Can Continuously Optimize Energetic Cost during Walking. *Curr. Biol.* **25**, 2452–2456 (2015). PMID: 26365256

15. Warren, W. H. Perceiving Affordances: Visual Guidance of Stair Climbing. 21. (1984). PMID: 6238127

16. Weast-Knapp, J. A. *et al.* Perception of another person's maximum reach-with-jump height from walking kinematics. *Q. J. Exp. Psychol.* **72**, 2018–2031 (2019). PMID: 30681043

17. Marigold, D. S. & Patla, A. E. Gaze fixation patterns for negotiating complex ground terrain. *Neuroscience* **144**, 302–313 (2007). PMID: 17055177

18. Matthis, J. S. & Fajen, B. R. Humans exploit the biomechanics of bipedal gait during visually guided walking over complex terrain. *Proc. R. Soc. B Biol. Sci.* **280**, 20130700 (2013). PMCID: PMC3673057

19. Matthis, J. S. & Fajen, B. R. Visual control of foot placement when walking over complex terrain. *J. Exp. Psychol. Hum. Percept. Perform.* **40**, 106–115 (2014). PMID: 23750964

20. Becker, S. I. Determinants of Dwell Time in Visual Search: Similarity or Perceptual Difficulty? *PLoS ONE* **6**, e17740 (2011). PMCID: PMC3050928

21. Riley, M. A., Kuznetsov, N. & Bonnette, S. State-, parameter-, and graph-dynamics: Constraints and the distillation of postural control systems. *Sci. Mot.* 5–18 (2011).

22. Nishikawa, K. *et al.* Neuromechanics: an integrative approach for understanding motor control. *Integr. Comp. Biol.* **47**, 16–54 (2007). PMID: 21672819

23. Patla, A. E. Understanding the roles of vision in the control of human locomotion. *Gait Posture* **5**, 54–69 (1997).

24. Matthis, J. S., Barton, S. L. & Fajen, B. R. The critical phase for visual control of human walking over complex terrain. *Proc. Natl. Acad. Sci.* **114**, E6720–E6729 (2017). PMCID: PMC5558990