**Optimal Dosage Ranges of Various Exercise Types for Enhancing Timed Up and Go Performance in Parkinson's Disease Patients: A Systematic Review and Bayesian Network Meta-analysis**

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# **Supplementary file 1: Search Strategy**

## 1.1 Database: PubMed <inception to February 5th 2024>

***Search Strategy:***

|  |  |  |
| --- | --- | --- |
| #25 | Search: ((Parkinson disease[MeSH Terms]) AND ((((((((((exercise\*[MeSH Terms]) OR (resistance training[MeSH Terms])) OR (Tai Ji[MeSH Terms])) OR (Qigong[MeSH Terms])) OR (Exercise Movement Techniques[MeSH Terms])) OR (Yoga[MeSH Terms])) OR (Virtual Reality[MeSH Terms])) OR (hydrotherapy[MeSH Terms])) OR (Dance Therapy[MeSH Terms])) OR ("aerobic exercise" or "aquatic exercise" or "balance training" or "body weight support treadmill" or "gait **training" or "high-speed resistance training" or "multicomponent exercise program" or "multidisciplinary exercise program" or "Nordic Walking" or Physiotherapy or pilates or "power training" or "Robotic-assisted gait training" or stretch or Tango or "treadmill training" or "walking" or "whole body vibration"))) AND ((((((((randomized controlled trial[**Publication Type]) OR (controlled clinical trial[Publication Type])) OR (randomized[Title/Abstract])) OR (placebo[Title/Abstract])) OR (randomly[Title/Abstract])) OR (trial[Title])) OR (clinical trials as topic[MeSH Terms])) NOT ((animals[MeSH Terms]) NOT (humans[MeSH Terms]))) | 890 |
| #24 | Search: (((((((randomized controlled trial[Publication Type]) OR (controlled clinical trial[Publication Type])) OR (randomized[Title/Abstract])) OR (placebo[Title/Abstract])) OR (randomly[Title/Abstract])) OR (trial[Title])) OR (clinical trials as topic[MeSH Terms])) NOT ((animals[MeSH Terms]) NOT (humans[MeSH Terms])) | 1,341,164 |
| #23 | Search: ((((((randomized controlled trial[Publication Type]) OR (controlled clinical trial[Publication Type])) OR (randomized[Title/Abstract])) OR (placebo[Title/Abstract])) OR (randomly[Title/Abstract])) OR (trial[Title])) OR (clinical trials as topic[MeSH Terms]) | 1,449,600 |
| #22 | Search: (((((((((exercise\*[MeSH Terms]) OR (resistance training[MeSH Terms])) OR (Tai Ji[MeSH Terms])) OR (Qigong[MeSH Terms])) OR (Exercise Movement Techniques[MeSH Terms])) OR (Yoga[MeSH Terms])) OR (Virtual Reality[MeSH Terms])) OR (hydrotherapy[MeSH Terms])) OR (Dance Therapy[MeSH Terms])) OR ("aerobic exercise" or "aquatic exercise" or "balance training" or "body weight support treadmill" or "gait training" or "high-speed resistance training" or "multicomponent exercise program" or "multidisciplinary exercise program" or "Nordic Walking" or Physiotherapy or pilates or "power training" or "Robotic-assisted gait training" or stretch or Tango or "treadmill training" or "walking" or "whole body vibration") | 551,542 |
| #21 | Search: (animals[MeSH Terms]) NOT (humans[MeSH Terms]) | 4,815,925 |
| #20 | Search: humans[MeSH Terms] | 19,183,084 |
| #19 | Search: animals[MeSH Terms] | 23,999,009 |
| #18 | Search: clinical trials as topic[MeSH Terms] | 355,600 |
| #17 | Search: trial[Title] | 238,308 |
| #16 | Search: randomly[Title/Abstract] | 356,459 |
| #15 | Search: placebo[Title/Abstract] | 223,336 |
| #14 | Search: randomized[Title/Abstract] | 561,707 |
| #13 | Search: controlled clinical trial[Publication Type] | 617,986 |
| #12 | Search: randomized controlled trial[Publication Type] | 528,725 |
| #11 | Search: "aerobic exercise" or "aquatic exercise" or "balance training" or "body weight support treadmill" or "gait training" or "high-speed resistance training" or "multicomponent exercise program" or "multidisciplinary exercise program" or "Nordic Walking" or Physiotherapy or pilates or "power training" or "Robotic-assisted gait training" or stretch or Tango or "treadmill training" or "walking" or "whole body vibration" | 361,398 |
| #10 | Search: Dance Therapy[MeSH Terms] | 396 |
| #9 | Search: hydrotherapy[MeSH Terms] | 20,257 |
| #8 | Search: Virtual Reality[MeSH Terms] | 2,684 |
| #7 | Search: Yoga[MeSH Terms] | 3,002 |
| #6 | Search: Exercise Movement Techniques[MeSH Terms] | 8,700 |
| #5 | Search: Qigong[MeSH Terms] | 229 |
| #4 | Search: Tai Ji[MeSH Terms] | 1,183 |
| #3 | Search: resistance training[MeSH Terms] | 9,538 |
| #2 | Search: exercise\*[MeSH Terms] | 297,336 |
| #1 | Search: Parkinson disease[MeSH Terms] | 69,308 |

## 1.2 Database: Ovid MEDLINE(R) <1946 to February 5th 2024>

***Search Strategy: --------------------------------------------------------------------------------***

1 Parkinson$.mp. (136173)

2 exp Parkinson disease/ (69312)

3 (aerobic exercise or aquatic exercise or balance training or body weight support treadmill or Dance Therapy or exercise$ or Exercise Movement Techniques or gait training or high-speed resistance training or hydrotherapy or multicomponent exercise program or multidisciplinary exercise program or Nordic Walking physiotherapy pilates or power training or Qigong or resistance training or Robotic-assisted gait training or stretch or tai ji or Tango or treadmill training or walking or Virtual Reality or whole body vibration or Yoga).mp. (540012)

4 exp resistance training/ (9532)

5 exp exercise$/ (206975)

6 exp tai ji/ (1182)

7 exp Qigong/ (228)

8 exp Exercise Movement Techniques/ (8695)

9 exp Yoga/ (2999)

10 exp Virtual Reality/ (2682)

11 exp hydrotherapy/ (20254)

12 exp Dance Therapy/ (396)

13 randomized controlled trial.pt. (527440)

14 controlled clinical trial.pt. (94123)

15 randomized.ab. (517037)

16 clinical trials as topic.sh. (195553)

17 randomly.ab. (355668)

18 trial.ti. (238446)

19 exp clinical trial/ (888782)

20 exp randomized controlled trials/ (145969)

21 exp cross-over studies/ (49955)

22 (clinic$ adj2 trial).mp. (746815)

23 (random$ adj5 control$ adj5 trial$).mp. (770827)

24 (crossover or cross-over).mp. (100433)

25 randomi$.mp. (943880)

26 (random$ adj5 (assign$ or allocat$ or assort$ or reciev$)).mp. (256419)

27 1 or 2 (136173)

28 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 (586531)

29 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 (1770322)

30 27 and 28 and 29 (1246)

1.3 Database: Embase <1974 to February 5th 2024>
***Search Strategy:***

--------------------------------------------------------------------------------

1 Parkinson$.mp. (219918)

2 exp parkinson disease/ (163492)

3 (aerobic exercise or aquatic exercise or balance training or body weight support treadmill or Dance Therapy or exercise$ or Exercise Movement Techniques or gait training or high-speed resistance training or hydrotherapy or multicomponent exercise program or multidisciplinary exercise program or Nordic Walking or Physiotherapy or pilates or power training or Qigong or resistance training or Robotic-assisted gait training or stretch or tai ji or Tango or treadmill training or walking or Virtual Reality or whole body vibration or Yoga).mp. (816955)

4 exp resistance training/ (20137)

5 exp exercise$/ (363106)

6 exp tai ji/ (3173)

7 exp Qigong/ (836)

8 exp Exercise Movement Technique/ (82933)

9 exp Yoga/ (8492)

10 exp Virtual Reality/ (18896)

11 exp hydrotherapy/ (3829)

12 exp Dance Therapy/ (527)

13 randomized.ab. (757440)

14 randomly.ab. (481077)

15 trial.ti. (332106)

16 exp clinical trial/ (1627821)

17 exp randomized controlled trials/ (200725)

18 exp cross-over studies/ (66963)

19 (clinic$ adj2 trial).mp. (1639410)

20 (random$ adj5 control$ adj5 trial$).mp. (961796)

21 (crossover or cross-over).mp. (123532)

22 randomi$.mp. (1323771)

23 (random$ adj5 (assign$ or allocat$ or assort$ or reciev$)).mp. (209949)

24 1 or 2 (219918)

25 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 (841979)

26 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 (2779253)

27 24 and 25 and 26 (2562)

## 1.4 Database: PsycINFO <1806 to February 5th 2024>

***Search Strategy:***

|  |
| --- |
| Set No. Searched for Databases Results |
| S1 | Parkinson\* | APA PsycInfo® | 39453 |
| S2 | mainsubject(parkinson disease) | APA PsycInfo® | 25842 |
| S3 | su((aerobic exercise or aquatic exercise or balance training or body weight support treadmill or Dance Therapy or exercise$ or Exercise Movement Techniques or gait training or high-speed resistance training or hydrotherapy or multicomponent exercise program or multidisciplinary exercise program or Nordic Walking or Physiotherapy or pilates or power training or Qigong or resistance training or Robotic-assisted gait training or stretch or tai ji or Tango or treadmill training or walking or Virtual Reality or whole body vibration or Yoga)) | APA PsycInfo® | 63328 |
| S4 | su(exercise$) | APA PsycInfo® | 39377 |
| S6 | su(physical activity) | APA PsycInfo® | 39490 |
| S7 | ab(randomized) | APA PsycInfo® | 83500 |
| S8 | ab(randomly) | APA PsycInfo® | 75844 |
| S9 | ti(trial) | APA PsycInfo® | 41193 |
| S10 | ab(clinical trial) | APA PsycInfo® | 51602 |
| S11 | ab(randomized controlled trials) | APA PsycInfo® | 36991 |
| S12 | ab(cross-over studies) | APA PsycInfo® | 2076 |
| S13 | ab(crossover studies) | APA PsycInfo® | 5363 |
| S14 | ab(randomi\*) | APA PsycInfo® | 83917 |
| S15 | su(animals) | APA PsycInfo® | 459210 |
| S16 | S1 OR S2 | APA PsycInfo®These databases are searched for part of your query. | 39453 |
| S17 | S3 OR S4 OR "S5" | APA PsycInfo®These databases are searched for part of your query. | 63473 |
| S18 | S6 OR S7 OR "S8" OR "S9" OR "S10" OR "S11" OR "S12" OR "S13" OR "S14" | APA PsycInfo®These databases are searched for part of your query. | 120428 |
| S19 | S16 AND S17 | APA PsycInfo®These databases are searched for part of your query. | 1074 |
| S20 | S18 AND S19 | APA PsycInfo®These databases are searched for part of your query. | 277 |
| S21 | S20 NOT S15 | APA PsycInfo®These databases are searched for part of your query. | 251 |

