<table>
<thead>
<tr>
<th>First author</th>
<th>Intervention</th>
<th>Intensity of intervention</th>
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</table>
| Carr and Jones 2003 | E: Aerobic training on a Sinties Scientific PRO II upper and lower body ergometer. | E: 16-week exercise protocol  
Phase one (weeks 1–5) 40%–50% of original test wattage for 20 min.  
Phase two (weeks 6–10) 50–60% of original wattage for 30 minutes.  
Phase three (weeks 11–16) 60–70% of original wattage for 40 min.  
C: Aerobic and strength training.  
C: Same aerobic protocol and eight strength training exercises (chest press, seated row, leg press, leg extension, leg curl, triceps press down, biceps curl, and shoulders front raise) 2 x 10 repetitions. |
| Chu et al. 2004     | E: Group exercise programs (water based leg exercise)                           | E: 1 hour, 3 times a week for 8 weeks.  
Weeks (heart rate reserve): week 1 (50%), week 2 (70%), weeks 3–5 (75%), weeks 6–9 (80%)  
C: Arm and hand exercises while sitting  
C: 1 hour, 3 times a week for 8 weeks. |
| Ivey et al. 2007    | E: Progressive treadmill exercise training                                      | E: Training target was three 40-minute sessions per week over 6 months at target intensity of 60% to 70% heart rate reserve (HRR). Training started at low intensity (40%–50%HHR) for 10 minutes and increased approximately 5 minutes every 2 week as tolerated. Aerobic intensity was similarly progressed by 5% HHR every 2 week. |
C: Supervised stretching

Janssen et al. 2008
E: Leg cycling exercise with maximally tolerable ES (ES-LCE)
C: LCE performing cycling with just sensible ES (not muscle contractions)

C: 3 times per week 13 stretching movements of upper and lower body for 30 to 40 min. over 6 months.
E: twice a week during 6 weeks.
70.6%±12% of heart rate reserve (HRR) in the first week to 84.7%±14% of HRR in the last week.
C: twice a week during 6 weeks.
70.6%±12% of heart rate reserve (HRR) in the first week to 84.7%±14% of HRR in the last week.

Katz-Laurer et al. 2007
E: Leg cycle ergometer
C: Traditional therapy

Katz-Leurer et al. 2003a
E: Cycle ergometer training
C: Regular therapy + 5 days a week of group activity for general exercise

Katz-Leurer et al. 2003b
E: Cycle ergometer training
C: Regular therapy + 5 days a week of group activity for general exercise

Janssen et al. 2008
E: twice a week during 6 weeks.
70.6%±12% of heart rate reserve (HRR) in the first week to 84.7%±14% of HRR in the last week.

Katz-Leurer et al. 2003a
1) First part (5 days), not determined
2) Second part (6 weeks) 60% of heard rate reserve as observed in the preliminary test.

Katz-Leurer et al. 2003b
1) First part (5 days), not determined
2) Second part (6 weeks) 60% of heard rate reserve as observed in the preliminary test.
Lee et al. 2008

**E:** Cycling

E: Cycling: Target heart rate (HR) equivalent to 50% of peak oxygen uptake (VO₂ peak) in the initial 1 to 2 weeks; this was increased to 70% VO₂ peak by Week 4. (10–12 weeks).

**C:** Progressive resistance training

C: Progressive resistance training

Two sets of eight repetitions unilaterally, commencing at 50% of baseline 1 RM and progressing to 80% 1 RM by week 2.

**C:** Sham cycling and sham progressive resistance training

C: Participants undertook 30 minutes of sham cycling and sham progressive resistance training

Lennon et al. 2008

**E:** cycle ergometer exercise using either the upper or lower limbs

E: twice weekly for 30 minute for 10 weeks. 50–60% of their maximal heart rate.

**C:** normal therapy

C: –

Macko et al. 2005

**E:** Treadmill aerobic training

E: 3 times per week during 6 months.

Training target was three 40-minute sessions per week at target intensity of 60% to 70% heard rate reserve (HRR). Training started at low intensity (40%–50%HHR) for 10 to 20 minutes and increased approximately 5 minutes every 2 week as tolerated. Aerobic intensity was similarly progressed by 5% HHR every 2 week.

**C:** Stretching and low-intensity walking

C: 13 stretching movements during 35 minutes and 5 minutes walking exercise 30–40% max HR, during 6 months

Pang et al. 2005

**E:** Fitness and mobility exercise (FAME exercise).

E: 1 hour session 3 times per week, 19 weeks. Training started at 40% to 50% HRR, with increment of 10% HRR every 4 weeks, up to 70% to 80% HRR, as tolerated.

