

Run Like a Fish: Published Literature Review - Annotated Bibliography

This annotated bibliography contains one entry for each separate work or public record cited in the Literature Review. Entries are grouped under the section where each source is first introduced so claims can be checked quickly. Sources used again in later sections are listed only once. A conventional APA reference list would normally be alphabetized. I state publication status, participant population, and important limits because these sources do not all provide equivalent evidence.

I used Google Scholar as the primary discovery platform from July 15 through August 31, 2026, then checked original papers, publisher records, DOI records, official reports, and accessible full texts when available. Commercial and project records are labeled as context and are not treated as equivalent to peer-reviewed participant studies.

Section 2 - Search Method

Kappers, A. M. L., Holt, R. J., Junggeburth, T. J. W., Oen, M. F. S., van de Wetering, B. J. T., & Plaisier, M. A. (2024). Hands-free haptic navigation devices for actual walking. *IEEE Transactions on Haptics*, 17(4), 528-545. <https://doi.org/10.1109/TOH.2024.3405551>

Used for: A recent review used as a citation index for hands-free haptic navigation systems and terminology.

Important limit: It was used to locate original papers, not as a substitute for checking the primary studies.

Section 3 - The Gap: What has been done, and what remains

European Commission. (2016). Advanced guiding technology for visually impaired athletes to run alone (BLINDTRACK project 605821). CORDIS. <https://cordis.europa.eu/article/id/170254-advanced-guiding-technology-for-visually-impaired-athletes-to-run-alone>

Used for: Official project-level evidence that BLINDTRACK combined real-time track localization, trajectory prediction, collision handling, and an eight-motor belt intended for independent running on a 400 m track. The final reporting describes testing with six visually impaired volunteers. **Important limit:** This is an official project record rather than a peer-reviewed controlled outcome paper; detailed path and workload results for the six-person field trial are not reported.

Kemeth, F., Hafenecker, S., Jakab, Á., Varga, M., Csielka, T., & Couronné, S. (2015). Guiding system for visually impaired running on a track. In J. Cabri, J. Barreiros, & P. Pizarat Correia (Eds.), *Sports science research and technology support (Communications in Computer and Information Science, Vol. 556)*, pp. 71-84). Springer. https://doi.org/10.1007/978-3-319-25249-0_6

Used for: The peer-reviewed technical description connected with BLINDTRACK, especially its localization and guidance architecture for a running track. **Important limit:** The publication is strongest on system design and positioning performance; it does not supply the full controlled end-user comparison needed for the present cue question.

Durá-Gil, J. V., Bazuelo-Ruiz, B., Moro-Pérez, D., & Mollà-Domenech, F. (2017). Analysis of different vibration patterns to guide blind people. *PeerJ*, 5, e3082. <https://doi.org/10.7717/peerj.3082>

Used for: A BLINDTRACK-related tactile-belt study comparing waist and back vibration patterns with blind and blindfolded sighted participants in static and walking tasks. **Important limit:** The patterns were researcher-controlled and the dynamic experiment involved walking rather than running; the authors also warn that the sample was small.

Pieralisi, M., Petrini, V., Di Mattia, V., Manfredi, G., De Leo, A., Scalise, L., Russo, P., & Cerri, G. (2015). Design and realization of an electromagnetic guiding system for blind running athletes. *Sensors*, 15(7), 16466-16483. <https://doi.org/10.3390/s150716466>

Used for: The earlier full-system description of electromagnetic track boundaries and vibrotactile correction for a blind running athlete. **Important limit:** The system required installed infrastructure and delivered reactive boundary information rather than anticipatory turn guidance.

Pieralisi, M., Di Mattia, V., Petrini, V., De Leo, A., Manfredi, G., Russo, P., Scalise, L., & Cerri, G. (2017a). An electromagnetic sensor for the autonomous running of visually impaired and blind athletes (Part I: The fixed infrastructure). *Sensors*, 17(2), 364. <https://doi.org/10.3390/s17020364>

Used for: The fixed electromagnetic infrastructure used to create detectable track boundaries for the wearable system. **Important limit:** It is a component paper and does not by itself establish participant-level usability.