## 1.5 Cochrane

#1  MeSH descriptor: [Parkinson disease] explode all trees (4376)

#2 (aerobic exercise or aquatic exercise or balance training or body weight support treadmill or Dance Therapy or exercise\* or Exercise Movement Techniques or gait training or high-speed resistance training or hydrotherapy or multicomponent exercise program or multidisciplinary exercise program or Nordic Walking or Physiotherapy or pilates or power training or Qigong or resistance training or Robotic-assisted gait training or stretch or tai ji or Tango or treadmill training or walking or Virtual Reality or whole body vibration or Yoga) in Trials (Word variations have been searched) (155706)

#3 MeSH descriptor: [resistance training] explode all trees (3641)

#4 MeSH descriptor: [exercise] explode all trees (25628)

#5 MeSH descriptor: [tai ji] explode all trees (373)

#6 MeSH descriptor: [Qigong] explode all trees (79)

#7 MeSH descriptor: [Exercise Movement Technique] explode all trees (2215)

#8 MeSH descriptor: [Yoga] explode all trees (699)

#9 MeSH descriptor: [Virtual Reality] explode all trees (284)

#10 MeSH descriptor: [hydrotherapy] explode all trees (1575)

#11 MeSH descriptor: [Dance Therapy] explode all trees (89)

#12#2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 (147882)

#13#1 and #12 (906)

## 1.6 Database: Web of Science <1965 to February 5th 2024>

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # 13 | 2,403 | #12 AND #11 AND #1Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 12 | 981,618 | #10 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 11 | 6,290,817 | TOPIC: ((“randomized controlled trial\*” or “controlled clinical trial” or “random\*” or “clinical trial\*” or randomly or trial or “clinical trial” or “randomized controlled trial\*” or “cross-over studies” or clinic\*) )Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 10 | 7,671 | TOPIC: ((Yoga or “Muscle Stretching Exercises”) )Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 9 | 373 | TOPIC: ((“Dance Therapy” or “Therapy, Dance” or “Dance Therapies” or “Therapies, Dance”) )Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 8 | 1,197 | TOPIC: ((hydrotherapy or Hydrotherapies or “Whirlpool Baths” or “Bath, Whirlpool” or “Baths, Whirlpool” or “Whirlpool Bath”) )Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 7 | 46,480 | TOPIC: (("Virtual Reality" or "Reality, Virtual" or "Virtual Reality, Educational" or "Educational Virtual Realities" or "Educational Virtual Reality" or "Reality, Educational Virtual" or "Virtual Realities, Educational" or "Virtual Reality, Instructional" or "Instructional Virtual Realities" or "Instructional Virtual Reality" or "Realities, Instructional Virtual" or "Reality, Instructional Virtual" or "Virtual Realities, Instructional") )Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 6 | 234 | TOPIC: (("Exercise Movement Techniques" or "Movement Techniques, Exercise" or "Exercise Movement Technics" or "Pilates-Based Exercises" or "Exercises, Pilates-Based" or "Pilates Based Exercises" or "Pilates Training" or "Training, Pilates"）)Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 5 | 4,058 | TOPIC: (“Tai-ji” or “Tai Chi” or “Chi, Tai” or “Tai Ji Quan” or “Ji Quan, Tai” or “Quan, Tai Ji” or Taiji or Taijiquan or “T'ai Chi” or “Tai Chi Chuan” Qigong or “Qi Gong” or “Ch'i Kung”)Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 4 | 625,989 | TOPIC: (Exercise\* or “Exercise Program, Weight-Bearing” or “Exercise Programs, Weight-Bearing” or “Weight Bearing Exercise Program” or “Weight-Bearing Exercise Programs” Exercise\* or “Physical Activity” or “Activities, Physical” or “Activity, Physical” or “Physical Activities” or “Exercise, Physical” or “Exercises, Physical” or “Physical Exercise” or “Physical Exercises” or “Exercise, Isometric” or “Exercises, Isometric” or “Isometric Exercises” or “Isometric Exercise” or “Exercise, Aerobic” or “Aerobic Exercise” or “Aerobic Exercises” or “Exercises, Aerobic” or “Exercise Training” or “Exercise Trainings” or “Training, Exercise” or “Trainings, Exercise”)Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 3 | 17,738 | TOPIC: ("Resistance training” or “Training, Resistance” or “Strength Training” or “Training, Strength” or “Weight-Lifting Strengthening Program” or “Strengthening Program, Weight-Lifting” or “Strengthening Programs, Weight-Lifting” or “Weight Lifting Strengthening Program” or “Weight-Lifting Strengthening Programs” or “Weight-Lifting Exercise Program” or “Exercise Program, Weight-Lifting” or “Exercise Programs, Weight-Lifting” or “Weight Lifting Exercise Program” or “Weight-Lifting Exercise Programs” or “Weight-Bearing Strengthening Program” or “Strengthening Program, Weight-Bearing” or “Strengthening Programs, Weight-Bearing” or “Weight Bearing Strengthening Program” or “Weight-Bearing Strengthening Programs” or “Weight-Bearing Exercise Program”)Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 2 | 424,147 | TOPIC: (“aerobic exercise” or “aquatic exercise” or “balance training” or “body weight support treadmill” or “Dance Therapy or exercise\*” or “Exercise Movement Techniques” or “gait training” or “high-speed resistance training” or “hydrotherapy” or “multicomponent exercise program” or “multidisciplinary exercise program” or “Nordic Walking” or “Physiotherapy” or pilates or “power training” or Qigong or “resistance training” or “Robotic-assisted gait training” or stretch or “tai ji” or Tango or “treadmill training” or “walking” or “Virtual Reality” or “whole body vibration” or Yoga)Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |
| # 1 | 113,262 | TOPIC: ("Idiopathic Parkinson's Disease" or "Lewy Body Parkinson's Disease" or "Parkinson's Disease, Idiopathic" or "Parkinson's Disease, Lewy Body" or "Parkinson Disease, Idiopathic" or "Parkinson's Disease" or "Idiopathic Parkinson Disease" or "Lewy Body Parkinson Disease" or "Primary Parkinsonism" or "Parkinsonism, Primary" or "Paralysis Agitans")Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years |  |  |

# Supplementary File 2: Definitions of exercise types and non-exercise training control

|  |  |  |
| --- | --- | --- |
| **Abbreviation** | **Full name** | **Definitions** |
| AE | Aerobic Exercise | Aerobic exercise is performed by repeating sequences of light-to-moderate intensity activities for extended periods of time.1 e.g., walking, bicycle, and treadmill training etc. |
| AQE | Aquatic Exercise | Gait training, balance training, resistance training, or aerobic training performed in deep or shallow water.2 |
| BGT | Balance and Gait Training | Single-task balance and gait training without external cues or internal and external attention |
| CON | Control group | Non-exercise intervention, usual care,3 or health education |
| Dance |  | Group dances other than tango, such as waltz, Irish set dancing etc. |
| MulC | Mixed Exercise Program | Two or more of the above specific types of exercise training (if it is only part of warm-up or relaxation, it is not considered as multi-mode) |
| RT | Resistance Training | Exercise training designed to improve the strength, power, endurance and size of skeletal muscles.4 |
| SE | Sensory Exercise | Focus on ‘internal’ or ‘external sensory’ feedback while doing balance and gait training.5 |
| TT | Treadmill Training Virtual Realty | Walking on a treadmill at a constant speed |
| **MBE (Mind Body Exercise)** |
| TC | Tai Chi | It is an internal Chinese martial art practiced for defense training, health benefits, and meditation. |
| Yoga |  | Mainly a series of methods for self-cultivation, including body-adjusting asanas (refer to yoga asana collection), breathing-adjusting breathing methods, and mind-adjusting meditation, etc., to achieve the unity of body and mind.6 |
| Qigong |  | It is a system of coordinated body-posture and movement, breathing, and meditation used for the purposes of health, spirituality, and martial-arts training. |

**Reference**

1. Plowman SA, Smith DL. Exercise physiology for health fitness and performance: Lippincott Williams & Wilkins; 2013.

2. Konlian C. Aquatic therapy: making a wave in the treatment of low back injuries. Orthop Nurs 1999; 18(1).

3. Goh S-L, Persson MSM, Stocks J, et al. Relative Efficacy of Different Exercises for Pain, Function, Performance and Quality of Life in Knee and Hip Osteoarthritis: Systematic Review and Network Meta-Analysis. Sports Med 2019; 49(5): 743-61.

4. Powell KE, Paluch AE, Blair SN. Physical activity for health: What kind? How much? How intense? On top of what? Annu Rev Public Health 2011; 32: 349-65.

5. Abdollahipour R, Wulf G, Psotta R, Palomo Nieto M. Performance of gymnastics skill benefits from an external focus of attention. J Sports Sci 2015; 33(17): 1807-13.

6. Cramer H, Lauche R, Haller H, Dobos G. A systematic review and meta-analysis of yoga for low back pain. Clin J Pain 2013; 29(5): 450-60.