**C:** Seated upper extremity program

C: 1 hour session 3 times per week, 19 weeks
**Pang et al. 2006**

**E:** Intensive exercise program with three different exercise programs
- weight bearing
- load the lower extremities
- enhance bone strength

**C:** upper extremity exercise program

**E:** 1 hour sessions three times per week for 19 weeks. Exercise intensity was set at 40–50% heart rate reserve (HRR) and increased by 10% HRR every 4 week, up to 70–80% HRR, as tolerated.

**Potempa et al. 1995**

**E:** Bicycle by ergometer

**C:** Passive exercise for range of motion to body joints

**E:** 30 minutes per session three times per week. The training load was gradually increased from a workload representing 30%–50% of maximal effort to the highest level of attainable by the subject.

**Strength training**

**Akbari and Karimi 2006**

**E:** Strengthening exercises and functional balance protocol.

**C:** Functional and balance exercise protocol.

**E:** 3 x week, 3 h per session (12 sessions). Concentric isotonic type of contraction with 70% of 1RM. All exercises repeated ten times in one session, 4 weeks.

**C:** –

**Bourbonnais 2002**

**E** Force-feedback program:
The motor reeducation program for upper and lower limp was based on the use of static dynamometer.

**Ea:** Upper limp program

**Ea:** Typically, the level of effort ranged from 20% to 35% of the maximal voluntary effort (MVE) at the beginning of the treatment to the 40% to 60% at the end of the treatment. Treatment was conducted three times a week for 6 wk duration

**Eb:** Lower limb program

**Eb:** Typically, the efforts ranged from 40% to 60% of the maximal voluntary contractions a given direction to 70% to 90% by the end of the treatment. Treatment was conducted three times a week for 6 wk duration.
Engardt et al. 1995

E: Eccentric training movements.
C: Concentric training movements.

E: Training the paretic leg exclusively with isokinetic maximal voluntary eccentric knee extensor actions, 2 x a week for 6 weeks.
C: Training exclusively with isokinetic maximal voluntary concentric knee extensor actions, 2 x a week for 6 weeks.

Flansbjer et al. 2008

E: Supervised resistance training program of the knee muscles.

E: 2 x week, 80% of maximum. Each session lasted about 90 min, 10 weeks.
After warming: Leg extension/curl rehab machine 5 reps without resistance and 5 reps at 25% of their maximum load, 6–8 reps in 2 sets at a low speed with about 80% of maximum load and with a 2 min. rest between each set and in the non-paretic and paretic lower limb. After a 10 min. rest, the same protocol with the flexors in the non-paretic and paretic lower limb. After this lower limbs were passively stretched using a static technique.
C: –

Glasser 1986

E: Isokinetic training and conventional therapeutic exercise program and gait training.

E: 1) Training with Kinetron. Position: lower extremity 30 degree of hip flexion and 20 degree of knee flexion; 25 repetitions of bilateral lower extremity exercise; rested 1 minute; repeated the procedure; pressure 50 to 100 psi.
2) Therapeutic exercise and gait training 2 x 60 minutes/day/5 times/week
C: Therapeutic exercise and gait training 2 x 60 minutes/day/5 times/week

Both groups were administered a therapeutic exercise program that consisted of techniques based on neurophysiologic and developmental theories.
Kim et al. 2001  
E: Maximal concentric isokinetic strength training (The Kin-Com Isokinetic Dynamometer)  
C: Passive range of motion. (The Kin-Com Isokinetic Dynamometer)  
E: Three 45-minute sessions per week for 6 consecutive weeks for a total of 18 sessions. 5 min warm-up. Three sets of 10 repetitions of maximal effort concentric hip flexion/extension, knee flexion/extension, and ankle dorsiflexion/plantarflexion of the paretic limb 30 minutes. 5 min cool-down.  
C: Three times a week for 6 weeks. Three sets of 10 repetitions (relax the limp). 5 min warm-up and 5-minute cool-down.

Lee et al. 2008  
E: Progressive resistance training  
CI: Sham cycling and sham progressive resistance training  
CII: Cycling  
E: Progressive resistance training  
Two sets of eight repetitions unilaterally, commencing at 50% of baseline 1 RM and progressing to 80% 1RM by week 2, 10–12 weeks.  
C I. Participants undertook 30 minutes of sham cycling and sham progressive resistance training, 10–12 weeks.  
C II. Participants undertook 30 minutes of cycling (50–70% of VO\textsubscript{2} max), 10–12 weeks.

