Question 56 evidence tables

Question 56: Does person-centred self-directed rehabilitation reduce dependency after stroke?

NB Any discrepancies between reviewers in evidence quality and comment were discussed at the corresponding evidence review meeting

RTT = Repetitive task training, IG = interactive gaming, ES = electrical stimulation, FES = functional electrical stimulation, CIMT = constraint-induced movement therapy, SR = systematic review, MA = meta-analysis, RCT = randomised controlled trial, IPDMA = individual patient data meta-analysis, MDT = multidisciplinary team, PICO = patient/population, intervention, comparison and outcomes, OR = odds ratio, CI = confidence interval, QoL = quality of life, ADL = activities of daily living, OR = odds ratio, RR = relative risk, aOR = adjusted odds ratio, cOR = crude odds ratio, CI = confidence interval, RoB = risk of bias, I2 = heterogeneity statistic.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
96	R. H. Da-Silva et al. (2018). Self-directed therapy programmes for arm rehabilitation after stroke: a systematic review. *Clin Rehabil,* 32:8 1022-1036	SR&MA; 40 studies; 1172 participants; 19 RCTs, 21 before & after studies.	Repetitive task training (RTT), Interactive gaming, electrical stimulation (ES), constraint-induced movement therapy (CIMT), robotic and orthotic devices, mirror therapy	Arm function/impairment; Action Research Arm Test (ARAT), Fugl-Meyer Assessment (FMA), Jebsen-Taylor Hand Function Test (JTHFT), Box and Block Test (BBT), Wolf Motor Function Test (WMFT); independence and self-care activities (amount of use & quality of use); Motor Activity Log; Standard Mean Difference (SMD) of arm function according to time since stroke onset; SMD of arm function according to therapy dose (time) received.	[note: meta-analyses utilise both Mean Difference (MD) where same outcomes utilised across studies & Standard Mean Difference (SMD) where outcomes utilised across studies vary] – Self-directed interventions on arm function / impairment: RTT, 3 studies (n= 169); no statistically significant benefit. Interactive gaming; 2 studies (n=231); no statistically significant benefit. ES; 3 studies (n=94); statistically significant effect favouring self-directed ES. CIMT; 3 studies (n=105); Statistically significant effect favouring CIMT. Robotic and orthotic devices; 4 studies (n=171); no statistically significant benefit. Mirror therapy; 1 study (n=36); no statistically	+ Heterogeneity of studies included relating to: types of interventions, dose of therapy, time post-stroke intervention applied, and outcome assessment. Additionally statistical heterogeneity clearly evident by chi^2 and I^2 in many of the meta-analyses.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
					significant benefit. Independence and self-care activities – Amount of use: Pooled; 9 studies (n=348); statistically significant effect favouring self-directed interventions. Subgroups; RTT; 2 studies (n= 148); statistically significant effect favouring intervention. Interactive gaming; 1 study (n=22); no statistically significant benefit. ES; 2 studies (n=54); no statistically significant benefit. CIMT; 3 studies (n=105); Statistically significant effect favouring intervention. Robotic and orthotic devices; 1 study (n=19); no statistically significant benefit. – Quality of Use; Pooled; 10 studies (n=364); statistically significant effect favouring self-directed interventions. Subgroups; RTT, 2 studies (n= 149); statistically significant effect favouring intervention; Interactive gaming; 1 study (n=22); statistically significant effect favouring intervention; ES; 2 studies (n=54);); no statistically significant benefit. CIMT; 3 studies (n=105);	

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
					Statistically significant effect favouring intervention. Robotic and orthotic devices; 2 studies (n=35); no statistically significant benefit. – Effect of interventions on arm function according to time since stroke onset – <3 months; 4 studies (n=361); no statistically significant benefit. 3-6 months; 2 studies (n=144); no statistically significant benefit. 6-12 months; 5 studies (n=156); no statistically significant benefit. >12 Months; 5 studies (n=145); statistically significant effect favouring intervention. – Therapy dose (time) on arm function; >60 hours; 3 studies (n=133); no statistically significant benefit. 20-60 Hours; 9 studies (n=541); no statistically significant benefit. <20 Hours; 4 studies (n=132); no statistically significant benefit. – Sensitivity analysis; therapy dose (time) on arm function (CIMT & ES studies only);	

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
					>60 hours; 2 studies (n=34); no statistically significant benefit. 20-60 Hours; 2 studies (n=68); no statistically significant benefit. <20 Hours; 2 studies (n=97); Statistically significant effect favouring intervention.	