# **Supplementary File 3: Characteristics of included studies (Table 1)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Age****(Mean±SD)** | **Number****(men)** | **Years of diagnosis** | **Hoehn and Yahr stage** | **Duration (weeks)** | **Frequency** | **Time****(minutes)** | **Outcome** |
| Jo´zsef Tolla´r, MSc et al.2018 | Mul\_C: 67.3±3.4CON: 67.6±4.1 | Mul\_C: 35(17)CON: 20(12) | Mul\_C: 6.7±2.3CON: 7.1±2.8 | 2-3 | 3 | 5 | 60 | TUG, time |
| Changhong Youm et al.2020 | RT: 68.0±6.8Stretch: 72.1±6.0 | RT: 10(6)Stretch: 7(4) | RT: 6.4±3.6Stretch: 8.0±4.0 | RT: 2.4±0.3Stretch: 2.3±0.4 | 12 | 3 | 75 | TUG, time |
| Ariel Vieira de Morae’s Filho et al.2020 | RT: 64.7±9.0CON: 64.4±5.8 | RT: 25(20)CON: 15(10) | RT: 5.7±4.0CON: 7.2±7.4 | NA | 9 | 2 | 55 | TUG, time |
| Marianna Capecci et al.2014 | BGT: 66.8±4.9CON: 68.1±5.6 | BGT: 7(4)CON: 7(4) | BGT: 9.5±7.4CON: 9.6±4.9 | BGT: 3.3±0.7CON: 3.3±0.9 | 4 | 3 | 40 | TUG, time |
| Nicholas P . Cherup et al.2020 | Yoga: 69.8±7.3  BGT: 71.4±12.1 | Yoga: 15(10) BGT: 18(11) | NA | Yoga: 1.7±0.5BGT: 2±0.8 | 12 | 2 | 45 | TUG, time |
| Madeleine E. Hackney et al.2008 | TC: 64.9± 8.3CON: 62.6±10.2 | TC: 17(11)CON: 15(10) | TC: 8.7±4.7CON: 5.5±3.3 | TC: 2±0.4CON: 1.9± 0.2 | 13 | 2 | 60 | TUG, time |
| Arva Khuzema et al.2020 | TC: 72±5.22Yoga: 68.11± 4.23BGT: 70.89±6.01 | TC: 9(6)Yoga: 9(6)BGT: 9(7) | TC: 5.67±2.33Yoga: 6.2±1.67BGT: 5.23±3.12 | TC: 2.83±0.24Yoga: 2.83±0.24BGT: 2.78±0.25 | 8 | 5 | 35 | TUG, time |
| Jojo Y. Y. Kwok et al 2019 | Yoga: 63.7±8.2 RT: 63.5±9.3 | Yoga: 71(37) RT: 67 (28) | NA | Yoga: 2.68 ± 0.47 RT: 2.66 ±0.54 | 8 | 3 | 85 | TUG, time |
| Ying-Yi Laio et al 2024 | Mul\_C: 64.6 ± 8.6TT: 65.1 ± 6.7SE: 67.3 ± 7.1 | Mul\_C: 12(5)TT: 12(6)SE: 12(6) | Mul\_C: 6.4 ± 3.0TT: 6.9 ± 2.8SE: 7.9 ± 2.7 | Mul\_C: 1.9 ± 0.8TT: 2.0 ± 0.8SE: 2.0 ± 0.7 | 6 | 2 | 60 | TUG, time |
| Xiao Lei Liu et al 2016 | Qigong: 65.84 ± 5.45CON: 62.5 ± 3.13 | Qigong: 28(11)CON 26(14) | NA | NA | 10 | 5 | 60 | TUG, time |
| Christian Schlenstedt et al 2015 | RT: 75.7 ± 5.5BGT: 75.7 ± 7.2 | RT:17(12)BGT: 15(9) | RT: 10.1 ± 6.0BGT: 9.3 ± 7.9 | RT: 2.8 ± 0.26BGT: 2.7 ± 0.4 | 7 | 2 | 60 | TUG, time |
| Pietro Santosa et al.2019 | SE: 61.7±7.3CON: 64.5±9.8SE: 66.6±8.2 | SE: 13(11)CON: 14(11)SE: 14(9) | SE: 7±2.8CON: 6.5±2.0SE: 7.8±3.7 | SE: 1.4±0.6CON: 1.3±0.3SE: 1.5±0.4 | 8 | 2 | 50 | TUG, time |
| Jooeun Song et al.2018 | SE: 68±7CON: 65±7 | SE: 31(15)CON: 29(9) | SE: 7±4CON: 9±6 | NA | 12 | 3 | 15 | TUG, time |
| Simon Steib, PhD et al. 2017 | SE: 67.5 ±8.2TT: 62.5±7.9 | SE: 18(11)TT: 20(16) | SE: 7.9±4.0TT: 7.3±4.4 | SE: 2.6±0.5TT: 2.5±0.5 | 8 | 2 | 40 | TUG, time |
| Chun-Mei Xiao et al 2015 | CON: 66.5±2.1Qigong: 68.1±2.3 | CON: 48(34)Qigong: 48(33) | CON: 6.2±2.6Qigong: 5.5±3.6 | CON: 2.1±0.2Qigong: 2.2±0.2 | 24 | 4 | 50 | TUG, time |
| Yongchang Zhuang, Med et al.2016 | 67.8±9.4 | Qigong: 49CON: 49 | NA | NA | 24 | 4 | 60 | TUG, time |
| Wen-Chieh Yang et al.2015 | SE: 72.5±8.4BGT: 75.4±6.3 | SE: 11(7)BGT: 12(7） | SE: 9.4±3.6BGT: 8.3±4.1 | SE: 3±0BGT: 3±0 | 6 | 2 | 50 | TUG, time |
| Wen-Chieh Yang et al.2019 | SE: 65.0±57.5 SE: 69.5±65.0BGT: 66.5±55.5 | SE: 6(4) SE: 6(4)BGT: 6(4) | SE: 5.5±2.8 SE 5.0±0.1BGT: 3.0±0.3 | SE: 2.0±1.6 SE: 2.0±1.8BGT: 1.5±0.9 | 4 | 3 | 30 | TUG, time |
| Tian-Yu Zhang, BS et al.2015 | TC: 66.0±11.8Mul\_C: 64.4±10.5 | TC: 20(13)Mul\_C: 20(11) | TC: 6.8±5.4Mul\_C: 4.9±3.7 | TC: 2.0±0.5Mul\_C: 2.2±0.4 | 12 | 2 | 60 | TUG, time |
| Meng-Che Shih et al 2016 | SE: 67.5±10.0BGT: 68.8±9.7 | SE: 10(9)BGT: 10(7) | SE: 4.0±3.7BGT: 5.2±4.9 | SE: 1.6±0.8BGT: 1.4±0.5 | 8 | 2 | 50 | TUG, time |
| Rocco Salvatore Calabro et al 2019 | SE: 70±8TT: 73±8 | SE: 25(11)TT: 25(14) | SE: 10.0±3.0TT: 9.3±3.0 | SE: 3.0±1.0TT: 3.0±1.0 | 8 | 5 | 25 | TUG, time |
| Marie d EMonc Eau et al.2017 | AE: 65±8RT: 67±10CON: 63.3±6 | AE: 16(12)RT:15(8)CON: 15(10) | AE: 5±4.07RT: 7±5.08CON: 5±2.96 | AE: 1.5±1.11RT: 2±1.11CON: 1.5±0.74 | 12 | 2-3 | 75 | TUG, time |
| Gloria Vergara-Diaz, MD et al. 2018 | TC: 65.7±3.9CON: 62.0±7.8 | TC: 16(9)CON: 16(7) | TC: 2.9±2.4CON: 2.9±2.2 | TC: 2.2±0.2CON: 2.1±0.2 | 24 | 2 | 60 | TUG, time |
| Alessandro Carvalho 2015 | AE: 64.8±11.9RT: 64.1±9.9BGT: 62.1±11.7 | AE: 5(4)RT: 8(6)BGT: 9(5) | AE: 6.6±1.5RT: 6.0±2.6BGT: 4.3±2.8 | AE: 2.6±0.5RT: 2.1±0.6BGT: 2.3±0.5 | 12 | 2 | 40 | TUG, time |
| Ilaria Arcolin 2016 | TT: 67.8±8.8AE: 68.7±8.3 | TT: 13(6)AE: 16(9) | TT: 6.5±2.9AE: 4.7±2.9 | TT: 2.3±0.5AE: 2.3±0.5 | 3 | 5 | 60 | TUG, time |
| Paria Arfa-Fatollahkhani 2018 | CON: 61.55±8.57 TT: 60.63±9.36 | CON: 9(7)TT: 11(8) | CON: 8.50±6.34TT: 8.89±5.14 | CON: 2.0±0.35TT: 2.13±0.32 | 10 | 2 | 30 | TUG, time |
| Dae-Hyouk Bang 2016 | NW: 58.30±7.71TT: 60.60±6.74 | NW: 10(5)TT: 10(4) | NW: 18.10±6.77TT: 17.98±3.28 | NW: 2.32±0.52TT: 2.56±0.51 | 4 | 5 | 60 | TUG, time |
| O. Bello et al.2013 | TT: 59.45±11.32 SE: 58±9.38 | TT: 11(7) SE: 11(5) | TT: 4.82±3.28 SE: 4.95±2.59 | TT: 2.27±0.41 SE: 2.05±0.52 | 5 | 3 | 25 | TUG, time |
| Georg Ebersbach et al 2010 | Mul\_C: 67.1±3.6NW: 65.5 ±9.0CON: 69.3 ±8.4 | Mul\_C: 20(7)NW: 19(7)CON: 19(8) | Mul\_C: 6.1±3.0NW: 7.8±4.4CON: 7.4±5.9 | Mul\_C: 2.8±0.37NW: 2.6±0.4CON: 2.5±0.7 | 5 | 3 | 60 | TUG, time |
| Ilaria Carpinella et al 2016 | SE: 73.0±7.1CON: 75.6±8.2 | SE: 17(14)CON: 20(9) | SE: 7.5±3.2CON: 10.3±5.7 | SE: 12.7±0.7CON: 2.9±0.5 | 7 | 3 | 45 | TUG, time |
| Fang-Yu Cheng et al 2017 | TT: 65.8 ± 11.5CON: 67.3 ± 6.4 | TT: 12(9)CON: 12(8) | TT: 6.1 ± 4.1CON: 8.1 ± 4.6 | TT: 1.8 ± 0.6CON: 2.0 ± 0.8 | 5 | 2.5 | 40 | TUG, time |
| Silvia Rios Romenets et al.2015 | CON: 64.3±8.1Tango: 63.2±9.9 | CON: 15(7)Tango: 18(12) | CON 7.7±4.6Tango: 5.5±4.4 | CON: 2.0±0.5Tango: 1.7±0.6 | 12 | 2 | 60 | TUG, time |
| Adriana Costa-Ribeiro et al.2016 | SE: 61.1±9.1 SE: 62.0±16.7 | SE: 11(8) SE: 11(7) | SE: 2.4±0.7 SE: 2.3±0.4 | SE: 6.1±3.8 SE: 6.3±3.7 | 4 | 3 | 43 | TUG, time |
| Lucia Cugusi et al.2015 | NW: 68.1 ± 8.7CON: 66.6±7.3 | NW: 10 (8)CON: 10(8) | NW: 7±2CON: 7±4 | NW: 2.4 ± 0.8CON: 2.3 ± 0.5 | 12 | 2 | 60 | TUG, time |
