

Online supplementary materials

Search Strategy (Medline)

S1. nitrate* (76,814)

S2. nitrite* (40,613)

S3. beetroot (705)

S4. (MH "Beta Vulgaris") (2,035)

S5. spinach (8,470)

S6. high nitrate diet (40)

S6. S1 OR S2 OR S3 OR S4 OR S5 (110,132)

S7. TX exercise performance (12,999)

S8. high-intensity intermittent exercise (1,231)

S9. high intensity exercise (5,430)

S10. supramaximal exercise (317)

S11. intermittent exercise (2,356)

S12. sprint* (8,733)

S13. all out (28,433)

S14. repeated sprint* (1,155)

S15. run* (220,658)

S16. cycl* (1,387,868)

S17. row* (75,488)

S18. TX "power output" (8,003)

S19. TX "distance covered" (1,374)

S20. TX "completion time" (1,520)

S21. TX "work rate" (2,668)

S22. fatigue* (108,075)

S23. wingate test (1,026)

S24. yo-yo test (448)

S25. S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18

OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 (1,804,060)

S26. S6 AND S25 (12,932)

S27. (MH "Randomized Controlled Trial") OR (MH "Controlled Clinical Trial") OR (MH

"Controlled Clinical Trials as Topic") OR (MH "Randomized Controlled Trials as Topic") OR

(MH "Random Allocation") (245,099)

S28. TX randomly (335,141)

S29. TX randomi?ed (897,912)

S30. AB placebo (208,574)

S31. AB trial (894,619)

S32. S27 OR S28 OR S29 OR S30 OR S31 (1,656,249)

S33. S32 AND S26 (**823**)

Search Strategy (Sportdiscus)

S1. TX nitrate* (3,234)

S2. TX nitrite* (1,787)

S3. TX beetroot (598)

S4. TX beet root (105)

S5. TX beet (2,677)

S6. TX beta Vulgaris (53)

S7. TX spinach (3,631)

S8. TX performance enhancer (648)

S9. high nitrate diet (21)

S10. S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S8 OR S9 (10,293)

S11. exercise performance (8,700)

S12. high intensity intermittent exercise (421)

S13. high intensity exercise (3,970)

S14. supramaximal exercise (357)

S15. intermittent exercise (1,790)

S16. repeated sprint* (1,445)

S17. run* (140,325)

S18. cycl* (106,843)

S19. row* (20,564)

S20. all out (2,670)

S21. wingate test (1,604)

S22. sprint* (21,758)

S23. fatigue* (23,558)

S24. TX "power output" (11,976)

S25. TX "distance covered" (3,550)

S26. TX "completion time" (1,028)

S27. TX "work rate" (4,033)

S28. yo-yo test (577)

S29. S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR
S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 (306,659)

S30. S29 AND S10 (1,629)

S31. TX randomi?ed control* trial* (52,723)

S32. randomi?ed N3 study (8,440)

S33. placebo N3 study (2,238)

S34. random* N7 order* (3,776)

S35. cross#over* OR cross N1 over* (8,443)

S36. TX randomly (65,616)

S37. AB placebo (13,433)

S38. AB trial (56,625)

S39. S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 (150,141)

S40. S30 AND S39 (510)

Table S1: Population, Intervention, Comparator, Outcome, Study design (PICOS) framework for study eligibility.

PICOS methodology		Corresponding search terms
Population	Healthy young adult participants ≥16 years old	Humans
Intervention	Inorganic nitrate or nitrite supplementation as beetroot juice, sodium/potassium nitrate, or nitrate rich diet.	Nitrate-rich beetroot juice, nitrate-rich diet, sodium nitrate, potassium nitrate
Comparator	Placebo or control group receiving nitrate-depleted compounds or foods.	Placebo, control, nitrate-depleted beetroot juice, low nitrate diet, sodium chloride, potassium chloride
Outcome	Trials reporting effects of nitrate supplementation on exercise performance	Total distance covered, maximal/mean power output, total/maximal work rate, completion time
Study design	Randomised controlled trials	Placebo-controlled trial randomized controlled trial Randomised/randomized randomly trials

