Supplementary File 1. PRISMA checklist

Section and Topic	Item	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Title page
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Abstract
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Introduction
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Introduction
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Methods, Study selection and eligibility
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Methods, Data sources and searches
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Methods, Study selection and eligibility
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Methods, Study selection and eligibility
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Methods, Data extraction
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Methods, Data extraction
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Methods, Data extraction
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Methods, Assessment of risk of bias
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Method, Statistical analysis
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Method, Statistical analysis
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Method, Statistical analysis
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Method, Statistical analysis
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Method, Statistical analysis
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Method, Statistical analysis
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Method, Statistical analysis
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Method, Statistical analysis

Section and Topic	Item	Checklist item	Location where item is reported
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Method, Statistical analysis
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Results, Study selection
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Results, Study selection, Supplemental Material 3
Study characteristics	17	Cite each included study and present its characteristics.	Results, Study selection
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Results, Characteristic of the included studies, Table 1
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Results
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Results, Meta-analyses
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Results, Meta-analyses
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Results
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Results
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Results
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Results
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Discussion
	23b	Discuss any limitations of the evidence included in the review.	Discussion
	23c	Discuss any limitations of the review processes used.	Discussion
	23d	Discuss implications of the results for practice, policy, and future research.	Discussion
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Methods, Study design
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Methods, Study design
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	N/A
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Funding
Competing interests	26	Declare any competing interests of review authors.	Competing interest

Section and Topic	Item	Checklist item	Location where item is reported
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Not appropriate

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71
For more information, visit: http://www.prisma-statement.org/

Supplementary Material 2. Detailed explanation of the procedure used to calculate the SMOS

Below, we report two examples (one clinically relevant and one not clinically relevant); they are intended to clarify the statistical steps used to calculate the SMOS and why we should consider the value of 1 SMOS as a cut-off to determine the clinical relevance between the two treatments.

We could consider the article by Hesse et al. (2005), which studied the function measured by the FMA (UE).

- We know that the MCID of the FMA (UE) is 5.25 points.
- This article included 21 subjects in the experimental group and 22 subjects in the control group
- In the experimental group, at the end of the treatment, the mean of the FMA (UE) is 24.6 points, and its standard deviation is 14.9 points.
- In the control group, at the end of the treatment, the mean of the FMA (UE) is 10.4 points, and its standard deviation is 7.5 points.

Therefore, the first step is to normalize the mean score at the end of the treatment of both the control and experimental groups by the MCID, creating an end-of-treatment score that indicates how many times the MCID is contained in the end-of-treatment mean for each group. Therefore, we did the following calculations:

- We divided the end-of-treatment mean of the experimental group by the MCID, i.e., 24.6/5.25=4.69. This score indicates how many times the MCID is contained in the end-of-treatment mean; in this case, 4.69 times.
- We divided the end-of-treatment mean of the control group by the MCID, i.e., 10.4/5.25=1.98. This score indicates how many times the MCID is contained in the end-of-treatment mean; in this case, 1.98 times.

The next step was to calculate the effect size (i.e., the SMOS) between the two groups, normalized by the MCID, by calculating the difference between the normalized mean of the experimental group and the normalized mean of the control group, i.e., SMOS=4.69–1.98=2.71. This result means that the experimental group has a difference of 2.71 MCID compared to the control group; considering that this value is greater than 1 SMOS (i.e., the clinically important difference represented by the MCID), we can conclude that the difference between the two treatments is clinically relevant, that is, the experimental treatment produces a difference in change compared to the clinically relevant control treatment.

In the next step, we performed the same procedure for the standard deviation; that is, we normalized the standard deviation using the MCID. This step is necessary to compute the standard error and, therefore, the confidence intervals that are needed to calculate the weight of the meta-analysis and the confidence intervals for the meta-analysis.

- We divided the end-of-treatment standard deviation of the experimental group by the MCID, i.e., 14.9/5.25=2.84
- We divided the standard deviation of the experimental group by the MCID, i.e., 7.5/5.25=1.43

The next step was to calculate the standard error of the SMOS (seSMOS), calculated as the square root of the sum of the ratios between the variance (i.e., squared standard deviation) normalized by the MCID of each group and the number of participants in the respective group. The seSMOS is needed to calculate confidence intervals and inverse variance for the meta-analysis. Therefore, we used the following formula:
$seSMOS = sqrt((2.84^2/21)+(1.42^2/22)= sqrt(8.07/21)+(2.02/22)= sqrt(0.38+0.09)= sqrt(0.472) = 0.686$

The final step is to calculate the confidence intervals using the seSMOS, first calculating the error range that seSMOS is given multiplied by 1.96 (i.e., the approximation for a 95% confidence interval), i.e., 0.686 X 1.96 = 1.34.
Then we calculate:

- The lower bound of the confidence interval with the following formula: SMOS – 1.34 = 2.71 – 1.34 = 1.36

- The upper bound of the confidence interval with the following formula: SMOS + 1.34 = 2.71 + 1.34 = 4.05

Thus, in conclusion, the final SMOS for this study was 2.71 (95% CI: 1.36, 4.05). The interpretation is that this SMOS is clinically relevant because it is greater than 1 SMOS, i.e., the difference between the experimental group and the control group exceeds the MCID (in this case by 2.71 times).

Now, we could consider the article by Daunoraviciene et al. 2018, which studied the function measured by the FMA (UE).

- We know that the MCID of the FMA for the upper limb is 5.25 points.
- This article included 17 subjects in the experimental group and 17 subjects in the control group
- In the experimental group, at the end of the treatment, the mean of the FMA (UE) is 45.17 points, and its standard deviation is 18.48 points.
- In the control group, at the end of the treatment, the mean of the FMA (UE) is 41.76 points, and its standard deviation is 15.41 points.

We perform the same procedure, normalizing for the MCID the final score of both the control group and the experimental group, creating an end-of-treatment score normalized for the MCID. Therefore, we did the following calculations:

- We divided the end-of-treatment mean of the experimental group by the MCID, i.e., 45.17/5.25=8.60. This score indicates how many times the MCID is contained in the end-of-treatment mean; in this case, it is 8.60 times.
- We divided the end-of-treatment mean of the control group by the MCID, i.e., 41.76/5.25=7.95. This score indicates how many times the MCID is contained in the end-of-treatment mean; in this case, it is 7.95 times.

The next step was to calculate the effect size (i.e., SMOS) between the two groups, normalized by the MCID, by taking the difference between the normalized mean of the experimental group and the normalized mean of the control group, i.e., SMOS=8.60-7.95=0.65. This result means that the experimental group has a difference of 0.65 MCID compared to the control group; considering that this value is less than 1 SMOS (i.e., the clinically important difference represented by the MCID), we can conclude that the difference between the two treatments is not clinically relevant, that is, that the experimental treatment produces a difference in change compared to the control treatment that is not clinically relevant.

In the next step, we perfomed the same procedure for the standard deviation; that is, we normalized the standard deviation for the MCID. This step is necessary to calculate the standard error and, therefore, the confidence intervals that are necessary to calculate the weight of the meta-analysis and the confidence intervals for the meta-analysis.

- We divided the standard deviation of the experimental group at the end of treatment by the MCID, i.e., 18.48/5.25=3.52.
- We divided the standard deviation of the experimental group by the MCID, i.e., 15.41/5.25=2.93.

The next step was to calculate the standard error of the SMOS (seSMOS), calculated as the square root of the sum of the ratios of the variance (i.e., squared standard deviation) normalized by the MCID of each group to the number of participants in the respective group. The seSMOS is needed to calculate confidence intervals and inverse variance. Therefore, we used the following formula:
seSMOS = sqrt((3.522/17)+(2.932/17)= sqrt(12.39/17)+(8.58/17)= sqrt(0.79+0.50)= sqrt 1.29= 1.14

The final step is to calculate the confidence intervals using the seSMOS, first calculating the error range that seSMOS will give multiplied by 1.96 (an approximation for a 95% confidence interval), i.e., 1.14 X 1.96 = 2.234.
Then we calculate

- The lower limit of the confidence interval with the following formula: SMOS – 2.234= 0.65 – 2.234= -1.584
- The upper limit of the confidence interval with the following formula: SMOS + 2.234= 0.65 + 2.234= 2.975

Thus, in conclusion, the final SMOS for this study was 0.65 (95% CI: -1.584, 2.975). The interpretation is that this SMOS is not clinically relevant because it is less than 1 SMOS, i.e., the difference between the experimental group and the control group does not exceed the MCID (in this case, it only exceeds 0.65 times)

Then, we calculated the SMOS for each study using confidence intervals. Finally, the SMOS for each study were meta-analyzed as described in the methods.

Supplementary Material 3. List of included articles in the systematic review

1. Abdullah HA, Tarry C, Lambert C, Barreca S, Allen BO. Results of clinicians using a therapeutic robotic system in an inpatient stroke rehabilitation unit. Journal of NeuroEngineering and Rehabilitation 2011;8:50
2. Aisen ML, Krebs HI, Hogan N, McDowell F, Volpe BT. The effect of robot- assisted therapy and rehabilitative training on motor recovery following stroke. Arch Neurol. 1997 Apr;54(4):443-6.
3. Ang KK, Guan C, Phua KS, Wang C, Zhou L, Tang KY, et al. Brain-computer interface-based robotic end effector system for wrist and hand rehabilitation: results of a three- armed randomized controlled trial for chronic stroke. Frontiers in Neuroengineering 2014;7:30.
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5. Bayındır O, Akyüz G, Sekban N. The effect of adding robot-assisted hand rehabilitation to conventional rehabilitation program following stroke: A randomized-controlled study. Turk J Phys Med Rehabil. 2022 Jun 1;68(2):254-261.
6. Brokaw EB, Nichols D, Holley RJ, Lum PS. Robotic therapy provides a stimulus for upper limb motor recovery after stroke that is complementary to and distinct from conventional therapy. Neurorehabilitation and Neural Repair 2014;28(4): 367–76.
7. Budhota A, Chua KSG, Hussain A, Kager S, Cherpin A, Contu S, Vishwanath D, Kuah CWK, Ng CY, Yam LHL, Loh YJ, Rajeswaran DK, Xiang L, Burdet E, Campolo D. Robotic Assisted Upper Limb Training Post Stroke: A Randomized Control Trial Using Combinatory Approach Toward Reducing Workforce Demands. Front Neurol. 2021 Jun 2;12:622014.
8. Burgar CG, Lum PS, Scremin AM, Garber SL, Van der Loos HF, Kenney D, et al. Robot-assisted upper-limb therapy in acute rehabilitation setting following stroke: Department of Veterans Affairs multisite clinical trial. Journal of Rehabilitation Research and Development 2011;48 (4):445–58.
9. Bustamante Valles K, Montes S, Madrigal Mde J, Burciaga A, Martínez ME, Johnson MJ. Technology-assisted stroke rehabilitation in Mexico: a pilot randomized trial comparing traditional therapy to circuit training in a robot/ technology- assisted therapy gym. Journal of NeuroEngineering and Rehabilitation 2016;13:83.
10. Calabrò RS, Accorinti M, Porcari B, Carioti L, Ciatto L, Billeri L, Andronaco VA, Galletti F, Filoni S, Naro A. Does hand robotic rehabilitation improve motor function by rebalancing interhemispheric connectivity after chronic stroke? Encouraging data from a randomised-clinical-trial. Clin Neurophysiol. 2019 May;130(5):767-780.
11. Cameirão M, Bermúdez I Badia S, Duarte E, Verschure PF. Virtual reality based rehabilitation speeds up functional recovery of the upper extremities after stroke: a randomized controlled pilot study in the acute phase of stroke using the rehabilitation gaming system. Restor Neurol Neurosci. 2011;29(5):287-98.
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13. Chen ZJ, He C, Guo F, Xiong CH, Huang XL. Exoskeleton-Assisted Anthropomorphic Movement Training (EAMT) for Poststroke Upper Limb Rehabilitation: A Pilot Randomized Controlled Trial. Arch Phys Med Rehabil. 2021 Nov;102(11):2074-2082.

14. Chen YW, Chiang WC, Chang CL, Lo SM, Wu CY. Comparative effects of EMG-driven robot-assisted therapy versus task-oriented training on motor and daily function in patients with stroke: a randomized cross-over trial. J Neuroeng Rehabil. 2022 Jan 16;19(1):6.
15. Chinembiri B, Ming Z, Kai S, Xiu Fang Z, Wei C. The fourier M2 robotic machine combined with occupational therapy on post-stroke upper limb function and independence-related quality of life: A randomized clinical trial. Top Stroke Rehabil. 2021 Jan;28(1):1-18.
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18. Coskunsu DK, Akcay S, Ogul OE, Akyol DK, Ozturk N, Zileli F, Tuzun BB, Krespi Y. Effects of robotic rehabilitation on recovery of hand functions in acute stroke: A preliminary randomized controlled study. Acta Neurol Scand. 2022 Nov;146(5):499-511.
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20. Daunoraviciene K, Adomaviciene A, Grigonyte A, Griškevičius J, Juocevicius A. Effects of robot-assisted training on upper limb functional recovery during the rehabilitation of poststroke patients. Technol Health Care. 2018;26(S2):533-542.
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29. Gueye T, Dedkova M, Rogalewicz V, Grunerova-Lippertova M, Angerova Y. Early post-stroke rehabilitation for upper limb motor function using virtual reality and exoskeleton: equally efficient in older patients. Neurol Neurochir Pol. 2021;55(1):91-96.
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Supplementary Material 4. List of excluded studies after full text reading in the selection and cross-referencing phases with reasons for exclusion

Number	Reference	Reason for exclusion
1	Acosta AM, Dewald HA, Dewald JP. Pilot study to test effectiveness of video game on reaching performance in stroke. J Rehabil Res Dev. 2011;48(4):431-44. doi: 10.1682/jrrd.2010.04.0052. PMID: 21674392; PMCID: PMC3316474.	Other study design
2	Bergmann J, Krewer C, Jahn K, Müller F. Robot-assisted gait training to reduce pusher behavior: A randomized controlled trial. Neurology. 2018 Oct 2;91(14):e1319-e1327. doi: 10.1212/WNL.0000000000006276. Epub 2018 Aug 31. PMID: 30171076.	About lower limbs
3	Buschfort R, Brocke J, Hess A, Werner C, Waldner A, Hesse S. Arm studio to intensify the upper limb rehabilitation after stroke: concept, acceptance, utilization and preliminary clinical results. J Rehabil Med. 2010 Apr;42(4):310-4. doi: 10.2340/16501977-0517. PMID: 20461332.	Other study design
4	Byl NN, Abrams GM, Pitsch E, Fedulow I, Kim H, Simkins M, Nagarajan S, Rosen J. Chronic stroke survivors achieve comparable outcomes following virtual task specific repetitive training guided by a wearable robotic orthosis (UL-EXO7) and actual task specific repetitive training guided by a physical therapist. J Hand Ther. 2013 Oct-Dec;26(4):343-52; quiz 352. doi: 10.1016/j.jht.2013.06.001. Epub 2013 Aug 1. PMID: 23911077.	Other study design
5	Cameirão MS, Badia SB, Duarte E, Frisoli A, Verschure PF. The combined impact of virtual reality neurorehabilitation and its interfaces on upper extremity functional recovery in patients with chronic stroke. Stroke. 2012 Oct;43(10):2720-8. doi: 10.1161/STROKEAHA.112.653196. Epub 2012 Aug 7. PMID: 22871683.	Other study design
6	Comani S, Velluto L, Schinaia L, Cerroni G, Serio A, Buzzelli S, Sorbi S, Guarnieri B. Monitoring Neuro-Motor Recovery From Stroke With High-Resolution EEG, Robotics and Virtual Reality: A Proof of Concept. IEEE Trans Neural Syst Rehabil Eng. 2015 Nov;23(6):1106-16. doi: 10.1109/TNSRE.2015.2425474. Epub 2015 Apr 22. PMID: 25910194.	Other study design
7	Conroy SS, Wittenberg GF, Krebs HI, Zhan M, Bever CT, Whitall J. Robot-Assisted Arm Training in Chronic Stroke: Addition of Transition-to-Task Practice. Neurorehabil Neural Repair. 2019 Sep;33(9):751-761. doi: 10.1177/1545968319862558. Epub 2019 Jul 22. PMID: 31328671.	Control group robotic rehabilitation
8	Frisoli A, Procopio C, Chisari C, Creatini I, Bonfiglio L, Bergamasco M, Rossi B, Carboncini MC. Positive effects of robotic exoskeleton training of upper limb reaching movements after stroke. J Neuroeng Rehabil. 2012 Jun 9;9:36. doi: 10.1186/1743-0003-9-36. PMID: 22681653; PMCID: PMC3443436.	Control group healthy people
9	Gijbels D, Lamers I, Kerkhofs L, Alders G, Knippenberg E, Feys P. The Armeo Spring as training tool to improve upper limb functionality in multiple sclerosis: a pilot study. J Neuroeng Rehabil. 2011 Jan 24;8:5. doi: 10.1186/1743-0003-8-5. PMID: 21261965; PMCID: PMC3037310.	Other disease
10	Grimm F, Naros G, Gharabaghi A. Closed-Loop Task Difficulty Adaptation during Virtual Reality Reach-to-Grasp Training Assisted with an Exoskeleton for Stroke Rehabilitation. Front Neurosci. 2016 Nov 15;10:518. doi: 10.3389/fnins.2016.00518. PMID: 27895550; PMCID: PMC5108796.	Other study design
11	Hollenstein, Christoph & Cabri, Jan. (2011). Zusatztherapie mit computerunterstütztem Trainingssystem im Vergleich zu ergotherapeutischer Armgruppentherapie. neuroreha. 3. 40-42. 10.1055/s-0031-1273066.	Other language
12	House G, Burdea G, Polistico K, Roll D, Kim J, Grampurohit N, Damiani F, Keeler S, Hundal J, Pollack S. Integrative rehabilitation of residents chronic post-stroke in skilled nursing facilities: the design and evaluation of the BrightArm Duo. Disabil Rehabil Assist Technol. 2016 Nov;11(8):683-94. doi: 10.3109/17483107.2015.1068384. Epub 2015 Jul 28. PMID:	Other study design

