

Supplementary material

Table S1. PRISMA checklist.

Section/topic	#	Checklist item
TITLE		
Title	1	Identify the report as a systematic review, meta-analysis, or both.
ABSTRACT		
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results and conclusions; limitations; conclusions and implications of key findings; systematic review registration number.
INTRODUCTION		
Rationale	3	Describe the rationale for the review in the context of what is already known.
Objectives	4	Provide an explicit statement of questions being addressed with reference to particular comparisons, outcomes, and study design (PICOS).
METHODS		
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and provide registration information including registration number.
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., considered, language, publication status) used as criteria for eligibility, giving ratios and where applicable, included in the meta-analysis).
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.
Search	8	Present full electronic search strategy for at least one database, including any limits used, that could be repeated.
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, included in the meta-analysis).
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently), and any processes for obtaining and confirming data from investigators.
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specifying whether this was done at the study or outcome level), and how this information is used in the synthesis.
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.
RISK OF BIAS		
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., selective reporting within studies).

Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-analyses), indicating which were pre-specified.
RESULTS		
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, and exclusions at each stage, ideally with a flow diagram.
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, study period) and provide the citations.
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessments.
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple measures of effect and (b) effect estimates and confidence intervals, ideally with a forest plot.
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-analyses [see Item 16]).
DISCUSSION		
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome and its relevance to key groups (e.g., healthcare providers, users, and policy makers).
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., retrieval of identified research, reporting bias).
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and recommendations for research.
FUNDING		
Funding	27	Describe sources of funding for the systematic review and other support (e.g., support from funders for the systematic review).

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: www.prisma-statement.org.

Table S2. Boolean search strategy for each database.

PubMed	<p>(("core strength"[Title/Abstract] OR "trunk strength"[Title/Abstract] OR "trunk stability"[Title/Abstract] OR "trunk stabilization"[Title/Abstract] OR "trunk control"[Title/Abstract] OR "core stability"[Title/Abstract] OR "core stabilization"[Title/Abstract] OR "core control"[Title/Abstract] OR "lumbar stability"[Title/Abstract] OR "lumbar stabilization"[Title/Abstract] OR "lumbar control"[Title/Abstract] OR "spine stability"[Title/Abstract] OR "spine stabilization"[Title/Abstract] OR "spine control"[Title/Abstract] OR "lumbopelvic stability"[Title/Abstract] OR "lumbopelvic control"[Title/Abstract] OR "lumbopelvic stabilization"[Title/Abstract] OR "lumbo-pelvic stability"[Title/Abstract] OR "lumbo-pelvic control"[Title/Abstract] OR "lumbo-pelvic stabilization"[Title/Abstract]) AND ("training"[Title/Abstract] OR "exercises"[Title/Abstract] OR "program"[Title/Abstract] OR "programme") AND ("stroke"[Title/Abstract]) NOT "cell"[Title/Abstract])</p>
Scopus	<p>TITLE-ABS ("core strength" OR "trunk strength" OR "trunk stability" OR "trunk stabilization" OR "trunk control" OR "core stability" OR "core stabilization" OR "core control" OR "lumbar stability" OR "lumbar stabilization" OR "lumbar control" OR "spine stability" OR "spine stabilization" OR "spine control" OR "lumbopelvic stability" OR "lumbopelvic control" OR "lumbopelvic stabilization" OR "lumbo-pelvic stability" OR "lumbo-pelvic control" OR "lumbo-pelvic stabilization") AND ("training" OR "exercises" OR "program" OR "programme") AND ("stroke") AND NOT ("cell") AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English"))</p>
Cochrane and EMBASE	<p>("core strength" OR "trunk strength" OR "trunk stability" OR "trunk stabilization" OR "trunk control" OR "core stability" OR "core stabilization" OR "core control" OR "lumbar stability" OR "lumbar stabilization" OR "lumbar control" OR "spine stability" OR "spine stabilization" OR "spine control" OR "lumbopelvic stability" OR "lumbopelvic control" OR "lumbopelvic stabilization" OR "lumbo-pelvic stability" OR "lumbo-pelvic control" OR "lumbo-pelvic stabilization") AND ("training" OR "exercises" OR "program" OR "programme") AND ("stroke") AND NOT ("cell")</p>

Forest plot of the main outcomes analyzed

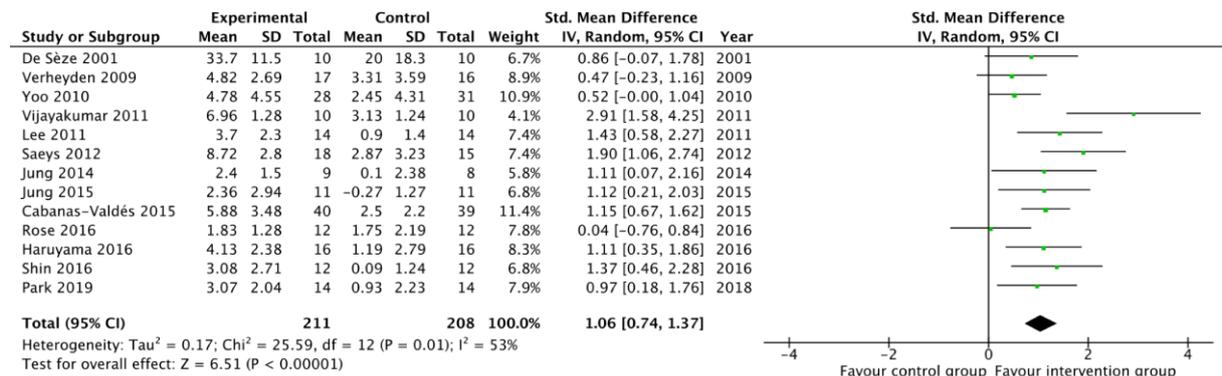


Figure S1. Pooled effect sizes on trunk function.

