

TABLE 1 – Description of self-directed interventions

No technology								
<i>Details of intervention /device</i>	<i>First Author, year, country</i>	<i>Study protocol</i>	<i>Study design Recruited (n=) Mean Time post stroke</i>	<i>Self-directed practice (hours)</i>	<i>Supervised practice (hours)</i>	<i>% self-directed practice</i>	<i>Adherence to amount of independent practice</i>	<i>Authors' conclusion</i>
Repetitive functional task practice two tasks chosen from a menu of daily activities. 20 repetitions practised twice daily.	Brkic, 2016 UK <sup>12</sup>	4 week programme of twice daily self-supervised practice. Twice-weekly therapy review of goals and tasks. Daily practice recorded on log sheets. Control group received usual care.	Pilot RCT (n = 24) <3 months	28	6	82%	Patients adhered well to twice daily practice over 4 weeks	Intervention was acceptable and led to achievement of goals but fatigue levels require monitoring
Graded repetitive arm supplementary programme (GRASP). Participants complete 1 hour a day of self-administered exercise programme from a manual.	Harris, 2009 USA <sup>17</sup>	4 week program; 60minutes per day, 6 days a week. Daily practice recorded on log sheets. Weekly review from a therapist. Control group provided with education book on stroke recovery and general health.	RCT (n = 103) <3 months	24	2	92%	1 hour a day for 4 weeks was feasible	Intervention is feasible and offers a low-cost method of delivery for maximising time spent on arm recovery
Self-directed exercise programme with task board and paper and glass cups. Graded according to ability to carry out repetitive reach and grasp tasks.	Lee, 2013 Republic of Korea <sup>35</sup>	10 week programme of 60 minutes unsupervised practise twice a week; Weekly 1 hr session with physiotherapist..	Before-after (n = 7) >12 months	20	10	67%	Twice weekly practice of programme was feasible	Self-directed exercise using a task board can improve function and reduce pain in the stroke arm.
3 hour self-directed practice consisting of 15 minutes self-mobilization exercises; 90 minutes unimanual task practise (bringing cup to mouth, stacking cups; reaching for water bottles; moving cutlery and coins; turning cards) and 40 minutes bimanual task practice (buttons; folding napkin and opening a bottle)	Natta, 2015 Benin <sup>38</sup>	2 week programme; 3 hours practice per day for 5 days/week over 2 weeks. Telephone review every two days to monitor progress.	Before-after (n = 12) >12 months	30	2.25	93%	3 hours a day practice was feasible	Self-directed therapy is feasible and inexpensive and could increase the number of rehabilitation sessions to improve recovery

Progressive training programme of whole reach-to-grasp tasks and part practice activities aiming to achieve 100-300 repetitions per session.	Turton, 2016 UK <sup>26</sup>	6 week programme. One hour self-directed practice per day. 14 x one hour therapy sessions over the six weeks. Daily practice recorded on log sheets. Control group received usual care.	RCT feasibility (n = 48) 3-6 months	42	14	75%	Participants achieved median 30 minutes self-practice per day	Home-based intensive task-specific rehabilitation is safe and feasible.
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## Interactive gaming