	26218427.	
13	Hsieh YW, Liing RJ, Lin KC, Wu CY, Liou TH, Lin JC, Hung JW. Sequencing bilateral robot-assisted arm therapy and constraint-induced therapy improves reach to press and trunk kinematics in patients with stroke. J Neuroeng Rehabil. 2016 Mar 22;13:31. doi: 10.1186/s12984-016-0138-5. PMID: 27000446; PMCID: PMC4802889.	Control group robotic rehabilitation
14	Hung CS, Hsieh YW, Wu CY, Chen YJ, Lin KC, Chen CL, Yao KG, Liu CT, Horng YS. Hybrid Rehabilitation Therapies on Upper-Limb Function and Goal Attainment in Chronic Stroke. OTJR (Thorofare N J). 2019 Apr;39(2):116-123. doi: 10.1177/1539449218825438. Epub 2019 Mar 5. PMID: 30834812.	Control group robotic rehabilitation
15	Husemann B, Müller F, Krewer C, Heller S, Koenig E. Effects of locomotion training with assistance of a robot-driven gait orthosis in hemiparetic patients after stroke: a randomized controlled pilot study. Stroke. 2007 Feb;38(2):349-54. doi: 10.1161/01.STR.0000254607.48765.cb. Epub 2007 Jan 4. PMID: 17204680.	About lower limbs
16	Kahn, Leonard & Averbuch, Michele & Rymer, William & Reinkensmeyer, David. (2001). Comparison of Robot-Assisted Reaching to Free Reaching in Promoting Recovery From Chronic Stroke.	Other outcome measures
17	Kahn LE, Zygman ML, Rymer WZ, Reinkensmeyer DJ. Robot-assisted reaching exercise promotes arm movement recovery in chronic hemiparetic stroke: a randomized controlled pilot study. J Neuroeng Rehabil. 2006 Jun 21;3:12. doi: 10.1186/1743-0003-3-12. PMID: 16790067; PMCID: PMC1550245.	Other outcome measures
18	Khor KX, Chin PJH, Yeong CF, Su ELM, Narayanan ALT, Abdul Rahman H, Khan QI. Portable and Reconfigurable Wrist Robot Improves Hand Function for Post-Stroke Subjects. IEEE Trans Neural Syst Rehabil Eng. 2017 Oct;25(10):1864-1873. doi: 10.1109/TNSRE.2017.2692520. Epub 2017 Apr 7. PMID: 28410110.	Other study design
19	Lambercy O, Dovat L, Yun H, Wee SK, Kuah CW, Chua KS, Gassert R, Milner TE, Teo CL, Burdet E. Effects of a robot-assisted training of grasp and pronation/supination in chronic stroke: a pilot study. J Neuroeng Rehabil. 2011 Nov 16;8:63. doi: 10.1186/1743-0003-8-63. PMID: 22087842; PMCID: PMC3280186.	Other study design
20	Lu, J.-L & Chen, Z.-M & Wu, H. & YANG, Wei & Chen, H.-H. (2017). Effect of lower limb rehabilitation robot on lower limb motor function of hemiplegic patients after stroke. Chinese Journal of Contemporary Neurology and Neurosurgery. 17. 334-339. 10.3969/j.issn.1672-6731.2017.05.004.	Other language
21	Mayr A, Kofler M, Saltuari L. ARMOR: Elektromechanischer Roboter für das Bewegungstraining der oberen Extremität nach Schlaganfall. Prospektive randomisierte kontrollierte Pilotstudie Handchir Mikrochir Plast Chir. 2008 Feb;40(1):66-73. German. doi: 10.1055/s-2007-989425. PMID: 18322901.	Other language
22	Merians AS, Tunik E, Adamovich SV. Virtual reality to maximize function for hand and arm rehabilitation: exploration of neural mechanisms. Stud Health Technol Inform. 2009;145:109-25. PMID: 19592790; PMCID: PMC4554695.	Other study design
23	Mihelj, Matjaž & Novak, Vesna & Milavec, Maja & Ziherl, Jaka & Olenšek, Andrej & Munih, Marko. (2012). Virtual Rehabilitation Environment Using Principles of Intrinsic Motivation and Game Design. Teleoperators and Virtual Environments - Presence. 21. 1-15. 10.1162/PRES_a_00078.	Other study design
24	Morone G, Bragoni M, Iosa M, De Angelis D, Venturiero V, Coiro P, Pratesi L, Paolucci S. Who may benefit from robotic-assisted gait training? A randomized clinical trial in patients with subacute stroke. Neurorehabil Neural Repair. 2011 Sep;25(7):636-44. doi: 10.1177/1545968311401034. Epub 2011 Mar 26. PMID: 21444654.	About lower limbs
25	Ochi M, Wada F, Saeki S, Hachisuka K. Gait training in subacute non-ambulatory stroke patients using a full weight-bearing gait-assistance robot: A prospective, randomized, open, blinded-endpoint trial. J Neurol Sci. 2015;353(1-2):130-6. doi: 10.1016/j.jns.2015.04.033. Epub 2015 May 1. PMID: 25956233.	About lower limbs

26	Picelli A, Munari D, Modenese A, Filippetti M, Saggioro G, Gandolfi M, Corain M, Smania N. Robot-assisted arm training for treating adult patients with distal radius fracture: a proof-of-concept pilot study. Eur J Phys Rehabil Med. 2020 Aug;56(4):444-450. doi: 10.23736/S1973-9087.20.06112-2. Epub 2020 Feb 25. PMID: 32096616.	Other disease
27	Reinkensmeyer DJ, Maier MA, Guigon E, Chan V, Akoner O, Wolbrecht ET, Cramer SC, Bobrow JE. Do robotic and non-robotic arm movement training drive motor recovery after stroke by a common neural mechanism? Experimental evidence and a computational model. Annu Int Conf IEEE Eng Med Biol Soc. 2009;2009:2439-41. doi: 10.1109/IEMBS.2009.5335353. PMID: 19965205.	Other study design
28	Sczesny-Kaiser M, Trost R, Aach M, Schildhauer TA, Schwenkreis P, Tegenthoff M. A Randomized and Controlled Crossover Study Investigating the Improvement of Walking and Posture Functions in Chronic Stroke Patients Using HAL Exoskeleton - The HALESTRO Study (HAL-Exoskeleton STROke Study). Front Neurosci. 2019 Mar 29;13:259. doi: 10.3389/fnins.2019.00259. PMID: 30983953; PMCID: PMC6450263.	About lower limbs
29	Simkins M, Fedulow I, Kim H, Abrams G, Byl N, Rosen J. Robotic Rehabilitation Game Design for Chronic Stroke. Games Health J. 2012 Dec;1(6):422-30. doi: 10.1089/g4h.2012.0044. PMID: 26192059.	Other study design
30	Sivan M, Gallagher J, Makower S, Keeling D, Bhakta B, O'Connor RJ, Levesley M. Home-based Computer Assisted Arm Rehabilitation (hCAAR) robotic device for upper limb exercise after stroke: results of a feasibility study in home setting. J Neuroeng Rehabil. 2014 Dec 12;11:163. doi: 10.1186/1743-0003-11-163. PMID: 25495889; PMCID: PMC4280043.	Other study design
31	S. Ueki *et al*., "Development of a Hand-Assist Robot With Multi-Degrees-of-Freedom for Rehabilitation Therapy," in *IEEE/ASME Transactions on Mechatronics*, vol. 17, no. 1, pp. 136-146, Feb. 2012, doi: 10.1109/TMECH.2010.2090353.	Other study design
32	Transformational technologies in single-event neurological conditions: applying lessons learned in stroke to cerebral palsy (August 14-15, 2008). Neurorehabil Neural Repair. 2009 Sep;23(7):747-65. doi: 10.1177/1545968309338028. PMID: 19710288.	Congress proceedings
33	Zhang H, Austin H, Buchanan S, Herman R, Koeneman J, He J. Feasibility studies of robot-assisted stroke rehabilitation at clinic and home settings using RUPERT. IEEE Int Conf Rehabil Robot. 2011;2011:5975440. doi: 10.1109/ICORR.2011.5975440. PMID: 22275640.	Other study design

Supplementary Material 5. Minimal Clinically Important Difference values of included outcome measures

Domain	Assessment tool	MCID values	Reference
Activity of daily living	Barthel Index (BI)	35 points	Castiglia SF, Galeoto G, Lauta A, Palumbo A, Tirinelli F, Viselli F, Santilli V, Sacchetti ML. The culturally adapted Italian version of the Barthel Index (IcaBI): assessment of structural validity, inter-rater reliability and responsiveness to clinically relevant improvements in patients admitted to inpatient rehabilitation centers. Funct Neurol. 2017 Oct/Dec;22(4):221-228. doi: 10.11138/fneur/2017.32.4.221.
	Stroke Impact Scale (SIS) ADL	5.9 points	Lin KC, Fu T, Wu CY, Wang YH, Liu JS, Hsieh CJ, Lin SF. Minimal detectable change and clinically important difference of the Stroke Impact Scale in stroke patients. Neurorehabil Neural Repair. 2010 Jun;24(5):486-92. doi: 10.1177/1545968309356295.
	Functional Independence Measure (FIM)	22 points	Beninato M, Gill-Body KM, Salles S, Stark PC, Black-Schaffer RM, Stein J. Determination of the minimal clinically important difference in the FIM instrument in patients with stroke. Arch Phys Med Rehabil. 2006 Jan;87(1):32-9. doi: 10.1016/j.apmr.2005.08.130.
	Functional Independence Measure (FIM); motricity	17 points	Beninato M, Gill-Body KM, Salles S, Stark PC, Black-Schaffer RM, Stein J. Determination of the minimal clinically important difference in the FIM instrument in patients with stroke. Arch Phys Med Rehabil. 2006 Jan;87(1):32-9. doi: 10.1016/j.apmr.2005.08.130.
	Chedoke Arm and Hand Activity Inventory	6.3 points	Sivan M, O'Connor RJ, Makower S, Levesley M, Bhakta B. Systematic review of outcome measures used in the evaluation of robot-assisted upper limb exercise in stroke. J Rehabil Med. 2011 Feb;43(3):181-9. doi: 10.2340/16501977-0674.
	ABILHAND	0.35 points	Wang TN, Lin KC, Wu CY, Chung CY, Pei YC, Teng YK. Validity, responsiveness, and clinically important difference of the ABILHAND questionnaire in patients with stroke. Arch Phys Med Rehabil. 2011 Jul;92(7):1086-91. doi: 10.1016/j.apmr.2011.01.020.
	Disability of the Arm, Shoulder and Hand (QuickDASH)	10 points	Fan ZJ, Smith CK, Silverstein BA. Assessing validity of the QuickDASH and SF-12 as surveillance tools among workers with neck or upper extremity musculoskeletal disorders. J Hand Ther. 2008 Oct-Dec;21(4):354-65. doi: 10.1197/j.jht.2008.02.001.
Dexterity	Box and Block Test (BBT)	6/min	Sivan M, O'Connor RJ, Makower S, Levesley M, Bhakta B. Systematic review of outcome measures used in the evaluation of robot-assisted upper limb exercise in stroke. J Rehabil Med. 2011 Feb;43(3):181-9. doi: 10.2340/16501977-0674.
	The Nine-Hole Peg Test (NHPT)	32 points	Sivan M, O'Connor RJ, Makower S, Levesley M, Bhakta B. Systematic review of outcome measures used in the evaluation of robot-assisted upper limb exercise in stroke. J Rehabil Med. 2011 Feb;43(3):181-9. doi: 10.2340/16501977-0674.
Arm function	Action Research Arm Test (ARAT)	12 points	Lang CE, Edwards DF, Birkenmeier RL, Dromerick AW. Estimating minimal clinically important differences of upper-extremity measures early after stroke. Arch Phys Med Rehabil. 2008 Sep;89(9):1693-700. doi: 10.1016/j.apmr.2008.02.022.
	Fugl-Meyer Assessment (FMA) arm motricity	7.25 points	Page SJ, Fulk GD, Boyne P. Clinically important differences for the upper-extremity Fugl-Meyer Scale in people with minimal to moderate impairment due to chronic stroke. Phys Ther. 2012 Jun;92(6):791-8. doi: 10.2522/ptj.20110009.
	the Fugl-Meyer Assessment upper extremity (FMA-UE)	5.25 points	Page SJ, Fulk GD, Boyne P. Clinically important differences for the upper-extremity Fugl-Meyer Scale in people with minimal to moderate impairment due to chronic stroke. Phys Ther. 2012 Jun;92(6):791-8. doi: 10.2522/ptj.20110009.

	the Fugl-Meyer Assessment (FMA) hand/wrist	4.25 points	Page SJ, Fulk GD, Boyne P. Clinically important differences for the upper-extremity Fugl-Meyer Scale in people with minimal to moderate impairment due to chronic stroke. Phys Ther. 2012 Jun;92(6):791-8. doi: 10.2522/ptj.20110009.
	The Wolf Motor Function Test (WMFT)	1 point	Lang CE, Edwards DF, Birkenmeier RL, Dromerick AW. Estimating minimal clinically important differences of upper-extremity measures early after stroke. Arch Phys Med Rehabil. 2008 Sep;89(9):1693-700. doi: 10.1016/j.apmr.2008.02.022.
	The Wolf Motor Function Test (WMFT), time	-19 points	Lang CE, Edwards DF, Birkenmeier RL, Dromerick AW. Estimating minimal clinically important differences of upper-extremity measures early after stroke. Arch Phys Med Rehabil. 2008 Sep;89(9):1693-700. doi: 10.1016/j.apmr.2008.02.022.
	Shoulder Disability Questionnaire (SDQ)	N.R.	
	Frenchay Arm Test (FAT)	N.R.	
	Motricity Index (MI)	13 points	Lin C, Arevalo YA, Harvey RL, Prabhakaran S, Martin KD. The minimal clinically important difference of the motricity index score. Top Stroke Rehabil. 2023 Apr;30(3):298-303. doi: 10.1080/10749357.2022.2031532.
	The *Arm Motor Ability Test* (AMAT)	0.40 points	Fulk G, Martin R, Page SJ. Clinically important difference of the arm Motor Ability Test in stroke survivors. Neurorehabil Neural Repair. 2017 Mar;31(3):272-279. doi: 10.1177/1545968316680486.
	Motor Activity Log	1 point	Simpson LA, Eng JJ. Functional recovery following stroke: capturing changes in upper-extremity function. Neurorehabil Neural Repair. 2013 Mar-Apr;27(3):240-50. doi: 10.1177/1545968312461719.
	SIS hand	17.8 points	Lin KC, Fu T, Wu CY, Wang YH, Liu JS, Hsieh CJ, Lin SF. Minimal detectable change and clinically important difference of the Stroke Impact Scale in stroke patients. Neurorehabil Neural Repair. 2010 Jun;24(5):486-92. doi: 10.1177/1545968309356295.
	Range of motion	N.R.	
	Motor status score	N.R.	
Mobility	SIS mobility	4.5 points	Lin KC, Fu T, Wu CY, Wang YH, Liu JS, Hsieh CJ, Lin SF. Minimal detectable change and clinically important difference of the Stroke Impact Scale in stroke patients. Neurorehabil Neural Repair. 2010 Jun;24(5):486-92. doi: 10.1177/1545968309356295.
Muscle tone	Ashworth Scale	1 point	Clinical Review Report: abobotulinumtoxinA (Dysport Therapeutic): (Ipsen Biopharmaceuticals Canada Inc.): Indication: For the symptomatic treatment of lower-limb spasticity in pediatric patients 2 years of age and older [Internet]. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2018 Aug. Appendix 5, Validity of Outcome Measures. Available from: https://www.ncbi.nlm.nih.gov/books/NBK540254/
	modified Ashworth Scale (MAS)	1 point	Clinical Review Report: abobotulinumtoxinA (Dysport Therapeutic): (Ipsen Biopharmaceuticals Canada Inc.): Indication: For the symptomatic treatment of lower-limb spasticity in pediatric patients 2 years of age and older [Internet]. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2018 Aug. Appendix 5, Validity of Outcome Measures. Available from: https://www.ncbi.nlm.nih.gov/books/NBK540254/
Pain	Visual Analog Scale (VAS)	8.6 points	Rozevink SG, van der Sluis CK, Hijmans JM. HoMEcare aRm rehabiLItatioN (MERLIN): preliminary evidence of long term

			effects of telerehabilitation using an unactuated training device on upper limb function after stroke. J Neuroeng Rehabil. 2021 Sep 19;18(1):141. doi: 10.1186/s12984-021-00934-z.
	Numeric Rating Pain Scale (NRPS)	1 point	Salaffi F, Stancati A, Silvestri CA, Ciapetti A, Grassi W. Minimal clinically important changes in chronic musculoskeletal pain intensity measured on a numerical rating scale. Eur J Pain. 2004 Aug;8(4):283-91. doi: 10.1016/j.ejpain.2003.09.004.
Muscle strength	Medical Research Council (MRC)	1 point	Merkies ISJ, Lawo JP, Edelman JM, et al. Minimum clinically important difference analysis confirms the efficacy of IgPro10 in CIDP: the PRIMA trial. *J Peripher Nerv Syst*. 2017;22(2):149-152. doi:10.1111/jns.12204
	Hand-Grip Strength by Dynamometry	5 points	Kim JK, Park MG, Shin SJ. What is the minimum clinically important difference in grip strength? Clin Orthop Relat Res. 2014 Aug;472(8):2536-41. doi: 10.1007/s11999-014-3666-y.
	Pinch	N.R.	
	Motor Power Scale (MP)	N.R.	
	SIS Strength	9.2 points	Lin KC, Fu T, Wu CY, Wang YH, Liu JS, Hsieh CJ, Lin SF. Minimal detectable change and clinically important difference of the Stroke Impact Scale in stroke patients. Neurorehabil Neural Repair. 2010 Jun;24(5):486-92. doi: 10.1177/1545968309356295.