Ouellette et al. 2004  
E: High intensity resistance training  
C: Upper extremity stretching  
E: Resistance training: seated bilateral leg press, unilateral paretic and nonparetic limb knee extension, unilateral ankle dorsiflexion and plantarflexion. Subjects performed bilateral leg press, unilateral paretic and nonparetic limb knee extension, and unilateral ankle dorsiflexion and plantarflexion 3 x 8–10 repetitions/week. After warm up 3 sets (8–10 repetitions per set) at 70% of the 1RM, 12 weeks.  
C: Bilateral range of motion (ROM) and upper body flexibility exercises performed 3 times per week, 12 weeks.
## Physical therapy methods / Bobath

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<thead>
<tr>
<th>Study</th>
<th>Type</th>
<th>Description</th>
<th>Duration</th>
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</table>
| Basmajian et al. 1987 | E: Exercise physical therapy. The approach used strictly adhered to the principles described in detail in Bobath’s text. | E: 45 min/session, 3 x week, for 5 weeks  
C: Integrated EMG biofeedback and physical therapy method. EMG feedback was employed as an adjunct to therapy, using the Cyborg BL900 dual processor. | E: 45 min/session, 3 x week, for 5 weeks  
C: 45 min/session, 3 x week, for 5 weeks |
| Dias et al. 2007    | E: Classical Bobath method, including an initial 20min session for joint mobilization and muscle strengthening, plus 20min of a balance and gait training session using the Bobath methods.  
C: First 20 min session of joint mobilization and muscle strengthening. In the following 20 min, patients were managed in the gait trainer and secured in a harness, with a maximum of 30% body weight relief during the first sessions. | E: 40 min/session, 5 x week, for 5 weeks.  
C: 40 min/session, 5 x week, for 5 weeks. |  
| Eich et al. 2004    | E: Bobath based individual physiotherapy concentrating on walking rehabilitation.  
C: Treadmill training wearing modified parachute harness to prevent falls. | E: 30 min/session, 5 x week, for 6 weeks  
C: 30 min/session, 5 x week, for 6 weeks |  
| Langhammer et al. 2000 | E: Physiotherapy according to Bobath concept  
C: Physiotherapy according to Motor Relearning Programme  
For both programs a manual describing the main philosophy behind the method was produced according to background literature. | E: ≥ 40 min/session, 5 x week, for as long as they were hospitalized  
C: ≥ 40 min/session, 5 x week, for as long as they were hospitalized |  

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<tr>
<th>Study</th>
<th>Intervention Details</th>
<th>Frequency</th>
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</table>
| Mudie et al. 2002     | E: a treatment protocol based on Bobath practices. A series of postures and postural manoeuvres involving lateral weight shift, lateral, anterior and posterior pelvic tilting and isolated trunk movements were verbally and manually facilitated by the therapist during seated reaching or in lying.  
C1: a portable computer-linked BPM feedback console was used to provide awareness of weight distribution during training in sitting.  
C2: For task-related reach training the subject was seated on an adjustable plinth, feet flat on the floor. There were 15 grocery items placed behind, or to the side of the subject or on the floor. The items were retrieved singly with the nonparetic upper limb and placed on the cupboard shelves.  
C3: Standard physiotherapy programme. | E: 30 min/session, 5 x week, for 2 weeks  
C1: 30 min/session, 5 x week, for 2 weeks  
C2: 30 min/session, 5 x week, for 2 weeks |
| Platz et al. 2005a    | E1: Bobath therapy. A study manual served as the basis for the study treatment. The emphasis has been on control of muscle tone and recruitment of arm activity in functional situations in various positions.  
E2: The Arm Basis training; a systematic repetitive training technique for hemiparetic patients.  
C: No augmented exercise therapy. | E1: 45min session, 5 x week, for 4 weeks  
E2: 45min session, 5 x week, for 4 weeks  
C: |
| Platz et al. 2005b    | E: Standard rehabilitation plus additional arm rehabilitation as Bobath therapy  
C1: Standard rehabilitation  
C2: standard rehabilitation plus 20 sessions of additional arm rehabilitation as impairment-oriented arm rehabilitation (BASIS training) | E: 20 sessions in four weeks  
C1: four weeks  
C2: 20 sessions in four weeks |
<table>
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<tr>
<th>Study</th>
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<th>Duration</th>
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</table>
| Thaut et al. 2007| Gait training followed the NDT and Bobath principles. Rhythmic auditory stimulation (RAS) training followed established protocols using a metronome and specifically prepared music tapes to ensure temporal precision and tempo stability as well as full capacity for frequency modulation of the stimulus based on patient needs. | E: 30 min/session, 5 week, for 3 weeks  
C: 30 min/session, 5 week, for 3 weeks |
| Van Vliet et al. 2005 | Bobath based treatment  
Movement science based treatment                                                                 | Treatment continued for as long as was needed, rather than standardized length of time. Patients received a median 23 min treatment by a physiotherapist per weekday. |
| Wang et al. 2006  | Retraining normal alignment and normal movement patterns based on Bobath treatment principles. These were facilitated through appropriate sensory and proprioceptive input, direct manual facilitation, key point control and verbal and visual feedback. Normalizing the muscle tone, re-educating the postural reaction and training for trunk control.  
Passive, assistive, active and progressive resistive exercise. The process attempted to elicit motion joint by joint, all under volitional control by the patients. The functional activities were also practiced. | E: 40 min/session, 5 x week, for 4 weeks  
C: 40 min/session, 5 x week, for 4 weeks. |