<i>Details of intervention / device</i>	<i>First Author, year, country</i>	<i>Study protocol</i>	<i>Study design Recruited (n=)</i> <i>Mean Time post stroke</i>	<i>Self-directed practice (hours)</i>	<i>Supervised practice (hours)</i>	<i>% self-directed practice</i>	<i>Adherence to amount of independent practice</i>	<i>Authors' conclusion</i>
<b>Nintendo Wii sports™</b> Commercially available video game offering non-immersive virtual reality therapy.	Adie, 2016 UK <sup>11</sup>	6 week programme. Self-directed exercise using the Nintendo Wii sport™ games for 45 minutes per day in seated position. Weekly telephone review. Control group practised tailored arm exercises 45 minutes per day for 6 weeks	RCT (n = 240 ) <3 months	31.5	1.5	95%	Participants achieved a mean of 39 minutes practice per day	Wii™ based exercise was safe and well tolerated but improvements were not superior to less expensive alternatives. Intervention led to
	Mouawad, 2011 Australia <sup>37</sup>	2 week programme. Self-directed exercise using the Nintendo Wii sport™ for 30 mins increasing to 3 hours per day; additional 1 hr per day of supervised training.	Before-after (n = 7) >12 months	22	10	69%	Participants achieved a mean of 2.4 hours practice per day	improvements in motor function which also benefitted use of stroke arm in activities of daily living. Intervention benefitted
<b>Neurogame Therapy system</b> Surface EMG-controlled video games to target wrist activation. Surface electromyography signals from wrist flexors and extensors transmitted to computer and converted	Donosos, 2014 USA <sup>33</sup>	4 week programme. 45 mins self-directed practice x 5 days a week for four weeks (or total of 15 hours). Intermittent support as required during the 4 weeks (estimated at 2 visits over the 4 weeks).	Repeated measures (n = 12) >12 months	15	1	94%	Five sessions weekly not feasible. Fewer sessions of longer duration may be more	muscle activation but limited changes in kinematic and activity level outcomes indicate need for additional

into movements to control the game.								functional component.
<b>Virtual glove</b> Hand-mounted unit with infra-red light emitting diodes mounted to fingertips. Nintendo Wiimotes on monitor tracks diodes to translate hand movements into 3D space. 3 games encourage reach and grasp, grasp and release and pronation / supination.	Standen, 2017 UK <sup>22</sup>	8 week programme. Self-directed practice of 20 minutes maximum, 3 times a day. Weekly or fortnightly review visits offered. Control group received no input other than visits to collect outcome measures.	Pilot RCT (n = 29) 6-12 months	56	4	93%	Low recruitment and retention rates. Higher than expected levels of support required (median 6hrs 10 minutes of support per person).	Additional strategies required to boost recruitment and adequate resources to support participants with the technology.
<b>Armeo®Senso</b> Sensor-based virtual reality training session with touchscreen computer and wearable movement sensors to offer high dose repetitions via computer therapy games.	Wittman, 2015 Switzerland <sup>47</sup>	6 week programme. As much practice as they chose playing virtual reality reaching game. No additional support was provided	Non-randomised feasibility study (n = 5) not reported	17	0	100%	Average amount of time spent on playing was 16.8 hours over 6 weeks.	Intervention is viable option for home therapy
	Wittman, 2016 Switzerland <sup>46</sup>	6 week programme. As much practice as they chose playing VR reaching game. No additional support was provided	Before-after (n = 11) >12 months	14	0	100%	Average daily time spent practising was 30 minutes for 4 days per week (mean 13.7 hours over 6 weeks).	IMU-based home therapy is safe and offers high dose of therapy
<b>Electrical stimulation</b>								
<i>Details of intervention / device</i>	<i>First Author, year, country</i>	<i>Study protocol</i>	<i>Study design Recruited (n=)</i> <i>Mean Time post stroke</i>	<i>Self-directed practice (hours)</i>	<i>Supervised practice (hours)</i>	<i>% self-directed practice</i>	<i>Adherence to amount of independent practice</i>	<i>Authors' conclusion</i>
<b>Handmaster™ system</b> Neuroprosthes maintains wrist in 10-20 degree	Alon, 2002 USA; Israel <sup>30</sup>	3 week functional programme. 10 minutes increasing to 45mins self-directed practice twice daily.	Before-after study (n = 29) >12 months	37	2	95%	Good compliance with programme	Handmaster is safe and effective for improving hand function