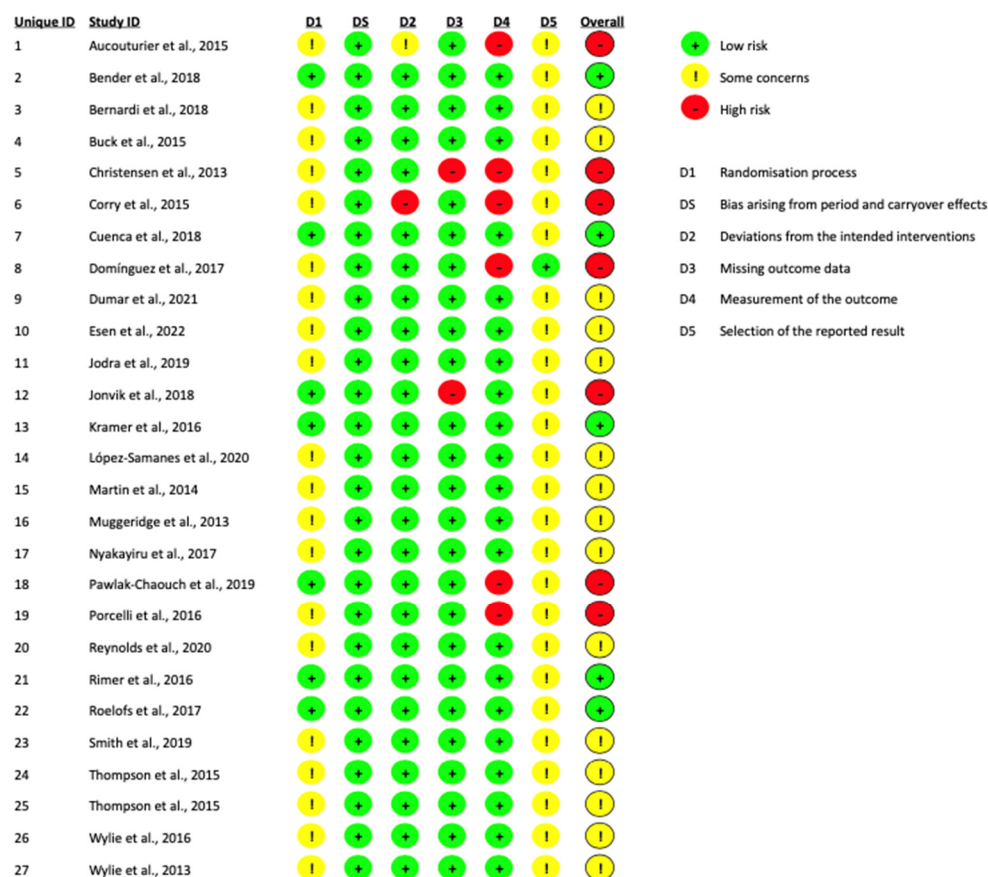


Figure S1. Risk of bias summary for individual for crossover trials [34–41,51–67,74,75]

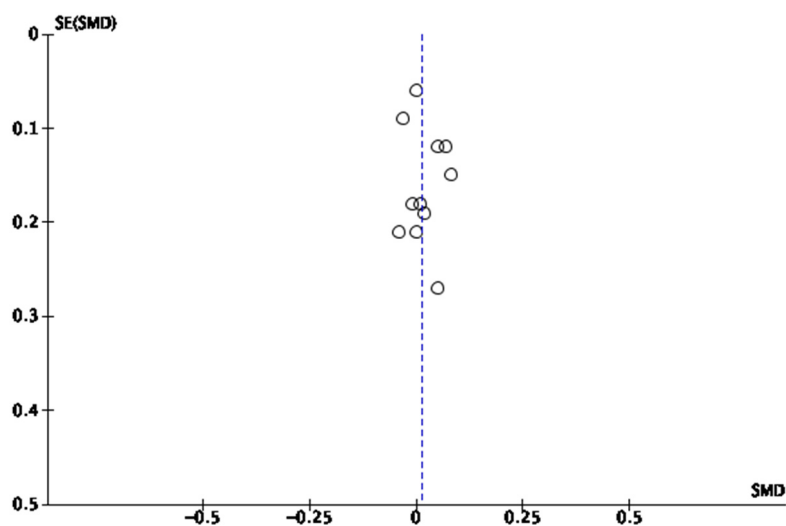


Figure S2. Funnel plot evaluating publication bias of trials assessing mean peak power output (n = 12).