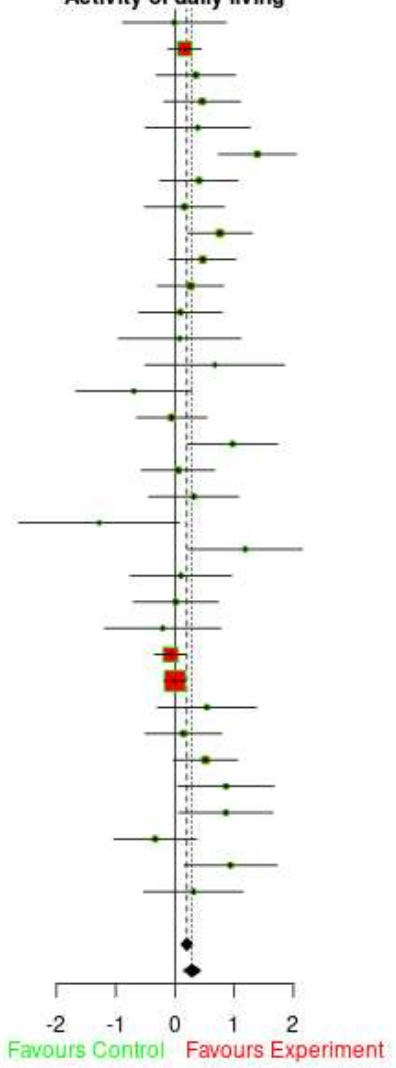
Abbreviation: MCID, minimal clinical important difference; N.R. not retrieved

Supplementary Material 6. Meta-analyses for each outcome considering the statistical significance

a) Activity of daily living

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMD [95% CI]
Aisen et al. 1997	25.60	7.23	10	25.70	12.25	10	1.2%	2.0%	-0.01 [-0.89; 0.87]
Aprile et al. 2020	60.10	10.62	91	58.40	10.08	99	11.1%	6.4%	0.16 [-0.12; 0.45]
Burgar et al. 2011	49.40	21.00	17	42.80	15.00	18	2.0%	3.0%	0.36 [-0.31; 1.02]
Carpinella et al. 2020	109.20	15.39	19	100.70	20.43	19	2.2%	3.1%	0.46 [-0.19; 1.11]
Chen et al. 2021	71.00	12.82	10	66.00	11.91	10	1.1%	2.0%	0.39 [-0.50; 1.27]
Chinembiri et al. 2021	71.80	9.20	20	54.00	14.70	25	2.1%	3.0%	1.39 [0.73; 2.05]
Conroy et al. 2011	75.12	17.85	17	68.21	15.39	19	2.1%	3.0%	0.41 [-0.25; 1.07]
Daunoraviciene et al. 2018	31.94	18.10	17	27.76	31.42	17	2.0%	3.0%	0.16 [-0.51; 0.83]
Fasoli et al. 2004	53.50	9.86	30	44.60	13.26	26	3.0%	3.8%	0.76 [0.21; 1.30]
Gueye et al. 2021	110.80	8.17	25	104.90	15.49	25	2.8%	3.7%	0.47 [-0.09; 1.03]
Hesse et al. 2014	68.00	17.70	24	62.80	20.80	25	2.8%	3.7%	0.26 [-0.30; 0.83]
Hsieh et al. 2017	103.69	48.00	16	99.80	34.08	15	1.8%	2.8%	0.09 [-0.61; 0.80]
Hwang et al. 2016	47.60	7.50	9	47.00	6.20	6	0.8%	1.6%	0.08 [-0.95; 1.11]
Iwamoto et al. 2019	7.50	6.13	6	3.42	4.98	6	0.6%	1.3%	0.67 [-0.50; 1.85]
Kutner et al. 2010	67.50	17.70	11	80.00	16.30	7	0.9%	1.7%	-0.69 [-1.67; 0.29]
Lee et al. 2016	53.91	18.92	22	54.91	16.78	22	2.6%	3.5%	-0.05 [-0.65; 0.54]
Lee et al. 2018	81.60	7.75	15	70.47	13.67	15	1.5%	2.5%	0.97 [0.21; 1.74]
Liao et al. 2011	117.70	23.30	20	116.70	13.01	20	2.3%	3.3%	0.05 [-0.57; 0.67]
Lum et al. 2002	54.70	8.29	13	52.00	8.23	14	1.6%	2.5%	0.32 [-0.44; 1.08]
Lum et al. 2006	50.90	5.39	6	58.00	4.65	5	0.5%	1.0%	-1.28 [-2.64; 0.08]
Masiero et al. 2006	55.97	13.89	10	36.10	17.88	10	1.0%	1.7%	1.19 [0.22; 2.16]
Masiero et al. 2011	63.55	29.65	11	60.92	17.75	10	1.2%	2.1%	0.10 [-0.75; 0.96]
Masiero et al. 2014	67.67	26.36	14	67.33	18.69	16	1.7%	2.7%	0.01 [-0.70; 0.73]
Page et al. 2013	41.57	8.15	8	44.17	14.91	8	0.9%	1.7%	-0.20 [-1.19; 0.78]
Rémy Néris et al. 2021	109.16	20.06	105	110.63	19.58	103	12.2%	6.5%	-0.07 [-0.35; 0.20]
Rodgers et al. 2020	50.80	22.50	220	50.80	21.10	194	24.1%	7.4%	0.00 [-0.19; 0.19]
Singh et al. 2022	89.10	7.90	12	82.70	14.30	11	1.3%	2.2%	0.54 [-0.29; 1.38]
Taravati et al. 2022	96.47	23.55	17	93.15	21.99	20	2.1%	3.1%	0.14 [-0.50; 0.79]
Taveggia et al. 2016	108.10	19.60	27	97.30	21.60	27	3.0%	3.8%	0.52 [-0.03; 1.06]
Tomic et al. 2017	86.20	10.39	13	78.50	6.50	13	1.4%	2.3%	0.86 [0.05; 1.67]
Vanoglio et al. 2016	-44.00	29.00	14	-65.10	16.40	13	1.4%	2.4%	0.86 [0.07; 1.65]
Villafane et al. 2017	-58.10	14.10	16	-52.10	20.40	16	1.8%	2.8%	-0.33 [-1.03; 0.36]
Wu et al. 2012	85.64	11.81	14	73.29	13.66	14	1.5%	2.4%	0.94 [0.15; 1.73]
Yoo et al. 2013	77.90	9.70	11	75.40	5.10	11	1.3%	2.2%	0.31 [-0.53; 1.15]
Total (common effect, 95% CI)			**890**			**869**	**100.0%**	--	**0.20 [0.11; 0.30]**
Total (random effect, 95% CI)							--	**100.0%**	**0.29 [0.15; 0.43]**

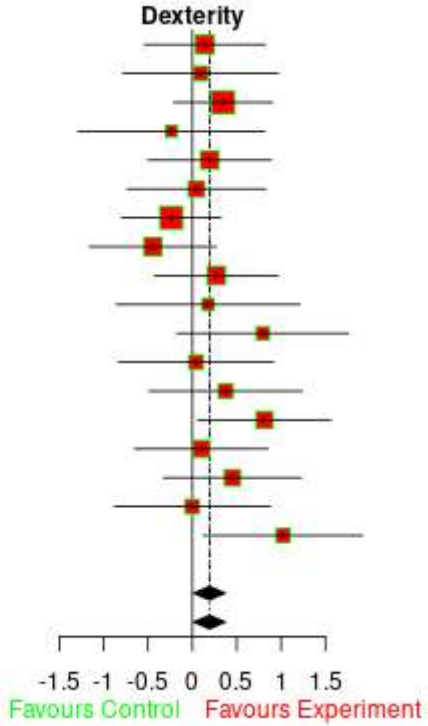
Heterogeneity: $Tau^2 = 0.0628$; $Chi^2 = 58.52$, df = 33 ($P < 0.01$); $I^2 = 44\%$



b) Dexterity

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMD [95% CI]
Bayindir et al. 2022	37.50	21.54	16	35.00	12.13	17	7.0%	7.0%	0.14 [-0.54; 0.82]
Bustamante Valles et al. 2016	5.30	11.28	10	4.40	7.26	10	4.2%	4.2%	0.09 [-0.79; 0.97]
Calabrò et al. 2019	-46.00	20.00	25	-55.00	30.00	25	10.4%	10.4%	0.35 [-0.21; 0.91]
Connelly et al. 2010	19.80	6.09	7	21.40	6.61	7	2.9%	2.9%	-0.24 [-1.29; 0.82]
Dehem et al. 2019	9.50	14.30	15	6.90	11.70	17	6.7%	6.7%	0.20 [-0.50; 0.89]
Grigoras et al. 2016	17.00	11.97	13	16.50	8.73	12	5.3%	5.3%	0.05 [-0.74; 0.83]
Hesse et al. 2014	10.70	14.80	24	14.70	18.10	25	10.3%	10.3%	-0.24 [-0.80; 0.32]
Hsieh et al. 2017	12.69	13.57	16	20.87	21.49	15	6.4%	6.4%	-0.45 [-1.16; 0.27]
Hsu et al. 2021	16.90	16.30	17	12.50	15.30	15	6.7%	6.7%	0.27 [-0.43; 0.97]
Hwang et al. 2016	-76.00	87.00	9	-98.50	159.60	6	3.0%	3.0%	0.18 [-0.86; 1.21]
Kuo et al. 2022	14.00	13.30	9	4.00	10.50	9	3.5%	3.5%	0.79 [-0.17; 1.76]
Lee et al. 2021	3.21	7.85	10	2.88	7.73	10	4.2%	4.2%	0.04 [-0.84; 0.92]
Masiero et al. 2011	22.50	13.11	11	17.30	13.57	10	4.3%	4.3%	0.37 [-0.49; 1.24]
Masiero et al. 2014	24.33	7.41	14	15.33	13.01	16	5.8%	5.8%	0.81 [0.06; 1.56]
Ranzani et al. 2020	29.22	11.93	14	28.00	11.80	13	5.7%	5.7%	0.10 [-0.66; 0.86]
Reinkensmeyer et al. 2012	2.00	4.10	13	0.60	1.10	13	5.3%	5.3%	0.45 [-0.33; 1.23]
Sale et al. 2013	9.09	13.50	11	9.11	12.02	9	4.2%	4.2%	-0.00 [-0.88; 0.88]
Yoo et al. 2013	19.00	16.00	11	6.70	3.50	11	4.0%	4.0%	1.02 [0.12; 1.92]
Total (common effect, 95% CI)			**245**			**240**	**100.0%**	--	**0.19 [0.01; 0.37]**
Total (random effect, 95% CI)							--	**100.0%**	**0.19 [0.01; 0.37]**

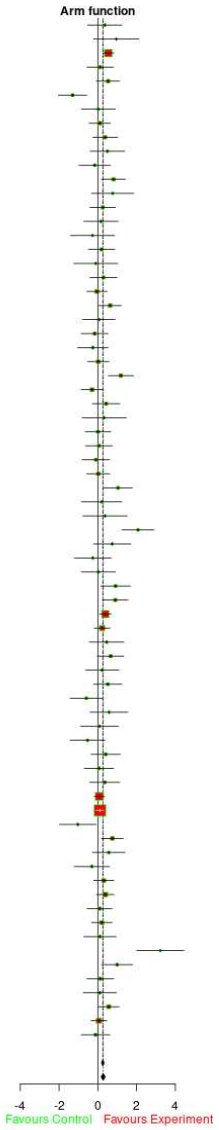
Heterogeneity: $Tau^2 = 0$; $Chi^2 = 14.84$, df = 17 (P = 0.61); $I^2 = 0\%$