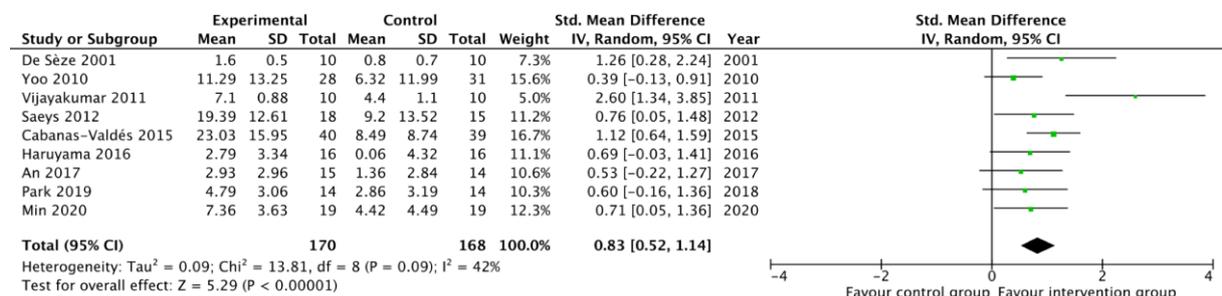
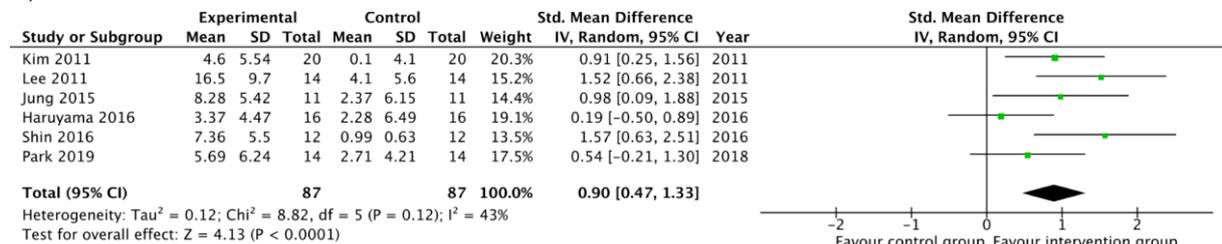
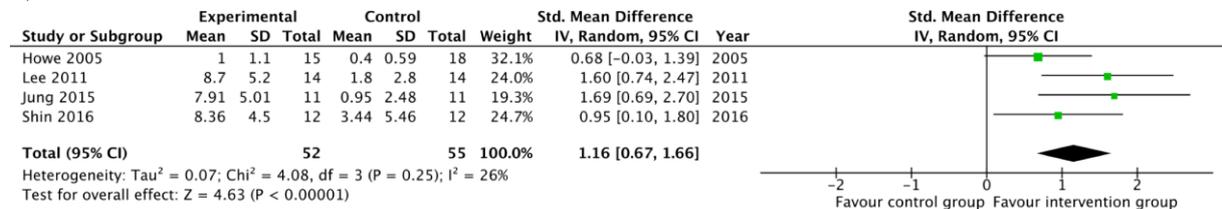


Figure S2. Pooled effect sizes on balance ability.

A)



B)



C)

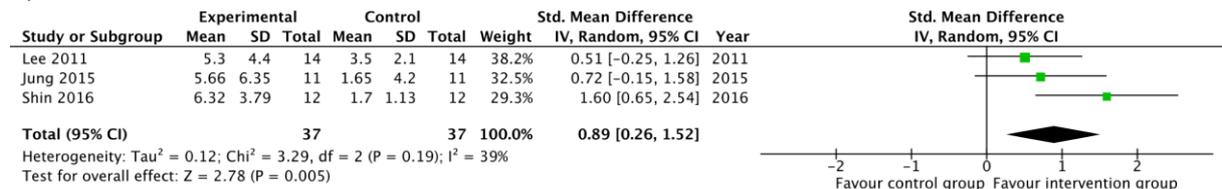


Figure S3. (A) Pooled effect sizes on limits of stability forward reach of the unaffected arm; (B) Pooled effect sizes on limits of stability lateral reach of the unaffected arm; (C) Pooled effect sizes on limits of stability lateral reach of the affected arm.

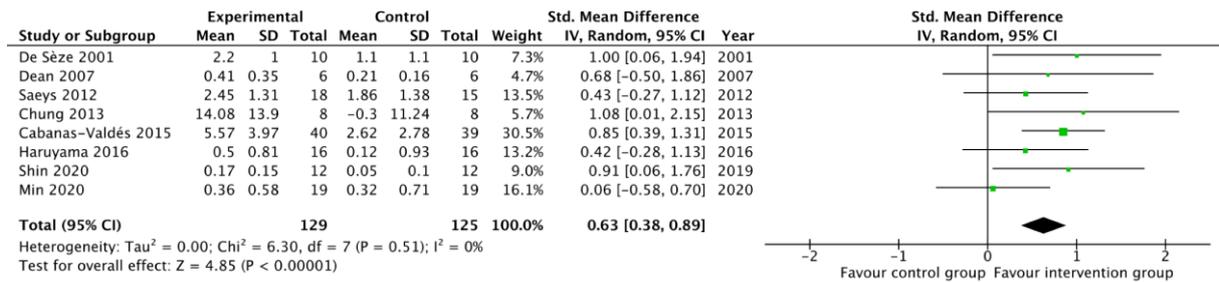


Figure S4. Pooled effect sizes on gait performance.