Pieralisi, M., Di Mattia, V., Petrini, V., De Leo, A., Manfredi, G., Russo, P., Scalise, L., & Cerri, G. (2017b). An electromagnetic sensor for the autonomous running of visually impaired and blind athletes (Part II: The wearable device). *Sensors*, 17(2), 381. <https://doi.org/10.3390/s17020381>

Used for: A field test in which one blind athlete completed walking, fast-walking, and three 400 m running laps. Mean running speeds were about 2.22, 2.42, and 2.63 m/s, with several safe-zone departures per lap. **Important limit:** The waist carried the electromagnetic sensor while vibration was delivered on the upper arms. The guidance was reactive and infrastructure-dependent, not a torso turn-warning display.

Cordovil Júnior, L. A. Q., Baima, R. L., Oka, G. T. R., Lima, A. C. O., Bastos, M. P., Martins, A. I., & Rocha, N. P. (2021). A tracking topology to support a trajectory monitoring system directed at helping visually impaired on Paralympic athletics. In A. Rocha, H. Adeli, G. Dzemyda, F. Moreira, & A. M. R. Correia (Eds.), *Trends and applications in information systems and technologies (Advances in Intelligent Systems and Computing, Vol. 1368, pp. 173-182)*. Springer. https://doi.org/10.1007/978-3-030-72654-6_17

Used for: A trajectory-monitoring prototype able to provide a vibratory stimulus, evaluated by eight visually impaired athletes during training activities. **Important limit:** The accessible reporting establishes feasibility and participant population more clearly than it establishes a controlled comparison of cue types or human-factors outcomes.

Cordovil Júnior, L. A. Q., Oka, G. T. R., Bastos, M. P., Baima, R. L., Ferst, N. C., Lima, A. C. O., Martins, A. I., & Rocha, N. P. (2022). Trajectory correction for visually impaired athletes on 100 m Paralympic races. In T. Antipova (Ed.), *Comprehensible science: ICCS 2021 (Lecture Notes in Networks and Systems, Vol. 315, pp. 393-401)*. Springer. https://doi.org/10.1007/978-3-030-85799-8_33

Used for: A follow-up experiment with eight visually impaired athletes in 100 m sprint tasks using inertial motion sensing, a trajectory algorithm, and haptic actuation. **Important limit:** This is an important actual-user running precedent, but the publication does not test a torso-based anticipatory turn cue or the planned workload comparison.

Machado, A., & Carvalho, C. (2021). Pro-Athlete: A guide system for visually impaired athletes in Olympic track race. *ITEGAM-JETIA*, 7(28), 16-22. <https://doi.org/10.5935/jetia.v7i28.746>

Used for: A peer-reviewed Brazilian proof of concept in which five visually impaired track athletes received remotely triggered cues through belt and bracelet actuators during simulated races. **Important limit:** The tested system was human-operated rather than autonomous, and its experimental reporting is limited. A proposed high-precision GPS architecture was future work, not the tested sensing method.

Kayhan, O., & Samur, E. (2022). A wearable haptic guidance system based on skin stretch around the waist for visually-impaired runners. *2022 IEEE Haptics Symposium (HAPTICS)*, 1-6. <https://doi.org/10.1109/HAPTICS52432.2022.9765618>

Used for: The closest fully described waist-worn running experiment: four participants, including one visually impaired runner, used skin-stretch steering over 400 m. The system produced fewer warnings and lane violations than verbal guidance. **Important limit:** It used skin stretch rather than vibration, was reactive, included only one visually impaired participant, and did not report workload or an anticipatory-turn comparison.