| Tiago Alencar de Lima et al.2019 | CON: 67.2 ± 5.2RT: 66.2 ± 5.5 | CON: 16(NA)RT: 17(NA) | NA | CON: 1.93±0.80RT: 2.07±0.80 | 20 | 2 | 35 | TUG, time |
| G.Frazzitta et al.2007 | SE: 66.6±10.0 AE: 65.0±8.8 | SE: 30(13)AE: 30(17) | NA | SE: 2.8 ±0.4AE: 2.8±0.4 | 4 | 6 | 35 | TUG, time |
| Victoria A Goodwin et al.2009 | Mul\_C: 72.0±8.6CON: 70.1±8.3 | Mul\_C: 64(39)CON: 66(35) | Mul\_C: 9.1±6.4CON 8.2±6.4 | Mul\_C: 2.6 ±0.9CON: 2.4 ±0.9 | 10 | 1 | 60 | TUG, time |
| Madeleine E. Hackney et al. 2015 | Tango: 72.6±2.2RT: 69.6±2.1 | Tango: 9(6)RT: 10(6) | Tango: 6.2±1.5RT: 3.3±0.5 | Tango: 2.3±0.7RT: 2.2±0.6 | 13 | 2 | 60 | TUG, time |
| Ryan P. Hubble et al.2017 | Mul\_C: 67.5±5.8CON: 63.3±4.9 | Mul\_C: 11(8)CON: 11(7) | Mul\_C: 7.0 ±5.0CON: 6.5±5.2 | Mul\_C: 2.0±0.7 CON: 1.8±0.6 | 12 | 1 | 90 | TUG, time |
| Adriano Zanardi da Silva 2018 | AQE: 63.12 ± 13.61CON: 64.23 ± 13.45 | AQE: 14(6)CON: 11(5) | NA | AUR: 3±1CON: 3±1 | 10 | 2 | 60 | TUG, time |
| Daniele Volpe et al.2014 | SE: 66.5±10.4BGT: 69.5±6.5 | SE: 20(7)BGT: 20(9) | SE: 6.0±5.0BGT: 6.5±3.7 | SE: 3.0±0.0BGT: 3.0±0.7 | 8 | 5 | 60 | TUG, time |
| Michael D. Sage et al.2009 | SE: 64.2±10.3AE: 65.1±9.3CON: 68.6±8.7 | SE: 18(12)AE: 13(6)CON: 15(7) | SE: 4.7±4.9AE: 3.2±2.9 CON: 2.5±2.2 | NA | 12 | 3 | 50 | TUG, time |
| Zahra Kadivar 2011 | SE: 73.3±2.2BGT: 70.5±2.2 | SE: 8(5)BGT: 8(6) | SE: 8.9±1.8BGT: 7.5±1.2 | SE: 2.69±0.56BGT: 2.69±0.56 | 6 | 3 | 50 | TUG, time |
| Paolo Solla 2019 | Dance: 67.8±5.9CON: 67.1±6.3 | Dance: 10(6)CON: 10(7) | Dance: 4.4±4.5CON: 5.0±2.9 | Dance: 2.1±0.6CON: 2.3±0.4 | 12 | 2 | 90 | TUG, time |
| Kristi Michels 2018 | Tango: 66.44±NACON: 75.50±NA | Tango: 9(NA)CON: 4(NA) | NA | Tango: 2.11±0.33CON: 2.50±1.00 | 10 | 2 | 60 | TUG, time |
| D Kunkel 2017 | Dance: 71.3±7.7CON: 69.7±6.0 | Dance: 36(19)CON: 15(6) | Dance: 4.7±3.5CON: 7.0±4.9 | Dance: 2.11±0.84CON: 2.13±0.72 | 10 | 2 | 60 | TUG, time |
| Lisa M. Shulman 2012 | TT: 66.1±9.7TT: 65.8±11.5RT: 65.3±11.3 | TT: 23(16)TT: 22(16)RT: 22(18) | TT: 5.9±3.9TT: 6.3±3.5RT: 6.3±4.0 | TT: 2.15±0.34TT: 2.16±0.35RT: 2.23±0.39 | 12 | 3 | 45 | TUG, time |
| Petra Pohl et al.2015 | 68.2±5.1 | Dance: 12(NA)CON: 6(NA) | 8.8±3.8 | 2.4±0.7 | 6 | 2 | 60 | TUG, time |
| Gloria Vergara-Diaz, MD et al. 2018 | TC: 65.7±3.9CON: 62.0±7.8 | TC: 16(9)CON: 16(7) | TC: 2.9±2.4CON: 2.9±2.2 | TC: 2.2±0.2CON: 2.1±0.2 | 24 | 2 | 60 | TUG, time |
| Emine Eda Kurt et al 2017 | AQE: 62.41 ± 6.76Mul\_C: 63.61 ± 7.18 | AQE: 20(11)Mul\_C: 20(13) | NA | AQE: 2.37±0.39Mul\_C: 2.32±0.40 | 5 | 5 | 60 | TUG, time |
| Yesim Kurtais et al 2008 | TT: 63.8±10.6CON: 65.7±5.3 | TT: 12(5)CON: 12(7) | TT: 5.3±0.8CON: 5.4±1.2 | TT: 2.5±0.7CON: 2.2±0.8 | 6 | 3 | 40 | TUG, time |
| Leon CP Leal et al 2019 | CON: 64.9±2.32 RT: 65.2±2.05 | CON: 27(13) RT: 27(14) | NA | CON: 2±0.5 RT: 2±0.5 | 24 | 2 | 32.5 | TUG, time |
| E.P. Monteiro et al 2016 | NW: 64.9±10.2BGT: 70.5±5.8 | NW: 16(13)BGT: 17(7) | NW: 5.5±3.3BGT: 5.09±4.1 | NW: 1.5±0.5BGT: 2.0±1.0 | 6 | 2 | 60 | TUG, time |
| Meg E. Morris et al 2015 | RT: 67.4±10.4 SE: 68.4±9.9CON: 67.9±8.4 | RT: 70(42) SE 69(46)CON: 71(52) | RT: 7.2±6.2 SE: 6±5.5CON: 6.9±5.2 | RT: 2.39±0.77 SE: 2.40±0.81CON: 2.61±0.90 | 8 | 1 | 120 | TUG, time |
| Grazia Palamara et al.2017 | AQE: 70.9±5.7Mul\_C: 70.8±5.3 | AQE: 17(9)Mul\_C: 17(11) | NA | AQE: 2.8±0.5Mul\_C: 3.1±0.2 | 4 | 4 | 60 | TUG, time |
| A. Park et al 2013 | RT: 60.1±6.6CON: 59.8±6.3 | RT: 15(10)CON: 16(10) | NA | NA | 48 | 3 | 60 | TUG, time |
| Ellen Poliakoff et al 2013 | Mul\_C: 68.8±7.3CON: 66.6±7.3 | Mul\_C: 12(9)CON: 10(8) | Mul\_C: 7.9±3.0CON: 4.6±3.9 | NA | 10 | 1 | 60 | TUG, time |
| Cornelia Schlick et al 2015 | SE: 71.2±10.9 TT: 68.9±6.8 | SE: 10(2)TT: 10(4) | SE: 10.4±5.2TT: 9.1±3.1 | SE: 2.8±0.9TT: 2.7±0.7 | 5 | 2.5 | 35 | TUG, time |
| CARLA SILVA-BATISTA et al 2016 | CON: 64.2±8.3 RT: 64.1±9.1 RT: 64.2±10.6 | CON: 13(9) RT: 13(10) RT: 13(10) | CON: 10.7±6.1 RT: 9.6±3.9 RT: 10.5±4.1 | CON: 2.5±0.4 RT: 2.5±0.5 RT: 2.5±0.4 | 12 | 2 | 60 | TUG, time |
| Carla Silva-Batista et al. 2016 | CON: 64.2±8.3 RT: 64.2±10.6 | CON: 13(9) RT: 13(10) | CON: 10.7±6.1 RT: 10.5±4.1 | CON: 2.5±0.4 RT: 2.5±0.4 | 12 | 2 | 60 | TUG, time |
| Nicolien M van der Kolk et al.2017 | NA | AE: 22(NA)CON: 15(NA) | NA | NA | 24 | 3 | 30 | TUG, time |
| Daniele Volpe1 et al.2014 | AQE: 68 ± 7BGT: 66 ± 8 | AQE:17(NA)BGT:17(NA) | AQE: 7.5 ± 5.1BGT: 7.6 ± 4.63 | AQE: 2.82 ± 0.3BGT: 2.65 ± 0.49 | 8 | 5 | 60 | TUG, time |
| Daniele Volpe1 et al.2016 | AQE: 70.6 ± 7.8 Mul\_C: 70 ± 7.8 | AQE: 15(9)Mul\_C: 15(10) | AQE: 9.4 ± 7.5 Mul\_C: 9 ± 7.0 | AQE: 2.6 ± 0.5Mul\_C: 2.7 ± 0.5 | 8 | 5 | 60 | TUG, time |
| Meg E. Morris al.2009 | SE: 72.5±5.8Mul\_C: 73.5±5.7 | SE: 14(NA)Mul\_C: 14(NA) | NA | NA | 2 | 8 | 40 | TUG, time |
| Helgerud J et al.2020 | RT: 72±8.0CON: 62.0±11 | RT: 15(7)CON: 7(2) | RT: 8.8±4.9CON: 7.3±2.5 | RT: 2.3±0.1CON: 2.7±0.7 | 4 | 3 | 60 | TUG, time |
| José Ma Cancela 2019 | AQE: 67.7±4.6Mul\_C: 69.2±4.4 | AQE: 7(6)Mul\_C: 5(3) | NA | AQE: 2.3±0.8Mul\_C: 2.2±0.5 | 8 | 3 | 50 | TUG, time |
| Tamine T.C. Capato et al.2020 | SE: 74±8BGT: 67±13CON: 73±10 | SE: 56(27)BGT: 50(32)CON: 48(29) | SE: 5±5.2BGT: 6±5.9CON: 8±9.6 | SE: 2.3±0.8BGT: 2.2±0.8CON: 2.3±0.7 | 5 | 2 | 45 | TUG, time |
| Tamine T.C. Capato et al.2020 | SE: 77±7BGT: 78±10 | SE: 17(9)BGT: 18(12) | SE: 17±9BGT: 11±4 | NA | 5 | 2 | 45 | TUG, time |
| Qiang Gao et al.2014 | TC: 69.5±7.3CON: 68.3±8.5 | TC: 37(23)CON: 39(27) | TC: 9.2±8.6CON: 8.4±8.2 | TC: 2.4±0.5CON: 2.4±0.7 | 12 | 3 | 60 | TUG, time |
| A Nieuwboer et al.2014 | SE: 67.5±7.8CON: 69±7.8 | SE: 76(48)CON: 77(40) | SE: 7±5.2CON: 8±5.9 | SE: 2.6±0.7CON: 2.7±0.7 | 3 | 3 | 30 | TUG, time |
| Hsin- Hsuan Liu, PT et al.2022 | BGT: 70.93±7.23CON: 64.79±5.86 | BGT: 14(8)CON: 14(8) | BGT: 6.82 ± 3.94CON: 6.96 ± 6.27 | BGT: 1.96 ± 0.72CON: 1.54 ± 0.72 | 8 | 2 | 60 | TUG, time |
| Zhenlan Li et al.2022 | Wu Qin Xi：67.57±3.95CON: 70±5.59 | Wu Qin Xi：20(13) CON : 20(16) | Wu Qin Xi：6.83 ± 4.09 CON :7.76 ± 4.55 | Wu Qin Xi：1.5±1.5 CON : 1.6±0.59 | 8 | 2 | 60 | TUG, time |