96	R. H. Da-Silva et al. (2018). Self-directed therapy programmes for arm rehabilitation after stroke: a systematic review. *Clin Rehabil,* 32:8 1022-1036	Systematic review 40 studies included (n=1172 participants); 19 RCTs and 21 before-after studies. Inclusion criteria: Studies of self-directed arm interventions for participants over the age of 18 with any stroke-related arm deficit regardless of time since onset. Populations with mixed impairment aetiology were included if at least 50% of participants had experienced a stroke.	Self-directed stroke arm interventions (i.e. > 50% of the time therapy was initiated and carried out by the participant). Studies grouped according to (i) no technology or (ii) the main additional technology used. (no technology n=5; interactive gaming n=6; ES n=11; CIMT n=6; robotic and dynamic orthotic devices n=8; mirror therapy n= 1; telerehabilitation n=2; wearable devices n=1).	Arm function/ impairment, independence, and self-care activities. Due to the variety of outcome measures used across studies, MA was carried out within each technology sub-group. When the same outcome measure was used by all studies within a sub-group, the mean difference was calculated, otherwise outcomes were pooled using the standardized mean difference (SMD).	A beneficial effect on arm function was found for self-directed interventions using CIMT & ES. CIMT and therapy programmes without technology improved independence in activities of daily living. Sensitivity analysis demonstrated arm function benefit for patients >12 months post-stroke.	**+/++** Acceptable / high quality, clinically relevant review Consider: small numbers within each sub-group
97	R. H. Da-Silva et al. (2019). Wristband Accelerometers to motiVate arm Exercises after Stroke (WAVES): a pilot	Pilot RCT; pragmatic, parallel group, observer blind; n=33 hemiplegic patients with the ability to lift the affected hand off their lap; recruited between 24 hours-3 months post stroke	Multifaceted intervention of wristband accelerometers worn for 12 hours per day (8am -8pm) across 4	Recruitment, retention, adherence rates, safety, and completion of assessments; Participants followed up at 4 and 8 weeks post allocation.	A multicentre RCT of wristband accelerometers would be feasible, requiring a sample of 108 participants to detect a clinically important effect.	**N/A** Pilot/feasibility study

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
	randomized controlled trial. *Clinical rehabilitation,* 33(8): 1391-1403	during either inpatient rehabilitation, community-based rehabilitation, or both. Multicentre; UK (England Only)	weeks of self-directed RTT in addition to 'standard of care' rehabilitation. Intervention group – twice weekly visual display of wristband accelerometer data with therapist coaching/ feedback, wristband accelerometer vibration if activity < agreed target in previous 60 minutes, participant monitoring of progress via wristband accelerometer LED light display (n= 14) ; Control Group – no visual data feedback or therapist coaching/ feedback, no wristband accelerometer reminder vibration, no LED progress status (n=19).		A pilot study, not powered to detect clinically significant changes between groups; no between group statistical analyses reported.	
97	R. H. Da-Silva et al. (2019). Wristband Accelerometers to motiVate arm Exercises after Stroke (WAVES): a pilot randomized controlled trial. *Clinical*	Setting: English NHS stroke services. Design: Parallel-group pilot RCT with blinded outcome assessments. Feasibility study. Subjects: n=33. Participants 0-3 months post stroke with a new arm impairment as a result of stroke.	Intervention (n=14) wearing prompting wristband during four weeks of self-directed therapy programme with twice weekly therapy review. Control (n=19) wearing a 'sham'	Clinical outcomes completed immediately after the intervention and at 4 and 8 weeks follow up. Action Research Arm Test (ARAT), arm strength (Motricity Index), patient reported outcome in amount and quality of use	Pilot study therefore comparative statistics not reported. BA total of 33 participants recruited (0.6 per month/site). 4 participants withdrew. Wristbands worn for 70% of the recommended time. 8 SAEs, all unrelated to the intervention. At baseline	**++** Note it is a pilot study evaluating feasibility.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
	rehabilitation, 33(8): 1391-1403		wristband during 4 weeks of self-directed therapy programme with twice weekly therapy review. Control participants did not view accelerometer data and wrist bands did not prompt wearer. Control participants had no additional feedback to help them remember to use their arm during the day.	of the arm in daily activities (Motor Activity Log; MAL), National Institute of Health Stroke Scale (NIHSS), Barthel Index (ADL), modified Rankin Scale, arm pain and overall fatigue (0-10 visual analogue scale), unilateral spatial neglect (Star Cancellation). Feasibility outcomes: ability to recruit one patient per month per site, adherence to the programme, attrition, frequency of usual rehab, success of blinding, SAEs, completeness of clinical outcome data, objective measurement of impaired arm activity at 4 and 8 week outcomes.	stroke severity similar between the two groups but some disparity in ARAT scores with higher median score in intervention group at baseline. Both groups showed improvement in ARAT scores during the intervention phase, intervention groups continued to improve up to the 8 week follow up.	