Mancini, A., Frontoni, E., & Zingaretti, P. (2018). Mechatronic system to help visually impaired users during walking and running. *IEEE Transactions on Intelligent Transportation Systems*, 19(2), 649-660. <https://doi.org/10.1109/TITS.2017.2780621>

Used for: An earlier camera-based lane-guidance system using a chest-mounted monocular camera and vibrotactile gloves, with operation reported at walking and running speeds. **Important limit:** The accessible record does not clearly establish a substantial visually impaired participant evaluation or the controlled path and workload outcomes needed here.

Narang, G., Galdelli, A., Kuznetsov, O., Zingaretti, P., & Mancini, A. (2026). TrackAid-DT: An egocentric vision dataset and benchmarks for lane detection in visually impaired athlete guidance. *Computer Vision and Image Understanding*, 269, 104788. <https://doi.org/10.1016/j.cviu.2026.104788>

Used for: A recent portable camera-and-glove system. Two blindfolded sighted participants completed twenty 400 m laps at a mean speed of 2.69 m/s, demonstrating end-to-end running feasibility on marked lanes.

Important limit: The participant test did not include visually impaired athletes, and speed was the main quantitative human-feasibility outcome; workload, obstacle performance, and quantitative path-error results were not reported.

Liao, Z., Salazar, J., & Hirata, Y. (2021). Robotic guidance system for visually impaired users running outdoors using haptic feedback. 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 8325-8331. <https://doi.org/10.1109/IROS51168.2021.9636567>

Used for: The earlier drone-guidance study comparing continuous and gait-phase lower-leg vibration during outdoor running by blindfolded users. **Important limit:** The participants were not visually impaired, the course was straight, and the display was on the lower leg rather than the torso.

Liao, Z., Salazar Lucas, J. V., Ravankar, A. A., & Hirata, Y. (2023). Running guidance for visually impaired people using sensory augmentation technology based robotic system. *IEEE Robotics and Automation Letters*, 8(9), 5323-5330. <https://doi.org/10.1109/LRA.2023.3294718>

Used for: Both treadmill direction-recognition testing and a 48 m outdoor route-following experiment with seven blindfolded sighted adults. Participants remained in the narrow track about 81% of the time with the system. **Important limit:** It still did not include visually impaired runners, torso delivery, turns, or anticipatory cueing.

Hirano, T., Kanebako, J., Saraiji, M. H. D. Y., Peiris, R. L., & Minamizawa, K. (2019). Synchronized running: Running support system for guide runners by haptic sharing in blind marathon. 2019 IEEE World Haptics Conference (WHC), 25-30. <https://doi.org/10.1109/WHC.2019.8816134>

Used for: Evidence that haptic pacing information can be used during running to help a sighted guide synchronize with a blind runner. **Important limit:** The system supported cadence sharing; the human guide still supplied route navigation.

Yu, Y., Xu, H.-S., & Lin, M.-Y. (2025). RunPacer: A smartwatch-based vibrotactile feedback system for symmetric co-running by visually impaired individuals and guides. *Proceedings of the 27th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '25)*, 1-4. <https://doi.org/10.1145/3663547.3759738>

Used for: A peer-reviewed short poster study of smartwatch pacing feedback with five runner-guide pairs on a 200 m track. An arXiv version is available as arXiv:2507.04241. **Important limit:** Each 'visually impaired' role was performed by a blindfolded sighted runner, and the system addressed pace synchronization rather than navigation.

Pratt Institute. (2018). Solved: Three industrial design alumni tackle a haptics challenge. <https://www.pratt.edu/news/solved-three-industrial-design-alumni-tackle-a-haptics-challenge/>

Used for: Commercial context for WearWorks' Wayband and its public marathon demonstration with a blind runner. **Important limit:** This is institutional press coverage, not peer-reviewed validation, and is not used to support a benchmark or novelty conclusion.

Section 4 - What the field already knows

van Erp, J. B. F., van Veen, H. A. H. C., Jansen, C., & Dobbins, T. (2005). Waypoint navigation with a vibrotactile waist belt. *ACM Transactions on Applied Perception*, 2(2), 106-117.

