*Table S2. Details of eligibility criteria, excluded articles with reason(s), and the screening process*

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| The inclusion and exclusion criteria designed for the screening process | | |
| Category | Inclusion criteria – We included studies if they: | Exclusion criteria – We excluded studies if they: |
| P | involve novice, trained, highly trained and elite participants1 irrespective of sex. | include children, clinical populations, and unhealthy participants at the time of their experiment. |
| I(M) | attempt to induce pressure2 (e.g., cognitive load) when given avoidant instructions experimentally in motor tasks3 performance within the context of Wegner's theory. | attempt to induce cognitive load when given avoidant instructions experimentally but not in relation to motor tasks performance within the context of Wegner's theory; as well as that introduce cognitive load in a motor task experimentally but without providing avoidant instructions or vice versa. |
| C | compare how ironic performance varied between low-cognitive load and high-cognitive load conditions or how ironic performance varied between baseline (neutral) and experimental conditions, including experimental instruction conditions. | compare warm-up or practice or familiarization trials. |
| O | report primary outcomes4, i.e., ironic performance effects or errors. | report 5secondary outcomes that are not related to ironic performance effects. |
| P | Are peer-reviewed papers and written in English language and published between 1998 and January 2022. | are written in a language other than English and are review papers, commentaries invited commentaries, conceptual articles, dissertations, and conference proceedings, and other not relevant papers. |
| Notes: (1) The classification of participants in the reviewed studies is adhered to McKay et al. (2022) model for systematic reviews; (2) We adopt Baumeister & Showers’s (1986) definitions of performance and pressure (Baumeister & Shower, 1986, p. 362). This criterion is also pivotal to the review because Wegner et al. (1998) suggested that implementation of cognitive load-induced avoidant instructions can cause inefficient motor cognition in sport, thereby inducing so-called ironic effects; (3) We specifically mean any task that involve motor skills in sport performance; (4) We considered all performance outcomes as primary outcomes unless stated otherwise by the authors; (5) Such as kinematic measures and skill execution in Gray et al. (2017); (6) Abbreviations are as follows: P = participants; I(M) = intervention(manipulation); C = condition; O = outcome; P = Publications. | | |

*Excluded articles with reason(s)*

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| # | Stage 1: Full-text articles at screening stage | | | Reason for exclusion |
|  | Adriaanse, M. A., van Oosten, J. M. F., de Ridder, D. T. D., et al. (2011). Planning what not to eat: ironic effects of implementation intentions negating unhealthy habits. *Personality and Social Psychology Bulletin*, 37(1): 69-81. <https://doi.org/10.1177/0146167210390523> | | | Not manipulation of interest |
|  | Aoyagi, M. W., Cohen, A. B., Poczwardowski, A., et al. (2018). Models of performance excellence: Four approaches to sport psychology consulting. *Journal of Sport Psychology in Action 9*(2), 94-110. <https://doi.org/10.1080/21520704.2017.1355861> | | | Not publication of interest, i.e., not relevant paper |
|  | Beevers, C. G., Wenzlaff, R. M., Hayes, A. M., & Scott, W. D. (1999). Depression and the ironic effects of thought suppression: Therapeutic strategies for improving mental control. *Clinical Psychology: Science and Practice 6*(2), 133. <https://doi.org/10.1093/clipsy.6.2.133> | | | Not publication of interest, i.e., a conceptual article |
|  | Bhangal, S., Merrick, C., & Morsella, E. (2015). Ironic effects as reflexive responses: Evidence from word frequency effects on involuntary subvocalizations. *Acta Psychologica 159*, 33-40. [https://doi.org/10.1016/j.actpsy.2015.04.006](https://psycnet.apa.org/doi/10.1016/j.actpsy.2015.04.006) | | | Manipulation did not involve motor task. |
|  | Dalgleish, T., Yiend, J., Schweizer, S., & Dunn, B. D. (2009). Ironic effects of emotion suppression when recounting distressing memories. *Emotion*, *9*(5): 744-749. [https://doi.org/10.1037/a0017290](https://psycnet.apa.org/doi/10.1037/a0017290) | | | Manipulation (i.e., emotion regulation task) did not involve motor task |