extension and delivers electrical stimulation through 5 surface electrodes to stimulate flexion / extension of fingers to grasp and release objects.	Alon, 2003 Sweden; The Netherlands; Israel <sup>31</sup>	5 week functional programme. 20mins daily increasing in the first 2 weeks up to 2hrs 45mins daily to be practiced for the remaining 3 weeks	Before-after (n = 77) >12 months	75	2	97%	High compliance supported use of FES of up to 2hrs 45 mins practice per day	5 week programme improved selected hand functions
Electrical stimulation using closed-loop control of micro stimulator implants to activate elbow extension, wrist extension, finger / thumb extension and thumb abduction when reaching and grasping.	Burridge, 2011 UK <sup>32</sup>	12 week programme; 1-2 hours per day at home for 12 weeks plus x 3 review sessions by researcher (one every 4 weeks).	Before-after (n = 6) >12 months	72	1.5	98%	Participants achieved a mean of 59.5 days of unsupervised practice	Closed-loop stimulation improved function but subjects reported inconvenience using. A fully implanted wireless version would overcome this.
<b>Reliefband</b> <sup>®</sup> device to deliver repetitive peripheral nerve stimulation prior to motor training tasks. Biphasic square-wave electrical nerve stimulation delivered via surface electrodes built into style device at frequency of 31 Hz. 5 different levels of stimulation.	Dos Santos-Fontes, 2013 Brazil <sup>14</sup>	4 week programme for 2 hours before motor training tasks. 2 blocks of training per day over 4 weeks. Therapy review at 7 days to ensure correct procedure and weekly review thereafter.  Control group wore wristband on dorsal surface of wrist thick polyester barrier to prevent electrical stimulation to nerve	Pilot RCT (n = 20) >12 months	42	1.25	97%	High compliance with intervention reported	Intervention is safe and feasible leading to long-lasting enhancement of arm function.
<b>Neuromove 900</b> – uses 3 surface electrodes to detect electromyography in affected muscles and deliver electrical stimulation to them if muscle activity exceeds a preset threshold.	Gabr, 2005 USA <sup>15</sup>	8 week programme of twice daily use of 35 minutes whilst practising extension exercises.  Control group 8 weeks home exercise programme for 35minutes per day. Both groups cross over following initial 8 weeks programme	Cross over RCT (n = 12) >12 months	65	0	100%	High compliance with intervention reported by completed patient diaries	Intervention is feasible and increased active wrist extension. No functional benefits were found.
Power-assisted closed-loop electromyographically triggered electrical stimulation system worn under clothes to induce greater muscle contraction than EMG signal detected.	Hara, 2008 Japan <sup>16</sup>	5 month programme; 30 min self-directed programme 5 days a week gradually increasing to 1hr per day within the first 10 days. Thereafter 1hr per day 5 days a week for 5months.	RCT (n = 22) >12 months	106	15	88%	10 out of 12 participants were able to comply with the full five month programme	Intervention benefitted wrist and finger extension and shoulder flexion.

Targets  
 supination/pronation,  
 flexion/extension of digits,  
 wrist and elbow;  
 abduction/adduction of  
 shoulder