<https://doi.org/10.1145/1060581.1060585>

Used for: A foundational belt study showing effective location-coded direction and no performance benefit from the tested rhythm-coded distance display. **Important limit:** The null result applies to that continuous distance code and task; it does not prove that every temporal warning will fail.

Flores, G., Kurniawan, S., Manduchi, R., Martinson, E., Morales, L. M., & Sisbot, E. A. (2015). Vibrotactile guidance for wayfinding of blind walkers. *IEEE Transactions on Haptics*, 8(3), 306-317.

<https://doi.org/10.1109/TOH.2015.2409980>

Used for: A walking study with ten blind participants in which tactile guidance improved path accuracy compared with audio while reducing walking speed. **Important limit:** The task involved walking, not running, and the speed-accuracy tradeoff may change at higher pace.

Brandebusemeyer, C., Luther, A. R., König, S. U., König, P., & Kärcher, S. M. (2021). Impact of a vibrotactile belt on emotionally challenging everyday situations of the blind. *Sensors*, 21(21), 7384.

<https://doi.org/10.3390/s21217384>

Used for: A seven-week study in which eleven blind users wore a continuously signaling feelSpace belt and reported changes in discomfort and confidence. **Important limit:** The sample was small and the belt indicated north during everyday use, not lane error during running.

Pielot, M., Poppinga, B., Heuten, W., & Boll, S. (2011). A tactile compass for eyes-free pedestrian navigation. In *Human-computer interaction - INTERACT 2011 (Lecture Notes in Computer Science, Vol. 6948, pp. 640-656)*. Springer.

https://doi.org/10.1007/978-3-642-23771-3_47

Used for: A counterexample showing that bearing and pause-based distance information can work in a particular handheld navigation design. **Important limit:** The body location, walking task, and encoding differ substantially from a torso turn cue at running pace.

Rümelin, S., Rukzio, E., & Hardy, R. (2011). NaviRadar: A novel tactile information display for pedestrian navigation. *Proceedings of the 24th Annual ACM Symposium on User Interface Software and Technology*, 293-302.

<https://doi.org/10.1145/2047196.2047234>

Used for: A single-tactor pedestrian display using radar-sweep timing for direction and intensity for distance, with navigation performance comparable to spoken guidance in its study. **Important limit:** It was designed for pedestrian navigation and does not isolate an accelerating approach signal.

Schätzle, S., & Weber, B. (2015). Towards vibrotactile direction and distance information for virtual reality and workstations for blind people. In *Universal access in human-computer interaction (Lecture Notes in Computer Science, Vol. 9176, pp. 148-160)*. Springer.

https://doi.org/10.1007/978-3-319-20681-3_14

Used for: A comparison of distance codes in which pause intervals and a distinct near-target change were useful during a hand-guidance task. **Important limit:** The wrist/hand target-acquisition task is not locomotion, so it supports signal design only indirectly.

Straub, M., Riener, A., & Ferscha, A. (2009). Distance encoding in vibro-tactile guidance cues. *6th Annual International Conference on Mobile and Ubiquitous Systems: Networking & Services*, 1-3.

<https://doi.org/10.4108/ICST.MOBIQUITOUS2009.6938>

Used for: An independent result in which adding the tested distance information did not improve navigation performance. **Important limit:** The study was short and used a specific waypoint task; it does not test an imminent-event turn alert.

Oron-Gilad, T., Downs, J. L., Gilson, R. D., & Hancock, P. A. (2007). Vibrotactile guidance cues for target acquisition. *IEEE Transactions on Systems, Man, and Cybernetics, Part C: Applications and Reviews*, 37(5), 993-1004.

<https://doi.org/10.1109/TSMCC.2007.900646>

Used for: A close signal-coding precedent showing that tactile burst-rate changes near a target can improve target-acquisition performance. **Important limit:** The feedback was delivered to the hand in a fine-control task, not to the torso during locomotion.