c) Arm function

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMD [95% CI]
Aisen et al. 1997	14.10	9.70	10	10.10	11.63	10	0.6%	1.0%	0.36 [-0.53; 1.24]
Ang et al. 2014	8.20	2.90	6	3.60	5.50	7	0.4%	0.7%	0.95 [-0.22; 2.12]
Aprile et al. 2020	35.40	7.01	91	31.70	6.70	99	5.9%	2.7%	0.54 [0.25; 0.83]
Bayindir et al. 2022	57.00	2.84	16	56.67	2.43	17	1.1%	1.4%	0.12 [-0.56; 0.81]
Budhota et al. 2021	44.64	9.77	22	38.86	11.69	22	1.4%	1.6%	0.53 [-0.08; 1.13]
Burgar et al. 2011	33.40	3.60	17	38.20	3.60	18	0.9%	1.3%	-1.30 [-2.04; -0.57]
Bustamante Valles et al. 2016	27.60	14.70	10	27.10	22.03	10	0.6%	1.0%	0.03 [-0.85; 0.90]
Calabrò et al. 2019	36.00	20.00	25	34.00	20.00	25	1.6%	1.8%	0.10 [-0.46; 0.65]
Carpinella et al. 2020	42.30	19.85	19	34.30	20.87	19	1.2%	1.5%	0.38 [-0.26; 1.03]
Chen et al. 2021	35.10	13.36	10	28.70	11.27	10	0.6%	1.0%	0.50 [-0.40; 1.39]
Chen et al. 2022	34.70	11.02	10	36.43	9.53	14	0.7%	1.2%	-0.16 [-0.98; 0.65]
Chinembiri et al. 2021	42.90	9.00	20	35.40	9.20	25	1.3%	1.6%	0.81 [0.20; 1.42]
Connelly et al. 2010	15.90	1.20	7	14.40	2.30	7	0.4%	0.7%	0.77 [-0.33; 1.86]
Conroy et al. 2011	23.24	16.53	17	19.39	13.56	19	1.1%	1.5%	0.25 [-0.41; 0.91]
Coskunsu et al. 2022	36.00	21.00	11	32.67	17.99	9	0.6%	1.0%	0.16 [-0.72; 1.04]
Daly et al. 2005	30.50	6.38	6	32.50	7.06	6	0.4%	0.7%	-0.27 [-1.41; 0.87]
Daunoraviciene et al. 2018	45.17	18.48	17	41.76	15.41	17	1.1%	1.4%	0.20 [-0.48; 0.87]
De Araújo et al. 2011	27.00	3.29	6	27.67	7.09	6	0.4%	0.7%	-0.11 [-1.24; 1.02]
Dehem et al. 2019	51.90	30.90	15	42.40	32.60	17	1.0%	1.4%	0.29 [-0.41; 0.99]
Fasoli et al. 2004	15.70	10.95	30	16.30	15.81	26	1.8%	1.9%	-0.04 [-0.57; 0.48]
Franceschini et al. 2019	39.83	15.33	25	25.87	26.87	23	1.5%	1.7%	0.64 [0.05; 1.22]
Frisoli et al. 2022	36.70	18.46	11	35.60	23.90	11	0.7%	1.1%	0.05 [-0.79; 0.89]
Gandolfi et al. 2019	32.38	11.84	16	34.50	12.89	16	1.0%	1.4%	-0.17 [-0.86; 0.53]
Grigoras et al. 2016	20.00	20.95	13	24.50	10.18	12	0.8%	1.2%	-0.26 [-1.05; 0.53]
Gueye et al. 2021	54.50	10.06	25	54.20	13.93	25	1.6%	1.8%	0.02 [-0.53; 0.58]
Hesse et al. 2005	24.60	14.90	21	10.40	7.50	22	1.2%	1.5%	1.19 [0.54; 1.84]
Hesse et al. 2014	25.70	16.50	24	31.10	19.10	25	1.6%	1.7%	-0.30 [-0.86; 0.27]
Housman et al. 2009	3.30	2.40	15	2.20	2.60	16	1.0%	1.4%	0.43 [-0.29; 1.14]
Hsieh et al. 2011	49.33	20.43	6	40.33	29.05	6	0.4%	0.7%	0.33 [-0.81; 1.47]
Hsieh et al. 2012	48.00	34.87	18	47.56	42.00	17	1.1%	1.5%	0.01 [-0.65; 0.67]
Hsieh et al. 2014	41.81	37.60	16	39.75	31.88	16	1.0%	1.4%	0.06 [-0.64; 0.75]
Hsieh et al. 2017	37.81	13.53	16	39.60	20.41	15	1.0%	1.4%	-0.10 [-0.81; 0.60]
Hsu et al. 2019	45.20	13.60	22	44.90	14.50	21	1.4%	1.6%	0.02 [-0.58; 0.62]
Hsu et al. 2021	42.10	14.40	17	27.60	12.60	15	0.9%	1.3%	1.04 [0.29; 1.79]
Hwang et al. 2016	20.20	6.90	9	18.80	6.30	6	0.5%	0.8%	0.20 [-0.84; 1.23]
Iwamoto et al. 2019	5.25	5.12	6	2.75	7.19	6	0.4%	0.7%	0.37 [-0.78; 1.52]
Kim et al. 2019	-68.00	6.00	18	-83.00	8.00	18	0.7%	1.1%	2.07 [1.25; 2.90]
Kuo et al. 2022	43.00	12.60	9	33.80	11.00	9	0.5%	0.9%	0.74 [-0.22; 1.70]
Kutner et al. 2010	52.00	17.50	11	57.90	26.90	7	0.5%	0.9%	-0.26 [-1.21; 0.69]
Lee et al. 2021	22.04	16.22	10	21.58	16.41	10	0.6%	1.0%	0.03 [-0.85; 0.90]
Lee et al. 2018	60.07	8.24	15	52.33	8.20	15	0.9%	1.3%	0.92 [0.16; 1.67]
Liao et al. 2011	51.20	8.82	20	40.90	13.14	20	1.2%	1.5%	0.90 [0.25; 1.56]
Lin et al. 2022	38.13	20.44	82	31.10	15.34	86	5.3%	2.6%	0.39 [0.08; 0.69]
Lo et al. 2010	23.57	11.11	47	21.31	8.95	46	3.0%	2.2%	0.22 [-0.19; 0.63]
Masiero et al. 2006	22.43	11.09	10	16.43	13.95	10	0.6%	1.0%	0.46 [-0.43; 1.35]
Masiero et al. 2007	12.80	5.50	17	7.50	9.50	18	1.1%	1.4%	0.66 [-0.02; 1.35]
Masiero et al. 2011	44.23	18.93	11	38.44	29.90	10	0.7%	1.1%	0.22 [-0.64; 1.08]
Masiero et al. 2014	55.67	10.71	14	44.67	26.82	16	0.9%	1.3%	0.51 [-0.22; 1.24]
MC Cabe et al. 2015	12.00	4.10	12	14.70	4.70	11	0.7%	1.1%	-0.59 [-1.43; 0.25]
Orihuela Espina et al. 2015	9.11	4.07	9	6.87	3.18	8	0.5%	0.9%	0.58 [-0.40; 1.55]
Page et al. 2013	22.86	19.83	8	21.00	21.33	8	0.5%	0.9%	0.09 [-0.90; 1.07]
Rabadi et al. 2008	8.03	1.76	10	9.05	1.91	10	0.6%	1.0%	-0.53 [-1.43; 0.36]
Ramos-Murguialday et al. 2019	4.06	0.73	16	3.71	0.98	12	0.9%	1.3%	0.40 [-0.35; 1.16]
Ranzani et al. 2020	36.50	9.35	14	35.92	10.13	13	0.9%	1.3%	0.06 [-0.70; 0.81]
Reinkensmeyer et al. 2012	27.40	11.40	13	23.80	8.00	13	0.8%	1.2%	0.35 [-0.42; 1.13]
Rémy Néris et al. 2021	39.19	12.76	105	38.14	13.34	103	6.7%	2.7%	0.08 [-0.19; 0.35]
Rodgers et al. 2020	26.20	17.70	232	24.20	18.40	202	13.8%	3.0%	0.11 [-0.08; 0.30]
Sale et al. 2013	73.27	27.02	11	98.13	16.90	9	0.5%	0.9%	-1.03 [-1.98; -0.08]
Sale et al. 2014	35.46	12.24	26	23.96	17.51	27	1.6%	1.8%	0.75 [0.19; 1.31]
Singh et al. 2022	50.20	6.50	12	45.40	9.70	11	0.7%	1.1%	0.57 [-0.27; 1.40]
Susanto et al. 2015	37.00	12.48	9	40.30	7.54	10	0.6%	1.0%	-0.31 [-1.22; 0.60]
Takahashi et al. 2016	9.50	7.90	30	6.90	8.80	26	1.8%	1.8%	0.31 [-0.22; 0.84]
Takebayashi et al. 2022	28.42	8.62	42	25.00	9.00	36	2.4%	2.1%	0.38 [-0.06; 0.83]
Taravati et al. 2022	24.24	10.02	17	23.35	10.01	20	1.2%	1.5%	0.09 [-0.56; 0.73]
Taveggia et al. 2016	54.70	22.20	27	50.60	16.40	27	1.7%	1.8%	0.21 [-0.33; 0.74]
Timmermans et al. 2014	52.67	11.88	11	51.33	11.88	11	0.7%	1.1%	0.11 [-0.73; 0.94]
Tomic et al. 2017	44.50	3.51	13	34.10	2.68	13	0.3%	0.6%	3.22 [2.00; 4.44]
Vanoglio et al. 2016	60.40	25.70	14	33.20	27.50	13	0.8%	1.2%	0.99 [0.19; 1.80]
Villafane et al. 2017	55.00	19.60	16	51.10	36.60	16	1.0%	1.4%	0.13 [-0.56; 0.82]
Volpe et al. 2008	15.73	6.63	11	15.10	5.38	10	0.7%	1.1%	0.10 [-0.76; 0.96]
Volpe et al. 2000	12.00	3.00	30	10.00	4.00	26	1.7%	1.8%	0.56 [0.03; 1.10]
Wolf et al. 2015	43.40	8.78	47	42.90	8.54	45	3.0%	2.2%	0.06 [-0.35; 0.47]
Wu et al. 2012	47.14	10.97	14	48.57	12.32	14	0.9%	1.3%	-0.12 [-0.86; 0.62]
Total (common effect, 95% CI)			**1638**			**1594**	**100.0%**		**-- 0.26 [0.19; 0.33]**
Total (random effect, 95% CI)							**--**	**100.0%**	**0.27 [0.17; 0.38]**

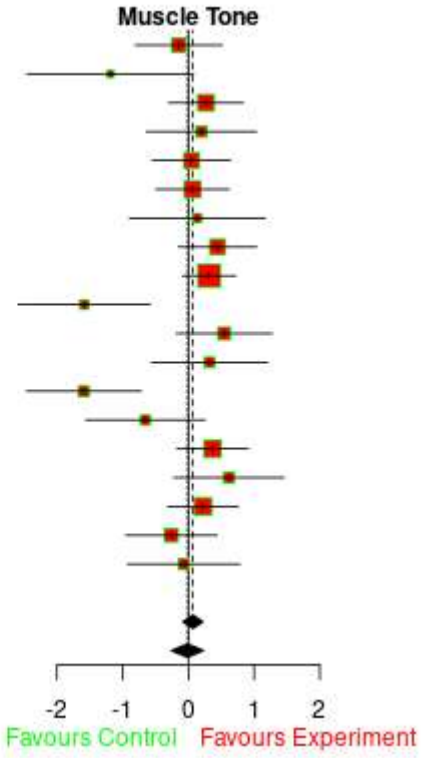
Heterogeneity: $Tau^2 = 0.0921$; $Chi^2 = 140.18$, df = 72 ($P < 0.01$); $I^2 = 49\%$



d) Muscle tone

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMD [95% CI]
Burgar et al. 2011	-0.50	0.37	17	-0.44	0.42	18	5.5%	5.8%	-0.15 [-0.81; 0.52]
De Araújo et al. 2011	-2.00	0.00	6	-1.50	0.55	6	1.5%	2.8%	-1.19 [-2.45; 0.08]
Franceschini et al. 2019	-0.67	0.79	25	-1.00	1.58	23	7.5%	6.5%	0.27 [-0.30; 0.84]
Frisoli et al. 2022	-18.60	17.75	11	-22.00	15.00	11	3.4%	4.6%	0.20 [-0.64; 1.04]
Hesse et al. 2005	-1.70	2.40	21	-1.80	1.70	22	6.7%	6.2%	0.05 [-0.55; 0.65]
Hesse et al. 2014	-2.20	2.80	24	-2.40	3.50	25	7.7%	6.5%	0.06 [-0.50; 0.62]
Hwang et al. 2016	-1.20	0.40	9	-1.30	1.00	6	2.3%	3.6%	0.14 [-0.90; 1.17]
Lee et al. 2016	-1.36	0.49	22	-1.64	0.73	22	6.7%	6.2%	0.44 [-0.16; 1.04]
Lo et al. 2010	-0.87	0.82	47	-1.12	0.75	46	14.4%	7.7%	0.32 [-0.09; 0.72]
Masiero et al. 2011	-0.90	0.22	11	-0.60	0.12	10	2.4%	3.8%	-1.58 [-2.59; -0.58]
Masiero et al. 2014	-0.00	0.00	14	-0.33	0.81	16	4.5%	5.3%	0.55 [-0.19; 1.28]
Rabadi et al. 2008	-2.73	1.29	10	-3.18	1.40	10	3.1%	4.4%	0.32 [-0.56; 1.20]
Ramos-Murguialday et al. 2019	-9.13	1.83	16	-6.36	1.48	12	3.2%	4.4%	-1.59 [-2.46; -0.72]
Sale et al. 2013	-4.73	4.10	11	-2.25	2.92	9	2.9%	4.2%	-0.66 [-1.56; 0.25]
Sale et al. 2014	-0.73	1.08	26	-1.15	1.17	27	8.2%	6.7%	0.37 [-0.18; 0.91]
Singh et al. 2022	-1.29	0.30	12	-1.59	0.60	11	3.4%	4.6%	0.62 [-0.22; 1.46]
Taveggia et al. 2016	-4.00	1.60	27	-4.40	1.90	27	8.4%	6.7%	0.22 [-0.31; 0.76]
Villafane et al. 2017	-0.60	0.80	16	-0.40	0.70	16	5.0%	5.5%	-0.26 [-0.96; 0.44]
Volpe et al. 2008	-6.27	3.32	11	-6.00	4.11	10	3.3%	4.5%	-0.07 [-0.93; 0.79]
Total (common effect, 95% CI)			**336**			**327**	**100.0%**		**0.07 [-0.09; 0.22]**
Total (random effect, 95% CI)								**100.0%**	**-0.02 [-0.26; 0.23]**

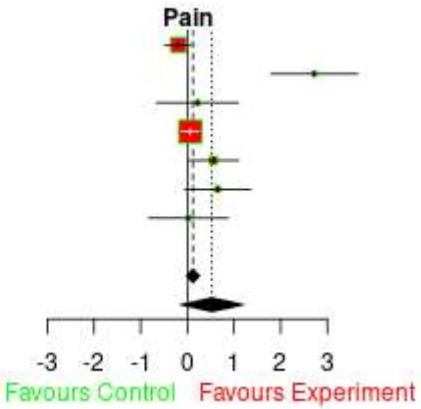
Heterogeneity: $Tau^2 = 0.1646$; $Chi^2 = 40.37$, df = 18 ($P < 0.01$); $I^2 = 55\%$



e) Pain

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMD [95% CI]
Aprile et al. 2020	-2.80	1.05	91	-2.60	0.98	99	24.7%	16.1%	-0.20 [-0.48; 0.09]
Kim et al. 2019	-4.10	0.70	18	-6.50	1.00	18	2.3%	12.6%	2.72 [1.79; 3.65]
Rabadi et al. 2008	22.98	4.65	10	21.93	4.65	10	2.6%	12.9%	0.22 [-0.66; 1.10]
Rodgers et al. 2020	-2.50	3.20	232	-2.70	3.20	206	57.0%	16.4%	0.06 [-0.13; 0.25]
Taveggia et al. 2016	-1.70	1.20	27	-2.50	1.60	27	6.8%	15.0%	0.56 [0.01; 1.10]
Villafane et al. 2017	-0.60	3.00	16	-6.90	13.00	16	3.9%	14.0%	0.65 [-0.06; 1.36]
Volpe et al. 2008	23.10	13.27	11	22.80	15.81	10	2.7%	13.1%	0.02 [-0.84; 0.88]
Total (common effect, 95% CI)			**405**			**386**	**100.0%**	--	**0.12 [-0.02; 0.26]**
Total (random effect, 95% CI)							--	**100.0%**	**0.53 [-0.15; 1.20]**

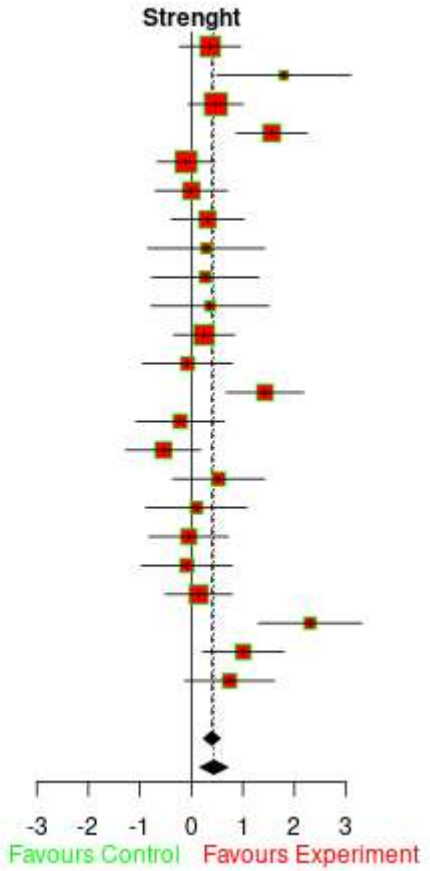
Heterogeneity: $Tau^2 = 0.7195$; $Chi^2 = 39.71$, df = 6 ($P < 0.01$); $I^2 = 85\%$



f) Strength

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMD [95% CI]
Budhota et al. 2021	9.41	4.84	22	7.81	3.70	22	7.1%	5.3%	0.36 [-0.23; 0.96]
Connelly et al. 2010	159.00	33.00	7	113.00	8.00	7	1.5%	2.7%	1.79 [0.49; 3.10]
Fasoli et al. 2004	6.80	3.29	30	4.90	4.59	26	8.9%	5.6%	0.48 [-0.06; 1.01]
Hesse et al. 2005	21.80	10.50	21	6.80	8.30	22	5.3%	4.9%	1.56 [0.87; 2.25]
Hesse et al. 2014	15.80	11.10	24	17.00	12.00	25	8.1%	5.5%	-0.10 [-0.66; 0.46]
Housman et al. 2009	0.80	3.00	15	0.80	2.30	16	5.1%	4.8%	0.00 [-0.70; 0.70]
Hsieh et al. 2017	8.73	4.93	16	6.99	5.86	15	5.1%	4.8%	0.31 [-0.40; 1.02]
Hsieh et al. 2011	3.81	1.35	6	3.33	1.69	6	2.0%	3.1%	0.29 [-0.85; 1.43]
Hwang et al. 2016	16.20	10.10	9	13.50	8.20	6	2.4%	3.5%	0.27 [-0.77; 1.31]
Iwamoto et al. 2019	2.49	3.51	6	1.23	2.89	6	1.9%	3.1%	0.36 [-0.78; 1.51]
Lee et al. 2016	1.84	1.25	22	1.56	0.96	22	7.2%	5.4%	0.25 [-0.35; 0.84]
Lee et al. 2021	3.58	5.02	10	3.98	5.27	10	3.3%	4.1%	-0.07 [-0.95; 0.80]
Masiero et al. 2007	2.10	1.10	17	0.70	0.80	18	4.5%	4.6%	1.43 [0.68; 2.18]
Masiero et al. 2011	3.65	1.36	11	4.20	3.28	10	3.4%	4.2%	-0.22 [-1.08; 0.64]
Masiero et al. 2014	4.00	0.04	14	4.33	0.81	16	4.7%	4.7%	-0.54 [-1.28; 0.19]
Masiero et al. 2006	3.93	3.25	10	2.33	2.47	10	3.2%	4.0%	0.53 [-0.36; 1.43]
Page et al. 2013	13.14	6.62	8	12.50	5.29	8	2.6%	3.7%	0.10 [-0.88; 1.08]
Reinkensmeyer et al. 2012	3.90	3.20	13	4.10	4.40	13	4.3%	4.5%	-0.05 [-0.82; 0.72]
Sale et al. 2013	5.80	2.60	11	7.25	23.18	9	3.3%	4.1%	-0.09 [-0.97; 0.79]
Taravati et al. 2022	12.82	12.41	17	11.00	12.98	20	6.1%	5.1%	0.14 [-0.51; 0.79]
Vanoglio et al. 2016	10.78	1.05	14	5.57	2.98	13	2.5%	3.6%	2.30 [1.30; 3.31]
Wu et al. 2012	51.34	14.75	14	36.16	14.54	14	4.0%	4.4%	1.01 [0.21; 1.80]
Yoo et al. 2013	8.50	5.80	11	5.10	2.30	11	3.4%	4.1%	0.74 [-0.13; 1.61]
Total (common effect, 95% CI)			**328**			**325**	**100.0%**	**--**	**0.40 [0.24; 0.56]**
Total (random effect, 95% CI)							**--**	**100.0%**	**0.44 [0.17; 0.71]**