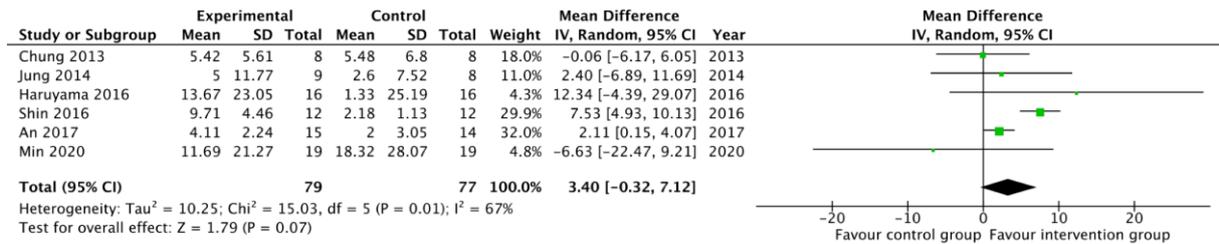
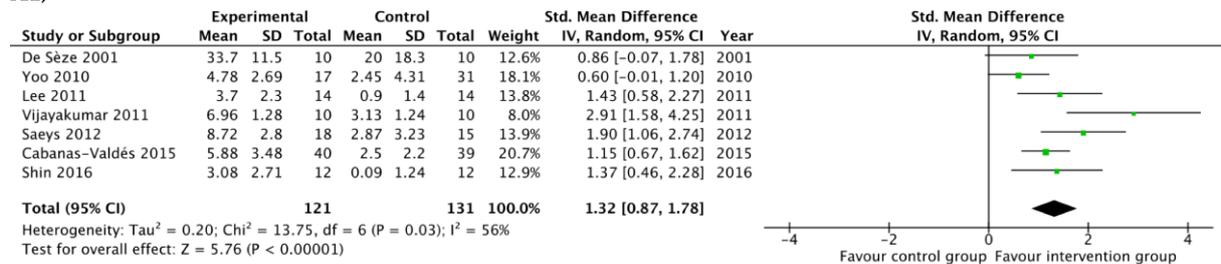


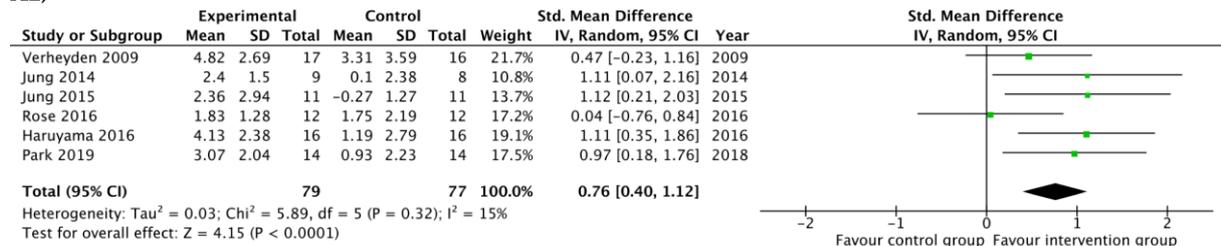
Figure S5. Pooled effect sizes on functional mobility.

Subgroup analyses for the moderator variables analyzed

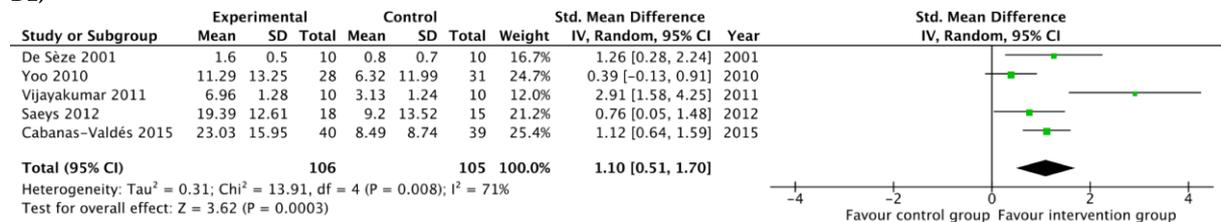
A1)



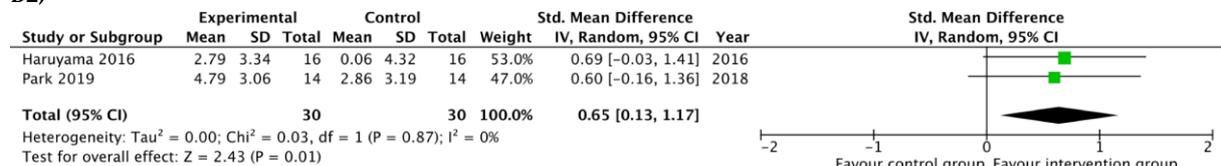
A2)



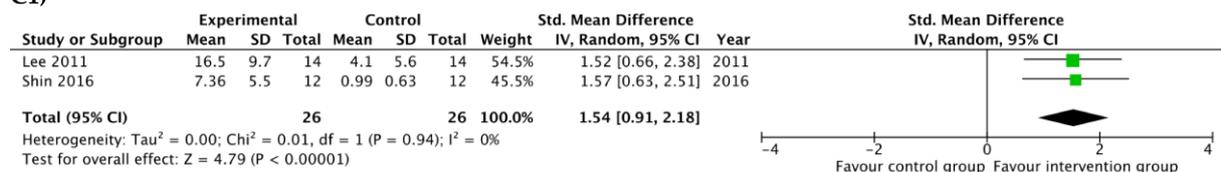
B1)



B2)



C1)



C2)