N/A not available, AE Aerobic Exercise, AQE Aquatic Exercise, BGT Balance and Gait Training,CON Control group, MulC Multicomponent Exercise Program, RT Resistance Training, TT Treadmil traing, TC Tai Chi, SE Sensory Exercise, TUG Time Up Go.

**Inclusion of study-specific data (Table 2)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author** | **Study** | **agent** | **dose** | **y** | **SE** | **n** | **MET** | **residual dose** | **MET-min/week** | **total MET** | **Time** | **Frequency** | **Period** |
| Josef et al.2018 | 1 | CON | 0 | -0.40 | 0.917606 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 1 | MulC | 750 | -6.20 | 0.560357 | 35 | 4.3 | 110 | 860 | 2580 | 40 | 5 | 3 |
| Changhong Youm et al.2020 | 2 | CON | 0 | 0.20 | 0.415761 | 7 | 0 | 0 | 0 | 0 | 60 | 3 | 12 |
|  | 2 | RT | 750 | -2.00 | 0.496991 | 10 | 3.5 | -120 | 630 | 7560 | 60 | 3 | 12 |
| Ariel Vieira de Morae’s Filho et al.2020 | 3 | CON | 0 | 0.70 | 0.819199 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 3 | RT | 500 | -1.80 | 0.458258 | 25 | 3.5 | -115 | 385 | 3465 | 55 | 2 | 9 |
| Marianna Capecci et al.2014 | 4 | CON | 0 | 0.00 | 3.363884 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 4 | BGT | 500 | -1.00 | 3.478678 | 7 | 3.8 | -44 | 456 | 1824 | 40 | 3 | 4 |
| Nicholas P. Cherup et al.2020 | 5 | BGT | 250 | -1.00 | 0.968102 | 18 | 3.8 | 92 | 342 | 4104 | 45 | 2 | 12 |
|  | 5 | MBE | 250 | -0.90 | 0.626099 | 15 | 3 | 20 | 270 | 3240 | 45 | 2 | 12 |
| Madeleine E. Hackney et al.2008 | 6 | CON | 0 | -0.10 | 0.305085 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 6 | MBE | 250 | -1.00 | 0.027735 | 13 | 3 | 110 | 360 | 4680 | 60 | 2 | 13 |
| Arva Khuzema et al.2020 | 7 | MBE | 500 | -3.33 | 1.660793 | 9 | 3 | 25 | 525 | 4200 | 35 | 5 | 8 |
|  | 7 | BGT | 750 | -1.38 | 2.288435 | 9 | 3.8 | -85 | 665 | 5320 | 35 | 5 | 8 |
|  | 7 | MBE | 500 | -1.39 | 4.454546 | 9 | 3 | 25 | 525 | 4200 | 35 | 5 | 8 |
| Jojo Y. Y. Kwok et al 2019 | 8 | RT | 750 | -1.64 | 0.685038 | 67 | 3.5 | -120 | 630 | 5040 | 60 | 3 | 8 |
|  | 8 | MBE | 750 | -2.82 | 1.826927 | 71 | 3 | -210 | 540 | 4320 | 60 | 3 | 8 |
| Ying-Yi Laio et al 2024 | 9 | CON | 0 | 0.70 | 0.490748 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 9 | MulC | 500 | -1.10 | 0.028868 | 12 | 3.5 | -80 | 420 | 2520 | 60 | 2 | 6 |
|  | 9 | SE | 500 | -2.90 | 0.635085 | 12 | 3.8 | -44 | 456 | 2736 | 60 | 2 | 6 |
| Xiao Lei Liu et al 2016 | 10 | CON | 0 | -0.24 | 0.681962 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 10 | MBE | 500 | -4.79 | 0.534493 | 23 | 3 | 100 | 600 | 6000 | 40 | 5 | 10 |
| Schlenstedt et al 2015 | 11 | RT | 500 | -1.70 | 0.69958 | 17 | 3.5 | -80 | 420 | 2940 | 60 | 2 | 7 |
|  | 11 | BGT | 250 | -0.20 | 0.675278 | 15 | 2.3 | 26 | 276 | 1932 | 60 | 2 | 7 |
| Pietro Santosa et al.2019 | 12 | CON | 0 | -2.50 | 0.853982 | 14 | 0 | 0 | 0 | 0 | 50 | 2 | 8 |
|  | 12 | SE | 500 | -3.00 | 1.231322 | 13 | 3.8 | -120 | 380 | 3040 | 50 | 2 | 8 |
| Pietro Santosa et al.2019 | 12 | CON | 0 | -2.50 | 0.853982 | 14 | 0 | 0 | 0 | 0 | 50 | 2 | 8 |
|  | 12 | SE | 500 | -3.30 | 0.668153 | 14 | 3.8 | -120 | 380 | 3040 | 50 | 2 | 8 |
| Jooeun Song et al.2018 | 13 | CON | 0 | -0.50 | 0.308 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 13 | SE | 250 | 0.15 | 0.228669 | 28 | 3.8 | -79 | 171 | 2052 | 15 | 3 | 12 |
| Simon Steib, PhD et al. 2017 | 14 | TT | 250 | 0.30 | 0.268328 | 20 | 2.5 | -50 | 200 | 1600 | 40 | 2 | 8 |
|  | 14 | SE | 250 | -0.80 | 0.377124 | 18 | 3.8 | 54 | 304 | 2432 | 40 | 2 | 8 |
| Chun-Mei Xiao et al 2015 | 15 | CON | 0 | 1.00 | 2.687936 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 15 | MBE | 500 | -1.20 | 1.735504 | 45 | 3 | 100 | 600 | 14400 | 50 | 4 | 24 |
| Yongchang Zhuang, Med et al.2016 | 16 | CON | 0 | -0.90 | 0.290084 | 33 | 0 | 0 | 0 | 0 | 60 | 4 | 24 |
|  | 16 | MBE | 750 | -1.00 | 0.45269 | 35 | 3 | -30 | 720 | 17280 | 60 | 4 | 24 |
| Wen-Chieh Yang et al.2015 | 17 | BGT | 500 | -3.10 | 3.231615 | 12 | 3.8 | -120 | 380 | 2280 | 50 | 2 | 6 |
|  | 17 | SE | 500 | -3.30 | 3.27428 | 11 | 3.8 | -120 | 380 | 2280 | 50 | 2 | 6 |
| Wen-Chieh Yang et al.2019 | 17 | SE | 250 | -1.20 | 0.628702 | 6 | 3.8 | 92 | 342 | 1368 | 30 | 3 | 4 |
|  | 17 | BGT | 250 | 0.30 | 1.931722 | 6 | 3.8 | 92 | 342 | 1368 | 30 | 3 | 4 |
| Wen-Chieh Yang et al.2019 | 17 | SE | 250 | -2.90 | 2.148724 | 6 | 3.8 | 92 | 342 | 1368 | 30 | 3 | 4 |
|  | 17 | BGT | 250 | 0.30 | 1.931722 | 6 | 3.8 | 92 | 342 | 1368 | 30 | 3 | 4 |
| Tian-Yu Zhang, BS et al.2015 | 18 | MulC | 500 | -2.13 | 0.406964 | 20 | 4.75 | 70 | 570 | 6840 | 60 | 2 | 12 |
|  | 18 | MBE | 250 | -1.91 | 0.72225 | 20 | 3 | 110 | 360 | 4320 | 60 | 2 | 12 |
| Meng-Che Shih et al 2016 | 19 | BGT | 500 | -0.87 | 1.321923 | 10 | 3.8 | -120 | 380 | 3040 | 50 | 2 | 8 |
|  | 19 | SE | 500 | -0.79 | 0.695162 | 10 | 3.8 | -120 | 380 | 3040 | 50 | 2 | 8 |
| Rocco Salvatore et al 2019 | 20 | SE | 500 | -2.00 | 1.637071 | 25 | 3 | -125 | 375 | 3000 | 25 | 5 | 8 |
|  | 20 | TT | 250 | -1.00 | 1.4 | 25 | 2.3 | 37.5 | 287.5 | 2300 | 25 | 5 | 8 |
| Marie et al.2017 | 21 | CON | 0 | 0.00 | 0.05164 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 21 | RT | 1200 | -0.10 | 0.093095 | 15 | 5.8 | 105 | 1305 | 15660 | 75 | 3 | 12 |
|  | 21 | AE | 750 | -0.10 | 0.066144 | 16 | 3.5 | 37.5 | 787.5 | 9450 | 75 | 3 | 12 |
| Gloria et al. 2018 | 22 | CON | 0 | 0.00 | 0.494874 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 22 | MBE | 250 | -0.58 | 0.701463 | 14 | 3 | 110 | 360 | 8640 | 60 | 2 | 24 |
| Alessandro Carvalho et.al.2015 | 23 | RT | 250 | -2.50 | 0.863858 | 8 | 4 | 70 | 320 | 3840 | 40 | 2 | 12 |
|  | 23 | BGT | 250 | -2.40 | 0.635959 | 9 | 3.8 | 54 | 304 | 3648 | 40 | 2 | 12 |
|  | 23 | AE | 250 | -3.10 | 1.323631 | 5 | 4.3 | 94 | 344 | 4128 | 40 | 2 | 12 |
| Ilaria et.al. 2016 | 24 | TT | 500 | -1.60 | 0.402874 | 13 | 2.3 | -40 | 460 | 1380 | 40 | 5 | 3 |
|  | 24 | AE | 750 | -0.70 | 0.463006 | 16 | 3.5 | -50 | 700 | 2100 | 40 | 5 | 3 |
| Paria et.al. 2018 | 25 | CON | 0 | -2.56 | 3.72812 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 25 | TT | 250 | -3.92 | 2.305036 | 11 | 2.3 | -112 | 138 | 1380 | 30 | 2 | 10 |
| Dae-Hyouk Bang 2016 | 26 | TT | 500 | -3.48 | 0.617746 | 10 | 2.3 | 75 | 575 | 2300 | 50 | 5 | 4 |
|  | 26 | AE | 750 | -4.72 | 0.632052 | 10 | 3.5 | 125 | 875 | 3500 | 50 | 5 | 4 |
| O. Bello et al.2013 | 27 | SE | 250 | -1.61 | 0.455941 | 11 | 3.5 | 12.5 | 262.5 | 1312.5 | 25 | 3 | 5 |
|  | 27 | TT | 250 | 0.13 | 0.18063 | 11 | 2.3 | -77.5 | 172.5 | 862.5 | 25 | 3 | 5 |
| Georg Ebersbach et al 2010 | 28 | CON | 0 | 0.44 | 0.277593 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 28 | MulC | 750 | -0.75 | 0.433797 | 20 | 4.75 | 105 | 855 | 4275 | 60 | 3 | 5 |
|  | 28 | AE | 750 | 0.58 | 0.394595 | 19 | 4.8 | 114 | 864 | 4320 | 60 | 3 | 5 |
| Ilaria Carpinella et al 2016 | 29 | CON | 0 | 0.40 | 3.848961 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 29 | SE | 250 | -1.00 | 1.592076 | 17 | 2.3 | 60.5 | 310.5 | 2173.5 | 45 | 3 | 7 |
| Fang-Yu Cheng et al 2017 | 30 | CON | 0 | -0.50 | 0.78475 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 30 | TT | 250 | -2.10 | 1.123981 | 12 | 2.3 | -20 | 230 | 1150 | 40 | 2.5 | 5 |
| Silvia Rios Romenets et al.2015 | 31 | CON | 0 | 0.10 | 0.610464 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 31 | Dance | 250 | -1.30 | 0.424918 | 18 | 3 | 110 | 360 | 4320 | 60 | 2 | 12 |
| Adriana Costa-Ribeiro et al.2016 | 32 | SE | 250 | -3.00 | 1.266348 | 11 | 2.8 | 111.2 | 361.2 | 1444.8 | 43 | 3 | 4 |
|  | 32 | SE | 500 | -2.30 | 0.54272 | 11 | 4.8 | 119.2 | 619.2 | 2476.8 | 43 | 3 | 4 |
| Lucia Cugusi et al.2015 | 33 | CON | 0 | 0.90 | 0.727324 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 33 | AE | 500 | -0.70 | 0.782943 | 10 | 4.8 | 76 | 576 | 6912 | 60 | 2 | 12 |
| Tiago Alencar de Lima et al.2019 | 34 | CON | 0 | 1.40 | 1.605265 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 34 | RT | 250 | -6.80 | 1.666098 | 17 | 3.5 | -5 | 245 | 4900 | 35 | 2 | 20 |
| Tiago Alencar de Lima et al.2019 | 34 | CON | 0 | 0.90 | 0.33541 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 34 | RT | 250 | -1.10 | 0.435316 | 20 | 3.5 | -5 | 245 | 4900 | 35 | 2 | 20 |