|  | Eastwood, J. D., Gaskovski, P., & Bowers, K. S. (1998). The folly of effort: ironic effects in the mental control of pain. International Journal of Clinical and Experimental Hypnosis, 46(1), 77–91. [https://doi.org/10.1080/00207149808409991](https://psycnet.apa.org/doi/10.1080/00207149808409991) | | | Manipulation did not involve motor task |
|  | Hagerman, C. J., Stock, M. L., Beekman, J. B., Yeung, E. W., & Persky, S. (2021). The ironic effects of dietary restraint in situations that undermine self-regulation. *Eating behaviors, 43*, 101579. <https://doi.org/10.1016/j.eatbeh.2021.101579> | | | Manipulation did not involve motor task |
|  | Hart, C. L., Randell, J. A., & Griffith, J. D. (2007). Ironic effects of attempting to remember. *North American Journal of Psychology, 9(2)*, 201-210. | | | Manipulation did not involve motor task |
|  | Langens, T. A., & Stucke, T. S. (2005). Stress and mood: the moderating role of activity inhibition. *Journal of Personality, 73*(1): 47-78. <https://doi.org/10.1111/j.1467-6494.2004.0030.x> | | | Not publication of interest, i.e., not relevant paper |
|  | MacMahon, K. M. A., & Masters, R. S. W. (2002). The effects of secondary tasks on implicit motor skill performance. International Journal of Sport Psychology, 33(3), 307–324. | | | Not publication of interest, i.e., not relevant paper |
|  | Najmi, S. & D. M. Wegner (2009). Hidden complications of thought suppression. *International Journal of Cognitive Therapy, 2*(3): 210-223. <https://doi.org/10.1521/ijct.2009.2.3.210> | | | Not publication of interest (conceptual article) |
|  | Schindler, S., & Kissler, J. (2018). Too hard to forget? ERPs to remember, forget, and uninformative cues in the encoding phase of item-method directed forgetting. *Psychophysiology 55*(10):e13207. <https://doi.org/10.1111/psyp.13207> | | | Manipulation did not involve motor task. |
|  | Slepian, M. L., et al. (2014). Suppressing thoughts of evaluation while being evaluated. *Journal of Applied Social Psychology, 44*(1), 31-39. <https://doi.org/10.1111/jasp.12197> | | | Manipulation did not involve motor task. |
|  | Soetens, B., et al. (2006). When suppression backfires - The ironic effects of suppressing eating-related thoughts. *Journal of Health Psychology 11(5),* 655-668. <https://doi.org/10.1177/1359105306066615> | | | Manipulation did not involve motor task. |
|  | Szasz, P. L. (2009). Thought suppression, depressive rumination and depression: A mediation analysis. Journal of Cognitive and Behavioral Psychotherapies, 9(2), 199–209. | | | Manipulation did not involve motor task. Participants with major depressive disorder are included. Also, |
|  | Wang, D., et al. (2020). Ironic Effects of Thought Suppression: A Meta-Analysis. *Perspectives on Psychological Science 15(3)*, 778-793. [https://doi.org/10.1177/1745691619898795](https://doi.org/10.1177%2F1745691619898795) | | | Not publication of interest |
|  | Wang, D., Chatzisarantis, N. L. D., & Hagger, M. S. (2017). Mechanisms underlying effective thought suppression using focused-distraction strategies: A self-determination theory approach. Psychology of Consciousness: Theory, Research, and Practice, 4(4), 367–380. [https://doi.org/10.1037/cns0000138](https://psycnet.apa.org/doi/10.1037/cns0000138) | | | Manipulated cognitive load when given avoidant instructions that did not involve motor task. |
|  | Wegner, D. M. (2009). How to think, say, or do precisely the worst thing for any occasion. *Science, 325(5936)*, 48-50. <https://doi.org/10.1126/science.1167346> | | | Not publication of interest (conceptual article) |
|  | Zhu, J. (2007). Mental action and causalism. *Journal of Mind and Behavior 28*(2): 89-99. | | | Not publication of interest (conceptual article) |
| **#** | Stage 2a: Manual screening – Records identified | | | |
|  | Bakker, F. C., Oudejans, R. R. D., Binsch, O., & van der Kamp, J. (2006). Penalty shooting and gaze behavior: Unwanted effects of the wish not to miss. International Journal of Sport Psychology, 37, 265-80. | | | |
|  | Beilock, S. L., Afremow, J. A., Rabe, A. L., & Carr, T. H. (2001). "Don't miss!" The debilitating effects of suppressive imagery on golf putting performance. Journal of Sport and Exercise Psychology, 23(3), 200–221. <https://doi.org/10.1123/jsep.23.3.200> | | | |