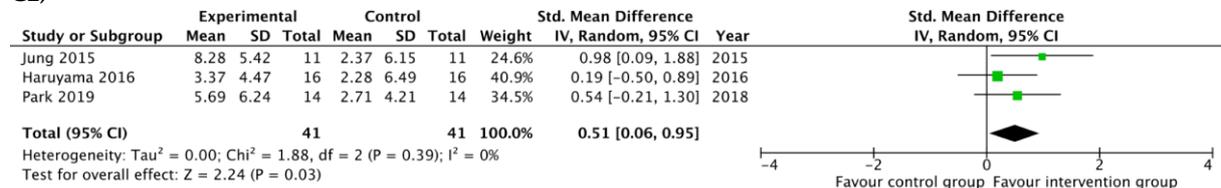
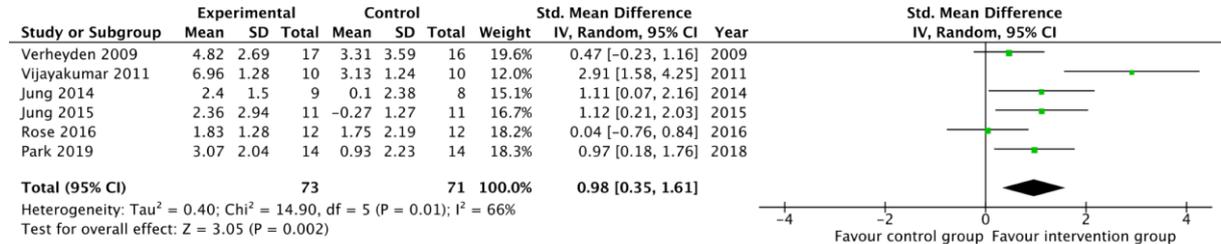
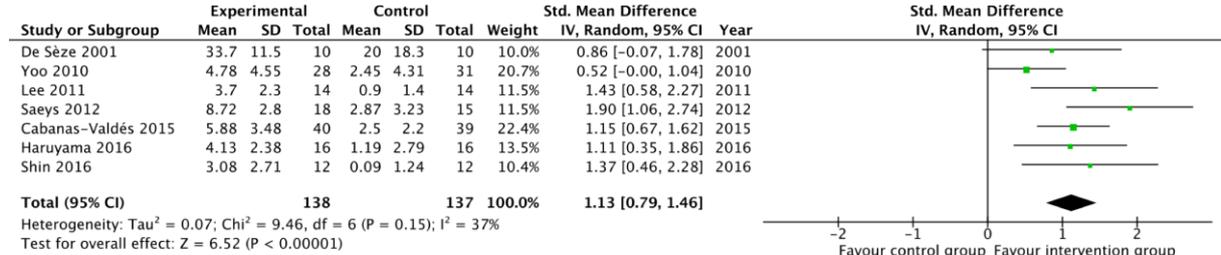


Figure S6. Subgroup analyses by initial trunk impairment. (A1) Effect on trunk function for studies below the median; (A2) Effect on trunk function for studies over the median; (B1) Effect on balance ability for studies below the median; (B2) Effect on balance ability for studies over the median; (C1) Effect on limits of stability forward reach of the unaffected arm for studies below the median; (C2) Effect on limits of stability forward reach of the unaffected arm for studies over the median.

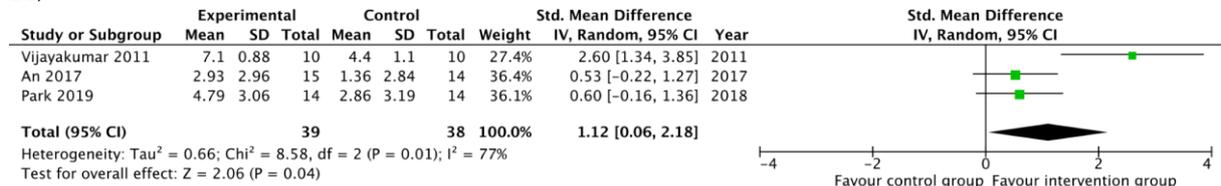
A1)



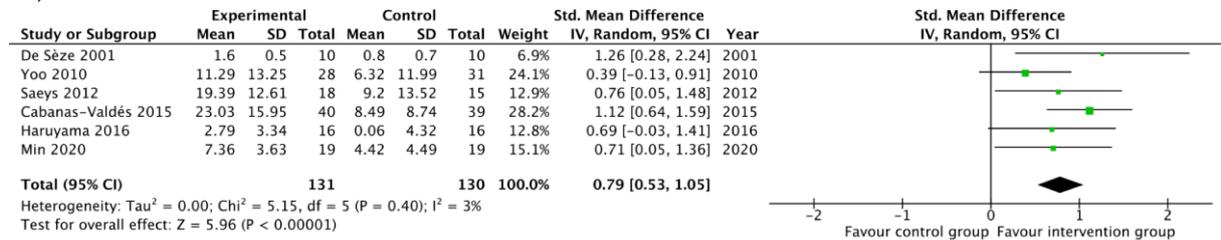
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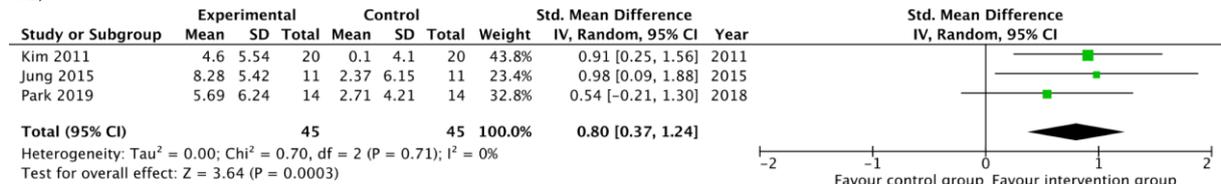
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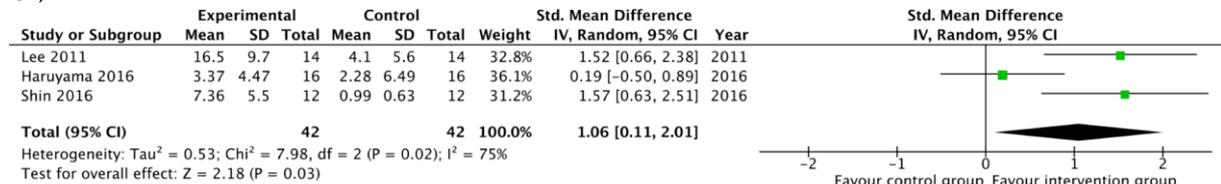
B2)