Meng, F., Gray, R., Ho, C., Ahtamad, M., & Spence, C. (2015). Dynamic vibrotactile signals for forward collision avoidance warning systems. *Human Factors*, 57(2), 329-346. <https://doi.org/10.1177/0018720814542651>

Used for: A driving-simulator study in which a dynamic, approaching tactile warning produced faster braking than a static cue. **Important limit:** A separate looming-intensity layer did not add benefit, showing that extra dynamics are not automatically useful.

Gray, R. (2011). Looming auditory collision warnings for driving. *Human Factors*, 53(1), 63-74. <https://doi.org/10.1177/0018720810397833>

Used for: The auditory counterpart showing faster responses to warnings that conveyed approach. **Important limit:** It is cross-modal and driving-specific evidence, so it supports the approach principle rather than the exact haptic cue.

Cholewiak, R. W., Brill, J. C., & Schwab, A. (2004). Vibrotactile localization on the abdomen: Effects of place and space. *Perception & Psychophysics*, 66(6), 970-987. <https://doi.org/10.3758/BF03194989>

Used for: A major torso-localization benchmark: stronger performance near midline anchors and roughly 92-97% accuracy in the tested six- and eight-position layouts versus about 74% with twelve positions. **Important limit:** These values are arrangement- and apparatus-specific; they support a starting design rather than a universal eight-tactor ceiling.

Jóhannesson, Ó. I., Hoffmann, R., Valgeirsdóttir, V. V., Unnpórsson, R., Moldoveanu, A., & Kristjánsson, Á. (2017). Relative vibrotactile spatial acuity of the torso. *Experimental Brain Research*, 235(11), 3505-3515. <https://doi.org/10.1007/s00221-017-5073-6>

Used for: Evidence that relative left/right displacement judgments can remain above chance at 13 mm spacing. **Important limit:** Relative discrimination is not the same as identifying an absolute belt position, and the study was not conducted during running.

Hoffmann, R., Valgeirsdóttir, V. V., Jóhannesson, Ó. I., Unnpórsson, R., & Kristjánsson, Á. (2018). Measuring relative vibrotactile spatial acuity: Effects of tactor type, anchor points and tactile anisotropy. *Experimental Brain Research*, 236, 3405-3416. <https://doi.org/10.1007/s00221-018-5387-z>

Used for: A follow-up showing that actuator type, anatomical anchors, and direction on the body affect relative tactile acuity. **Important limit:** It used a lower-back array in controlled conditions rather than a running belt.

Demircan, E., Recinos, E., Khoo, I. H., Teng, S., & Wu, W. (2020). Understanding human perception of vibrotactile feedback in walking and running tasks. *Advances in Science, Technology and Engineering Systems Journal*, 5(2), 537-544. <https://doi.org/10.25046/aj050267>

Used for: The most direct perception-under-running precedent located: cue-identification performance fell with running, especially for multi-motor and continuous patterns, while single-motor and staggered patterns were more robust. **Important limit:** The device, body placement, participant population, and treadmill task differ from the proposed torso belt and outdoor navigation test.

Redden, E. S., Carstens, C. B., Turner, D. D., & Elliott, L. R. (2006). Localization of tactile signals as a function of tactor operating characteristics (ARL-TR-3971; DTIC ADA457062). U.S. Army Research Laboratory.

Used for: Independent evidence that torso-signal localization declines during a moving soldier course and that actuator characteristics and placement matter. **Important limit:** The military task and equipment differ from running guidance; the values are contextual priors rather than design requirements.

Rupert, A. H., Lawson, B. D., & Basso, J. E. (2016). Tactile Situation Awareness System (TSAS): Recent developments for aviation. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*.

Used for: A representative overview of aviation work using torso tactile cues in high-workload, vibration-rich tasks. **Important limit:** TSAS findings span multiple experiments and reports. Claims about a specific helicopter task should be tied to the original experiment, and transfer to running remains indirect.