| G.Frazzitta et al.2007 | 35 | SE | 750 | -3.30 | 1.22692 | 30 | 3.5 | -15 | 735 | 2940 | 35 | 6 | 4 |
|  | 35 | AE | 750 | -3.00 | 0.689202 | 30 | 3.5 | -15 | 735 | 2940 | 35 | 6 | 4 |
| Victoria A Goodwin et al.2009 | 36 | CON | 0 | 1.60 | 1.162373 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 36 | MulC | 250 | 0.30 | 0.938639 | 61 | 4.75 | 35 | 285 | 2850 | 60 | 1 | 10 |
| Madeleine E. Hackney et al. 2015 | 37 | RT | 500 | 0.10 | 0.398447 | 10 | 3.5 | -80 | 420 | 5460 | 60 | 2 | 13 |
|  | 37 | Dance | 250 | -0.90 | 0.4 | 9 | 3 | 110 | 360 | 4680 | 60 | 2 | 13 |
| Ryan P. Hubble et al.2017 | 38 | CON | 0 | -0.34 | 0.53066 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 38 | MulC | 500 | 0.11 | 0.53066 | 11 | 4.75 | -72.5 | 427.5 | 5130 | 90 | 1 | 12 |
| Adriano da Silva 2018 | 39 | CON | 0 | 1.25 | 1.162329 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 39 | AQE | 750 | -2.52 | 1.023057 | 14 | 5.3 | -114 | 636 | 6360 | 60 | 2 | 10 |
| Daniele Volpe et al.2014 | 40 | BGT | 750 | -0.90 | 0.623298 | 20 | 2.3 | -60 | 690 | 5520 | 60 | 5 | 8 |
|  | 40 | SE | 750 | -2.20 | 0.998248 | 20 | 2.3 | -60 | 690 | 5520 | 60 | 5 | 8 |
| Michael D. Sage et al.2009 | 41 | CON | 0 | 0.00 | 0.600555 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 41 | SE | 500 | -0.50 | 0.487055 | 18 | 3 | -50 | 450 | 5400 | 50 | 3 | 12 |
|  | 41 | AE | 500 | -0.70 | 0.667371 | 13 | 3.5 | 25 | 525 | 6300 | 50 | 3 | 12 |
| Zahra Kadivar 2011 | 42 | BGT | 500 | -2.62 | 0.848528 | 8 | 2.5 | -125 | 375 | 2250 | 50 | 3 | 6 |
|  | 42 | SE | 250 | -5.70 | 0.777817 | 8 | 2.3 | 95 | 345 | 2070 | 50 | 3 | 6 |
| Paolo Solla 2019 | 42 | CON | 0 | -0.48 | 0.287412 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 42 | Dance | 500 | -1.82 | 0.234361 | 16 | 3 | 40 | 540 | 6480 | 90 | 2 | 12 |
| Kristi Michels 2018 | 43 | CON | 0 | -0.31 | 4.789616 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 43 | Dance | 250 | -0.57 | 0.531863 | 9 | 3 | 110 | 360 | 3600 | 60 | 2 | 10 |
| D Kunkel 2017 | 44 | CON | 0 | -1.30 | 1.478513 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 44 | Dance | 750 | 0.70 | 0.952416 | 31 | 5.4 | -102 | 648 | 6480 | 60 | 2 | 10 |
| Lisa M. Shulman 2012 | 45 | RT | 500 | 0.50 | 1.323564 | 22 | 3.5 | -27.5 | 472.5 | 5670 | 45 | 3 | 12 |
|  | 45 | TT | 750 | -0.40 | 0.75564 | 23 | 6 | 60 | 810 | 9720 | 45 | 3 | 12 |
| Lisa M. Shulman 2012 | 45 | RT | 500 | 0.50 | 1.323564 | 22 | 3.5 | -27.5 | 472.5 | 5670 | 45 | 3 | 12 |
|  | 45 | TT | 750 | -0.50 | 0.700479 | 21 | 6 | 60 | 810 | 9720 | 45 | 3 | 12 |
| Lisa M. Shulman 2015 | 46 | TT | 250 | 1.10 | 1.48181 | 59 | 2.3 | 60.5 | 310.5 | 1863 | 45 | 3 | 6 |
|  | 46 | SE | 500 | -0.64 | 1.482903 | 62 | 3.8 | 13 | 513 | 3078 | 45 | 3 | 6 |
| Petra Pohl et al.2015 | 47 | CON | 0 | 1.00 | 1.057363 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 47 | Dance | 750 | -0.50 | 1.174908 | 12 | 5.4 | -102 | 648 | 3888 | 60 | 2 | 6 |
| Diaz, MD et al. 2018 | 48 | CON | 0 | -0.49 | 0.461303 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 48 | MBE | 250 | -0.49 | 0.682333 | 14 | 3 | 110 | 360 | 8640 | 60 | 2 | 24 |
| Eda Kurt et al 2017 | 49 | MulC | 1000 | -0.85 | 1.510464 | 20 | 4.15 | 37.5 | 1037.5 | 5187.5 | 50 | 5 | 5 |
|  | 49 | AQE | 1500 | -5.01 | 1.218325 | 20 | 4.5 | -150 | 1350 | 6750 | 60 | 5 | 5 |
| Kurtais et al 2008 | 50 | CON | 0 | -1.50 | 0.728583 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 50 | TT | 250 | -2.70 | 1.879051 | 12 | 2.3 | 26 | 276 | 0 | 40 | 3 |  |
| Leon CP Leal et al 2019 | 51 | CON | 0 | 0.70 | 0.837324 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 51 | RT | 250 | -3.10 | 0.800231 | 27 | 5 | 75 | 325 | 7800 | 32.5 | 2 | 24 |
| E.P. Monteiro et al 2016 | 52 | BGT | 500 | -2.78 | 0.557832 | 17 | 3.8 | -44 | 456 | 2736 | 60 | 2 | 6 |
|  | 52 | AE | 500 | 1.42 | 0.1 | 16 | 4.8 | 76 | 576 | 3456 | 60 | 2 | 6 |
| Meg E. Morris et al 2015 | 53 | CON | 0 | 1.10 | 0.749152 | 57 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 53 | RT | 500 | 0.00 | 0.752012 | 67 | 3.5 | -80 | 420 | 2520 | 60 | 2 | 6 |
|  | 53 | SE | 500 | 0.80 | 0.663782 | 66 | 3.8 | -44 | 456 | 2736 | 60 | 2 | 6 |
| Grazia Palamara et al.2017 | 54 | MulC | 1000 | -2.40 | 0.584934 | 17 | 4.15 | -4 | 996 | 3984 | 60 | 4 | 4 |
|  | 54 | AQE | 1200 | -3.40 | 0.708934 | 17 | 5.3 | 72 | 1272 | 5088 | 60 | 4 | 4 |
| A. Park et al 2013 | 55 | CON | 0 | -0.17 | 0.487987 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 55 | RT | 750 | -0.75 | 0.441369 | 15 | 3.5 | -120 | 630 | 30240 | 60 | 3 | 48 |
| Ellen Poliakoff et al 2013 | 56 | CON | 0 | -0.20 | 0.798123 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 56 | MulC | 250 | -0.30 | 0.996813 | 11 | 4.75 | 35 | 285 | 2850 | 60 | 1 | 10 |
| Cornelia Schlick et al 2015 | 57 | SE | 250 | -0.10 | 1.388884 | 10 | 3 | 12.5 | 262.5 | 1312.5 | 35 | 2.5 | 5 |
|  | 57 | TT | 250 | -2.60 | 1.977119 | 10 | 2.3 | -48.75 | 201.25 | 1006.25 | 35 | 2.5 | 5 |
| CARLA SILVA-BATISTA et al 2016 | 58 | CON | 0 | 1.10 | 0.526965 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 58 | RT | 500 | -1.90 | 0.66564 | 13 | 3.5 | -80 | 420 | 5040 | 60 | 2 | 12 |
| CARLA SILVA-BATISTA et al 2016 | 59 | CON | 0 | 1.10 | 0.526965 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 59 | RT | 500 | -0.70 | 0.582435 | 13 | 3.5 | -80 | 420 | 5040 | 60 | 2 | 12 |
| Carla Silva-Batista et al. 2017 | 60 | CON | 0 | 1.10 | 0.526965 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 60 | RT | 500 | -1.90 | 0.66564 | 13 | 3.5 | -80 | 420 | 5040 | 60 | 2 | 12 |
| Nicolien M van der Kolk et al.2017 | 61 | CON | 0 | -0.80 | 0.722957 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 61 | AE | 250 | 1.10 | 0.319801 | 22 | 3.5 | 65 | 315 | 7560 | 30 | 3 | 24 |
| Daniele Volpe1 et al.2014 | 62 | BGT | 750 | -1.20 | 0.715788 | 17 | 3.8 | 10 | 760 | 6080 | 40 | 5 | 8 |
|  | 62 | AQE | 1000 | -2.10 | 0.798528 | 17 | 5.3 | 60 | 1060 | 8480 | 40 | 5 | 8 |
| Daniele Volpe1 et al.2016 | 63 | MulC | 1000 | -3.20 | 2.266956 | 11 | 4.75 | -50 | 950 | 7600 | 40 | 5 | 8 |
|  | 63 | AQE | 1000 | -1.40 | 0.569075 | 13 | 5.3 | 60 | 1060 | 8480 | 40 | 5 | 8 |
| Meg E. Morris et.al.2009 | 64 | MulC | 1000 | 0.10 | 0.763918 | 14 | 3.8 | 64 | 1064 | 2128 | 40 | 7 | 2 |
|  | 64 | SE | 1200 | -0.90 | 0.548374 | 14 | 4.3 | 4 | 1204 | 2408 | 40 | 7 | 2 |
| Helgerud J et al.2020 | 65 | CON | 0 | -0.50 | 0.916515 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 65 | RT | 1000 | -1.60 | 0.769848 | 15 | 5 | 125 | 1125 | 4500 | 45 | 5 | 4 |
| José Ma Cancela 2019 | 66 | MulC | 750 | 0.68 | 1.972689 | 5 | 4.75 | -37.5 | 712.5 | 2850 | 50 | 3 | 4 |
|  | 66 | AQE | 750 | 0.76 | 0.665861 | 7 | 5.3 | 45 | 795 | 3180 | 50 | 3 | 4 |
| Tamine T.C. Capato et al.2020 | 67 | CON | 0 | 0.50 | 2.243729 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 67 | BGT | 250 | -3.20 | 1.810173 | 50 | 3.8 | 92 | 342 | 1710 | 45 | 2 | 5 |
|  | 67 | SE | 250 | -6.90 | 1.882764 | 56 | 3.8 | 92 | 342 | 1710 | 45 | 2 | 5 |
| Tamine T.C.et al.2020 | 68 | BGT | 250 | 0.60 | 4.879369 | 18 | 3.8 | 92 | 342 | 1710 | 45 | 2 | 5 |
|  | 68 | SE | 250 | -6.20 | 3.361292 | 17 | 3.8 | 92 | 342 | 1710 | 45 | 2 | 5 |
| Gao et al.2014 | 69 | CON | 0 | 0.03 | 0.455584 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 69 | MBE | 500 | -1.37 | 0.481756 | 37 | 2.5 | -50 | 450 | 5400 | 60 | 3 | 12 |
| A Nieuwboer et al.2014 | 70 | CON | 0 | -0.30 | 0.89595 | 77 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | 70 | SE | 250 | -0.40 | 0.774682 | 76 | 3 | 20 | 270 | 810 | 30 | 3 | 3 |
| Hsin- Hsuan Liu, PT et al.2022 | 71 | BGT | 500 | -2.64 | 2.188671 | 14 | 3.8 | -44 | 456 | 3648 | 60 | 2 | 8 |
|  | 71 | CON | 0 | -1.14 | 1.250511 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Zhenlan Li et al.2022 | 72 | MBE | 250 | -1.38 | 0.676598 | 20 | 3 | 110 | 360 | 4320 | 60 | 2 | 12 |
|  | 72 | CON | 0 | 1.95 | 0.943621 | 20 | 0 | 0 | 0 | 0 | 60 | 2 | 12 |
| Zhenlan Li et al.2022 | 73 | MBE | 500 | -1.5 | 0.676598 | 20 | 3 | 110 | 360 | 4320 | 60 | 2 | 12 |
|  | 73 | CON | 0 | 1.95 | 0.943621 | 20 | 0 | 0 | 0 | 0 | 60 | 2 | 12 |