98	V. Fu et al. (2020). Taking Charge after Stroke: A randomized controlled trial of a person-centered, self-directed rehabilitation intervention. *International Journal of Stroke,* 15(9): 954-964	RCT, 400 participants randomised into: (i) 1 take Charge session (ii) 2 take charge sessions (6 weeks apart) (iii) control intervention. Inclusion criteria: Within 16 weeks of acute stroke; discharged to community setting Exclusion criteria: full recovery from stroke (mRS <1), a communication or cognitive deficit precluding personal written informed consent, or a premorbid condition making 12-month survival unlikely.	"Take Charge" Intervention. A person-centred, self-directed rehabilitation intervention after stroke. Take Charge intervention group received a 1:1, non-directive exploration of their views on what and who was important to them in their lives, and what they wanted to prioritize for the next	Quality of Life after stroke. Primary Outcome: physical component, summary score of the Short Form 36 at 12 months following stroke. Secondary Outcomes: Barthel Index (BI); Frenchay Activities Index (FAI); mRS; Short Form 12 Physical Component Summary (SF-12 PCS) score; Caregiver Strain Index; Euroqol EQ-5D-5L.	The Take Charge session lead to an improvement in health related quality of life six months following stroke which was sustained at 12 months. 2 sessions, 6 weeks apart, were better than a single session. Improvements were also seen in basic and advanced activities of daily living and independence.	**+** Acceptable quality, clinically relevant RCT. Consider: No info about usual care delivered in any of the groups. Study population skewed towards people with milder stroke. People with cognitive / communication difficulties precluding written, informed consent excluded.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
			12 months. Stroke survivor held illustrated workbook used to structure the process. The intervention was not time-limited and usually took between 30 and 60 minutes to complete. The second Take Charge session included all components of the first, including a repeat baseline assessment. Control group given written educational materials about stroke produced by the Stroke Foundation of New Zealand, covering common issues following stroke and risk factor management	Baseline/6-/12- month assessments completed. At 6 and 12 months following stroke, information about hospital admissions, new episodes of stroke, and any rehabilitation contact were collected directly from participants. Hospital admission details checked by case-note review.		
98	V. Fu et al. (2020). Taking Charge after Stroke: A randomized controlled trial of a person-centered, self-directed rehabilitation intervention. *International Journal of Stroke,* 15(9): 954-964	7 centers in New Zealand, four tertiary and 3 non-tertiary centers, serving a catchment population of around 2.4 million people. RCT open trial of two active and one control interventions. N=400 adults diagnosed with stroke and not of Maori or Pacific ethnicity by self-report. At randomisation, participants had to be living in	1 Take Charge session (TC1, n=132), 2 Take Charge sessions (TC2, n= 138), or control (n=130). Control participants given written educational material. Participants randomised to the Take Charge interventions received	Primary outcome: the Physical Component Summary score of the Short Form 36 at 12 months following stroke.	Take Charge groups (i.e. TC1 & TC2) scored 2.9 (95% CI 0.95 to 4.9, p = 0.004) points higher (better) than control on the Short Form 36 Physical Component	**+** There was a (non-significant) imbalance in SF-12 PCS scores at baseline, favoring the intervention groups. Sensitivity analysis confirmed findings.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
		the community in non-institutional care, no more than 16 weeks following their stroke.	a 1:1, non-directive exploration of their views on what and who was important to them in their lives, and what they wanted to prioritize for the next 12 months. An illustrated workbook was used to structure the process and help the person consider the future and generate ideas.			