Wang, S., Dai, W., Yu, L., Liu, Y., Yang, Y., Guo, R., Hong, Y., Chen, J., Lin, S., Ruan, X., Ouyang, Q., & Wang, X. (2024). A vibrotactile belt for measuring vibrotactile acuities on the human torso using coin motors. *Micromachines*, 15(11), 1341. <https://doi.org/10.3390/mi15111341>

Used for: A prototype-relevant torso study of coin-motor location and pulse duration, including a practical localization/comfort range around 80-320 ms in its apparatus. **Important limit:** Commanded duration and skin-level vibration depend on motor spin-up, mounting, clothing, and body location, so the range must be retested with the actual belt.

Remache-Vinueza, B., Trujillo-León, A., & Vidal-Verdú, F. (2025). Vibrotactile stimulus duration threshold for perception of pulse to vibration transition. *Scientific Reports*, 15, 5057. <https://doi.org/10.1038/s41598-025-85778-6>

Used for: A psychophysical estimate around 30 ms for the transition between perceiving a stimulus as a brief pulse and as vibration across the tested frequencies. **Important limit:** This is not a universal detection threshold and not a torso-localization result; it should not be combined directly with Wang's practical duration range.

Slater, A. E., Ferris, S., Dixon, J. A., Renshaw, C., Moore, T. E., Frady, G., & Harrison, S. J. (2025). Navigating in zero-visibility: A haptic guidance system for improving egress and situation awareness of professional firefighters. *Human Factors*, 67(11), 1152-1169. <https://doi.org/10.1177/00187208251348020>

Used for: A waist-belt navigation study with eighteen firefighters in simulated zero visibility, reporting improved egress and situation awareness. **Important limit:** Firefighter egress is demanding but still different from running, and participants were blindfolded rather than visually impaired.

Camacho, G., Bolton, M. L., Watson, A., & Pitt, I. (2025). Integrating an intuitive tactical navigation solution to enable situational awareness for people with visual disabilities. *Applied Ergonomics*, 129, 104576.

Used for: A torso-mounted vibrotactile navigation study with fully blind participants, measuring accuracy, time, workload, situation awareness, and usability in an open indoor space. **Important limit:** The task was slow, short-distance navigation rather than running, but it is directly relevant to end-user outcomes and torso cue design.

Camacho, G., Bolton, M. L., Watson, A., Bearden, H., & Lu, S. (2026). Guiding by touch: A vibrotactile navigation system for underwater situational awareness. *International Journal of Industrial Ergonomics*, 111, 103864. <https://doi.org/10.1016/j.ergon.2025.103864>

Used for: An underwater extension showing improved tactile-guided accuracy with increased navigation time and comparable subjective workload to standard methods. **Important limit:** Blackout diving is an adjacent zero-visibility task, not evidence that the same tradeoff will occur in running.

Eriksson, L., Berglund, A., Willén, B., Svensson, J., Petterstedt, M., Carlander, O., Lindahl, B., & Allerbo, G. (2008). On visual, vibrotactile, and 3D audio directional cues for dismounted soldier waypoint navigation. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 52, 1282-1286. <https://doi.org/10.1177/154193120805201827>

Used for: A comparison reporting similar navigation precision across visual, tactile, and 3D-audio displays, with lower reported attentional interference and workload for tactile guidance than for 3D audio. **Important limit:** The sample and military walking task differ from visually impaired running.

Section 5 - The two biomimetic hypotheses against the evidence

Bernard, C., Monnoyer, J., Wiertelowski, M., & Ystad, S. (2022). Rhythm perception is shared between audio and haptics. *Scientific Reports*, 12, 4188. <https://doi.org/10.1038/s41598-022-08152-w>

Used for: Psychophysical evidence that haptic and auditory rhythmic-gradient tasks produced similar threshold patterns, supporting pulse rate as a plausible information dimension. **Important limit:** The result should not be generalized to every rhythm task or described as proof that skin and hearing have identical precision.

Lee, D. N. (1976). A theory of visual control of braking based on information about time-to-collision. *Perception*, 5(4), 437-459.

Used for: The original theoretical basis for using time-to-contact information in action control. **Important limit:** A visual-control theory does not establish that a vibrotactile turn cue will work; it motivates a testable mapping.