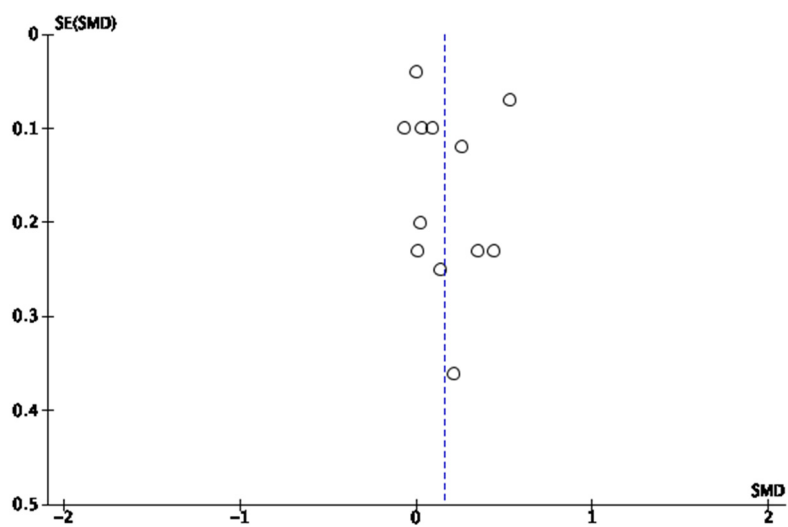


Figure S3. Funnel plot evaluating publication bias of trials assessing mean of the mean power output (n =12).

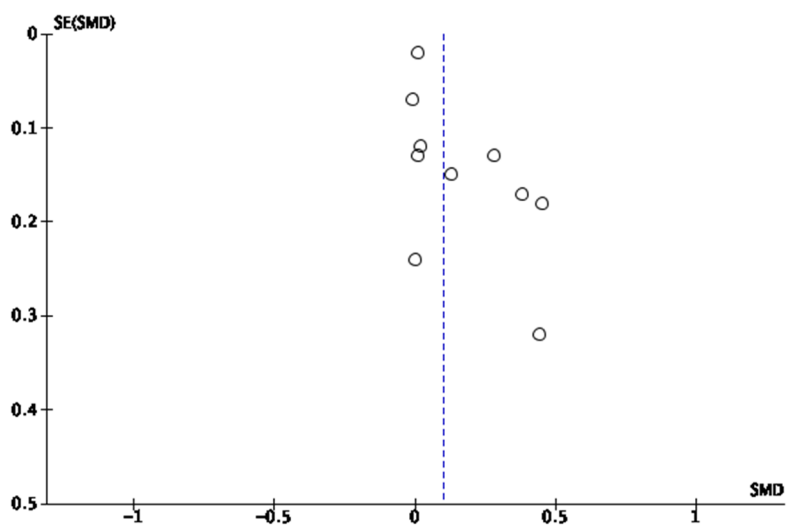


Figure S4. Funnel plot evaluating publication bias of trials assessing mean power output during the first sprint (n =10).