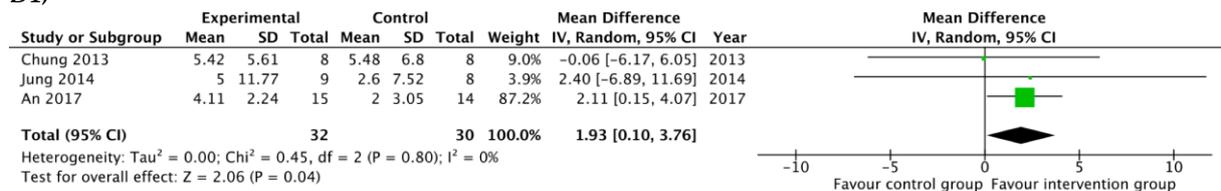
C1)



C2)



D1)



D2)

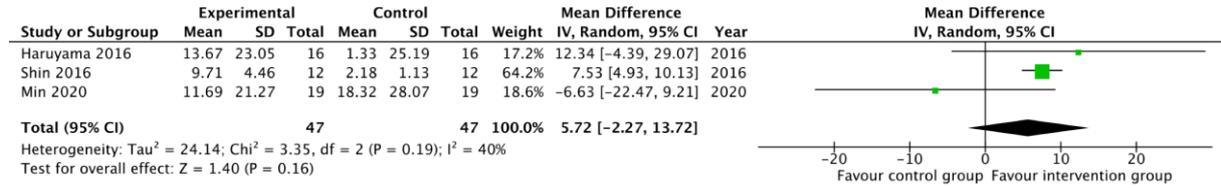
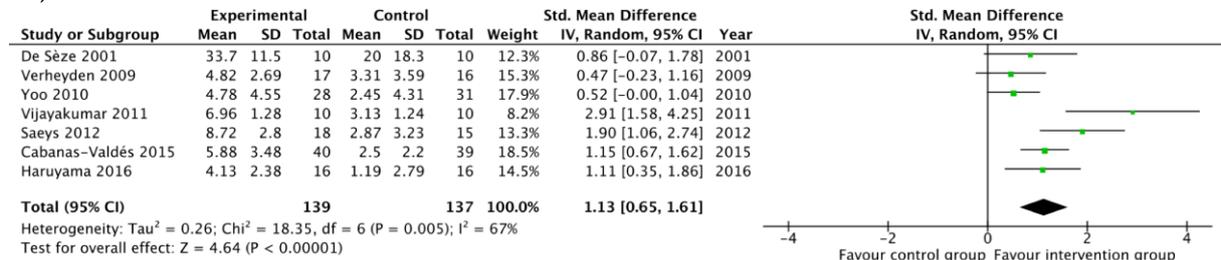
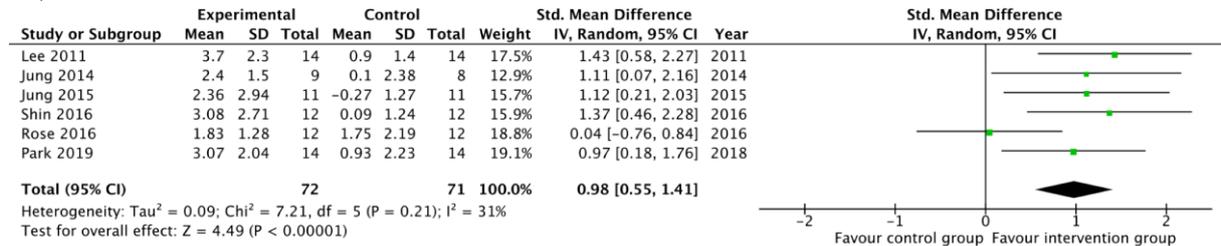


Figure S7. Subgroup analyses by participants' age. (A1) Effect on trunk function for studies below the median; (A2) Effect on trunk function for studies over the median; (B1) Effect on balance ability for studies below the median; (B2) Effect on balance ability for studies over the median (C1) Effect on limits of stability forward reach of the unaffected arm for studies below the median; (C2) Effect on limits of stability forward reach of the unaffected arm for studies over the median; (D1) Effects on functional mobility for studies below the median; (D2) Effects on functional mobility for studies over the median.

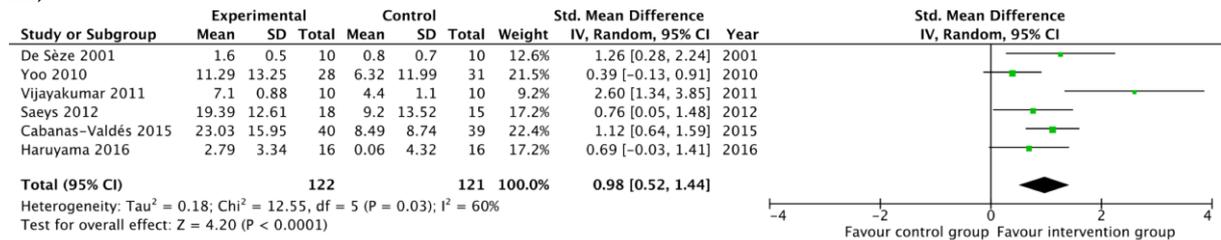
A1)



