Running title: Specific versus non-specific VR-based rehabilitation

Supplementary Materials

Effect of specific over non-specific VR-based rehabilitation on post-stroke motor recovery: A systematic meta-analysis

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SUPPLEMENTAL TABLES

Supplementary Table 1. Search strategy of the meta-analysis. The search was organized by MeSH headings [MeSH] and searches in titles, abstracts, and keywords [tiab].

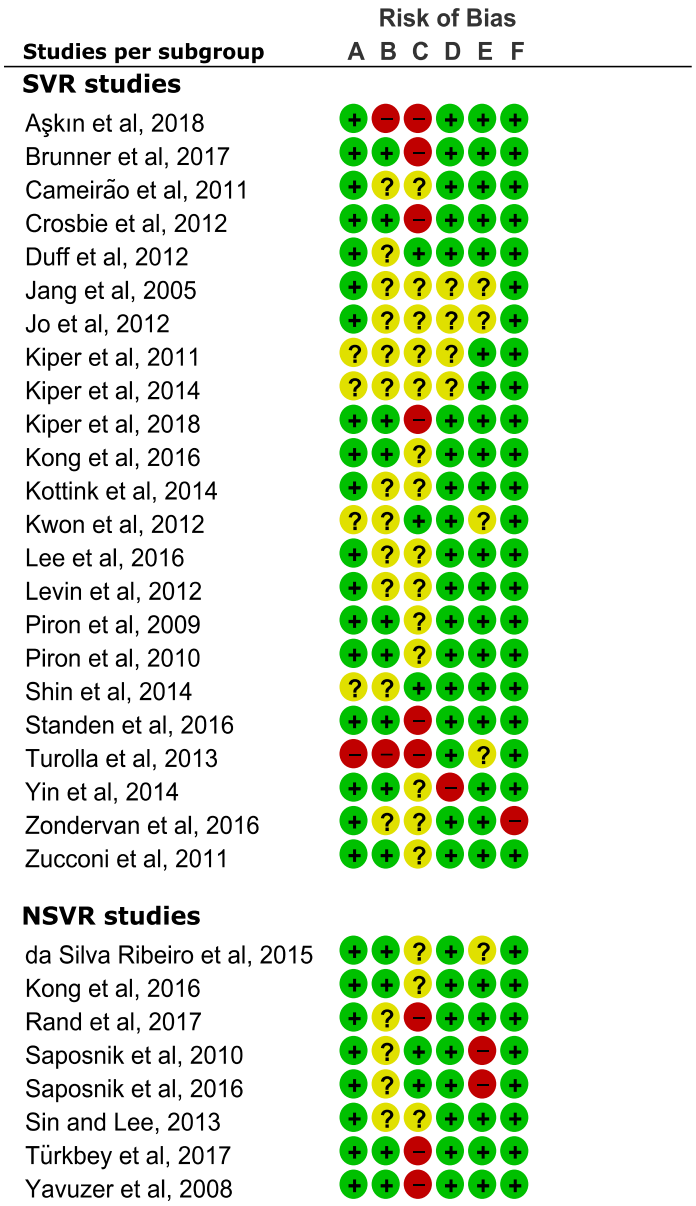
#1	Stroke[MeSH] OR eva*[tiab] OR post-stroke*[tiab] OR stroke*[tiab] OR apoplexy*[tiab]
#2	Hemiplegia[MeSH] OR Paresis[MeSH] OR hemipleg*[tiab] OR hemipar*[tiab] OR paresis[tiab] OR paretic[tiab] OR upper-extremit*[tiab] OR upper-arm*[tiab]
#3	"Occupational Therapy" [MeSH] OR "Physical Therapy" [MeSH] OR "Rehabilitation" [MeSH] OR "Virtual Reality" [MeSH] OR "Serious games" [MeSH]
#4	#1 AND #2 AND #3

Supplementary Table 2. Excluded studies after full-text analysis.

Adie et al, 2017[1]	No after treatment measurement for MAL QOM reported
Broeren et al, 2008[2]	PEDro score below 5
Carregosa et al, 2018[3]	Follow-up of already published study
Chen et al, 2015[4]	Baseline not balanced
Choi et al, 2018[5]	No endpoint measurements, baseline age not equal
Fan et al, 2014[6]	Only Jebsen-Taylor hand test used
Friedman et al, 2014[7]	Only changes reported
Housman et al, 2009[8]	No endpoint measurements reported
In et al, 2012[9]	PEDro score below 5, no VR intervention
Kim et al, 2011a[10]	Control group did not do CT/PT/OC
Kim et al, 2012[11]	Passive control, no clinical scales, electrical stimulation, PEDro score below 5
Kim et al, 2018[12]	Control group did not do CT/PT/OC
Lee et al, 2013[13]	No clinical scales
Lee et al, 2014[14]	No VR environment
McNulty et al, 2015[15]	Control group did mCIMT
Park et al, 2016[16]	Control group did not do CT/PT/OC
Piron et al, 2007[17]	PEDro score below 5
Rand et al, 2009[18]	Only 4 patients, no control group
Shin et al, 2015[19]	Median and interquartile range is reported
Shin et al, 2016[20]	RAPAEL smart glove, a hand exoskeleton, is used
Subramanian et al, 2013[21]	No endpoint measurement reported
Sucar et al, 2009[22]	No endpoint measurement reported