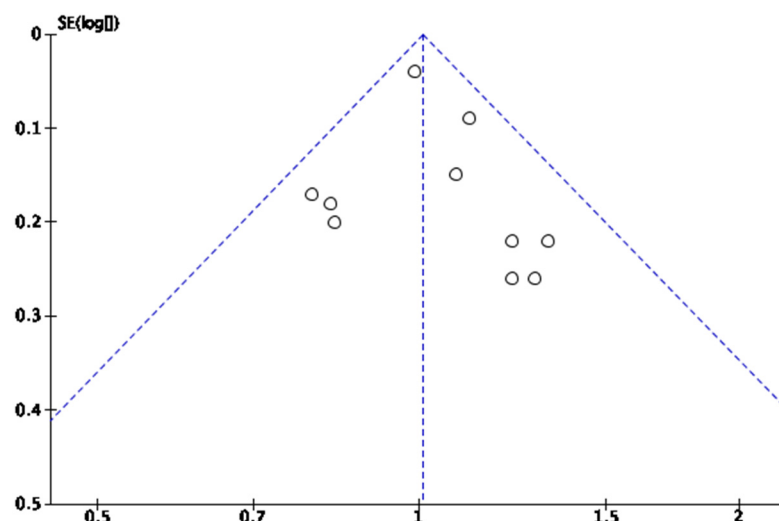
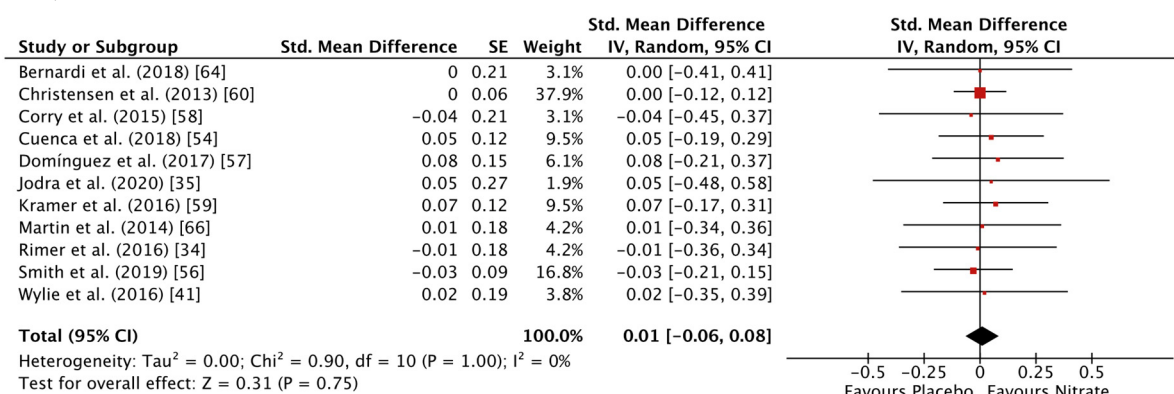
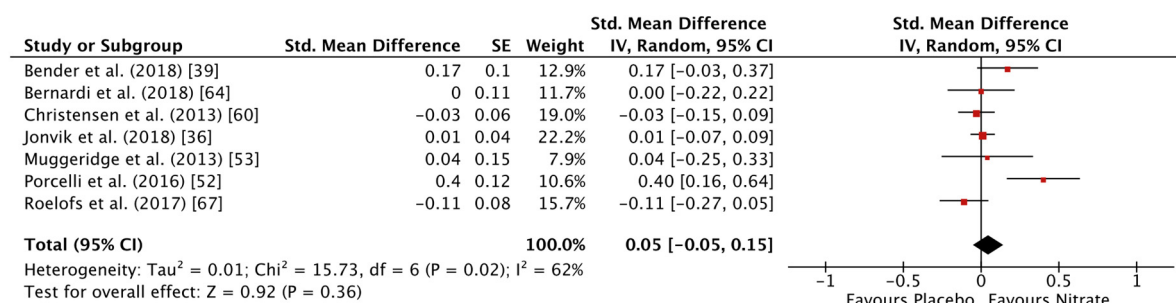


Figure S5. Funnel plot evaluating publication bias of trials assessing mean power output during the last sprint (n=10).

a)



b)



c)