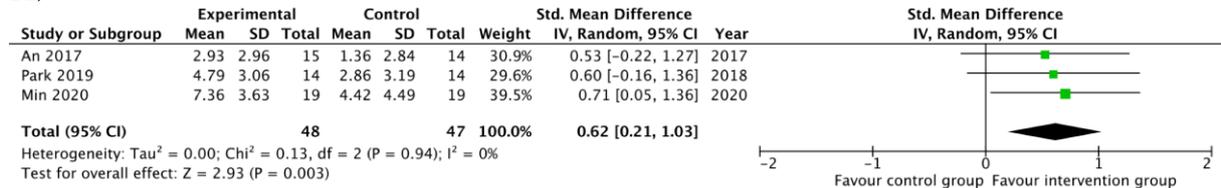
A2)



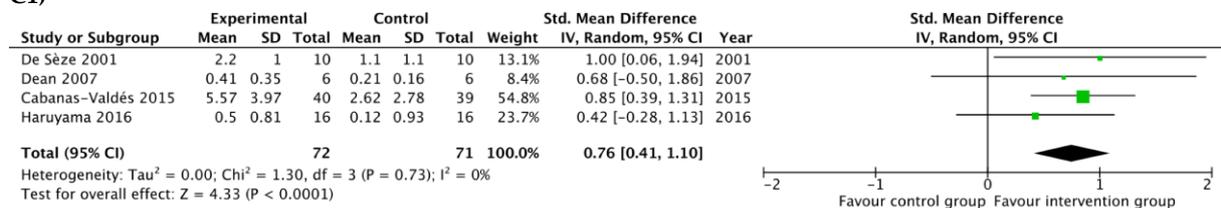
B1)



B2)



C1)



C2)

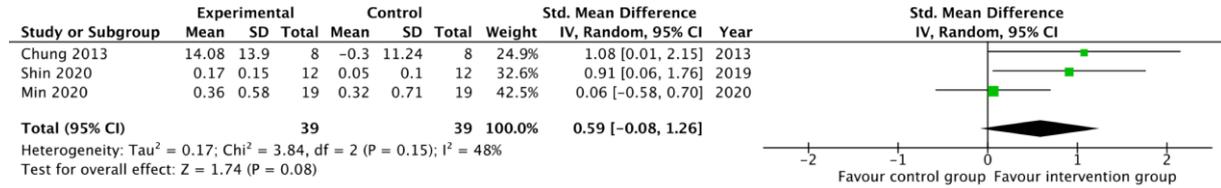
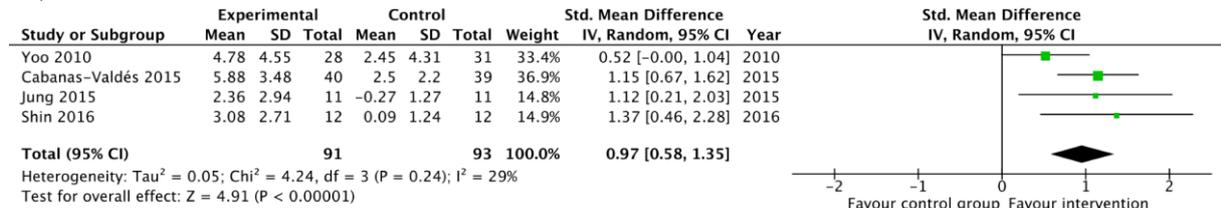
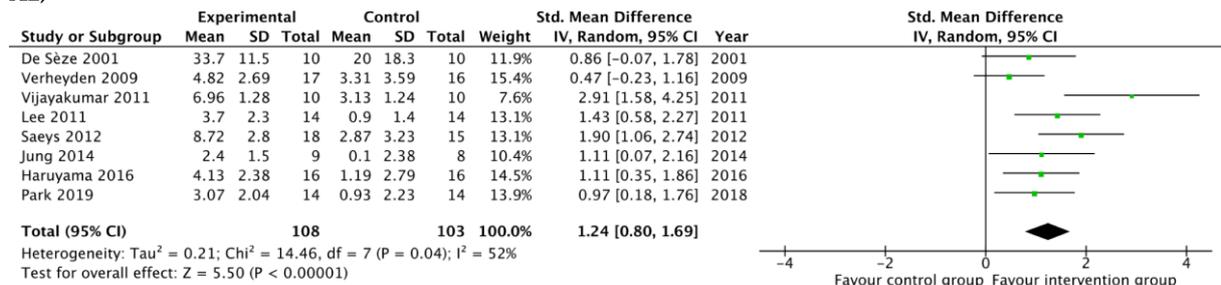


Figure S8. Subgroup analyses by the start of the intervention after the stroke-onset. (A1) Effect on trunk function for studies below the median; (A2) Effect on trunk function for studies over the median; (B1) Effect on balance ability for studies below the median; (B2) Effect on balance ability for studies over the median; (C1) Effect on gait performance for studies below the median; (C2) Effect on gait performance for studies over the median.