### Electrical stimulation (continued)

<i>Details of intervention / device</i>	<i>First Author, year, country</i>	<i>Study protocol</i>	<i>Study design Recruited (n=) Mean Time post stroke</i>	<i>Self-directed practice (hours)</i>	<i>Supervised practice (hours)</i>	<i>% self-directed practice</i>	<i>Adherence to amount of independent practice</i>	<i>Authors' conclusion</i>
<b>Automove Model AM 706</b> stimulator Electromyography triggered somatosensory stimulation to peripheral nerves to facilitate hand opening	Kimberley, 2003 USA <sup>18</sup>	3 week programme of 6 hours a day over 10 days. Half the time participant triggered stimulated response through active effort, rest of time machine automatically stimulated muscle contraction. Control received same programme using sham device before cross-over	RCT crossover (n = 16) >12 months	60	0.75	99%	All participants achieved 60 hours typically through 3-6 hours every day or every other day.	Intervention self-administered in an intensive manner is feasible. Improvements lead to improvements in hand function.
<b>Mentamove</b> neuromuscular electrical stimulation device detects electrical signals in muscle group and activates muscle if EMG activity meets or exceeds preset threshold.	Page, 2015 USA <sup>41</sup>	8 week programme of mental practice-to trigger muscle activation. Patients imagined carrying out 2 upper limb tasks without actually moving. Device detected if electrical signals sent to targeted muscle group met threshold and if so activated muscle; 1hr per day	pre-post case series design (n = 6) >12 months	56	2	97%	High compliance with intervention	Intervention appears to be feasible and benefitted arm impairment, dexterity and participation in activities.
<b>Rehabicare EMS +2</b> Muscle stimulator with Stimcare + electrodes.	Sullivan, 2007 USA <sup>44</sup>	8 week programme of neuromuscular and sensory amplitude electrical stimulation during task-specific exercises for 15 minutes once or twice daily. Sensory stimulation 15 minutes twice daily for participants with sensory deficits.	Before-after (n = 10) >12 months	56	none reported	100%	Poor completion of log books but all participants completed the programme	Intervention is feasible and led to sensory and motor improvements.

Glove electrode with electrical stimulation delivered by EMPI 300 PV neuromuscular stimulator.	Sullivan, 2012 USA <sup>24</sup>	4 week programme sensory electrical stimulation delivered during 10 task-specific arm exercises. Twice daily for 30 minutes 5 days a week. Control group followed same programme using a sham device	RCT (n = 43) 6-12 months	20	none reported	100%	High compliance with the intervention	Intervention did not benefit task practice. Future studies should explore of more intensive practice leads and if stimulation is better before or during the task practice. <i>Intervention was feasible and led to improvements. Personalising the intervention around the subjects led to higher motivation/compliance.</i>
Radiofrequency microstimulator implanted in arm and forearm to activate elbow, wrist and finger extension and thumb abduction while performing functional tasks	Turk, 2008 UK <sup>45</sup>	12 week programme; 12 weeks self-supervised practice of 1 hour per day 5 days a week. Weekly to fortnightly lab-based sessions with research therapist to adjust device.	Before-after (n = 7) >12 months	60	15	80%	High compliance with the intervention	

### Constraint-induced movement therapy

<i>Details of intervention / device</i>	<i>First Author, year, country</i>	<i>Study protocol</i>	<i>Study design Recruited (n=) Mean Time post stroke</i>	<i>Self-directed practice (hours)</i>	<i>Supervised practice (hours)</i>	<i>% self-directed practice</i>	<i>Adherence to amount of independent practice</i>	<i>Authors' conclusion</i>
Task-related arm training delivered by therapist plus unilateral self-directed programme following shaping principles and based around activities of daily living. Constraint mitt worn for 4 hours. Daily log of time spent exercising.	Brunner, 2012 Norway <sup>13</sup>	4 week programme; 4 hours a week supervised therapy as in/outpatient plus 2-3 hours a day self-directed functional programme. constraint mitt worn for 4 hours a day. Control group followed a similar programme but with bimanual tasks.	RCT (n = 30) <3 months	56	16	78%	Participants were able to achieve the required amount of self-directed practice and wore the mitt for a mean of 3.5 hours per day.	Intervention was as effective as bimanual training and therefore wearing a mitt may be unnecessary. Programmes should include bimanual tasks.