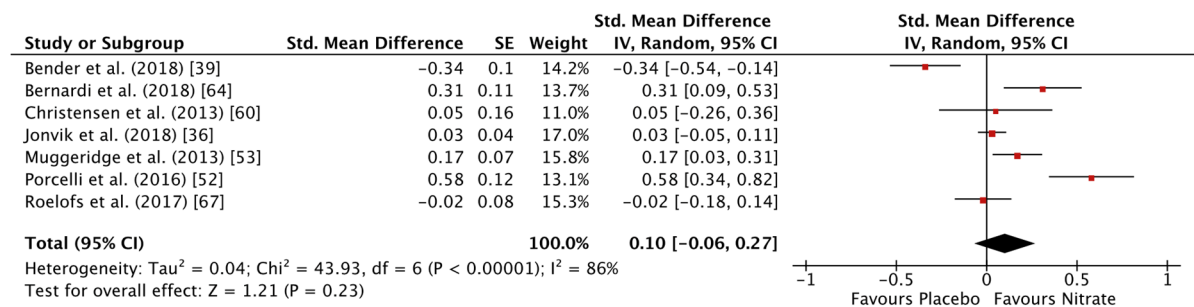
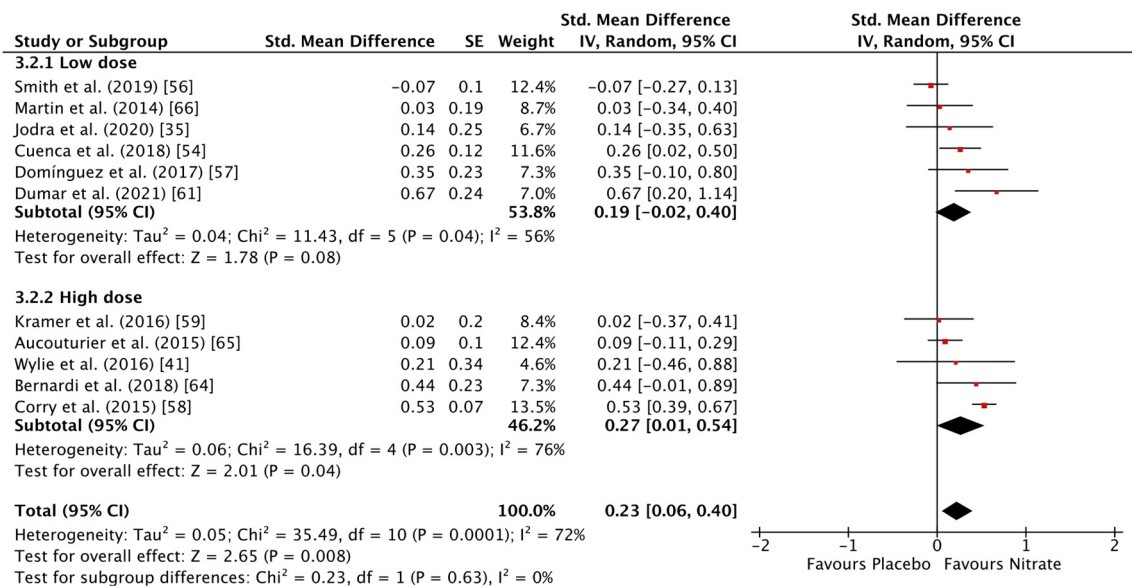
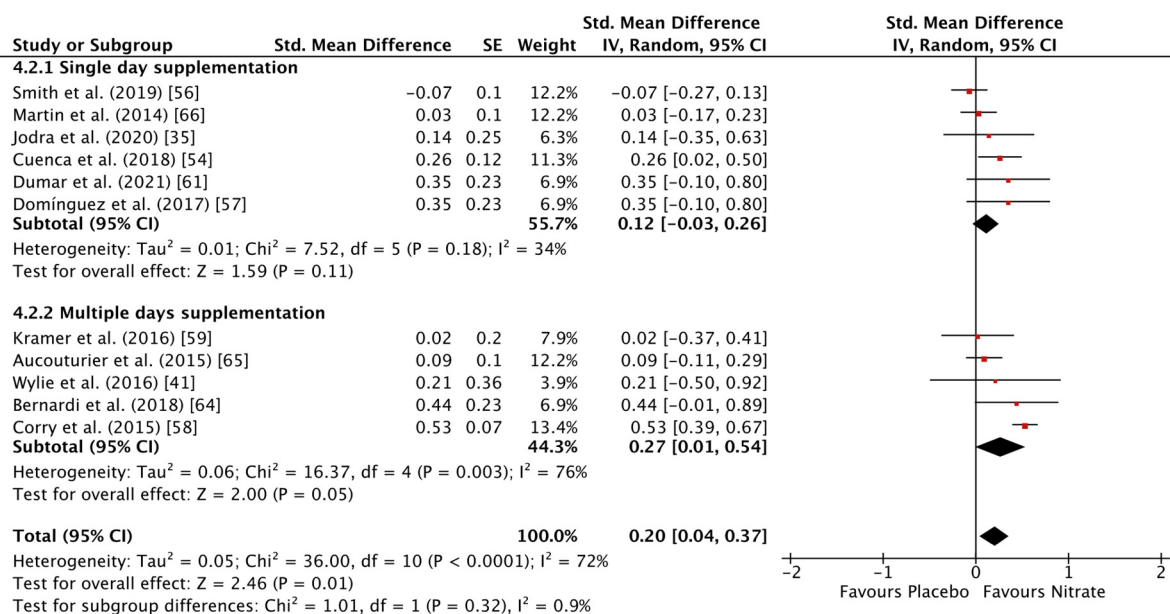