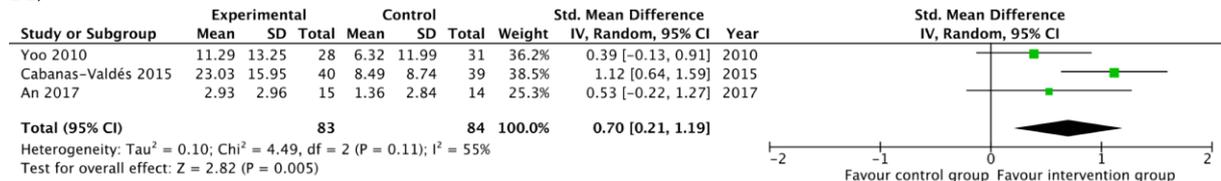
A1)



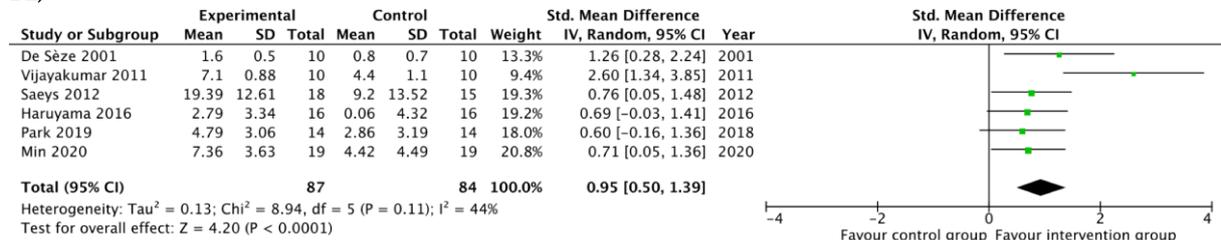
A2)



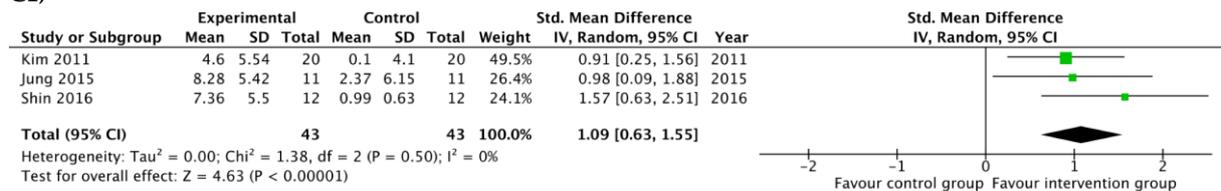
B1)



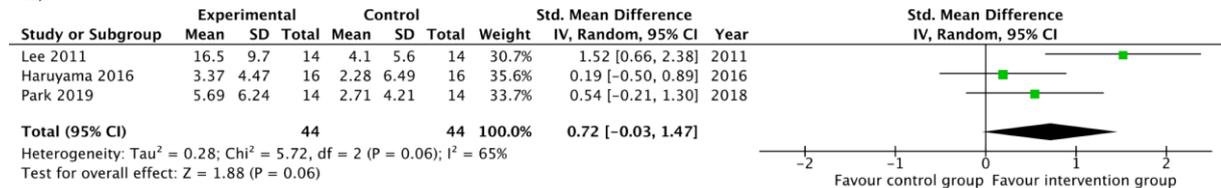
B2)



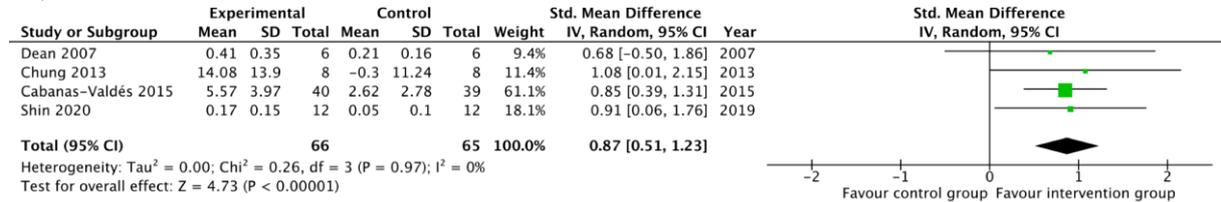
C1)



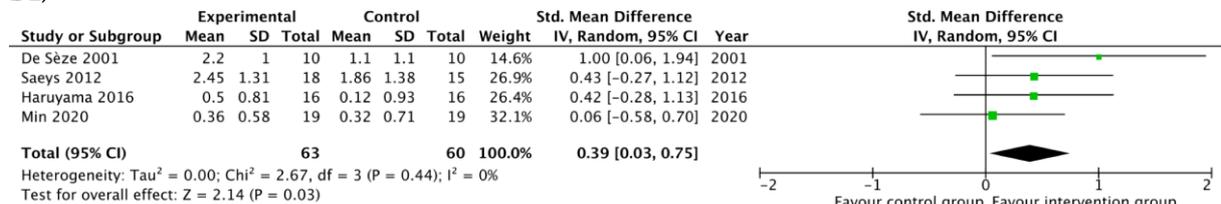
C2)



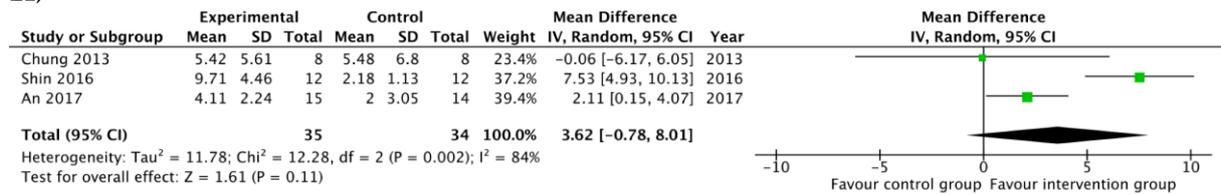
D1)



D2)



E1)



E2)