Web-supported programme (LifeCIT) incorporating instructions guiding participants through the programme, setting of daily targets for constraint mitt wear time and time spent on exercises, computer-based therapy games and activities of daily living.	Burridge, 2017 UK <sup>29</sup>	3 week programme. Intervention group accessed the programme 6 hours a day, 5 days a week for 21 days. Control group received usual care	Pilot RCT (n = 19) <3 months	90	0	100%	High compliance with intervention. Mitt worn for mean 4.8 hours per day for 13.6 out of 15 days. Activities performed for mean 3.2 hours per day.	A web-supported programme of constraint-induced movement therapy can increase intensity and adherence.
Modified constraint-induced movement therapy programme delivered via tele-rehabilitation.	Page, 2007 USA <sup>40</sup>	10 week programme; 3 half hour therapy sessions per week delivered via tele-rehabilitation; mitt worn for 5 hours daily and participants recorded ADLs performed during this time	Before-after case series (n=4) >12mths	350	16	95%	Good adherence to the programme. Participants and therapists reported high satisfaction.	Delivery of constraint-induced movement therapy via the internet is feasible and inexpensive.
Constraint-induced movement therapy programme delivered via video-conferencing equipment	Pickett, 2008 USA <sup>42</sup>	2 week programme; 6 hrs per day self-directed practice 5 days a week with 1.5hrs per day of tele-rehabilitation support from therapist (split across morning and afternoon)	Before-after case series (n = 2) >12 months	60	15	80%	Patients reported moderately high time demands for the intervention and difficulty reconciling times for therapy reviews.	Partial confirmation that intervention is effective. Need to streamline delivery with more portable equipment.
Modified constraint-induced movement therapy programme consisting of daily outpatient session and self-directed practise of 30 household activities.	Smania, 2012 Italy <sup>21</sup>	2 week programme. 1 hour individual treatment sessions as outpatient in morning and 1 hour self-directed household activities in afternoon 5 days a week for 2 weeks. Constraint splint worn for 12 hours per day. Control group received 1 hour therapy and 1 hour self-directed household tasks.	RCT (n = 66) 6-12 months	10	10	50%	Participants were able to adhere to the programme	Two hours of constraint induced movement therapy a day may be effective than conventional therapy.
Daily restraining of hand whilst carrying out intensive training activities based on participants activities of daily living. Training recorded in log sheets.	Tariah, 2010 Jordan <sup>25</sup>	2 month programme, 2 hours a day, 7 days a week. Control group received dose matched neuro-developmental therapy.	RCT (n = 20) 6-12 months	120	none reported	100%	All participants adhered to the intervention.	The intervention was feasible and led to improvements in arm function.