**Physical therapy methods / Positioning**

<table>
<thead>
<tr>
<th>Study</th>
<th>Interventions</th>
<th>Duration</th>
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</table>
| Ada et al. 2005  | To determine the efficacy of positioning on affected shoulder in flexion and external rotation to prevent shoulder contracture | E: positioning of shoulder two times day 30 min, five days a week + usual physiotherapy  
C: usual physiotherapy |
| Dean et al. 2000 | To investigate the effect of a shoulder positioning protocol on shoulder pain and range of motion | E: prolonged positioning to hemiplegic shoulder five days a week 3 position/20 min + usual physiotherapy  
C: usual physiotherapy |
Griffin et al. 2006  
To investigate if strapping of shoulder prevent or delay development of hemiplegic shoulder pain  
- E: therapeutic or placebo strapping + usual physiotherapy  
- C: usual physiotherapy

Gustafsson et al. 2006  
To evaluate the effectiveness of static positional stretches and positioning of hemiplegic shoulder for maintaining shoulder external rotation and decreasing hemiplegic shoulder pain  
- E: static positional stretches of hemiplegic shoulder twice a day and hemiplegic upper limb in armrest support at all times when seated and when in bed, the participants used pillow to support the stroke shoulder in a position midway between external and internal rotation and not horizontally adducted + usual physiotherapy  
- E1) Sitting with affected upper limb abducted to 90° and fully supported of a table with the elbow extended and forearm in neutral. (20 min)  
- E2) Lying in supine, with the shoulder abducted to 90° and in the maximal amount of achievable external rotation. The elbow was flexed and forearm pronated (20 min)  
- C: participants used locally fabricated cushion supports for their stroke-affected upper limb when seated + usual physiotherapy

Jong et al. 2006  
To investigate the effectiveness of a contracture preventive positioning of the hemiplegic arm after stroke  
- E: positioning procedure of hemiplegic arm for two 30-min session a day, five days a week  
- C:

Lannin et al. 2007  
To investigate if hand splint reduces wrist contracture in adults with hemiplegic  
- E: neutral or extended splint + usual physiotherapy. Splints were worn overnight, 9–12 hours.  
- C: usual physiotherapy

Robinson 2008  
To investigate if wearing a night splint is as effective as standing on a tilt table in preventing ankle dorsiflexion contracture and promoting the ability to stand up early after stroke  
- E: night splint with affected ankle at plantar grade 7 nights per week  
- C: stood on a tilt table for 30 min with the ankle at maximum dorsiflexion 5 times/week
Turton et al. 2005

to evaluate the feasibility and effect of daily stretch positioning for prevention of contractures in stroke patients without arm function

E: two 30 min stretches to wrist and finger flexors and two 30 min stretches to shoulder adductors and internal rotators + usual physiotherapy
C: usual physiotherapy

Physical therapy methods / Robot therapy

Aisen et al. 1997

E: Goal-directed, robot-assisted arm movements with robot. Robot provided assistance as much as required.
C: Contact with the robot. Patient actively moved the robotic arm.

E: 4–5 hours/week for 6 weeks.
C: Once a week or in 2 weeks (biweekly)
Add on intervention: Conventional therapy. Intensity not reported.

Amirabdollahian et al. 2007

E1: baseline (no intervention)
E2: Robot-mediated therapy: individually tailored therapy for 3 x 10 min sessions were conducted using one of three therapy modes (patient passive, patient active-assisted and patient active) based on the patient’s stroke severity and the type of support required.
C: Phase C: Sling suspension phase: 3 x 10 min arm de-weighted with a sling 1) combined movement involving shoulder and elbow flexion and extension while patients lay in their side, 2) activities involving shoulder flexion and extension, 3) elbow flexion and extension.