|  | Binsch, O., Oudejans, R. R. D., Bakker, F. C., Hoozemans, M. J. M., & Savelsbergh, G. J. P. (2010). Ironic effects in a simulated penalty shooting task: Is the negative wording in the instruction essential? International Journal of Sport Psychology, 41(2), 118–133. | | | |
|  | Binsch, O., Oudejans, R. R. D., Bakker, F. C., & Savelsbergh, G. J. P. (2010). Ironic effects and final target fixation in a penalty shooting task. *Human Movement Science,* *29*(2), 277-288. <https://doi.org/10.1016/j.humov.2009.12.002> | | | |
|  | Gray, R., Orn, A., & Woodman, T. (2017). Ironic and reinvestment effects in baseball pitching: how information about an opponent can influence performance under pressure. *Journal of Sport and Exercise Psychology,* *39*(1), 3-12. <https://doi.org/10.1123/jsep.2016-0035> | | | |
|  | Hall, C. R., Hardy, J., & Gammage, K. L. (1999). About hitting golf balls in water: Comments on Janelle’s (1999) article on ironic processes. *The Sport Psychologist*, *13*(2), 221-224. <https://doi.org/10.1123/tsp.13.2.221> | | | |
|  | **Janelle, C. M. (1999). Ironic processes in sport: implications for the sport psychologist. *The Sport Psychologist, 13*, 201 – 220.** | | | |
|  | Liu, S., Eklund, R. C., & Tenenbaum, G. (2015). Time pressure and attention allocation effect on upper limb motion steadiness. *Journal of Motor Behavior, 47,* 271–281. <http://dx.doi.org/10.1080/00222895.2014.977764> | | | |
| **#** | Stage 2b: Website and online screening – Records identified | | | |
|  | Güldenpenning, I., Weigelt, M., & Kunde, W. (2019). Processing head fakes in basketball: are there ironic effects of instructions on the head-fake effect in basketball? *Human Movement Science, 67*, 102499. <https://doi.org/10.1016/j.humov.2019.102499>. Retrieved online from [University of Paderborn](https://sug.uni-paderborn.de/en/sportwissenschaft/psychologie-und-bewegung/research-areas-and-laboratories/psychology-lab/projekte-in-der-psychologie/underlying-mechanisms-and-constraints-of-head-fakes-in-sports). | | | |
|  | Lorusso, J. E. (2009). Ironic processes of mental control of action in tennis. Florida State University. Retrieved online from [FSU](https://diginole.lib.fsu.edu/islandora/object/fsu:175613/datastream). | | | |
|  | Tanaka, Y., & Karakida, K. (2019). Application of ironic processing theory to motor performance: experimental verification and mechanism of ironic and overcompensation errors. *Japanese Journal of Sport Psychology*. Retrieved online from [ResearchGate](https://www.researchgate.net/publication/330910987_yundongpafomansuhenopirouguochenglilunnoyuanyong-piroueratoguobuchangeranoshizhengtomekanizumu-_Application_of_Ironic_Processing_Theory_to_Motor_Performance_Experimental_Verification_and_Mechanism_of_). | | | |
| **#** | Stage 3: Reviewing full-text studies | Include/Exclude | Reasons for exclusion | |
|  | Barlow, M., Woodman, T., Gorgulu, R., & Voyzey, R. (2016, Study 1 – 2). Ironic effects of performance are worse for neurotics. *Psychology of Sport and Exercise, 24*, 27-37. <https://doi.org/10.1016/j.psychsport.2015.12.005> | Include |  | |
|  | Bakker, F. C., Oudejans, R. R. D., Binsch, O., & van der Kamp, J. (2006, Study 1). Penalty shooting and gaze behavior: Unwanted effects of the wish not to miss. International Journal of Sport Psychology, 37, 265-80. | Exclude | Not manipulation of interest (i.e., the instructional manipulation did not involve avoidant or negative instructions). | |
|  | Bakker, F. C., Oudejans, R. R. D., Binsch, O., & van der Kamp, J. (2006, Study 2). Penalty shooting and gaze behavior: Unwanted effects of the wish not to miss. International Journal of Sport Psychology, 37, 265-80. | Include |  | |
|  | Beilock, S. L., Afremow, J. A., Rabe, A. L., & Carr, T. H. (2001). "Don't miss!" The debilitating effects of suppressive imagery on golf putting performance. Journal of Sport and Exercise Psychology, 23(3), 200–221. | Exclude | Not manipulation of interest (i.e., induced suppressive imagery instructions without cognitive load). | |
|  | Binsch, O., Oudejans, R. R. D., Bakker, F. C., Hoozemans, M. J. M., & Savelsbergh, G. J. P. (2010). Ironic effects in a simulated penalty shooting task: Is the negative wording in the instruction essential? International Journal of Sport Psychology, 41(2), 118–133. | Include |  | |