### Robotic and dynamic orthotic devices

<i>Details of Intervention / device</i>	<i>First Author, year, country</i>	<i>Study protocol</i>	<i>Study design Recruited (n=) Mean Time post stroke</i>	<i>Self-directed practice (hours)</i>	<i>Supervised practice (hours)</i>	<i>% self-directed practice</i>	<i>Adherence to amount of independent practice</i>	<i>Authors' conclusion</i>
<b>HandSOME (Hand spring operated movement enhancer)</b> to extend fingers in grasp and release tasks and logs movement data.	Chen, 2017 USA <sup>50</sup>	4 week programme; 90 minutes per day x 5 days per week. Graded unimanual and bimanual tasks eg fill water bottle, pick and place objects. Weekly therapy review.	Before-after (n=10) >12 months	30	2	94%	Practice ranged from 3 to 33 hours. 3 participants unable to don/doff device.	Gains after intervention were not sustained. Improvements to donning and doffing device needed.
<b>Saebo Mobile Arm support (SaeboMAS)</b> Gravity compensation of proximal arm with <b>Supervised Care and Rehabilitation Involving Personal Telerobotics (SCRIPT)</b> dynamic wrist / hand orthosis for passive extension of arm, wrist and hand task. Computer games and remote monitor practice.	Nijenhuis, 2015 Netherlands; Italy; UK <sup>39</sup>	6 week programme; 30 mins per day x 6 days per week. Weekly home visit review of 15 minutes and daily remote monitoring of progress and training adjustments.	Feasibility study (n = 24) >12 months	18	1.5	92%	Mean of 1.75 hours per week of self-directed practice.	Intervention is feasible and improved function and quality of life but not dexterity.
	Nijenhuis, 2017 Netherlands <sup>20</sup>	6 week programme; 30 mins per day x 6 days per week. Weekly home visit review. Control group performed conventional home exercise programme.	Pilot RCT (n = 20) 6-12 months	18	1.5	92%	Mean of 2 hours per week of self-directed practice.	No benefit found and control group reported higher training duration.
<b>Home-based computer assisted arm rehabilitation robotic device (hCAAR)</b> Joystick handle linked to robotic arm to complete tasks on computer screen	Sivan, 2014 UK <sup>43</sup>	8 week programme. 30 minutes a day 5 days a week; fortnightly therapist telephone call.	Feasibility study (n = 19) > 12 months	20	1	95%	Lower dose of practice than requested. Median 7.2 hours practice over the 8 weeks.	Intervention improved arm movement and function. Improvements could be made to the games.
<b>Active-passive bilateral therapy (APBT)</b> device mechanically couples hands to allow stroke arm to mirror rhythmic flexion-extension of non-paretic wrist. Used to prime the motor system prior to tasks.	Stinear, 2008 New Zealand <sup>23</sup>	1 month programme. 10-15 minutes APBT followed by 10 minutes task training performing 2 repetitive motor tasks with wooden blocks x3 daily. Control group performed the same tasks without the priming with APBT.	RCT (n = 32) >12 months	30	none reported	100%	High compliance with intervention	Both groups benefitted from self-directed motor practice. Intervention group had additional neurophysiological changes to the motor cortex.
<b>Hand mentor pro™</b> Robotic active-assist device worn on forearm and paired with video games to improve active range of movement in wrist and fingers. Remote monitoring of use through tele-rehabilitation.	Wolf, 2015 USA <sup>27</sup>	8 week programme. 2 hours practise with device plus one hour of functional activities 5 days a week. Weekly contact via telephone / email. Control group performed 2 hours traditional exercises and 1 hour functional activities.	RCT (n = 99) 3-6 months	120	2	98%	High compliance with intervention	Both groups benefitted from self-directed approach. Added benefit of Robot group was additional information for the therapist.



<b>Robotic upper extremity repetitive therapy ( RUPERT IV)</b> Wearable robotic exoskeleton system assists shoulder/ arm / hand movements to reach for 3-D virtual targets. Monitored remotely.	Zhang, 2011 Switzerland <sup>48</sup>	4 week programme. 45 minute sessions 1-2 times each weekday for 4 weeks. Weekly review visit from therapist.	Before-after (n = 2) >6 months	15	2	88%	Participants were able to complete the programme	Inconclusive results due to small sample size and wide variation between participants.
<b>Resonating arm exerciser</b> Mechanical device encourages shoulder and elbow flexion/extension to roll wheelchair back and forth.	Zondervan, 2014 USA <sup>28</sup>	3 week programme of resonating arm exercises. 3 hours per week for 3 weeks. Weekly phone contact from therapist. Control group were given booklet of conventional exercises.	RCT cross-over (n = 17) >12 months	9	0.75	92%	High compliance with intervention. Participants were able to complete about 10 hours of self-directed practice.	Home-based training was feasible and reduced impairment.

### Mirror therapy

<i>Details of intervention / device</i>	<i>First Author, year, country</i>	<i>Study protocol</i>	<i>Study design Recruited (n=) Mean Time post stroke</i>	<i>No.of hours self-directed practice</i>	<i>No. of hours supervised practice (hours)</i>	<i>% self-directed practice</i>	<i>Adherence to amount of independent practice</i>	<i>Authors' conclusion</i>
<b>Mirror therapy</b> Instruction booklet with photographs and video of exercises.	Michielson, 2011 Netherlands <sup>19</sup>	6 week program; 1 hour per day x 5 days a week for 6 weeks. Weekly 1 hour therapy review with therapist and telephone calls. Control group performed same programme but with direct view of both hands.	RCT (n = 40) >12 months	30	6	83%	High compliance with average of 30 hours of self-directed practice.	Improvements to motor function found. Further research into optimum practice intensity and duration required.