Abbreviations: CT, conventional therapy; MAL QOM, Motor Activity Log Quality of Movement; mCIMT, modified constrained induced therapy; OC, occupational therapy; PT, physical therapy; VR, virtual reality.

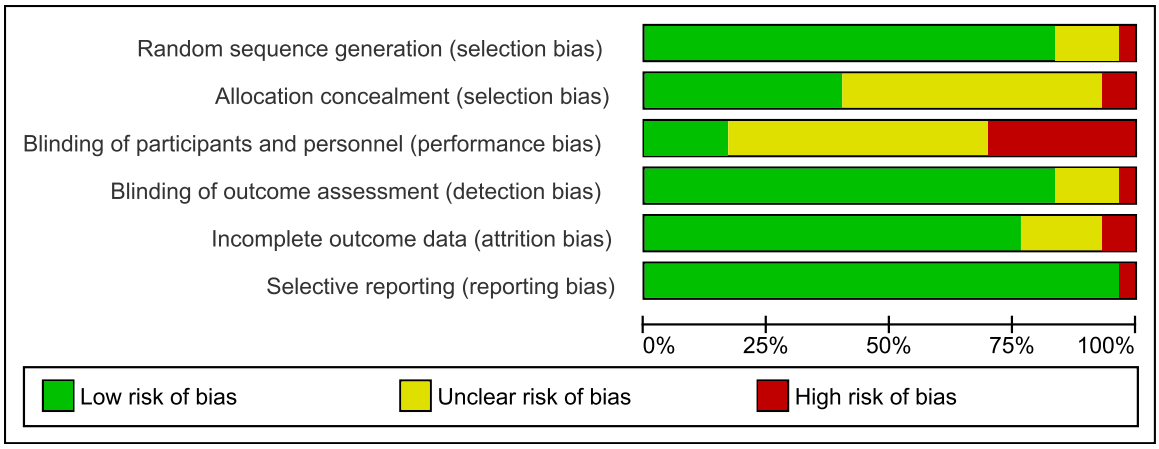
SUPPLEMENTAL FIGURES



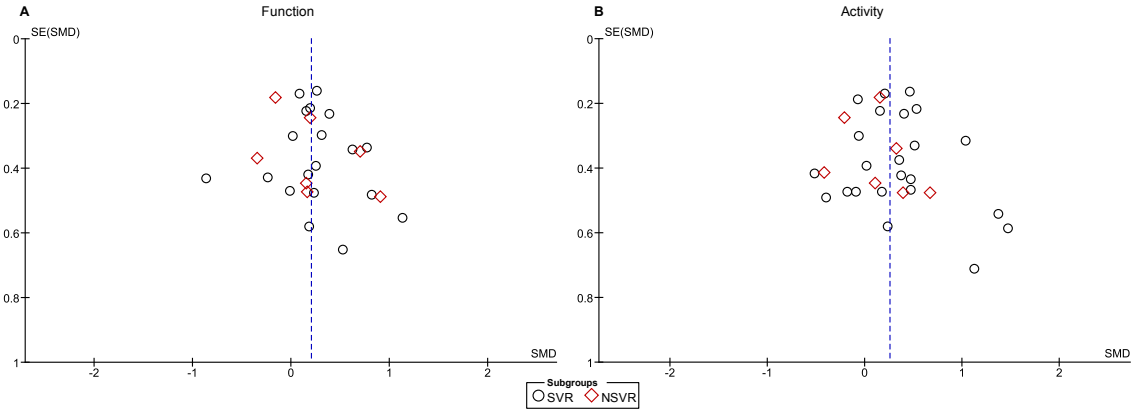
Risk of bias legend

(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)