|  | Binsch, O., Oudejans, R. R. D., Bakker, F. C., & Savelsbergh, G. J. P. (2009). Unwanted effects in aiming actions: the relationship between gaze behavior and performance in a golf putting task. *Psychology of Sport and Exercise, 10*(6), 628-635. <https://doi.org/10.1016/j.psychsport.2009.05.005> | 2Exclude | Not manipulation of interest. Both Wegner's theory and implicit overcompensation hypothesis were investigated. A perspective that is somewhat more expansive than the current review. | |
|  | Binsch, O., Oudejans, R. R. D., Bakker, F. C., & Savelsbergh, G. J. P. (2010). Ironic effects and final target fixation in a penalty shooting task. *Human Movement Science,* *29*(2), 277-288. | Include |  | |
|  | de la Pena, Murphy, & Janelle (2008, Study 1). Implicit overcompensation: The influence of negative self-instructions on performance of a self-paced motor task. *Journal of Sports Science, 26*(12), 1323-1331. <https://doi.org/10.1080/02640410802155138> | Include |  | |
|  | de la Pena, Murphy, & Janelle (2008, Study 2). Implicit overcompensation: The influence of negative self-instructions on performance of a self-paced motor task. *Journal of Sports Science, 26*(12), 1323-1331. <https://doi.org/10.1080/02640410802155138> | Exclude | Not manipulation of interest (i.e., induced negative instructions without cognitive load involving motor task). | |
|  | Dugdale, J. R. & Eklund, R. C. (2002). Do not pay any attention to the umpires: Thought suppression and task-relevant focusing strategies. *Journal of Sport and Exercise Psychology 24*(3): 306-319. | Exclude | Manipulation did not involve motor task (i.e., induced cognitive load in the form of audio distracter when given avoidant instructions in computer-based image watching tasks in Study 1 and avoidant instruction was introduced without cognitive load in the same task in Study 2). | |
|  | Dugdale, J. R., & Eklund, R. (2003). Ironic processing and static balance performance in high-expertise performers. *Research Quarterly for Exercise and Sport, 74*(3), 348-352. <https://doi.org/10.1080/02701367.2003.10609102> | Include |  | |
|  | Gorgulu, R. (2019a). An examination of ironic effects in air-pistol shooting under pressure. *Journal of Functional Morphology and Kinesiology, 4*(2), 20. <https://doi.org/10.3390/jfmk4020020> | Include |  | |
|  | Gorgulu, R. (2019b). Counter-intentional errors of basketball free throw shooting under elevated pressure: An educational approach of task instruction. *Journal of Education and Learning, 8*(2), 89-97. <https://doi.org/10.5539/jel.v8n2p89> | Include |  | |
|  | 1Gorgulu, R. (2019c). Ironic or overcompensation effects of motor behaviour: An examination of a tennis serving task under pressure. *Behavioural Sciences, 9*(2), 21. <https://doi.org/10.3390/bs9020021> | Include  (Borderline case) |  | |
|  | Gorgulu, R., Cooke, A., & Woodman, T. (2019, Study 1 – 5). Anxiety and ironic errors of performance: Task instruction matters. *Journal of Sport and Exercise Psychology, 41*(2), 82-95. | Include |  | |
|  | Gorgulu, R., & Gokcek, E. (2021). The effects of avoiding instructions under pressure: An examination of the volleyball serving task. *Journal of Human Kinematics, 31*, 239-249. | Include |  | |
|  | Gray, R., Orn, A., & Woodman, T. (2017). Ironic and reinvestment effects in baseball pitching: How information about an opponent can influence performance under pressure. *Journal of Sport and Exercise Psychology, 39*(1), 3-12. | Include |  | |
|  | Güldenpenning, I., Weigelt, M., & Kunde, W. (2019). Processing head fakes in basketball: are there ironic effects of instructions on the head-fake effect in basketball? *Human Movement Science, 67*, 102499. | Exclude | Not manipulation of interest (i.e., induced negative instructions without cognitive load involving motor task). Authors did not specify the time embedded in the reactive-motor task was not specified as a cognitive load. Attempt was made contacting the main author of the article whether they considered time as a factor in their Bayesian analysis via email. But no response has been received. | |
|  | Hall, C. R., Hardy, J., & Gammage, K. L. (1999). About hitting golf balls in water: Comments on Janelle’s (1999) article on ironic processes. *The Sport Psychologist*, *13*(2), 221-224. | Exclude | Not publication of interest (i.e., invited commentary). | |
|  | **Janelle, C. M. (1999). Ironic processes in sport: implications for the sport psychologist. *The Sport Psychologist, 13*, 201 – 220.** | Exclude | Not publication of interest (i.e., conceptual article) | |