Figure S6: Forrest plot for mean peak power output (a), peak power during the first sprint (b), and peak power during the last sprint (c) in the nitrate and placebo trials.

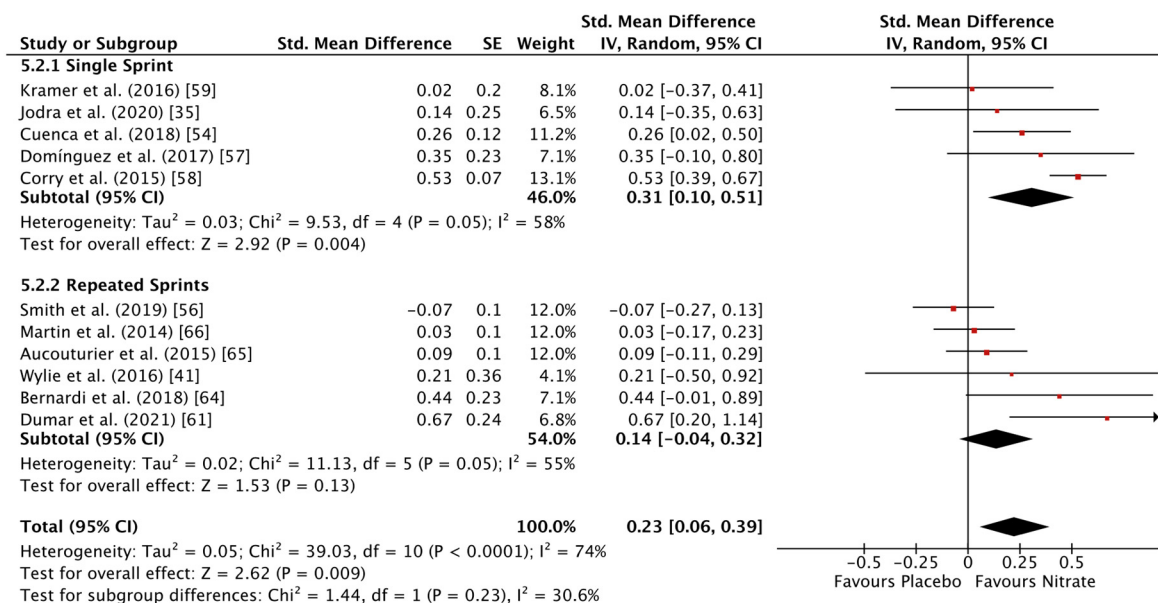
a)



b)



c)



d)