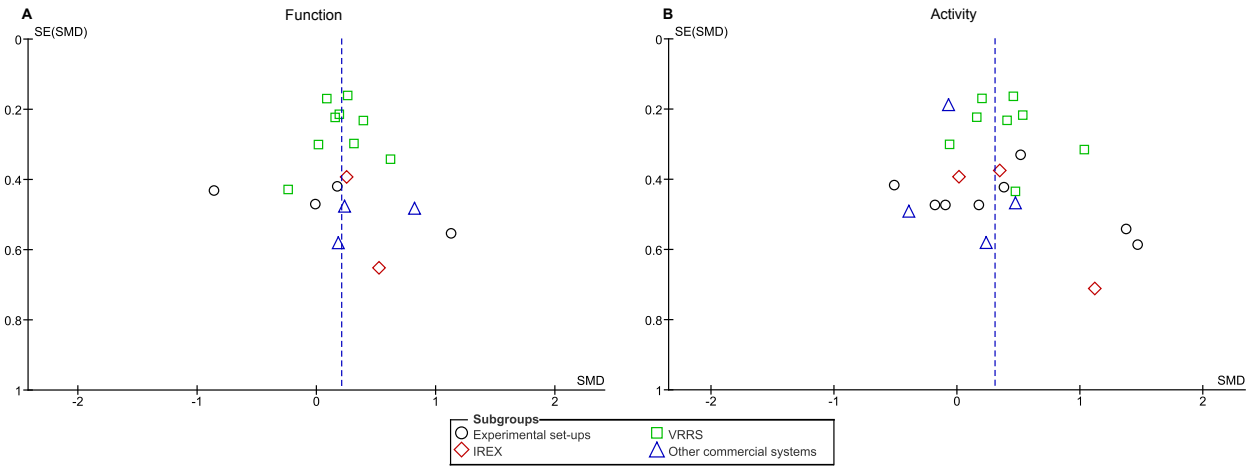
Supplementary Figure 1. Risk of bias per study. Review authors' judgments about each risk of bias item for all the included studies.
Abbreviations: NSVR, nonspecific VR; SVR, specific VR; VR, virtual reality.



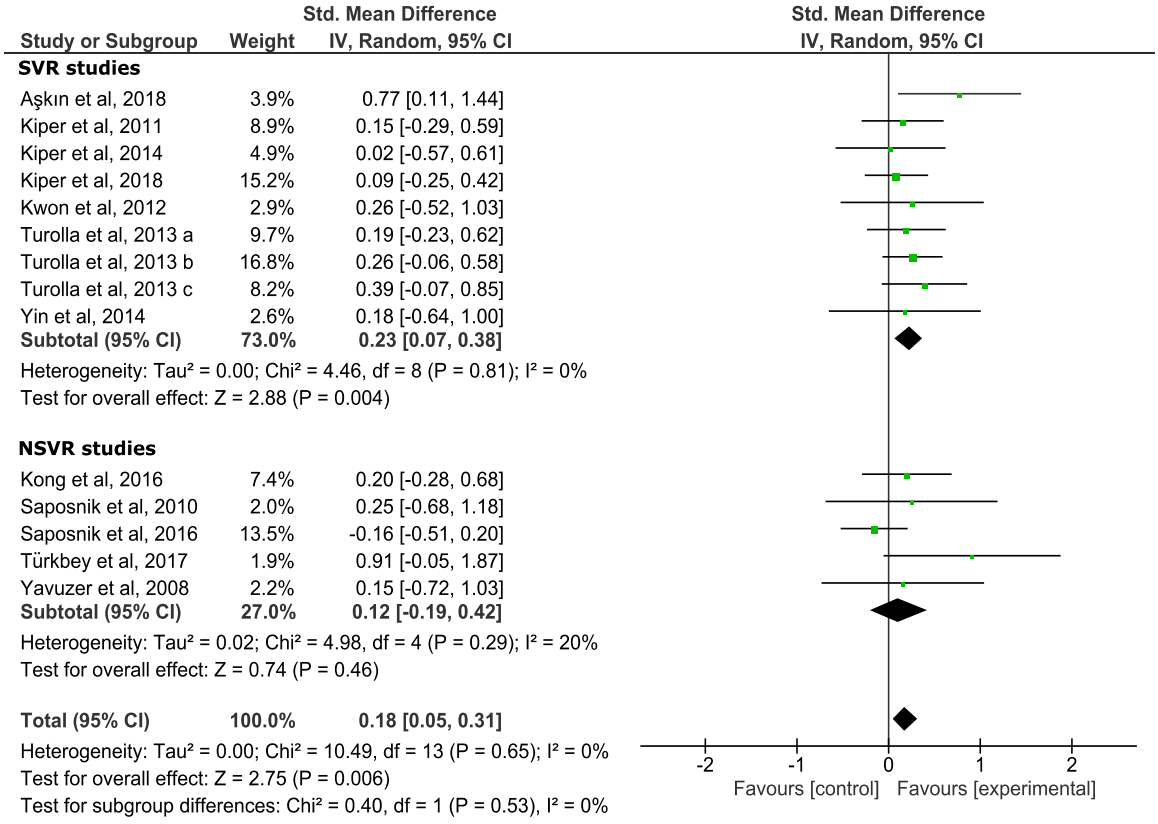
Supplementary Figure 2. Risk of bias summary. Review authors' judgments about each risk of bias item presented as percentages across all included studies. According to the assessment executed above, both study groups seem to be balanced with regards to their risk of bias.