Heterogeneity: $Tau^2 = 0.2600$; $Chi^2 = 56.95$, df = 22 ($P < 0.01$); $I^2 = 61\%$

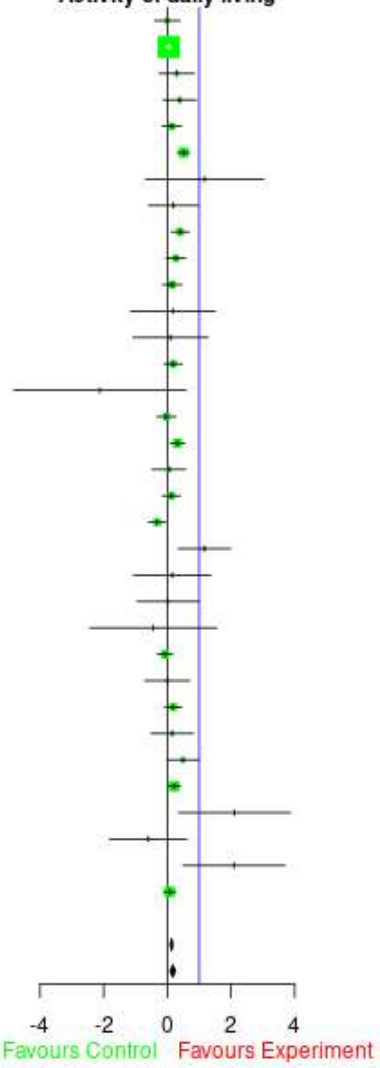


Supplementary Material 7. Meta-analyses for each outcome considering the clinical relevance.

a) Activity of daily living

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMOS [95% CI]
Aisen et al. 1997	1.16	0.33	10	1.17	0.56	10	1.6%	3.2%	-0.00 [-0.41; 0.40]
Aprile et al. 2020	1.72	0.30	91	1.67	0.29	99	35.4%	8.3%	0.05 [-0.04; 0.13]
Burgar et al. 2011	2.25	0.95	17	1.95	0.68	18	0.8%	2.0%	0.30 [-0.25; 0.85]
Carpinella et al. 2020	4.96	0.70	19	4.58	0.93	19	0.9%	2.2%	0.39 [-0.14; 0.91]
Chen et al. 2021	2.03	0.37	10	1.89	0.34	10	2.6%	4.3%	0.14 [-0.17; 0.45]
Chinembiri et al. 2021	2.05	0.26	20	1.54	0.42	25	6.2%	6.2%	0.51 [0.31; 0.71]
Conroy et al. 2011	12.73	3.03	17	11.56	2.61	19	0.1%	0.2%	1.17 [-0.68; 3.03]
Daunoraviciene et al. 2018	1.45	0.82	17	1.26	1.43	17	0.4%	1.1%	0.19 [-0.59; 0.97]
Fasoli et al. 2004	2.43	0.45	30	2.03	0.60	26	3.2%	4.7%	0.40 [0.12; 0.69]
Gueye et al. 2021	5.04	0.37	25	4.77	0.70	25	2.6%	4.3%	0.27 [-0.04; 0.58]
Hesse et al. 2014	1.94	0.51	24	1.79	0.59	25	2.6%	4.3%	0.15 [-0.16; 0.46]
Hsieh et al. 2017	4.71	2.18	16	4.54	1.55	15	0.1%	0.4%	0.18 [-1.15; 1.50]
Hwang et al. 2016	8.07	1.27	9	7.97	1.05	6	0.2%	0.5%	0.10 [-1.08; 1.28]
Iwamoto et al. 2019	0.34	0.28	6	0.16	0.23	6	3.0%	4.6%	0.19 [-0.10; 0.47]
Kutner et al. 2010	11.44	3.00	11	13.56	2.76	7	0.0%	0.1%	-2.12 [-4.83; 0.59]
Lee et al. 2016	1.54	0.54	22	1.57	0.48	22	2.8%	4.4%	-0.03 [-0.33; 0.27]
Lee et al. 2018	2.33	0.22	15	2.01	0.39	15	4.9%	5.7%	0.32 [0.09; 0.55]
Liao et al. 2011	5.35	1.06	20	5.30	0.59	20	0.9%	2.1%	0.05 [-0.49; 0.58]
Lum et al. 2002	2.49	0.38	13	2.36	0.37	14	3.1%	4.7%	0.12 [-0.16; 0.41]
Lum et al. 2006	2.31	0.24	6	2.64	0.21	5	3.5%	4.9%	-0.32 [-0.59; -0.05]
Masiero et al. 2006	3.29	0.82	10	2.12	1.05	10	0.4%	1.0%	1.17 [0.34; 1.99]
Masiero et al. 2011	3.74	1.74	11	3.58	1.04	10	0.2%	0.5%	0.15 [-1.06; 1.37]
Masiero et al. 2014	3.98	1.55	14	3.96	1.10	16	0.3%	0.8%	0.02 [-0.96; 0.99]
Page et al. 2013	7.05	1.38	8	7.49	2.53	8	0.1%	0.2%	-0.44 [-2.44; 1.55]
Rémy Néris et al. 2021	4.96	0.91	105	5.03	0.89	103	4.2%	5.3%	-0.07 [-0.31; 0.18]
Rodgers et al. 2020	8.61	3.81	220	8.61	3.58	194	0.5%	1.3%	0.00 [-0.71; 0.71]
Singh et al. 2022	2.55	0.23	12	2.36	0.41	11	3.4%	4.9%	0.18 [-0.09; 0.46]
Taravati et al. 2022	4.38	1.07	17	4.23	1.00	20	0.6%	1.5%	0.15 [-0.52; 0.82]
Taveggia et al. 2016	4.91	0.89	27	4.42	0.98	27	1.0%	2.3%	0.49 [-0.01; 0.99]
Tomic et al. 2017	2.46	0.30	13	2.24	0.19	13	6.9%	6.4%	0.22 [0.03; 0.41]
Vanoglio et al. 2016	-4.40	2.90	14	-6.51	1.64	13	0.1%	0.2%	2.11 [0.35; 3.87]
Villafane et al. 2017	-5.81	1.41	16	-5.21	2.04	16	0.2%	0.5%	-0.60 [-1.82; 0.62]
Wu et al. 2012	14.52	2.00	14	12.42	2.32	14	0.1%	0.3%	2.09 [0.49; 3.70]
Yoo et al. 2013	2.23	0.28	11	2.15	0.15	11	7.3%	6.5%	0.07 [-0.11; 0.26]
Total (common effect, 95% CI)			**890**			**869**	**100.0%**	--	**0.13 [0.08; 0.18]**
Total (random effect, 95% CI)							--	**100.0%**	**0.17 [0.08; 0.26]**

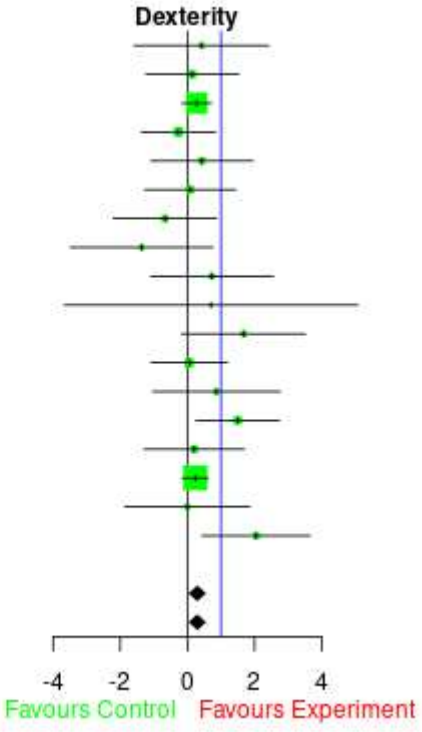
Heterogeneity: $Tau^2 = 0.0227$; $Chi^2 = 66.43$, df = 33 ($P < 0.01$); $I^2 = 50\%$



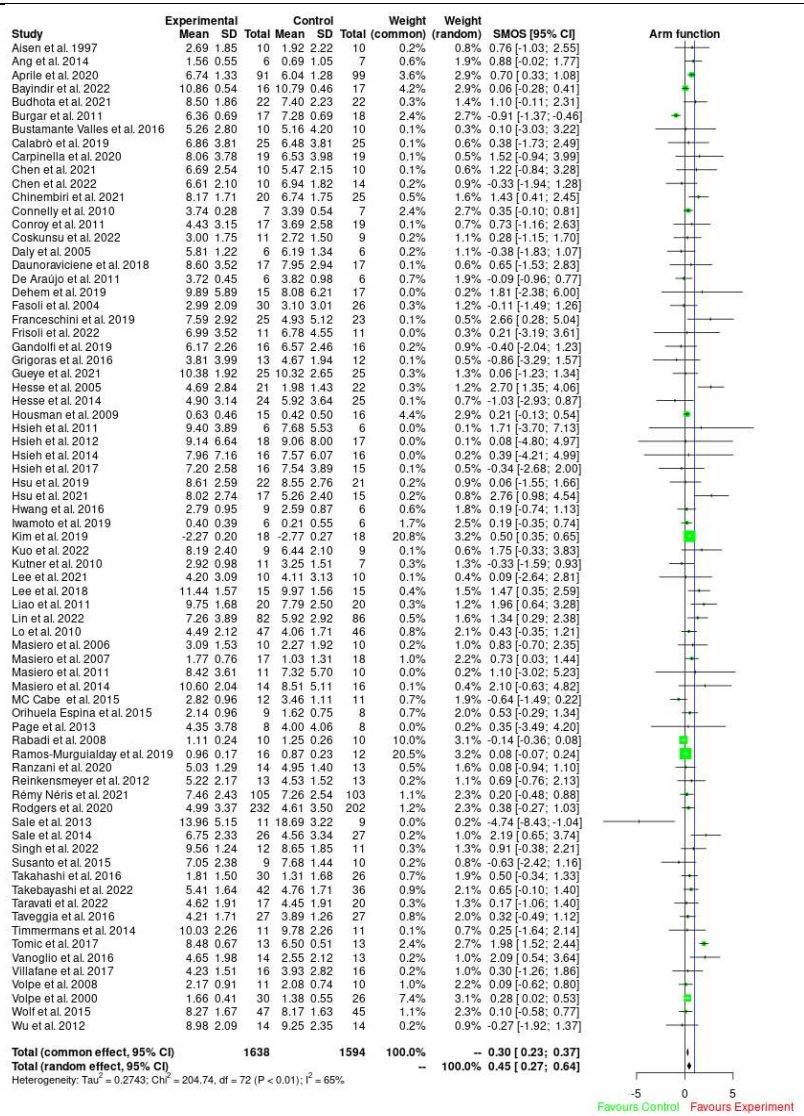
b) Dexterity

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMOS [95% CI]
Bayindir et al. 2022	6.25	3.59	16	5.83	2.02	17	1.3%	1.3%	0.42 [-1.59; 2.42]
Bustamante Valles et al. 2016	0.88	1.88	10	0.73	1.21	10	2.8%	2.8%	0.15 [-1.24; 1.54]
Calabrò et al. 2019	-1.44	0.62	25	-1.72	0.94	25	27.6%	27.6%	0.28 [-0.16; 0.72]
Connelly et al. 2010	3.30	1.01	7	3.57	1.10	7	4.4%	4.4%	-0.27 [-1.38; 0.84]
Dehem et al. 2019	1.58	2.38	15	1.15	1.95	17	2.3%	2.3%	0.43 [-1.09; 1.95]
Grigoras et al. 2016	2.83	2.00	13	2.75	1.45	12	2.9%	2.9%	0.08 [-1.28; 1.44]
Hesse et al. 2014	1.78	2.47	24	2.45	3.02	25	2.3%	2.3%	-0.67 [-2.21; 0.87]
Hsieh et al. 2017	2.11	2.26	16	3.48	3.58	15	1.2%	1.2%	-1.36 [-3.49; 0.76]
Hsu et al. 2021	2.82	2.72	17	2.08	2.55	15	1.6%	1.6%	0.73 [-1.09; 2.56]
Hwang et al. 2016	-2.38	2.72	9	-3.08	4.99	6	0.3%	0.3%	0.70 [-3.67; 5.07]
Kuo et al. 2022	2.33	2.22	9	0.67	1.75	9	1.6%	1.6%	1.67 [-0.18; 3.51]
Lee et al. 2021	0.54	1.31	10	0.48	1.29	10	4.2%	4.2%	0.06 [-1.08; 1.19]
Masiero et al. 2011	3.75	2.18	11	2.88	2.26	10	1.5%	1.5%	0.87 [-1.04; 2.77]
Masiero et al. 2014	4.06	1.24	14	2.56	2.17	16	3.5%	3.5%	1.50 [0.26; 2.74]
Ranzani et al. 2020	4.87	1.99	14	4.67	1.97	13	2.4%	2.4%	0.20 [-1.29; 1.70]
Reinkensmeyer et al. 2012	0.33	0.68	13	0.10	0.18	13	36.5%	36.5%	0.23 [-0.15; 0.62]
Sale et al. 2013	1.51	2.25	11	1.52	2.00	9	1.5%	1.5%	-0.00 [-1.87; 1.86]
Yoo et al. 2013	3.17	2.67	11	1.12	0.58	11	2.1%	2.1%	2.05 [0.44; 3.66]
Total (common effect, 95% CI)			**245**			**240**	**100.0%**	**--**	**0.30 [0.06; 0.53]**
Total (random effect, 95% CI)							**--**	**100.0%**	**0.30 [0.06; 0.53]**

Heterogeneity: $Tau^2 = 0$; $Chi^2 = 16.26$, df = 17 (P = 0.51); $I^2 = 0\%$



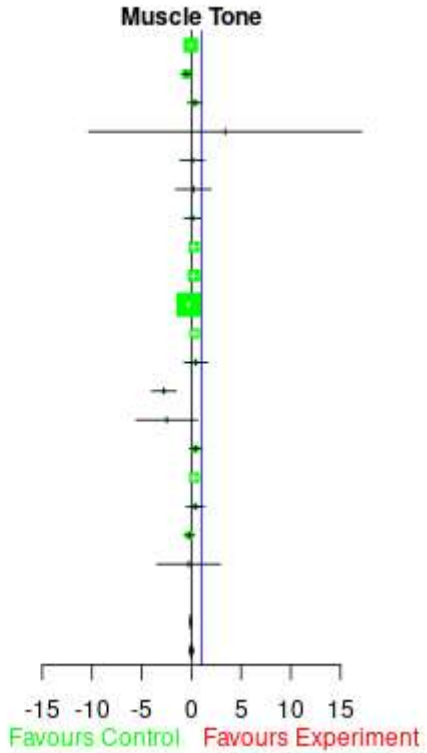
c) Arm function



d) Muscle tone

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMOS [95% CI]
Burgar et al. 2011	-0.50	0.37	17	-0.44	0.42	18	13.4%	9.9%	-0.06 [-0.32; 0.20]
De Araújo et al. 2011	-2.00	0.00	6	-1.50	0.55	6	4.8%	7.9%	-0.50 [-0.94; -0.06]
Franceschini et al. 2019	-0.67	0.79	25	-1.00	1.58	23	1.8%	5.2%	0.33 [-0.38; 1.05]
Frisoli et al. 2022	-18.60	17.75	11	-22.00	15.00	11	0.0%	0.0%	3.40 [-10.33; 17.13]
Hesse et al. 2005	-1.70	2.40	21	-1.80	1.70	22	0.6%	2.5%	0.10 [-1.15; 1.35]
Hesse et al. 2014	-2.20	2.80	24	-2.40	3.50	25	0.3%	1.4%	0.20 [-1.57; 1.97]
Hwang et al. 2016	-1.20	0.40	9	-1.30	1.00	6	1.3%	4.3%	0.10 [-0.74; 0.94]
Lee et al. 2016	-1.36	0.49	22	-1.64	0.73	22	6.9%	8.7%	0.28 [-0.09; 0.65]
Lo et al. 2010	-0.87	0.82	47	-1.12	0.75	46	9.1%	9.3%	0.25 [-0.07; 0.57]
Masiero et al. 2011	-0.90	0.22	11	-0.60	0.12	10	41.4%	10.9%	-0.30 [-0.45; -0.15]
Masiero et al. 2014	-0.00	0.00	14	-0.33	0.81	16	5.9%	8.4%	0.33 [-0.06; 0.73]
Rabadi et al. 2008	-2.73	1.29	10	-3.18	1.40	10	0.7%	2.7%	0.45 [-0.73; 1.63]
Ramos-Murguialday et al. 2019	-9.13	1.83	16	-6.36	1.48	12	0.6%	2.5%	-2.77 [-4.00; -1.54]
Sale et al. 2013	-4.73	4.10	11	-2.25	2.92	9	0.1%	0.5%	-2.48 [-5.56; 0.60]
Sale et al. 2014	-0.73	1.08	26	-1.15	1.17	27	2.5%	6.2%	0.42 [-0.19; 1.03]
Singh et al. 2022	-1.29	0.30	12	-1.59	0.60	11	6.0%	8.4%	0.30 [-0.09; 0.69]
Taveggia et al. 2016	-4.00	1.60	27	-4.40	1.90	27	1.1%	3.8%	0.40 [-0.54; 1.34]
Villafane et al. 2017	-0.60	0.80	16	-0.40	0.70	16	3.4%	7.0%	-0.20 [-0.72; 0.32]
Volpe et al. 2008	-6.27	3.32	11	-6.00	4.11	10	0.1%	0.5%	-0.27 [-3.48; 2.94]
Total (common effect, 95% CI)			**336**			**327**	**100.0%**		**-0.08 [-0.17; 0.02]**
Total (random effect, 95% CI)								**100.0%**	**0.01 [-0.22; 0.23]**