69	K. Hachisuka et al. (2021). Clinical effectiveness of peroneal nerve functional electrical stimulation in chronic stroke patients with hemiplegia (PLEASURE): A multicentre, prospective, randomised controlled trial. *Clinical rehabilitation,* 35(3): 367-377	Open-label RCT, conducted in Japanese rehabilitation units. Participants were inpatient stroke survivors, more than 4 weeks from stroke, with foot-drop. Study did not reach the pre-specified sample size of n=120, with n=56 in the intervention group and n=58 in the control group included in the analysis.	Intervention was peroneal nerve stimulation device combined with 260 minutes of bespoke rehabilitation; comparator was 260 minutes of bespoke rehabilitation. All participants also had baseline 480 minutes of rehabilitation. All rehabilitation was delivered by a physical therapist.	Primary outcome: change in 6-minute walk distance from baseline to 4 weeks. Secondary outcomes: 10 meter walk test, Fugyl-Meyer, Modified Ashworth, Stroke Impact Scale, strength and range of ankle movement, AEs.	No difference in change in 6-minute walk distance between groups, both groups improved: intervention 14.7 metres (SD 37.6), control 22.2 (SD 49.3). No between group difference in secondary outcomes other than in one item of the Stroke Impact Scale.	**+** Open label, under powered, highly selected group, no intention to treat analysis.
69	K. Hachisuka et al. (2021). Clinical effectiveness of peroneal nerve functional electrical stimulation in chronic stroke patients with hemiplegia	RCT; open label, parallel group; n=119 patients with hemiplegic foot-drop; recruited during inpatient rehabilitation in the post-acute phase; multicentre; Japan.	Multifaceted intervention of peroneal nerve FES; All subjects: 480-minute self-directed training over four weeks without device; followed by;	Primary outcome: Six-minute walk test distance without device or ankle-foot orthosis; Secondary outcomes: 10-metre walk test speed without device or orthosis, Fugl-Meyer	No significant differences detected between groups.	**-** No blinding of participants or assessors.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
	(PLEASURE): A multicentre, prospective, randomised controlled trial. *Clinical rehabilitation,* 35(3): 367-377		Intervention group (n=56), 60 minutes of physical therapist-assisted training for gait with device; Control group (n=58) – 260 minutes of physical therapist-assisted training for gait without the device.	Assessment lower extremity scores, ankle dorsiflexor strength, ankle dorsiflexion range of motion, Modified Ashworth Scale plantar flexor scores, Stroke Impact Scale; assessed at baseline and at 4 weeks post-baseline.		
99	H. McNaughton et al. (2021). The effect of the Take Charge intervention on mood, motivation, activation and risk factor management: Analysis of secondary data from the Taking Charge after Stroke (TaCAS) trial. *Clinical rehabilitation,* 35(7): 1021-1031	Study Aim: To explore mechanisms for the positive effect of the Take Charge intervention. 400 participants randomised into: (i) 1 take Charge session (ii) 2 take charge sessions (6 weeks apart) (iii) control intervention. Inclusion criteria: Within 16 weeks of acute stroke; discharged to community setting. Exclusion criteria: full recovery from stroke (mRS <1), a communication or cognitive deficit precluding personal written informed consent, or a premorbid condition making 12-month survival unlikely.	"Take Charge" Intervention. A person centred, self-directed rehabilitation intervention after stroke. Take Charge intervention group received a 1:1, non-directive exploration of their views on what and who was important to them in their lives, and what they wanted to prioritize for the next 12 months. Stroke survivor held illustrated workbook used to structure the process. The intervention was not time-limited and usually took between 30-60 minutes to complete. The second Take Charge session	12 months after stroke: Mood (Patient Health Questionnaire-2, Mental Component Summary of the Short Form 36); 'Ability to Take Charge' using a novel measure, the Autonomy-Mastery-Purpose-Connectedness (AMP-C) score; activation (Patient Activation Measure); Body Mass Index (BMI), blood pressure (BP) and medication adherence (Medication Adherence Questionnaire).	There were no significant differences in mood, activation, 'ability to Take Charge', medication adherence, BMI or BP by randomised group at 12 months. Significant positive association between baseline AMP-C scores and 12-month outcome for control participants but not for the Take Charge groups combined	**+** Acceptable quality, clinically relevant RCT.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
			included all components of the first, including a repeat baseline assessment. Control group were given written educational materials about stroke produced by the Stroke Foundation of New Zealand, covering common issues following stroke and risk factor management.			