### Tele-rehabilitation

Task specific training programme presented on laptop screen. Equipment for modular tasks to support fine motor tasks, stereognosis, tactile discrimination and object manipulation. Guidance	Langan, 2013 USA <sup>34</sup>	6 week programme. 1 hour practice a day for 5 days a week. Daily monitoring via internet video conferencing reduced to once a week by final week.	Before-after (n = 7) >12 months	30	3.5	90%	Good adherence to the programme - over 90% compliance.	Tele-rehabilitation is viable and offers feedback based on one-to-one supervision or data acquired during training
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and support provided via video conferencing.

**SMART** rehabilitation system – x2 motion sensors track arm movements and communicate information to computer interface via Bluetooth. Feedback on exercise performance provided to the wearer.

Mawson, 2011 UK<sup>36</sup>

2 week programme of computer aided repetitive reaching exercises carried out daily.

Before-after study (n = 4) >6 months

7

none reported

100%

Good adherence to the programme

The SMART system may be a more cost-effective and effective method of delivering therapy.

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### Wearable devices

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**Wrist-worn accelerometer** with prompt alert function is programmed to provide up to hourly feedback to the wearer on their stroke arm activity levels. Therapy reviews offer opportunity to view activity data on computer interface and set activity targets for next few days.

Da Silva, 2018 UK<sup>49</sup>

4 week repetitive task programme to encourage stroke arm use within activities of daily living whilst wearing the watch. Amount of practice based on individual baseline activity levels. Twice weekly therapy reviews to view data and task practice and to reset activity targets

Before-after study (n = 11) <1 month

Not reported in hours

8

n/a

Adherence was good

Feedback delivered by the accelerometer increased arm activity. Participants favoured hourly prompts with a low prompt threshold.

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	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)
Adie 2016	+	+	-	?	+	+
Brkic 2016	+	+	-	?	+	+
Brunner 2012	+	+	-	+	+	+
Burridge 2017	?	?	-	+	?	?
Dos Santos-Fontes 2013	+	+	+	+	-	+
Gabr 2005	+	?	-	+	?	-
Hara 2008	+	+	-	-	?	-
Harris 2009	+	+	-	+	+	+
Kimberley 2004	?	?	+	+	+	+
Michielsen 2011	+	+	-	+	+	+
Nijenhuis 2017	?	+	-	-	+	+
Smania 2012	+	+	-	+	+	+
Standen 2017	+	+	-	?	-	?
Stinear 2008	?	?	-	+	?	?
Sullivan 2012	+	?	?	+	+	?
Tariah 2010	-	-	-	+	?	?
Turton 2016	+	+	-	?	+	+
Wolf 2015	+	+	-	+	+	?
Zondervan 2015	?	?	-	+	+	+

**Figure 2: Risk of bias summary: review authors' judgements for each included RCT study.**

## **Appendix 1**

### **Medline Search Strategy**

1. Stroke/rh, th [Rehabilitation, Therapy]
2. exp upper extremity/ or exp arm/ or exp axilla/ or exp elbow/ or exp forearm/ or exp hand/ or exp shoulder/
3. 1 and 2
4. self-administer\*.mp.
5. self-care.mp.
6. self-direct\*.mp.
7. self-manag\*.mp.
8. self-supervised.mp.
9. home-based.mp.
10. thera\*.mp.
11. practise.mp.
12. extra.mp.
13. supplement\*.mp.
14. enhanced.mp.

15. physical therapy.mp.

16. physiotherapy.mp.

17. exercise therapy.mp.

18. occupational therapy.mp.

19. 4 or 5 or 6 or 7 or 8 or 9 or 11 or 12 or 13 or 14

20. 10 or 15 or 16 or 17 or 18

21. 3 and 19 and 20