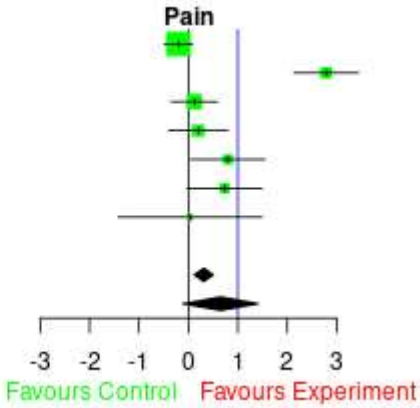
Heterogeneity: $Tau^2 = 0.1120$; $Chi^2 = 54.37$, df = 18 ($P < 0.01$); $I^2 = 67\%$



e) Pain

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMOS [95% CI]
Aprile et al. 2020	-2.80	1.05	91	-2.60	0.98	99	46.8%	16.1%	-0.20 [-0.49; 0.09]
Kim et al. 2019	-4.77	0.81	18	-7.56	1.16	18	9.2%	14.7%	2.79 [2.13; 3.45]
Rabadi et al. 2008	2.67	0.54	10	2.55	0.54	10	17.5%	15.5%	0.12 [-0.35; 0.60]
Rodgers et al. 2020	-2.50	3.20	232	-2.70	3.20	206	10.9%	15.0%	0.20 [-0.40; 0.80]
Taveggia et al. 2016	-1.70	1.20	27	-2.50	1.60	27	6.9%	14.2%	0.80 [0.05; 1.55]
Villafane et al. 2017	-0.07	0.35	16	-0.80	1.51	16	6.8%	14.2%	0.73 [-0.03; 1.49]
Volpe et al. 2008	2.69	1.54	11	2.65	1.84	10	1.8%	10.4%	0.03 [-1.42; 1.49]
Total (common effect, 95% CI)			**405**			**386**	**100.0%**	--	**0.31 [0.11; 0.51]**
Total (random effect, 95% CI)							--	**100.0%**	**0.65 [-0.13; 1.42]**

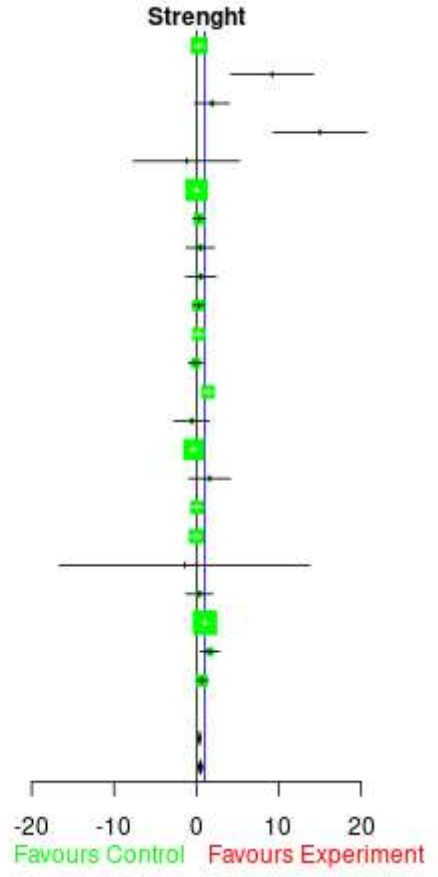
Heterogeneity: $Tau^2 = 0.9507$; $Chi^2 = 70.55$, df = 6 ($P < 0.01$); $I^2 = 91\%$



f) Strength

Study	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight (common)	Weight (random)	SMOS [95% CI]
Budhota et al. 2021	1.88	0.97	22	1.56	0.74	22	8.6%	7.6%	0.32 [-0.19; 0.83]
Connelly et al. 2010	31.80	6.60	7	22.60	1.60	7	0.1%	0.3%	9.20 [4.17; 14.23]
Fasoli et al. 2004	6.80	3.29	30	4.90	4.59	26	0.5%	1.7%	1.90 [-0.22; 4.02]
Hesse et al. 2005	21.80	10.50	21	6.80	8.30	22	0.1%	0.3%	15.00 [9.33; 20.67]
Hesse et al. 2014	15.80	11.10	24	17.00	12.00	25	0.1%	0.2%	-1.20 [-7.67; 5.27]
Housman et al. 2009	0.16	0.60	15	0.16	0.46	16	15.6%	8.5%	0.00 [-0.38; 0.38]
Hsieh et al. 2017	1.75	0.99	16	1.40	1.17	15	3.8%	6.0%	0.35 [-0.42; 1.11]
Hsieh et al. 2011	3.81	1.35	6	3.33	1.69	6	0.7%	2.3%	0.48 [-1.25; 2.21]
Hwang et al. 2016	3.24	2.02	9	2.70	1.64	6	0.6%	2.0%	0.54 [-1.32; 2.40]
Iwamoto et al. 2019	0.50	0.70	6	0.25	0.58	6	4.2%	6.2%	0.25 [-0.48; 0.98]
Lee et al. 2016	1.84	1.25	22	1.56	0.96	22	5.1%	6.6%	0.28 [-0.38; 0.94]
Lee et al. 2021	0.72	1.00	10	0.80	1.05	10	2.7%	5.2%	-0.08 [-0.98; 0.82]
Masiero et al. 2007	2.10	1.10	17	0.70	0.80	18	5.4%	6.8%	1.40 [0.76; 2.04]
Masiero et al. 2011	3.65	1.36	11	4.20	3.28	10	0.5%	1.6%	-0.56 [-2.74; 1.63]
Masiero et al. 2014	4.00	0.04	14	4.33	0.81	16	14.0%	8.4%	-0.33 [-0.73; 0.07]
Masiero et al. 2006	3.93	3.25	10	2.33	2.47	10	0.3%	1.2%	1.60 [-0.93; 4.13]
Page et al. 2013	1.43	0.72	8	1.36	0.57	8	5.5%	6.8%	0.07 [-0.57; 0.71]
Reinkensmeyer et al. 2012	0.78	0.64	13	0.82	0.88	13	6.4%	7.1%	-0.04 [-0.63; 0.55]
Sale et al. 2013	5.80	2.60	11	7.25	23.18	9	0.0%	0.0%	-1.45 [-16.67; 13.77]
Taravati et al. 2022	2.56	2.48	17	2.20	2.60	20	0.8%	2.5%	0.36 [-1.28; 2.00]
Vanoglio et al. 2016	2.16	0.21	14	1.11	0.60	13	19.1%	8.7%	1.04 [0.70; 1.39]
Wu et al. 2012	5.58	1.60	14	3.93	1.58	14	1.6%	3.9%	1.65 [0.47; 2.83]
Yoo et al. 2013	1.70	1.16	11	1.02	0.46	11	4.1%	6.1%	0.68 [-0.06; 1.42]
Total (common effect, 95% CI)			**328**			**325**	**100.0%**	--	**0.39 [0.24; 0.54]**
Total (random effect, 95% CI)							--	**100.0%**	**0.48 [0.18; 0.78]**

Heterogeneity: $Tau^2 = 0.2380$; $Chi^2 = 90.79$, df = 22 ($P < 0.01$); $I^2 = 76\%$



Abbreviation: SMOS, standardized MCID overall score

Notes: The blue line (SMOS=1) indicates the line of clinical non-relevance

Supplementary Material 8. Meta-analyses for each outcome considering subgroups for statistical significance meta-analyses.

Domain	Subgroup	Subgroup category	SN	Fixed effect	95% CI fixed	Random effects	95% CI random	I^2
Activity of daily living	Arm segments	Proximal	25	0.17	0.06, 0.28	0.27	0.11, 0.43	38 %
		Distal	4	0.31	-0.04, 0.67	0.19	-0.55, 0.93	74 %
		Both	5	0.29	0.06, 0.51	0.36	0.02, 0.70	41 %
	Robot types	Unilateral	25	0.18	0.07, 0.29	0.30	0.12, 0.48	48 %
		Bilateral	3	0.29	-0.11, 0.70	0.32	-0.21, 0.85	43 %
		Both	6	0.24	0.02, 0.45	0.24	0.02, 0.45	43 %
	Content of control groups	Conventional therapy	21	0.16	0.05, 0.27	0.25	0.09, 0.41	35 %
		Occupational therapy	4	0.82	0.44, 1.20	0.81	0.23, 1.40	56 %
		Task-oriented approach	3	-0.18	-0.68, 0.31	-0.18	-0.68, 0.31	0 %
		Conventional therapy + occupational therapy	1	-0.33	-1.03, 0.36	-0.33	-1.03, 0.36	-
		Others	5	0.35	0.05, 0.64	0.35	0.05, 0.64	0 %
Dexterity	Arm segments	Proximal	9	0.31	0.05, 0.56	0.31	0.03, 0.59	14 %
		Distal	7	0.17	-0.14, 0.47	0.17	-0.14, 0.47	0 %
		Both	2	-0.14	-0.62, 0.33	-0.14	-0.62, 0.33	0 %
	Robot types	Unilateral	15	0.31	0.10, 0.51	0.31	0.10, 0.51	0 %
		Bilateral	1	-0.45	-1.16, 0.27	-0.45	-1.16, 0.27	-
		Both	2	-0.14	-0.62, 0.33	-0.14	-0.62, 0.33	0 %
	Content of control groups	Conventional therapy	11	0.33	0.01, 0.56	0.33	0.10, 0.56	0 %
		Occupational therapy	1	0.00	-0.88, 0.88	0.00	-0.88, 0.88	-
		Task-oriented approach	2	-0.01	-0.58, 0.57	0.13	-1.08, 1.34	76 %
		Virtual reality	1	-0.24	-1.29, 0.82	-0.24	-1.29, 0.82	-
		Conventional therapy + occupational therapy	2	0.20	-0.35, 0.75	0.20	-0.35, 0.75	0 %
		Others	1	-0.24	-0.80, 0.32	-0.24	-0.80, 0.32	-
Arm function	Arm segments	Proximal	44	0.19	0.10, 0.28	0.21	0.09, 0.32	31 %
		Distal	19	0.33	0.15, 0.50	0.35	0.08, 0.63	55 %
		Both	10	0.41	0.25, 0.57	0.52	0.06, 0.97	71 %
	Robot types	Unilateral	60	0.25	0.18, 0.33	0.28	0.18, 0.38	39 %
		Bilateral	8	0.30	0.05, 0.55	0.29	-0.07, 0.66	53 %
		Both	5	0.24	0.01, 0.46	-0.01	-0.75, 0.73	86 %
	Content of control groups	Conventional therapy	45	0.28	0.19, 0.36	0.31	0.18, 0.45	54 %
		Occupational therapy	6	0.41	0.09, 0.74	0.34	-0.20, 0.89	61 %
		Task-oriented approach	5	0.08	-0.30, 0.47	0.08	-0.30, 0.47	0 %
		Virtual reality	1	0.77	-0.33, 1.86	0.77	-0.33, 1.86	-

		Intensive therapy	4	0.17	-0.12, 0.46	0.17	-0.12, 0.46	0 %
		Conventional therapy + occupational therapy	4	0.24	-0.16, 0.63	0.20	-0.44, 0.83	61 %
		Others	8	0.12	-0.11, 0.36	0.11	-0.29, 0.52	61 %
Muscle tone	Arm segments	Proximal	15	0.12	-0.07, 0.30	0.09	-0.14, 0.31	42 %
		Distal	1	-0.26	-0.96, 0.44	-0.26	-0.96, 0.44	-
		Both	3	0.00	-0.31, 0.31	-0.35	-1.47, 0.77	87 %
	Robot types	Unilateral	17	0.08	-0.08, 0.25	-0.03	-0.32, 0.27	60 %
		Both	2	-0.02	-0.45, 0.40	-0.02	-0.45, 0.40	0 %
	Content of control groups	Conventional therapy	11	0.17	-0.04, 0.38	0.11	-0.19, 0.41	51 %
		Occupational therapy	1	-0.66	-1.56, 0.25	-0.66	-1.56, 0.25	-
		Intensive therapy	2	0.24	-0.13, 0.61	0.24	-0.13, 0.61	0 %
		Conventional therapy + occupational therapy	2	-0.04	-0.58, 0.51	-0.04	-0.59, 0.52	2 %
		Others	3	-0.24	-0.61, 0.13	-0.45	-1.47, 0.58	82 %
Pain	Arm segments	Proximal	5	0.20	0.03, 0.37	0.68	0.27, 1.63	88 %
		Distal	1	0.65	-0.06, 1.36	0.65	-0.06, 1.36	-
		Both	1	-0.20	-0.48, 0.09	-0.20	-0.48, 0.09	-
	Robot types	Unilateral	6	0.22	0.06, 0.39	0.67	-0.09, 1.43	85 %
		Both	1	-0.20	-0.48, 0.09	-0.20	-0.48, 0.09	-
	Content of control groups	Conventional therapy	4	0.10	-0.05, 0.25	0.73	-0.51, 1.96	92 %
		Intensive therapy	1	0.02	-0.84, 0.88	0.02	-0.84, 0.88	-
		Conventional therapy + occupational therapy	2	0.48	-0.08, 1.03	0.48	-0.08, 1.03	0 %
Strenght	Arm segments	Proximal	18	0.39	0.22, 0.57	0.39	0.13, 0.65	50 %
		Distal	3	1.13	0.54, 1.71	1.31	-0.16, 2.78	85 %
		Both	2	-0.05	-0.54, 0.43	-0.05	-0.54, 0.43	0 %
	Robot types	Unilateral	19	0.43	0.25, 0.60	0.46	0.14, 0.77	65 %
		Bilateral	3	0.56	0.08, 1.04	0.56	0.06, 1.07	0 %
		Both	1	-0.10	-0.66, 0.46	-0.10	-0.66, 0.46	-
	Content of control groups	Conventional therapy	16	0.38	0.19, 0.57	0.41	0.10, 0.72	59 %
		Occupational therapy	2	0.08	-0.62, 0.78	0.08	-0.62, 0.78	0 %
		Task-oriented approach	2	0.24	-0.33, 0.82	0.24	-0.33, 0.82	0 %
		Virtual reality	1	1.79	0.49, 3.10	1.79	0.49, 3.10	-
		Others	2	0.56	0.12, 0.99	0.72	-0.91, 2.35	93 %

Abbreviations: SN, study number; CI, confidence interval

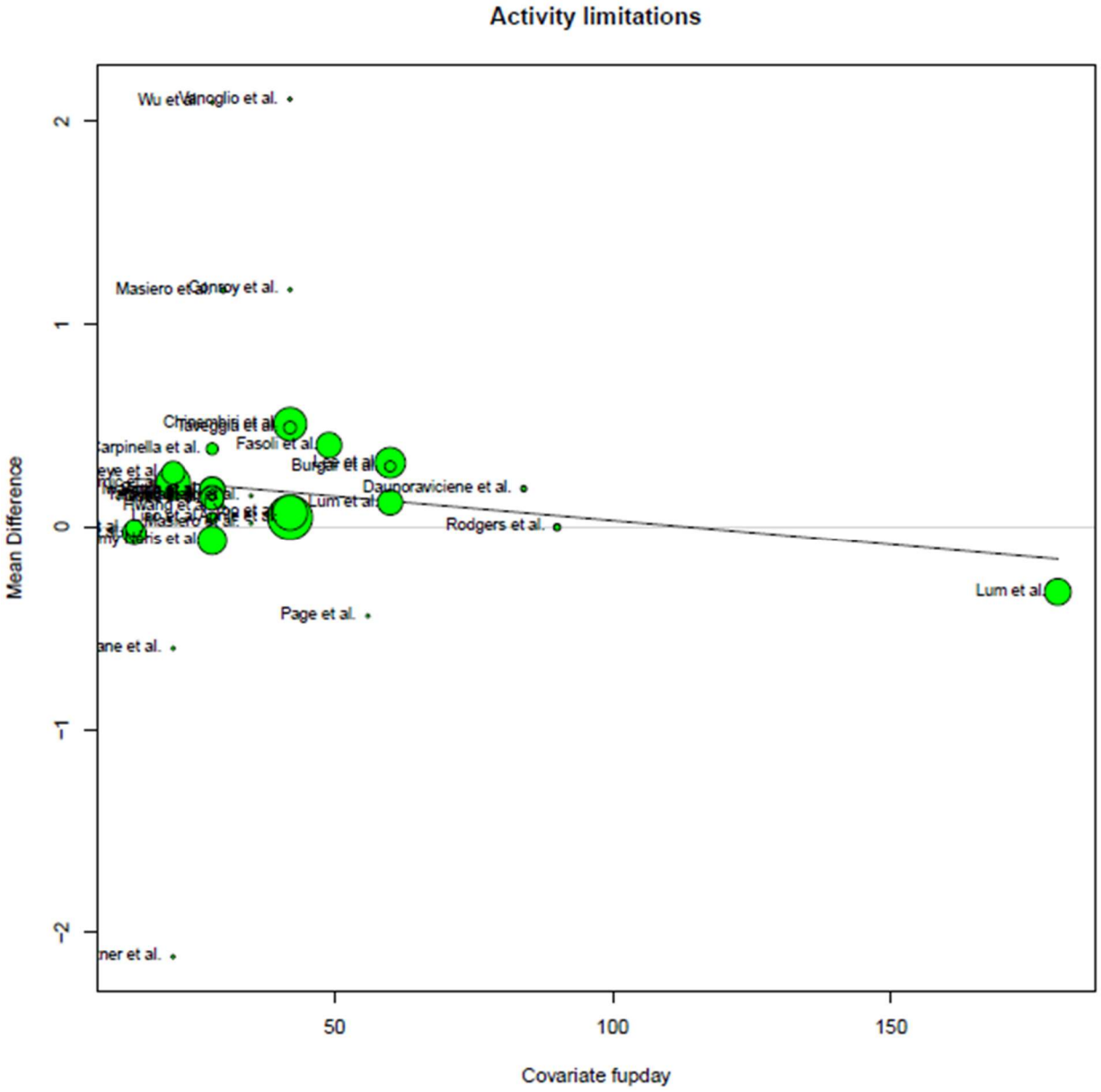
Supplementary Material 9. Meta-analyses for each outcome considering subgroups for clinical relevance meta-analyses.