99	H. McNaughton et al. (2021). The effect of the Take Charge intervention on mood, motivation, activation and risk factor management: Analysis of secondary data from the Taking Charge after Stroke (TaCAS) trial. *Clinical rehabilitation,* 35(7): 1021-1031	RCT open trial of two active and one control interventions. N=400 adults diagnosed with stroke	One Take Charge session (N=132), two Take Charge sessions (N= 138), or control intervention (n=130).	Mood (Patient Health Questionnaire-2, Mental Component Summary of the Short Form 36); 'ability to Take Charge' using a novel measure, the Autonomy-Mastery-Purpose-Connectedness (AMP-C) score; activation (Patient Activation Measure); body mass index (BMI), blood pressure (BP) and medication adherence (Medication Adherence Questionnaire).	There were no significant differences in mood, activation, 'ability to Take Charge', medication adherence, BMI or BP by randomised group at 12months. There was a significant positive association between baseline Autonomy-Mastery-Purpose-Connectedness scores and 12-month outcome for control participants (1.73 (95%CI 0.90 to 2.56)) but not for the Take Charge groups combined (0.34 (95%CI −0.17 to 0.85))	- The trial was not powered to detect statistical differences in the secondary outcome variables. Analysis was not adjusted for Type I error inflation caused by multiple statistical testing.
100	B. Studer et al. (2021). A decision-neuroscientific intervention to improve cognitive recovery after stroke.	Masking not described - presumably open label RCT of inpatient stroke survivors in a single centre in Germany. Participants had 'severe' stroke, characterised by impairments in	The intervention relevant to Q56 was a system of 'precommitment', where participants could agree that they	The outcomes relevant to Q56 were co-primary outcomes of training frequency and duration of training.	The intervention group who engaged with the self-directed training had higher frequency of training (every other day, versus every fifth day) and longer duration of training	- Open label, does not use intention to treat approaches despite the large drop-out in the intervention group. Poor

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
	Brain : a journal of neurology, 144(6): 1764-1773	activities of daily living and cognitive impairments. The analysis relevant to the research question (Q56) recruited 64 participants, with substantial and unequal drop-out.	would either not have visitors during self-directed training sessions or that their adherence to self-directed training would be reported to the clinical team. All but one of the participants in the intervention group opted to restrict visitors. The control group had access to self-directed training but no precommitment. The self-direct training was based on a cognitive training computer game (paired associate learning). The intervention group n=33 stroke survivors but 8 did not engage in the intervention. The control n=31 stroke survivors and 1 did not engage in the intervention.		(90.2±SE15.2 minutes versus 33.6±SE11.2 minutes).	reporting of randomisation procedure.
100	B. Studer et al. (2021). A decision-neuroscientific intervention to improve cognitive recovery after stroke. *Brain : a journal of*	Germany/Meerbusch, private hospital for acute neurological disease, urban; randomised sample (n=95, after drop outs, n=83) with 2 expereimental and 1 control group; ischaemic and haemorraghic stroke, age:	Treatment group (n=25); control (n=30); standard therapy: (n=28); treatment and control groups engaged in spatial working memory tasks	Hypothesis confirmed: treatment group participants (those who pre-commited to visitor ban) were better at participation in self-directed computerized		

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
	neurology, 144(6): 1764-1773	average 73; 39.6 days post-stroke. Narrow inclusion criteria: excluded aphasia, all kinds of cognitive co-morbidities and complexities Each dose administered over 3 week practice bouts separated by 1 month: train-wait-train.	(Spatial Span and a computerised visual memory game); treatment group had to pre-commit to a choice restriction to ban visitors; control group had no choice restriction. The paradigm involved the hypothesis that people who pre-committed would be better in self-directed working memory tasks and their cogntive scores above those in the control group (no pre-commitment).	memory game and had better working memory scores at the end of the trial.		
101	B. Studer et al. (2016). Increasing self-directed training in neurorehabilitation patients through competition. *Progress in Brain Research,* 229: 367-388	Germany/Meerbusch, private hospital for acute neurological disease, urban. Design: cross-over within-subject design; subjects: each subject underwent 3 experimental conditions: baseline, feedback, competition repeatedly (min 2x, max unrestricted); order of conditons was randomised; Subjects: n=93 adult stroke patients, (30 exclusions from statistics), retrospectively recruited, time since stroke 2-20 weeks; final analysis of n=60 and total of 701 recorded training sessions.	Bicycle trainers: conventional n=35 (24 in final sample) and wheelchair adaptable n=58 (36 in final sample); pre-test to estimate patients' fitness level; participants chose duration and intensity of training each day; examiner informed them about the condition for the upcoming exercise (baseline, feedback, competition) ; the sequence of these conditions was	Generalixed Estimating Equation (GEE) models were used to assess the effect of the experimental condition. Effect was shown for the type of condition. Training performance increased significantly in the 'competition' condition (p=0...5), not during the 'feedback' condition (p=0.63) compared to 'baseline'; direct comparison between competition and feedback showed patients trained more intensively during competition (p=0.002);	Competition led to a signficant increase in intensity of self-directed training under perceived competition rather than the control conditions; Perceived exertion covaried with objective training performance, but was not significantly altered by competition. 'Competition' had an enhancing effect on subsequent training performance, Rematch condition was effective in increasing training intensity.	