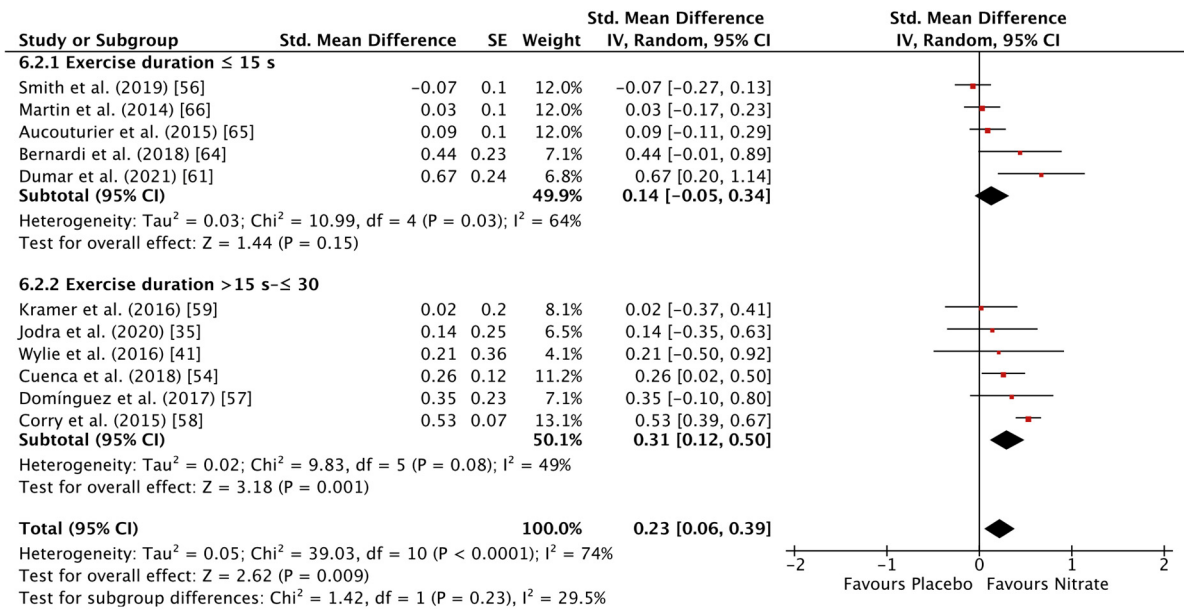


Figure S7. Forrest plot for mean power output sub-group analyse; low nitrate dose < 8 mmol compared to high nitrate dose ≥ 8 mmol (a), single day nitrate supplementation compared multiple days nitrate supplementation (b), single sprint compared to repeated sprints (c), exercise duration ≤ 15 s compared to exercise duration >15 s - ≤ 30 (d)

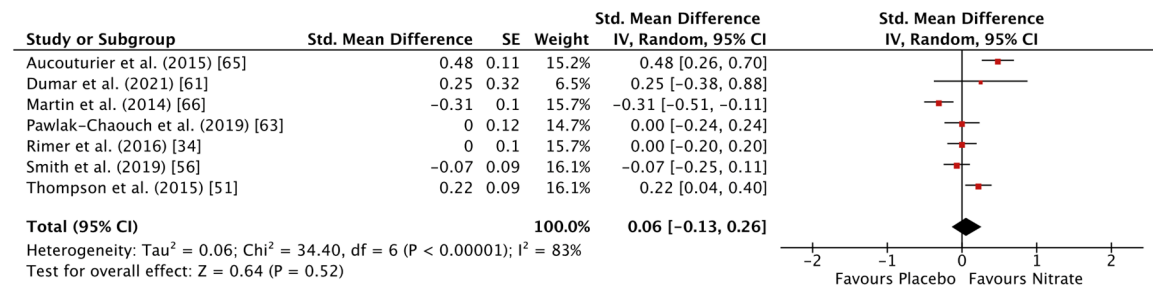


Figure S8: Forrest plot for total work done in the nitrate and placebo trials.