Domain	Subgroup	Subgroup category	SN	Fixed effect	95% CI fixed	Random effects	95% CI random	I^2
Activity of daily living	Arm segments	Proximal	25	0.15	0.08, 0.22	0.16	0.05, 0.28	48 %
		Distal	4	0.37	0.10, 0.64	0.13	-1.25, 1.51	68 %
		Both	5	0.10	0.03, 0.17	0.16	0.02, 0.29	42 %
	Robot types	Unilateral	25	0.20	0.13, 0.28	0.21	0.10, 0.31	39 %
		Bilateral	3	0.24	-0.23, 0.71	0.60	-0.54, 1.74	65 %
		Both	6	0.06	-0.01,0.13	0.08	-0.10, 0.27	64 %
	Content of control groups	Conventional therapy	21	0.09	0.03, 0.15	0.13	0.03, 0.23	46 %
		Occupational therapy	4	0.37	0.24, 0.50	0.35	0.18, 0.52	21 %
		Task-oriented approach	3	-0.31	-1.34, 0.71	-0.31	-1.34, 0.71	11 %
		Conventional therapy + occupational therapy	1	-0.60	-1.82, 0.62	-0.60	-1.82, 0.62	-
		Others	5	0.16	-0.03, 0.35	0.16	-0.03, 0.35	43 %
Dexterity	Arm segments	Proximal	9	0.35	0.08, 0.61	0.35	0.08, 0.61	27 %
		Distal	7	0.23	-0.30,- 0.77	0.23	-0.31, 0.77	0 %
		Both	2	-0.22	-1.25, 0.81	-0.22	-1.25, 0.81	0 %
	Robot types	Unilateral	15	0.35	0.11, 0.59	0.35	0.11, 0.59	0 %
		Bilateral	1	-1.36	-3.49, 0.76	-1.36	-3.49, 0.76	-
		Both	2	-0.22	-1.25, 0.81	-0.22	-1.25, 0.81	0 %
	Content of control groups	Conventional therapy	11	0.35	0.10, 0.60	0.35	0.10, 0.60	0 %
		Occupational therapy	1	0.00	-1.87, 1.86	0.00	-1.87, 1.86	-
		Conventional therapy + occupational therapy	2	0.36	-0.74, 1.47	0.36	-0.74, 1.47	0 %
		Task-oriented approach	2	0.36	-1.03, 1.76	0.20	-2.77, 3.17	78 %
		Virtual reality	1	-0.27	-1.38, 0.84	-0.27	-1.38, 0.84	-
		Others	1	-0.67	-2.21, 0.87	-0.67	-2.21, 0.87	-
Arm function	Arm segments	Proximal	44	0.21	0.07, 0.34	0.38	0.13, 0.63	50 %
		Distal	19	0.31	0.20, 0.41	0.33	0.10, 0.56	58 %
		Both	10	0.37	0.24, 0.50	0.76	0.23, 1.29	88 %
	Robot types	Unilateral	60	0.30	0.23, 0.37	0.43	0.26, 0.61	60 %
		Bilateral	8	1.16	0.49, 1.84	0.94	-0.16, 2.03	46 %
		Both	5	0.12	-0.16, 0.39	0.12	-0.93, 1.17	89 %
	Content of control groups	Conventional therapy	45	0.46	0.36, 0.56	0.54	0.30, 0.78	64 %
		Occupational therapy	6	0.55	0.17, 0.93	0.63	-0.03, 1.28	67 %
		Task-oriented approach	5	0.16	-0.68, 1.01	0.16	-0.68, 1.01	0 %

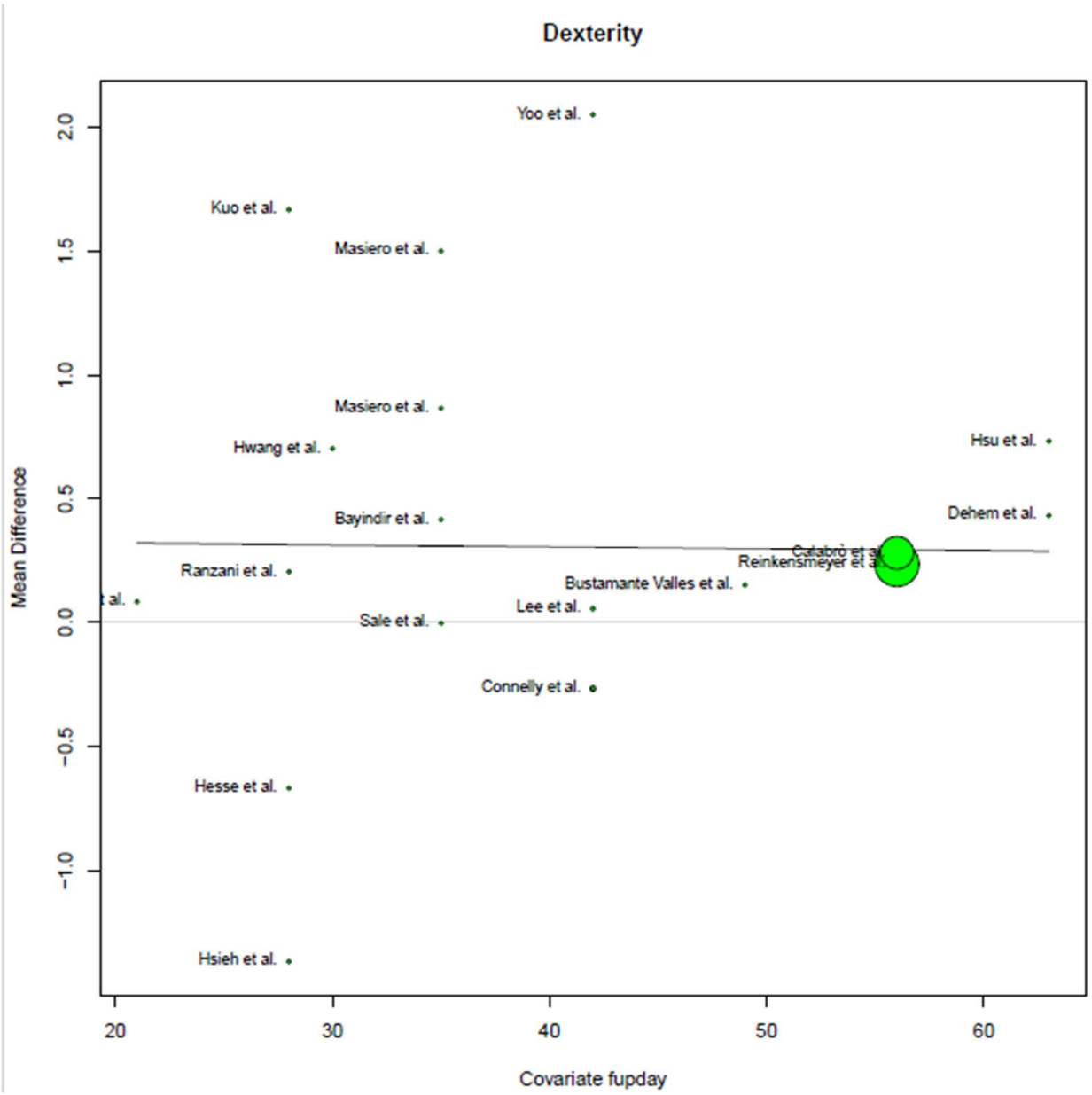
		Virtual reality	1	0.35	-0.10, 0.81	0.35	-0.10, 0.81	-
		Intensive therapy	4	0.28	-0.23, 0.78	0.28	-0.23, 0.78	0 %
		Conventional therapy + occupational therapy	4	-0.09	-0.31, 0.13	0.68	-0.69, 2.05	71 %
		Others	8	0.10	-0.04, 0.23	0.10	-0.55, 0.74	65 %
Muscle Tone	Arm segments	Proximal	15	-0.09	-0.19, 0.02	0.07	-0.14, 0.28	56 %
		Distal	1	-0.20	-0.72, 0.32	-0.20	-0.72, 0.32	NA %
		Both	3	0.06	-0.24, 0.37	-0.77	-2.73, 1.20	91 %
	Robot types	Unilateral	17	-0.08	-0.18, 0.03	0.00	-0.27, 0.27	71 %
		Both	2	-0.05	-0.32, 0.21	-0.05	-0.32, 0.21	0 %
	Content of control groups	Conventional therapy	11	-0.09	-0.19, 0.02	0.07	-0.15, 0.29	65 %
		Occupational therapy	1	-2.48	-5.56, 0.60	-2.48	-5.56, 0.60	-
		Intensive therapy	2	0.24	-0.07, 0.56	0.24	-0.07, 0.56	0 %
		Conventional therapy + occupational therapy	2	-0.09	-0.57, 0.38	-0.09	-0.57, 0.38	0 %
		Others	3	-1.05	-1.84, -0.27	-0.87	-2.82, 1.08	84 %
Pain	Arm segments	Proximal	5	0.76	0.47, 1.06	0.82	-0.22, 1.86	92 %
		Distal	1	0.73	-0.03,- 1.49	0.73	-0.03, 1.49	NA %
		Both	1	-0.20	-0.49, 0.09	-0.20	-0.49, 0.09	NA %
	Robot types	Unilateral	6	0.76	0.49, 1.03	0.81	-0.04, 1.66	90 %
		Both	1	-0.20	-0.49, 0.09	-0.20	-0.49, 0.09	-
	Content of control groups	Conventional therapy	4	0.32	0.09, 0.55	0.88	-0.42, 2.19	96 %
		Intensive therapy	1	0.03	-1.42, 1.49	0.03	-1.42, 1.49	-
		Conventional therapy + occupational therapy	2	0.29	-0.11, 0.69	0.35	-0.23, 0.93	44 %
Strenght	Arm segments	Proximal	18	0.25	0.07, 0.42	0.46	0.12, 0.79	72 %
		Distal	3	0.94	0.62, 1.25	2.85	-2.28, 7.98	87 %
		Both	2	0.06	-0.58, 0.69	0.06	-0.58, 0.69	0 %
	Robot types	Unilateral	19	0.37	0.21, 0.52	0.45	0.12, 0.77	79 %
		Bilateral	3	0.70	0.10, 1.30	0.79	-0.09, 1.67	41 %
		Both	1	-1.20	-7.67, 5.27	-1.20	-7.67, 5.27	NA %
	Content of control groups	Conventional therapy	16	0.40	0.24, 0.56	0.47	0.13, 0.81	71 %
		Occupational therapy	2	0.25	-0.48, 0.97	0.25	-0.48, 0.97	0 %
		Task-oriented approach	2	0.18	-0.31, 0.67	0.18	-0.31, 0.67	0 %
		Virtual reality	1	9.20	4.17, 14.23	9.20	4.17, 14.23	-
		Others	2	7.96	3.69, 12.22	6.98	-8.90, 22.85	93 %

Abbreviations: SN, study number; CI, confidence interval

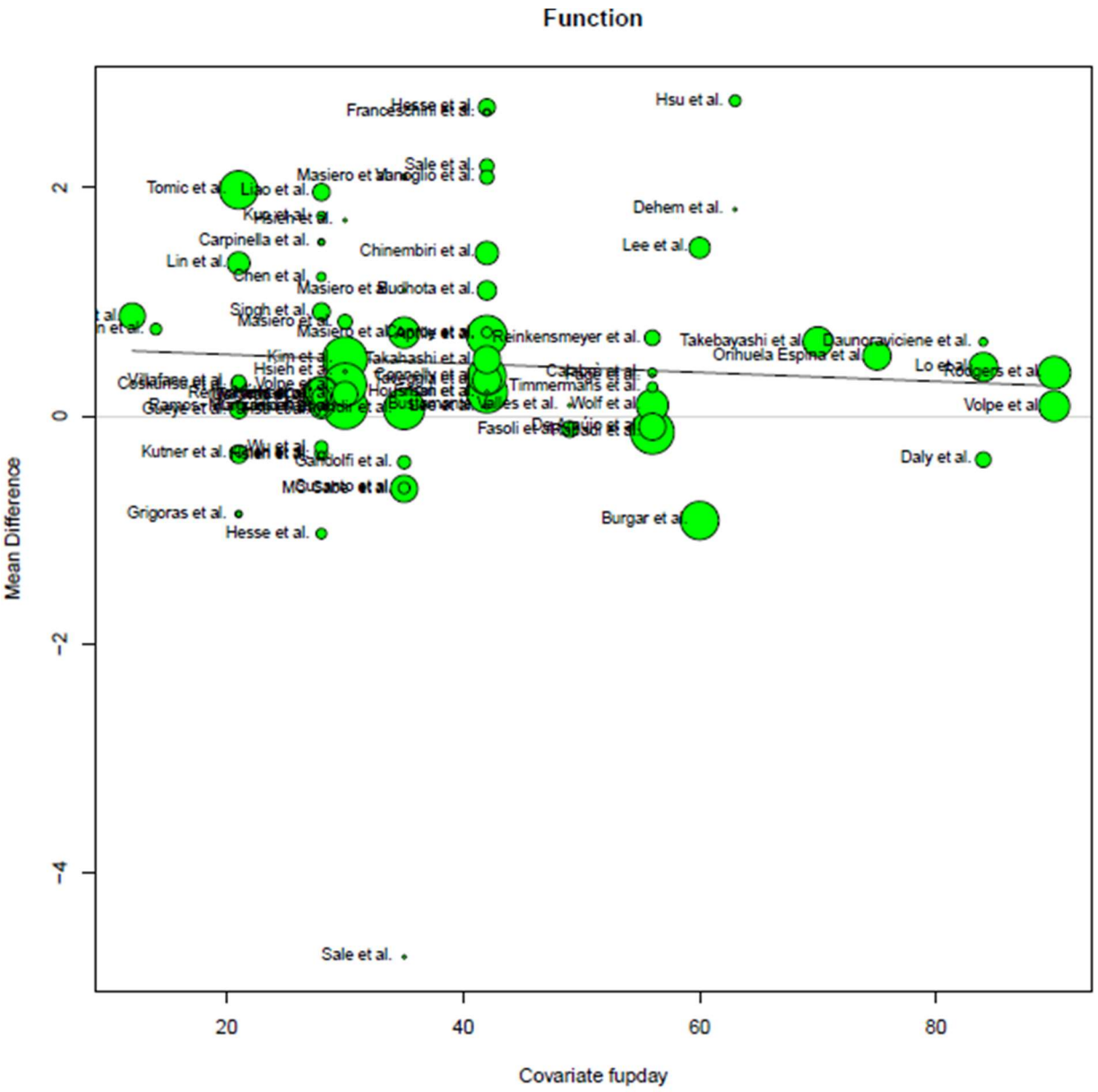
Supplementary Material 10. Findings of the metaregression analyses for each domain using the duration of interventions as independent factor