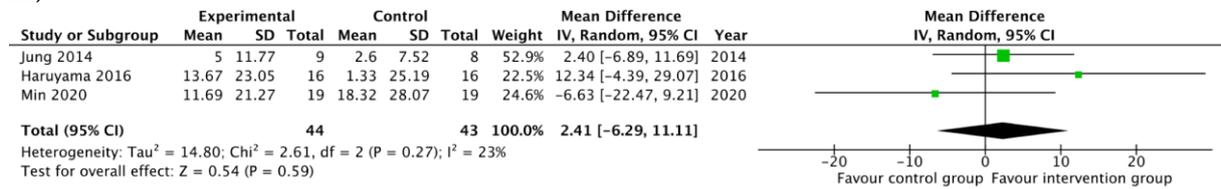


Figure S9. Subgroup analyses by total volume (minutes) of the additional trunk exercise programs. (A1) Effect on trunk function for studies below the median; (A2) Effect on trunk function for studies over the median; (B1) Effect on balance ability for studies below the median; (B2) Effect on balance ability for studies over the median; (C1) Effect on limits of stability forward reach of the unaffected arm for studies below the median; (C2) Effect on limits of stability forward reach of the unaffected arm for studies over the median; (D1) Effects on gait performance for studies below the median; (D2) Effects on gait performance for studies over the median; (E1) Effects on functional mobility for studies below the median; (E2) Effects on functional mobility for studies over the median.

Table S3. PEDro scale to assess methodological quality.

	Eligibility criteria specified	Subjects random allocation	Concealed allocation	Similar groups baseline	Subjects blinding	Therapists blinding	Assessors blinding	Outcome measurement in 85% of the subjects initially allocated	Intention to treat	Between-group statistical comparison	Point measures and variability
DeSèze et al., 2001	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓
Howe et al., 2005	✓	✓	✓	✓	X	X	✓	✓	X	✓	X
Dean et al., 2007	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓
Verheyden et al., 2009	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓
Yoo et al., 2010	✓	✓	X	✓	X	X	X	?	?	✓	X
Kim et al., 2011	✓	✓	X	✓	X	X	X	✓	✓	✓	X
Vijayakumar et al., 2011	✓	✓	✓	✓	X	X	✓	?	?	✓	X
Lee et al., 2011	✓	✓	X	✓	X	X	✓	✓	X	✓	✓
Saeys et al., 2012	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓
Chung et al., 2013	✓	✓	X	✓	X	X	X	✓	✓	✓	✓
Jung et al., 2014	✓	✓	✓	✓	X	X	✓	✓	X	✓	X

Cabanas-Valdés et al., 2015	✓	✓	✓	✓	X	X	✓	✓	X	✓	✓
Jung et al., 2015	✓	✓	✓	✓	X	X	✓	X	X	✓	✓
Haruyama et al., 2016	✓	✓	✓	✓	X	X	✓	✓	X	✓	✓
Shin et al., 2016	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓
Rose et al., 2016	✓	✓	✓	✓	X	X	✓	✓	X	✓	✓
An et al., 2017	✓	✓	✓	✓	X	X	?	✓	X	✓	✓
Park et al., 2019	✓	✓	✓	✓	✓	X	X	✓	X	✓	X
Min et al., 2020	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓

Table S4. Quality of evidence (GRADE approach) between additional trunk-focused exercises vs conventional rehabilitation.

<i>No of studies</i>	<i>Study design</i>	<i>Risk of bias (PEDro)</i>	<i>Inconsistency</i>	<i>Indirectness</i>	<i>Imprecision</i>	<i>Publication bias</i>	<i>Sample Experimental group</i>	<i>Sample Control group</i>	<i>Pooled effect size (95% CI)</i>	<i>Certainty</i>	<i>Importance</i>
<i>Trunk function</i>											
13	randomised trials	serious ^a	serious ^b	serious ^c	not serious	none	211	208	SMD 1.06 SD higher (0.74 higher to 1.37 higher)	⊕○○○ VERY LOW	CRITICAL
<i>Balance ability</i>											
9	randomised trials	serious ^a	not serious	serious ^c	not serious	none	170	168	SMD 0.83 SD higher (0.52 higher to 1.14 higher)	⊕⊕○○ LOW	CRITICAL
<i>Limits of stability - Forward unaffected</i>											
6	randomised trials	serious ^a	not serious	serious ^c	serious ^d	none	87	87	SMD 0.9 SD higher (0.47 higher to 1.33 higher)	⊕○○○ VERY LOW	CRITICAL
<i>Limits of stability - Lateral unaffected</i>											
4	randomised trials	serious ^a	not serious	serious ^c	serious ^d	none	52	55	SMD 1.16 SD higher (0.67 higher to 1.66 higher)	⊕○○○ VERY LOW	CRITICAL
<i>Limits of stability - Lateral affected</i>											
3	randomised trials	serious ^a	not serious	not serious	serious ^d	none	37	37	SMD 0.89 SD higher (0.26 higher to 1.52 higher)	⊕⊕○○ LOW	CRITICAL
<i>Gait performance</i>											
8	randomised trials	not serious	not serious	serious ^c	serious ^d	none	129	125	SMD 0.63 SD higher (0.38 higher to 0.89 higher)	⊕⊕○○ LOW	CRITICAL
<i>Functional mobility</i>											

6	randomised trials	serious ^a	serious ^b	not serious	very serious ^{d,e}	none	79	77	MD 3.4 higher (-0.32 lower to 7.12 higher)	⊕○○○ VERY LOW	CRITICAL
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Abbreviations. PEDro: Physiotherapy Evidence Database Scale; CI: Confidence interval; SMD: Standardized mean difference; MD: Weighted Mean difference; I²: Inconsistency Statistic;

- a. Downgraded one level since at least two studies scored ≤6 on the PEDro scale
- b. Downgraded one level due to an Inconsistency statistic (I²) ≥ 50%
- c. Downgraded one level because different test/scales were employed to measure the outcome
- d. Downgraded one level due to a sample with less than 300 participants
- e. Downgraded one level due to large confidence intervals (Includes the 0-Hypothesis)