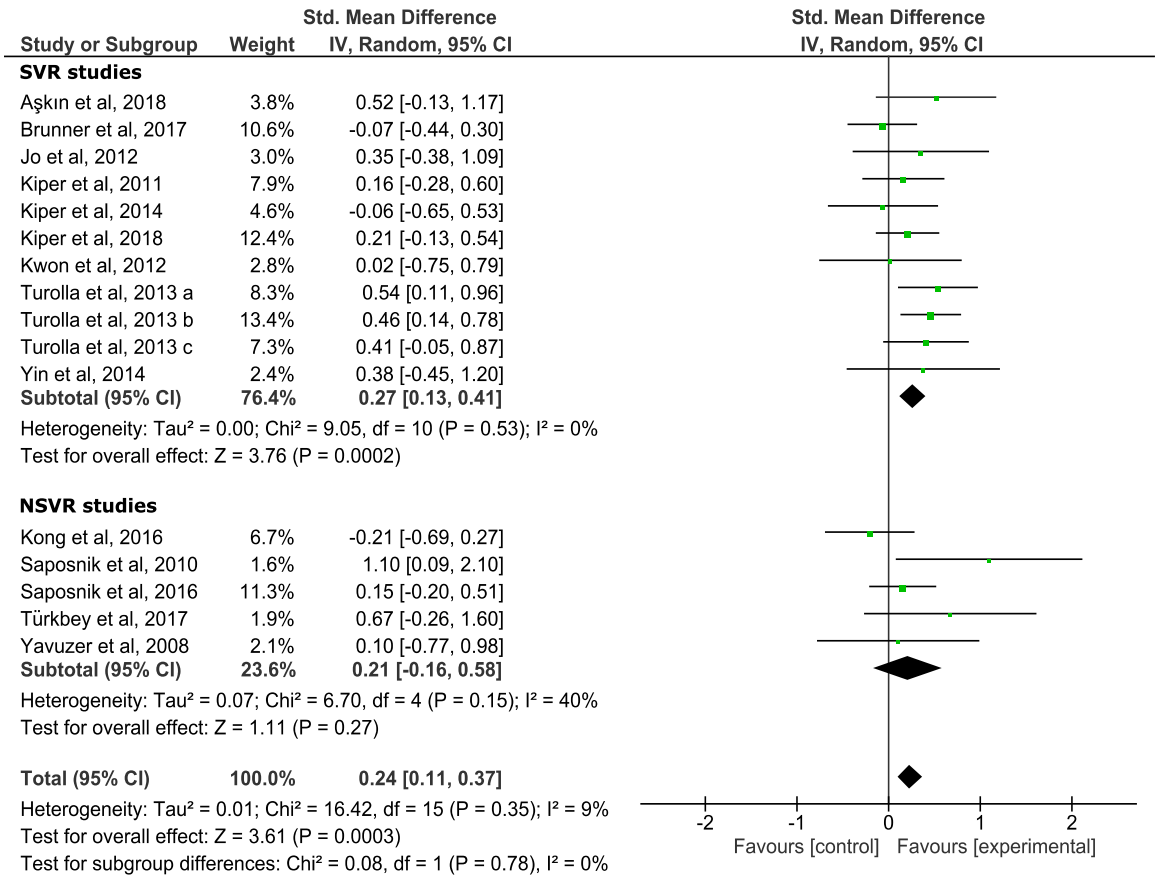
Supplementary Figure 3. Evaluation of a possible publication bias in included studies. A) shows the funnel plot for function outcomes, B) shows the funnel plot for activity outcomes. Black refers to SVR and red to NSVR studies. Abbreviations: NSVR, nonspecific VR; SMD, standardized mean difference; SE(SMD, standard error of SMD; SVR, specific VR; VR, virtual reality.



Supplementary Figure 4. Funnel plot split by commercial systems that are available to clinics. A) shows the funnel plot for function outcomes, B) shows the funnel plot for activity outcomes. Circles are experimental set-ups, squares represent VRRS studies, rhombi represent IREX studies, and triangles other commercial systems.
Abbreviations: SMD, standardized mean difference; SE(SMD, standard error of SMD.



Supplementary Figure 5. Forest plot of dosage in body function outcomes. Comparison of SVR and NSVR studies with control group regarding intensive practice.
Abbreviations: NSVR, nonspecific VR; SVR, specific VR; VR, virtual reality.



Supplementary Figure 6. Forest plot of dosage in activity outcomes. Comparison of SVR and NSVR studies with control group regarding intensive practice.
Abbreviations: NSVR, nonspecific VR; SVR, specific VR; VR, virtual reality.

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