|  | Liu, S., Boiangin, N., Meir, G., Shaffer, K. A., Lebeau, J.-C., Basevitch, I., & Tenenbaum, G. (2019, Study 1 – 4). Ironic and overcompensating processes under avoidance instructions in motor tasks: An attention imbalance model with golf-putting evidence. Journal of Experimental Psychology: Human Perception and Performance, 45(12), 1596–1613. | 2Exclude | Not manipulation of interest. Their studies looked at Wegner's theory from a broader perspective, such as attention imbalance paradigm, and implicit overcompensation hypothesis. | |
|  | Liu, S., Eklund, R. C., & Tenenbaum, G. (2015). Time pressure and attention allocation effect on upper limb motion steadiness. *Journal of Motor Behavior, 47,* 271–281. | Include |  | |
|  | Liu, S., Folstein, J. R., Appelbaum, L. G., & Tenenbaum, G. (2021). Effects of control strategies on the activation of unwanted intrusive thoughts in elite athletes. *Journal of Psychology:* *Human Perception Performance, 47*(10), 1395-1408. <https://doi.org/10.1037/xhp0000945> | Exclude | Induced cognitive load without avoidant instruction. Relatively broader scope in choking under pressure (i.e., tested intervention effects of three mental control strategies on elite athletes choking experience not in a motor task performance). | |
|  | Lorusso, J. E. (2009). Ironic processes of mental control of action in tennis. Florida State University. | Exclude | Not publication of interest (i.e., Ph.D. dissertation. | |
|  | Malhotra, N., Charlton, S., Starkey, N., & Masters, R. (2018). Examining ironic processes in tourist drivers: Driving on the unfamiliar side of the road. *Safety 4*(3). <https://doi.org/10.3390/saftey4030028> | Exclude | Manipulation did not involve motor task despite researchers induced cognitive load when given avoidant instructions. | |
|  | Oudejans, R. R., Binsch, O., & Bakker, F. C. (2013). Negative instructions and choking under pressure in aiming at a far target. *International Journal of Sport Psychology, 44*, 294-309. | Include |  | |
|  | Russell, C., & Grealy, M. A. (2010). Avoidant instructions induce ironic and overcompensatory movement errors differently between and within individuals. *Quarterly Journal of Experimental Psychology 63*(9): 1671-1682. | Exclude | Manipulation did not involve motor task (computer-based mouse cursor movement task) despite researchers induced cognitive load (digit-number rehearsal) when given avoidant instructions. | |
|  | Tanaka, Y., & Karakida, K. (2019). Application of ironic processing theory to motor performance: experimental verification and mechanism of ironic and overcompensation errors. *Japanese Journal of Sport Psychology*. | Exclude | Not publication of interest (review article written in Japanese language) | |
|  | Toner, J., Moran, A., & Jackson, R. (2013). The effects of avoidant instructions on golf putting proficiency and kinematics. Psychology of Sport and Exercise, 14(4), 501–507. | Exclude | Not manipulation of interest (i.e., induced negative instructions without cognitive load involving motor task) | |
|  | Wegner, D. M., Ansfield, M., & Pilloff, D. (1998, Study 1 – 2). The putt and the pendulum: Ironic effects of the mental control of action. *Psychological Science, 9*(3), 196-199. | Include |  | |
|  | Woodman, T., & Davis, P. A. (2008). The role of repression in the incidence of ironic errors. *The Sport Psychologist, 22*(2), 183-196. | Include |  | |
|  | Woodman, T., Barlow, M., & Gorgulu, R. (2015, Study 1 – 2). Don't miss, don't miss, d'oh! Performance when anxious suffers specifically where least desired. *The Sport Psychologist, 29*(3), 213-223. [https://doi.org/10.1123/tsp.2014-0114](https://psycnet.apa.org/doi/10.1123/tsp.2014-0114) | Include |  | |
| Notes: (1) Based on Wegner's theory, this 'borderline' article tested whether cognitive load induced performance errors were linked explicitly to ironic effects or overcompensating effects when given avoidant instructions. This necessitated additional screening of similar articles within the identified studies; ensuring improved sensitivity (Siddaway et al., 2019). However, no similar cases were identified. Consequently, we retained the article after consensus meeting; (2) Due to the narrow scope of this review that examined fundamental principles of ironic processes on motor performance, we excluded studies that tested broader aspects, such as alternative paradigms that incorporate ironic effects on motor task performance. | | | | |