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
			randomised; measures: wheelchair-adapted: duration and intensity; conventional trainer: total number of pedal cycles per session; Borg Rating of Perceived Exertion.	perceived performance was positively related with perceived exertion (p=0.004); type of experimental condition, time (length of session unclear), and training type had no sign effect; the condition 'competition' positively effected the performance of the subsequent session (p=.0.08); Rematch competition (competing against the same person again after having 'won' increased training performance significantly (p=0.02);		
102	B. Te Ao et al. (2021). Economic analysis of the 'Take Charge' intervention for people following stroke: Results from a randomised trial. *Clinical rehabilitation,* : 2.692155211e+15	RCT aim: to undertake an economic analysis of the Take Charge intervention as part of the TaCAS study 400 participants randomised into: (i) 1 take Charge session, (ii) 2 take charge sessions (6 weeks apart), (iii) control intervention Inclusion criteria: within 16 weeks of acute stroke; discharged to community setting. Exclusion criteria: full recovery from stroke (mRS <1), a communication or cognitive deficit precluding personal written.	"Take Charge" Intervention. A person-centred, self-directed rehabilitation intervention after stroke. Take Charge intervention group received a 1:1, non-directive exploration of their views on what and who was important to them in their lives, and what they wanted to prioritize for the next 12 months. Stroke survivor held illustrated workbook used to structure the	EuroQol-5D-5L (completed by 340 of the 388 (88%) survivors at 12 months. The cost per quality-adjusted life year (QALY) saved (for the period between randomisation and 12 months following acute stroke. QALYs were calculated from the EuroQol-5D-5L. Costs of stroke-related and non-health care were obtained by questionnaire, hospital records and the New Zealand Ministry of Health.	Take Charge is cost-effective, even at a very low willingness-to-pay threshold. The main contributors to cost saving for Take Charge were a reduction in acute hospital readmission for stroke, lower rates of hospital-level aged residential care and less use of personal care services.	+ Acceptable quality, clinically relevant RCT

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
			process. The intervention was not time-limited and usually took between 30 and 60 minutes to complete. Control group given written educational materials about stroke produced by the Stroke Foundation of New Zealand, covering common issues following stroke and risk factor management.			
102	B. Te Ao et al. (2021). Economic analysis of the 'Take Charge' intervention for people following stroke: Results from a randomised trial. *Clinical rehabilitation,* : 2.692155211e+15	Economic analysis of an RCT open trial of two active and one control intervention. n=400 adults diagnosed with stroke.	One Take Charge session (n=132), two Take Charge sessions (n= 138), or control intervention (n=130).	Cost per quality-adjusted life year (QALY) saved (calculated from the EuroQol-5D-5L) form randomisation to 12 months post-stroke. Costs were obtained by questionnaire, hospital records and the New Zealand Ministry of Health.	The mean cost of care was $4706 USD (95% CI $3758–$6014) for the Take Charge group and $6118 USD (95% CI $4350–$8005) for control, mean difference -$1412 USD (95% CI −$3553 to +$729). Mean health utility scores were 0.75 (95% CI 0.73–0.77) for Take Charge and 0.71 (0.67–0.75) for control, mean difference 0.04 (95% CI 0.0–0.08). Cost per QALY gained for the Take Charge intervention was $US –$35,296 USD (=-£25,524, -€30,019).	**+** Acceptable methods.