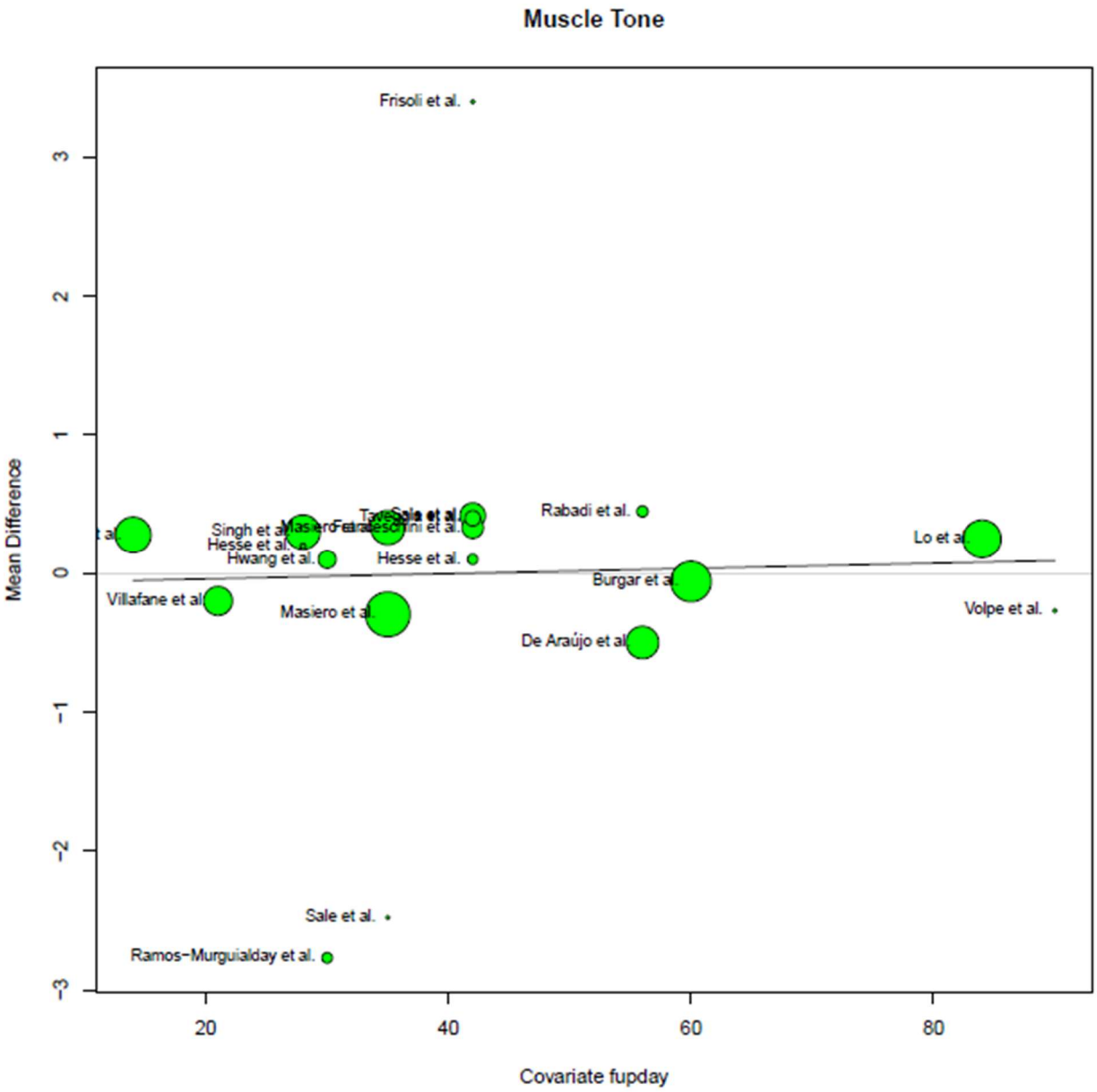
Mixed−Effects Model (k = 107; tau^2 estimator: REML)
logLik deviance AIC BIC AICc
−119.8972 239.7945 245.7945 253.7564 246.0321
tau^2 (estimated amount of residual heterogeneity): 0.2218 (SE = 0.0521)
tau (square root of estimated tau^2 value): 0.4709
I^2 (residual heterogeneity / unaccounted variability): 88.41%
H^2 (unaccounted variability / sampling variability): 8.63
R^2 (amount of heterogeneity accounted for): 5.55%
Test for Residual Heterogeneity:
QE(df = 105) = 412.4393, p−val < .0001
Test of Moderators (coefficient 2):
QM(df = 1) = 3.7045, p−val = 0.0543
Model Results:
estimate se zval pval ci.lb ci.ub
intrcpt 0.5798 0.1251 4.6360 <.0001 0.3347 0.8250 ***
.subgroup −0.0052 0.0027 −1.9247 0.0543 −0.0104 0.0001 .
−−−
Signif. codes: 0 ...***... 0.001 ...**... 0.01 ...*... 0.05 ..... 0.1 1



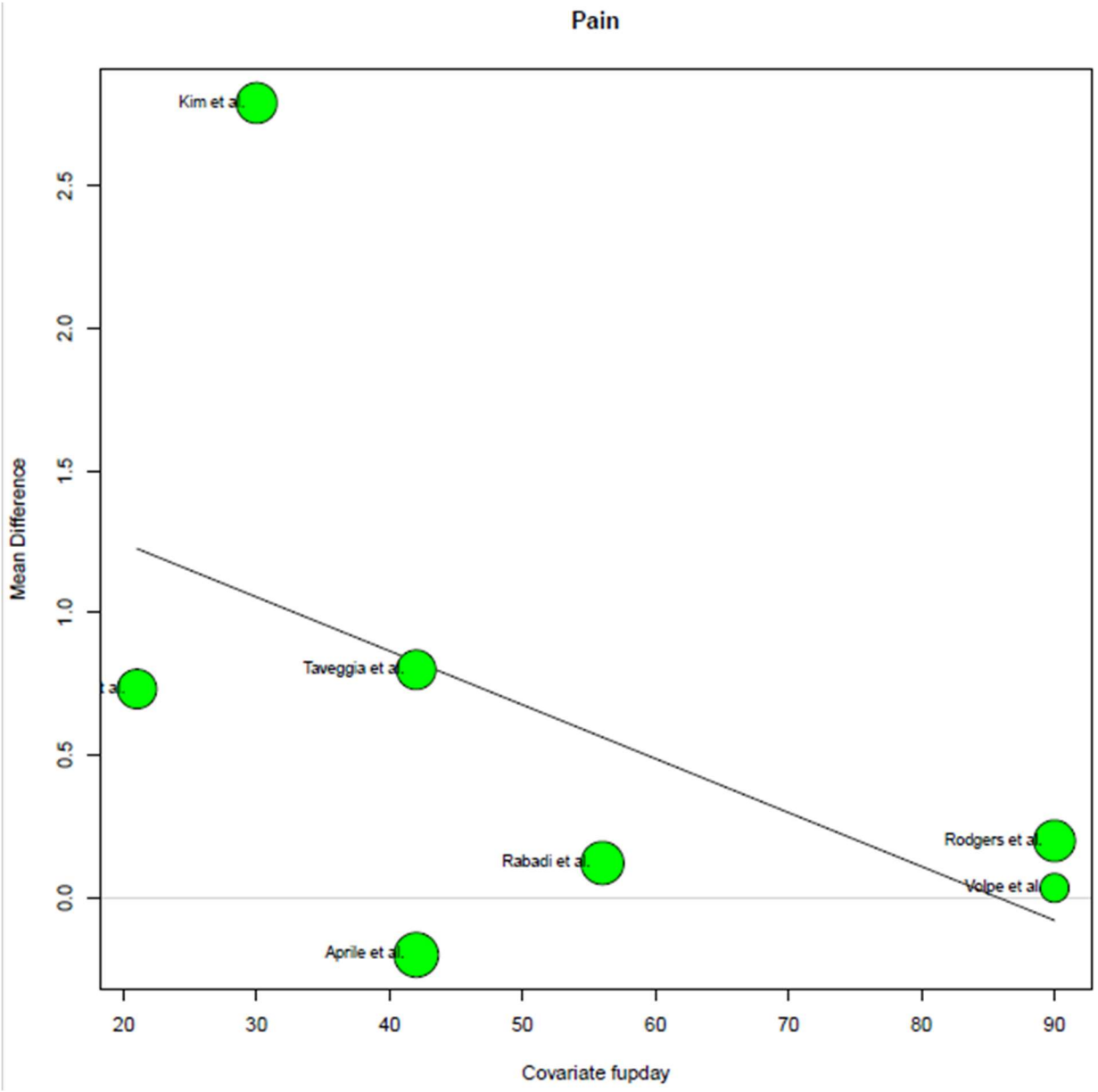
Mixed−Effects Model (k = 18; tau^2 estimator: REML)
logLik deviance AIC BIC AICc
−18.3979 36.7959 42.7959 45.1136 44.7959
tau^2 (estimated amount of residual heterogeneity): 0 (SE = 0.0592)
tau (square root of estimated tau^2 value): 0
I^2 (residual heterogeneity / unaccounted variability): 0.00%
H^2 (unaccounted variability / sampling variability): 1.00
R^2 (amount of heterogeneity accounted for): 0.00%
Test for Residual Heterogeneity:
QE(df = 16) = 16.2581, p−val = 0.4351
Test of Moderators (coefficient 2):
QM(df = 1) = 0.0065, p−val = 0.9359
Model Results:
estimate se zval pval ci.lb ci.ub
intrcpt 0.3411 0.5601 0.6089 0.5426 −0.7567 1.4389
.subgroup −0.0009 0.0110 −0.0804 0.9359 −0.0224 0.0207
−−−
Signif. codes: 0 ...***... 0.001 ...**... 0.01 ...*... 0.05 ..... 0.1 1



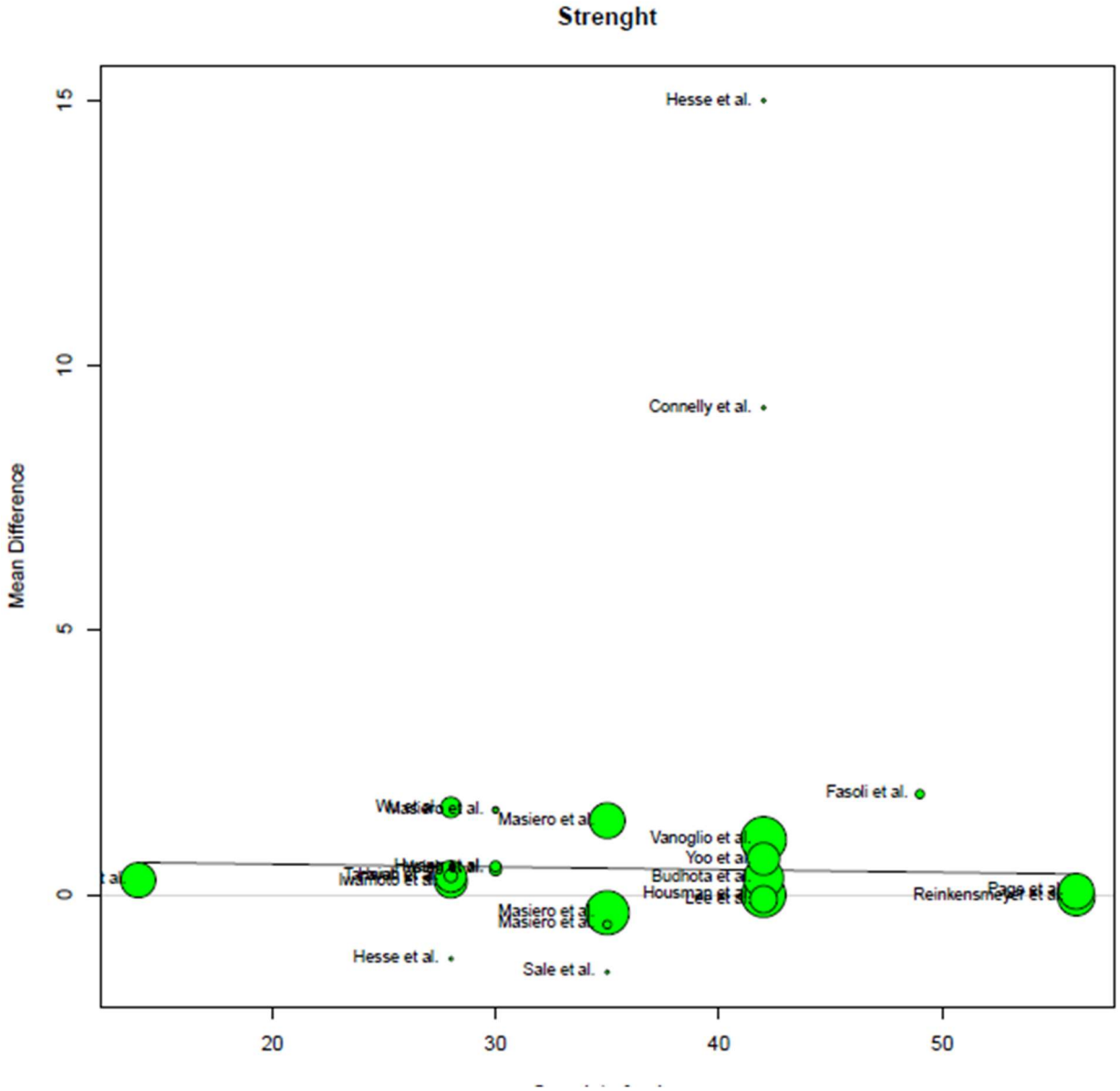
Mixed−Effects Model (k = 73; tau^2 estimator: REML)
logLik deviance AIC BIC AICc
−95.5378 191.0756 197.0756 203.8636 197.4338
tau^2 (estimated amount of residual heterogeneity): 0.2691 (SE = 0.0917)
tau (square root of estimated tau^2 value): 0.5188
I^2 (residual heterogeneity / unaccounted variability): 71.24%
H^2 (unaccounted variability / sampling variability): 3.48
R^2 (amount of heterogeneity accounted for): 1.89%
Test for Residual Heterogeneity:
QE(df = 71) = 192.9782, p−val < .0001
Test of Moderators (coefficient 2):
QM(df = 1) = 0.6377, p−val = 0.4245
Model Results:
estimate se zval pval ci.lb ci.ub
intrcpt 0.6180 0.2278 2.7132 0.0067 0.1716 1.0644 **
.subgroup −0.0039 0.0049 −0.7986 0.4245 −0.0135 0.0057
−−−
Signif. codes: 0 ...***... 0.001 ...**... 0.01 ...*... 0.05 ..... 0.1 1



Mixed−Effects Model (k = 19; tau^2 estimator: REML)
logLik deviance AIC BIC AICc
−20.9945 41.9889 47.9889 50.4886 49.8351
tau^2 (estimated amount of residual heterogeneity): 0.1503 (SE = 0.0914)
tau (square root of estimated tau^2 value): 0.3876
I^2 (residual heterogeneity / unaccounted variability): 71.28%
H^2 (unaccounted variability / sampling variability): 3.48
R^2 (amount of heterogeneity accounted for): 0.00%
Test for Residual Heterogeneity:
QE(df = 17) = 53.5914, p−val < .0001
Test of Moderators (coefficient 2):
QM(df = 1) = 0.0814, p−val = 0.7755
Model Results:
estimate se zval pval ci.lb ci.ub
intrcpt −0.0787 0.3032 −0.2594 0.7953 −0.6730 0.5157
.subgroup 0.0019 0.0066 0.2853 0.7755 −0.0111 0.0149
−−−
Signif. codes: 0 ...***... 0.001 ...**... 0.01 ...*... 0.05 ..... 0.1 1



Mixed−Effects Model (k = 7; tau^2 estimator: REML)
logLik deviance AIC BIC AICc
−7.0164 14.0327 20.0327 18.8610 44.0327
tau^2 (estimated amount of residual heterogeneity): 0.8755 (SE = 0.6363)
tau (square root of estimated tau^2 value): 0.9357
I^2 (residual heterogeneity / unaccounted variability): 91.21%
H^2 (unaccounted variability / sampling variability): 11.37
R^2 (amount of heterogeneity accounted for): 7.91%
Test for Residual Heterogeneity:
QE(df = 5) = 64.3369, p−val < .0001
Test of Moderators (coefficient 2):
QM(df = 1) = 1.4822, p−val = 0.2234
Model Results:
estimate se zval pval ci.lb ci.ub
intrcpt 1.6217 0.8858 1.8308 0.0671 −0.1144 3.3578 .
.subgroup −0.0189 0.0155 −1.2174 0.2234 −0.0493 0.0115
−−−
Signif. codes: 0 ...***... 0.001 ...**... 0.01 ...*... 0.05 ..... 0.1 1



Mixed−Effects Model (k = 23; tau^2 estimator: REML)
logLik deviance AIC BIC AICc
−44.3772 88.7544 94.7544 97.8879 96.1661
tau^2 (estimated amount of residual heterogeneity): 0.2601 (SE = 0.1505)
tau (square root of estimated tau^2 value): 0.5100
I^2 (residual heterogeneity / unaccounted variability): 64.06%
H^2 (unaccounted variability / sampling variability): 2.78
R^2 (amount of heterogeneity accounted for): 0.00%
Test for Residual Heterogeneity:
QE(df = 21) = 90.6129, p−val < .0001
Test of Moderators (coefficient 2):
QM(df = 1) = 0.1241, p−val = 0.7247
Model Results:
estimate se zval pval ci.lb ci.ub
intrcpt 0.6845 0.5747 1.1910 0.2336 −0.4419 1.8109
.subgroup −0.0052 0.0147 −0.3522 0.7247 −0.0339 0.0236
−−−
Signif. codes: 0 ...***... 0.001 ...**... 0.01 ...*... 0.05 ..... 0.1 1