Lee, D. N. (1998). Guiding movement by coupling taus. *Ecological Psychology*, 10(3-4), 221-250.

Used for: A later development of tau coupling as a general account of movement timing. **Important limit:** The theory should only be invoked if the implemented cue is actually related to estimated time-to-action.

Lee, D. N. (2009). General tau theory: Evolution to date. *Perception*, 38(6), 837-858.

Used for: A retrospective statement of the broader tau framework and its proposed applications. **Important limit:** It provides conceptual framing rather than direct evidence for running guidance.

Section 7 - Other research that helps shape future testing

Kallie, C. S., Schrater, P. R., & Legge, G. E. (2007). Variability in stepping direction explains the veering behavior of blind walkers. *Journal of Experimental Psychology: Human Perception and Performance*, 33(1), 183-200.

Used for: Evidence that small step-direction errors can accumulate into veering. Mean unsigned lateral deviations were about 0.45-1.74 m after 9.14 m of forward travel. **Important limit:** Those values are lateral distances, not angles, and the walking task should not be treated as a direct running-performance target.

Souman, J. L., Frissen, I., Sreenivasa, M. N., & Ernst, M. O. (2009). Walking straight into circles. *Current Biology*, 19(18), 1538-1542.

Used for: Outdoor trajectory evidence that people without stable external references can gradually curve away from an intended straight path. **Important limit:** The study motivates the need for reference information but does not test haptic correction or running.

Rector, K., Bartlett, R., & Mullan, S. (2018). Exploring aural and haptic feedback for visually impaired people on a track: A Wizard of Oz study. *Proceedings of the 20th International ACM SIGACCESS Conference on Computers and Accessibility*, 295-306. <https://doi.org/10.1145/3234695.3236345>

Used for: The closest methodological precedent for a human operator triggering feedback for visually impaired participants exercising on a track, with performance and preference comparisons across feedback types. **Important limit:** Wrist vibration and track exercise are not the same as a torso turn cue during independent running, but the study supports Wizard-of-Oz evaluation.

Poláček, O., Grill, T., & Tscheligi, M. (2012). Towards a navigation system for blind people: A Wizard of Oz study. *ACM SIGACCESS Accessibility and Computing*, 104, 12-29. <https://doi.org/10.1145/2388818.2388820>

Used for: An earlier wizard-plus-evaluator design used before a complete navigation system existed.

Important limit: The participants and walking route differ from the planned running study; it supports method choice rather than expected effect size.

Kerdegari, H., Kim, Y., & Prescott, T. J. (2016). Head-mounted sensory augmentation device: Comparing haptic and audio modality. In *Biomimetic and biohybrid systems (Lecture Notes in Computer Science, Vol. 9793, pp. 107-118)*. Springer. https://doi.org/10.1007/978-3-319-42417-0_11

Used for: A comparison reporting lower route deviation and lower NASA-TLX scores with haptic than with audio guidance in its task. **Important limit:** The device was head-mounted and the task was not running, so it provides only indirect workload evidence.

Sarfraz, M. S., Constantinescu, A., Zuzej, M., & Stiefelhagen, R. (2017). A multimodal assistive system for helping visually impaired in social interactions. *Informatik Spektrum*, 40. <https://doi.org/10.1007/s00287-017-1077-7>

Used for: A counterexample in which adding redundant vibrotactile information to audio increased reported workload. **Important limit:** The social-interaction task is different, but the result warns against assuming that every added feedback channel is cost-free.

Note on sources

The revised bibliography contains **50 separate works or public records**. The count treats the three Lee papers, the two Pieralisi 2017 component papers, and the two Camacho studies as separate works.

BLINDTRACK's official project record and the Wayband institutional press record are included as labeled context, not as peer-reviewed evidence. The earliest exploratory Google Scholar searches were not logged prospectively, so this bibliography does not claim a precise total number of search results screened. Sources that were available only through abstracts or official summaries are described cautiously, and no benchmark value is taken from commercial press coverage.