103	K. M. Triandafilou et al. (2018). Development of a 3D, networked multi-user virtual	Randomised cross-over trial, performed in a single site movement laboratory. Participants were more than two	Three arm cross-over design. Novel intervention was a virtual reality	User satisfaction was reported using a series of bespoke, unvalidated questionnaires. Analysis of	Users were satisfied with all three modalities and did not express a preference. Movement analytics	**0** The questionnaires were unvalidated, the analysis was

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
	reality environment for home therapy after stroke. *Journal of NeuroEngineering and Rehabilitation,* 15(1) (no pagination):	years post stroke and had upper limb impairments. There was no sample size calculation, 15 stroke survivors were included in the analysis.	rehabilitation environment that allowed for gaming with a virtual partner. Comparators were a standard home exercise programme and a computer game based upper limb rehabilitation programme.	movement patterns was also performed.	suggested greater absolute movements with the home exercise program but no evidence of non-inferiority of the virtual reality platform.	inappropriate to the cross-over design, the sample size was too small to demonstrate even a moderate between group effect, reporting was poor with no detail on randomisation or masking to intervention.
105	D. Vadas et al. (2021). Understanding the facilitators and barriers of stroke survivors' adherence to recovery-oriented self-practice: a thematic synthesis. *Disability and rehabilitation,* : 01-Dec	Thematic analysis of qualitative studies (from 9 different countries) only including papers where post-stroke patient was over 18 & adherence to post-stroke exercise programme was the main or secondary focus. Self practice of excercise programmes being the focus. Only papers on recovery-focused exercise programmes were included. Qualitative studies reviewed in recognition of the multitude of factors that influence behaviour and behavioural engagement (e.g health beliefs, culture, peer influence, etc). Qualitative studies thus allowing for inductive analysis of data gathered. Data was coded according to meaning assumed, themes then identified and merged, where appropriate , with the aim of developing a set of core descriptive and then analytical themes. Creation of analytical themes enabling	Exploration of factors affecting adherence to post stroke exercise programme interventions, prescribed for self directed practice.	The review identified a breadth of patient experience and personal psychology relevant to rates of adherence, ranging from adherence being driven by trust in healthcare professionals, interest in the regime and past healthcare experience, social and family support (including doing excercises together), influence of practical and environmental factors, and the effects of the stroke itself (e.g influence of post stroke fatigue).	Adherence to home-based exercise programmes is best acheived through personalisation (taking account of the mutiple influences on adherence). Consideration of individual factors deemed to be vital for good outcomes Adequate knowledge of and rapport with the patient also indicated as being vital.	**++** 12 studies out of 1308 were selected, determined to be of high quality. Methodological process was rigorous and evidence based. Conclusions reached rooted in evidence gained through the methodological process applied.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
		recommendations to be made to increase adherence to home-based exercise.				
106	C. Wang et al. (2020). The Efficiency, Efficacy, and Retention of Task Practice in Chronic Stroke. *Neurorehabilitation and Neural Repair,* 34(10): 881-890	Country: USA. Small study, participants randomised into 4 groups; total n=41; at least 5 months post-stroke; upper extremity Fugl-Meyer motor score of 19-60 out of 66. Question: which dose of arm exercise is required for best efficiency and retention? Groups: dose 0 hrs practice, n=10; dose 15 hrs practice, n=10; dose 30 hrs practice, n=10; dose 60 hrs practice, n=11. Each group underwent 14 clinical assessments of arm performance.	Each group received their respective dose of arm exercises over 3 weeks, one month wait, then another 3 week period of exercises.	Quality of Movement measured on the Motor Activity Log; Efficacy increased with increased dose of task practice (ie. higher number of hours of practice during the 3 week period); Efficiency decreased with the number of additional weeks of practice: 2-fold reduction in gain in the second week and 5-fold reduction in the third week compared to the first week. The efficiency outcomes on the Motor Activity log in the third week improved very little across all groups, irrespective of dosage, i.e. increased practice duration decreased efficieny. Forgetting following task practice was fast across dosage but slowed down within 2 months post-practice (i.e. eventually participants retained the tasks). The 15 hour group had the best motor outcomes and retention. Higher dose was negatively related to	Large dosage of practice increased motor activity post-practice. In contrast, efficiency decreased with additonal hours of practice. Each hour of practice in the 60-hour group was 2 times less effective than an hour in the 15 hour dose. Strong decrease in the efficiency of practice as weeks progressed: the third week was 5 times less efficient than the first. Retention of skill was rapid in the early periods of practice and slowed after 2 months (i.e. forgetting rated achieved near baseline = zero forgetting= remembering the exercises in the next 4 months). Subjective components were postulated in people not remembering the subtle improvements at later practice as well as the more noticable initial improvements. Also, in the higher dose group (60 hours) the decay of meory was greater - postulated that this group acquired more skill and had more prompts/support which allowed more for more decay when the practice stopped.	