## **List of included studies**

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# **Supplementary File 4: Assessment of** **Model Consistency**

We analyzed the data with the consistency model and the unrelated mean effect model, and compared the differences in the deviation, the number of estimated parameters in the network, and the Deviance Informative Criterion (DIC) indicators of the two models. If these are similar, it means that our research has good consistency (Wheeler et al., 2010). Comparison of these parameters indicated good consistency across models (Table 4.1).

## **Table 4.1. Consistent and UME models fit comparison**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model** | **pD** | **Residual deviance** | **Deviance** | **DIC** | **SD** |
| Consistent | 141.6 | 161.287 | 377.245 | 518.3 | 1.299 |
| UME | 139.8 | 167.196 | 383.154 | 522.5 | 1.360 |

pD: Number of estimated parameters; DIC: Deviance Informative Criterion; SD: Standard Deviation; UME: Unrelated Mean Effects. Scientific literature indicated that the main indicator to assess the model fit is the DIC. As lower DIC, better fit.

# **Supplementary File 5: Node-splitting analysis** **of** **inconsistency**

We assessed inconsistency via MBNMA node-splitting approach. This method splits and compares contributions for a particular treatment contrast into direct and indirect evidence (van Valkenhoef et al., 2016). Similar effects denote good consistency. Table 5.1 below present the results for node-splitting analysis of inconsistency in this meta-analysis. The results showed that there was no inconsistency in our study (P>0.05).

## **Table 5.1 Node-splitting analysis of inconsistency**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Comparison** |  | **p-value** | **Median** | **2.50%** | **97.50%** |
| TT\_250 vs SE\_500 |  | 0.511 |  |  |  |
| -> direct |  |  | 1.361 | -2.056 | 4.682 |
| -> indirect |  |  | 0.847 | -0.343 | 2.026 |
| -> MBNMA |  |  | 0.958 | -0.182 | 2.093 |
|  |  |  |  |  |  |
| TT\_250 vs SE\_250 |  | 0.802 |  |  |  |
| -> direct |  |  | 0.975 | -0.767 | 2.708 |
| -> indirect |  |  | 0.613 | -0.801 | 2.024 |
| -> MBNMA |  |  | 0.77 | -0.353 | 1.844 |
|  |  |  |  |  |  |
| SE\_500 vs SE\_250 |  | 0.12 |  |  |  |
| -> direct |  |  | 0.714 | -3.078 | 4.314 |
| -> indirect |  |  | -0.17 | -0.496 | -0.009 |
| -> MBNMA |  |  | -0.166 | -0.47 | -0.01 |
|  |  |  |  |  |  |
| TT\_750 vs RT\_500 |  | 0.531 |  |  |  |
| -> direct |  |  | -0.044 | -2.812 | 2.697 |
| -> indirect |  |  | 1.193 | -0.459 | 2.715 |
| -> MBNMA |  |  | 0.915 | -0.546 | 2.285 |
|  |  |  |  |  |  |
| SE\_1200 vs MulC\_1000 |  | 0.507 |  |  |  |
| -> direct |  |  | -1.004 | -4.267 | 2.182 |
| -> indirect |  |  | 0.197 | -1.197 | 1.652 |
| -> MBNMA |  |  | 0.34 | -0.908 | 1.623 |
|  |  |  |  |  |  |
| RT\_750 vs MBE\_750 |  | 0.435 |  |  |  |
| -> direct |  |  | 1.171 | -1.82 | 4.147 |
| -> indirect |  |  | -0.307 | -1.605 | 1.003 |
| -> MBNMA |  |  | -0.431 | -1.678 | 0.786 |
|  |  |  |  |  |  |
| MulC\_500 vs MBE\_250 |  | 0.628 |  |  |  |
| -> direct |  |  | -0.252 | -3.238 | 2.873 |
| -> indirect |  |  | -0.628 | -1.998 | 0.705 |
| -> MBNMA |  |  | -0.463 | -1.652 | 0.756 |
|  |  |  |  |  |  |
| RT\_500 vs Dance\_250 |  | 0.355 |  |  |  |
| -> direct |  |  | -0.751 | -3.614 | 1.947 |
| -> indirect |  |  | 1.261 | -0.352 | 2.896 |
| -> MBNMA |  |  | 1.109 | -0.225 | 2.569 |
|  |  |  |  |  |  |
| SE\_750 vs BGT\_750 |  | 0.404 |  |  |  |
| -> direct |  |  | -1.293 | -4.688 | 2.15 |
| -> indirect |  |  | 0.347 | -1.013 | 1.739 |
| -> MBNMA |  |  | 0.513 | -0.726 | 1.775 |
|  |  |  |  |  |  |
| SE\_500 vs BGT\_500 |  | 0.533 |  |  |  |
| -> direct |  |  | 0.074 | -3.408 | 3.556 |
| -> indirect |  |  | 0.529 | -0.678 | 1.795 |
| -> MBNMA |  |  | 0.495 | -0.661 | 1.718 |
|  |  |  |  |  |  |
| SE\_250 vs BGT\_500 |  | 0.17 |  |  |  |
| -> direct |  |  | -3.102 | -6.415 | 0.157 |
| -> indirect |  |  | -0.122 | -1.295 | 1.105 |
| -> MBNMA |  |  | 0.303 | -0.835 | 1.493 |
|  |  |  |  |  |  |
| SE\_250 vs BGT\_250 |  | 0.118 |  |  |  |
| -> direct |  |  | -3.143 | -6.163 | -0.205 |
| -> indirect |  |  | 0.075 | -1.075 | 1.249 |
| -> MBNMA |  |  | 0.458 | -0.593 | 1.541 |
|  |  |  |  |  |  |
| RT\_500 vs BGT\_250 |  | 0.29 |  |  |  |
| -> direct |  |  | -1.536 | -4.593 | 1.597 |
| -> indirect |  |  | 0.575 | -0.659 | 1.795 |
| -> MBNMA |  |  | 0.72 | -0.398 | 1.901 |
|  |  |  |  |  |  |
| MBE\_250 vs BGT\_250 |  | 0.515 |  |  |  |
| -> direct |  |  | 0.069 | -3.317 | 3.441 |
| -> indirect |  |  | 0.942 | -0.355 | 2.345 |
| -> MBNMA |  |  | 0.783 | -0.418 | 2.023 |
|  |  |  |  |  |  |
| MulC\_1000 vs AQE\_1500 | 0.138 |  |  |  |
| -> direct |  |  | 4.168 | -0.387 | 8.816 |
| -> indirect |  |  | -0.331 | -2.031 | 1.368 |
| -> MBNMA |  |  | -0.805 | -2.395 | 0.758 |
|  |  |  |  |  |  |
| MulC\_1000 vs AQE\_1200 | 0.463 |  |  |  |
| -> direct |  |  | 1.019 | -2.083 | 4.137 |
| -> indirect |  |  | -0.693 | -2.492 | 1.191 |
| -> MBNMA |  |  | -0.775 | -2.34 | 0.765 |
|  |  |  |  |  |  |
| MulC\_1000 vs AQE\_1000 | 0.463 |  |  |  |
| -> direct |  |  | -1.935 | -7.05 | 3.298 |
| -> indirect |  |  | -0.957 | -2.572 | 0.658 |
| -> MBNMA |  |  | -0.741 | -2.298 | 0.77 |
|  |  |  |  |  |  |
| BGT\_750 vs AQE\_1000 |  | 0.502 |  |  |  |
| -> direct |  |  | 0.813 | -2.387 | 4.076 |
| -> indirect |  |  | -0.959 | -3.084 | 1.125 |
| -> MBNMA |  |  | -0.982 | -2.676 | 0.773 |
|  |  |  |  |  |  |
| MulC\_750 vs AQE\_750 |  | 0.504 |  |  |  |
| -> direct |  |  | -0.202 | -4.773 | 4.663 |
| -> indirect |  |  | -0.806 | -2.397 | 0.827 |
| -> MBNMA |  |  | -0.725 | -2.227 | 0.747 |
|  |  |  |  |  |  |
| TT\_500 vs AE\_750 |  | 0.673 |  |  |  |
| -> direct |  |  | 0.077 | -1.945 | 2.059 |
| -> indirect |  |  | -0.692 | -2.406 | 1.036 |
| -> MBNMA |  |  | -0.33 | -1.649 | 0.956 |
|  |  |  |  |  |  |
| AQE\_500 vs AE\_750 |  | 0.416 |  |  |  |
| -> direct |  |  | 0.172 | -2.899 | 3.287 |
| -> indirect |  |  | 2.175 | 0.282 | 3.99 |
| -> MBNMA |  |  | 1.572 | -0.053 | 3.092 |
|  |  |  |  |  |  |
| BGT\_500 vs AE\_500 |  | 0.04 |  |  |  |
| -> direct |  |  | -4.225 | -6.679 | -1.796 |
| -> indirect |  |  | -0.243 | -1.577 | 1.061 |
| -> MBNMA |  |  | 0.729 | -0.555 | 1.953 |
|  |  |  |  |  |  |
| RT\_250 vs AE\_250 |  | 0.397 |  |  |  |
| -> direct |  |  | 0.031 | -3.346 | 3.425 |
| -> indirect |  |  | 1.28 | 0.25 | 2.311 |
| -> MBNMA |  |  | 1.189 | 0.2 | 2.176 |
|  |  |  |  |  |  |
| BGT\_250 vs AE\_250 |  | 0.503 |  |  |  |
| -> direct |  |  | 0.444 | -3.469 | 4.13 |
| -> indirect |  |  | 0.773 | -0.448 | 1.965 |
| -> MBNMA |  |  | 0.632 | -0.525 | 1.738 |
|  |  |  |  |  |  |
| RT\_1200 vs Placebo\_0 |  | 0.154 |  |  |  |
| -> direct |  |  | -0.086 | -2.276 | 1.995 |
| -> indirect |  |  | -2.108 | -2.997 | -1.324 |
| -> MBNMA |  |  | -1.883 | -2.708 | -1.058 |
|  |  |  |  |  |  |
| RT\_1000 vs Placebo\_0 |  | 0.379 |  |  |  |
| -> direct |  |  | -1.148 | -4.475 | 2.372 |
| -> indirect |  |  | -1.885 | -2.714 | -1.114 |
| -> MBNMA |  |  | -1.863 | -2.686 | -1.055 |
|  |  |  |  |  |  |
| MulC\_250 vs Placebo\_0 |  | 0.503 |  |  |  |
| -> direct |  |  | -0.615 | -3.264 | 1.915 |
| -> indirect |  |  | -1.275 | -2.343 | -0.357 |
| -> MBNMA |  |  | -1.197 | -2.085 | -0.318 |
|  |  |  |  |  |  |
| Dance\_750 vs Placebo\_0 | 0.592 |  |  |  |
| -> direct |  |  | 0.128 | -2.846 | 3.088 |
| -> indirect |  |  | -1.072 | -2.934 | 0.742 |
| -> MBNMA |  |  | -0.768 | -2.292 | 0.799 |
|  |  |  |  |  |  |
| Dance\_500 vs Placebo\_0 | 0.644 |  |  |  |
| -> direct |  |  | -1.332 | -3.886 | 1.32 |
| -> indirect |  |  | -0.396 | -2.14 | 1.264 |
| -> MBNMA |  |  | -0.736 | -2.184 | 0.766 |

The number after the exercise type represents the weekly dose (MET-min). AE Aerobic Exercise, AQE Aquatic Exercise, BGT Balance and Gait Training,CON Control group, MulC Multicomponent Exercise Program, RT Resistance Training, TT Treadmil traing, TC Tai Chi, SE Sensory Exercise.

# **Supplementary File 6: Non-linear functions and models fit comparison**

The different doses of exercise treatments were meta-analysed as independent and unrelated treatments (i.e., “split” NMA). This step is useful to determine which function fits the data better and should subsequently be used in a Model-Based Network Meta-Analysis (MBNMA) (Pedder, 2021). Figure 6.1 show the different responses (MD) of each dose for different treatments, respectively.



**Figure 6.1** “Split” NMA of different exercise treatment agents. AE Aerobic Exercise, AQE Aquatic Exercise, BGT Balance and Gait Training,CON Control group, MulC Multicomponent Exercise Program, RT Resistance Training, TT Treadmil traing, TC Tai Chi, SE Sensory Exercise.

Table 6.1 shows the fit indices from each of the models fitted. For our data, restricted cubic splines show the best fit and were therefore used in subsequent analyses.

## **Table 6.1** Models fit comparison

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model** | **DIC** | **SD** | **Deviance** | **Residual deviance** | **pD** |
| Emax(common treatment effects) | 647.3 | NA | 558.046 | 342.089 | 89.6 |
| Emax(random treatment effects) | 507.9 | 1.244 | 378.028 | 162.070 | 130.5 |
| Exponential(common treatment effects) | 654.4 | NA | 566.164 | 350.207 | 88.9 |
| Exponential(random treatment effects) | 506.3 | 1.251 | 377.321 | 161.364 | 129.9 |
| Restricted cubic spline(common treatment effects; 3 knots) | 569.7 | NA | 472.276 | 256.318 | 98.1 |
| Restricted cubic spline(random treatment effects; 3 knots) | 499.3 | 1.139 | 368.067 | 159.110 | 126.3 |
| Non-parametric monotonically up (common treatment effects) | 803.5 | NA | 716.452 | 500.495 | 87.7 |
| Non-parametric monotonically up (random treatment effects) | 530.9 | 2.623 | 382.635 | 166.677 | 149.1 |
| Linear (common treatment effects) | 645.8 | NA | 557.344 | 341.387 | 89.1 |
| Linear (random treatment effects) | 510.3 | 1.315 | 378.382 | 162.424 | 132.4 |

DIC = Deviance Information Criterion; SD = Between-study Standard Deviation; pD: Number of estimated parameters; NA = Not Applicable. The SD is presented as the main value and (95% Credible Intervals).

Further to model fit indices, deviance plots showing the contribution of each data point to the residual deviance are also useful to confirm the robustness of model selection (Pedder, 2021). Each data point should contribute about 1 to the posterior mean deviance, which indicates good model fit (Dias et al., 2013). The deviance plot for treatment effects confirm the robustness of our model selection (Figure 6.2).

Figure 6.2. Deviance plots at treatment-level. AE Aerobic Exercise, AQE Aquatic Exercise, BGT Balance and Gait Training,CON Control group, MulC Multicomponent Exercise Program, RT Resistance Training, TT Treadmil traing, TC Tai Chi, SE Sensory Exercise.

# **Supplementary File 7:** **Study-level risk of bias analysis**

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**Reference**

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