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
				motor outcomes and retention.		
107	F. Wittmann et al. (2016). Self-directed arm therapy at home after stroke with a sensor-based virtual reality training system. *Journal of Neuroengineering & Rehabilitation,* 13:1 75	Open label, single group trial; n=11 hemiparetic patients able to lift arm against gravity; single centre; Switzerland.	Self-directed; x2 upper limb therapy games with real time feedback/ interface from upper arm, wrist and trunk accelerometers. In addition to standard of care; physical therapy, on average 3.9 sessions/week, approximately 155 min/week	Primary outcome: duration of training per week; across 6 weeks. Secondary Outcomes: reported average training duration for every training week = training duration per session; training intensity = sum of both the number of meteors caught (meteors game) and the number of targets hit (slingshot game); compensatory movements = trunk rotation, trunk inclination; arm function = via Fugl-Meyer Assessment - Upper Extremity (FMA-UE); Wolf Motor Function Test (WMFT) Recorded at pre-training, 3 weeks post-training, & 6 weeks post-training.	Primary Outcome: weekly training duration did not change over the course of six weeks. Secondary Outcomes: reported average training duration per week was 137 ± 120min, average training (gaming) duration per session was 30 ± 16min, training duration per session; Training Intensity = 387 ± 522 movements per session. Compensatory Movements = average absolute trunk rotation & average trunk inclination did not change significantly between week 1 and weeks 5/6; Arm Function = significant improvement in the FMA-UE from 35.1 ± 19.9 points to 39.2 ± 17.9 points after 6 weeks, changes seen in the WMFT were not significant +1.2 points after 6 weeks	**0** No blinding of participants or assessors & lack of control group make interpreting the results in any meaningful way difficult.
108	Y. Wong et al. (2020). Self-administered, home-based, upper limb practice in stroke patients: A systematic review. *J Rehabil Med,* 52:10 jrm00118	SR&MA; 15 studies 788 participants; chronic stroke;	Primary: home-based practice vs no intervention; Secondary: structured home-based practice vs non-structured home-based practice	Upper limb activity; Box & Blocks Test (BBT) (6 studies), 9 hole Peg Test (9HPT) (1 study), Purdue Pegboard Test (PPT) (1 study), Wolf Motor Function Test (WMFT) (3 studies), Action	Primary: Self-administered, home-based practice did not improve activity compared with no intervention; 5 trials (n= 275); Secondary: no difference between structured and non-structured home-based	**+** Intervention and outcome measures.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
				Research Arm Test (ARAT) (2 studies), Chedoke Arm and Hand Inventory (CAHAI) (1 study), And Motor Activity Log (MAL) amount of use scale (1 study).	practice in terms of upper limb activity; 10 trials (n=513)	
695	L. V. Gauthier et al (2022). Video game rehabilitation for outpatient stroke (VIGoROUS): A multi-site randomized controlled trial of in-home, self-managed, upper-extremity therapy. eClinicalMedicine. 43.	Parallel, five site, single blind RCT. Community-dwelling adults, >6 months post-stroke, mild/moderate upper extremity hemiparesis. n=193 enrolled, n=167 began treatment and were analysed, 150 (90%) completed treatment, 115 (69%) completed follow up.	Randomly allocated to receive one of four interventions over a 3 week period. 1) 5 hours of behaviourally-focused intervention plus gaming self-management (Self-Gaming), 2) The same with additional behaviourally-focused telerehabilitation (Tele-Gaming) 3) 5 hours of Traditional motor-focused rehabilitation 4) 35 hours of constraint-induced movement therapy (CI)	Primary outcomes: Everyday arm use (Motor Activity Log Quality of Movement, MAL) and motor speed/function (Wolf Motor Function Test, WMFT). Assessed immediately before treatment, immediately after treatment, also 6 months later.	Clinically meaningful MAL gains in tele-gaming and self-gaming compared with traditional care. Self-gaming less effective than CI, telegaming was not. Six month retention of MAL gains was 57% across all groups. Similar clinically meaningful WMFT gains in all groups. Six month retention of WMFT gains across all groups was 92%.	**+** RCT but some limitations to note. Compared 4 different interventions. Randomised. Main issues were high attrition rate (31% overall) and variable adherence to self-management component of the intervention.