E1: 3 weeks
E2: 3 x 10 min/ session, 3 x a week for 9 weeks. 9 sessions = 4.5 hours
C: 3 x 10 min/session, 3 x a week for 9 weeks. 9 sessions = 4.5 hours

Burgar et al. 2000

E: Stretching 5 min, tabletop tracing of circles and polygons, series of 3D-targeted reaching movements assisted by the robot. Each movement progressed from the easiest exercise mode (passive = robot assists all necessary guidance and force), active-assisted (subject initiates the movement and robot provides

E: 60 min/day, total of 24 sessions
assistance necessary to complete the task), to the most challenging (active-constrained = pt need to produce force in the direction of the movement against the robot’s velocity-sensitive resistance).

C: Stretching, weight bearing, facilitation (cutaneous and proprioceptive stimulation), games and activities (cone stacking, ball tossing etc.) and 5 minutes of tracking tasks with the target positioned by the robot (pt were told that either a therapist or robot will help them to move their arm).

### Daly et al. 2005

**E:** Shoulder and elbow movements with the robot

**C:** FNS for wrist and finger muscles

E: 1.5 hours a day, 5 days a week for 12 weeks. 

C: 1.5 hours a day, 5 days a week for 12 weeks.

Add on intervention: 3.5 hours functional task components and whole task practise without technology assistance.

### Fasoli et al. 2003

**E:** Progressive-resistive: Perform goal-directed, planar reaching tasks moving against an opposing force generated by the robot.

**C:** Sensorimotor: Perform goal-directed, planar reaching tasks with robot. When pt was unable to perform the task, robot assisted the movement.

E: 60 min/day, 3 times/week, 6 weeks

C: 60 min/day, 3 times/week, 6 weeks

### Fasoli et al. 2004

**E:** Patient performed goal-directed, planar reaching tasks with robot. When pt was unable to perform the task, robot assisted the movement.

**C:** Perform the same reaching tasks as intervention group but robot did not assist the movement. Pt or technician would assist with the unimpaired arm to complete the reaching movement.

E: 60 min/day, for 5 times/week, total of 25 sessions (125 hrs)

C: 60 min/ week, 6–7 weeks (total 6–7 hrs)

Add on intervention: All subjects received conventional, interdisciplinary rehabilitation services. Intensity not described.
<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention Details</th>
<th>Control Group Details</th>
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<tbody>
<tr>
<td>Fazekas et al. 2007</td>
<td>E: Robot provides passive shoulder and elbow movements by ready-set complex program (can be chosen from any therapeutic school (Bobath, Kabat etc.). C: No therapy</td>
<td>E: Additional 30 min robot-mediated therapy/day for the 20 consecutive work days = Patients received total of 10 h of robot-mediated therapy C: –</td>
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<tr>
<td></td>
<td>Add on intervention: 30 min Bobath-based PT for 20 consecutive work days</td>
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<tr>
<td>Hesse et al. 2005</td>
<td>E: With robot patient trained two movement cycles: FOREARM pro-supination and WRIST flexion-extension. 3 modes: 1) passive-passive (both arms moved by the machine), 2) active-passive (non-affected arm driving the affected side), 3) active-active: both arms actively moving against resistance. Within 1st session: 200 elbow and 200 wrist cycles (total of 400) OR 800 repetitions half in mode 1 and half in mode 2. Additionally 25–50 repetitions in mode 3. C: 4–7 s trains of monophasic exponential pulses of electrical stimulation (75Hz, 0.5 ms, 0–80 mA) with self-adhesive electrodes (2.5 x 3 cm). Intensity was set to produce maximum wrist extension. 60–80 wrist extensions /session, interval 8–15 s (ON 4–7 s: OFF 8–15 s). If voluntary activity presents, EMG initiated ES was applied.</td>
<td>E: 20 min/day, 5 days/week, 6 weeks</td>
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<td>Add on intervention: Standard inpatient rehabilitation program: 45 min 5 times a week PT, 30 min 4 times a week OT based on NDT. Balance, gait and ADL training, 20% of therapy time for UL exercise (tone inhibiting exercise, proximal muscle control)</td>
</tr>
<tr>
<td>Kahn et al. 2006</td>
<td>E: Robotic training active/assisted reaching</td>
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<td></td>
<td>C: Unconstrained, unassisted repetitive voluntary reaching</td>
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<td></td>
<td>Add on intervention: Subjects continued their usual exercise activity and were asked not to change their routines during the intervention. No OT or PT.</td>
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<tr>
<td>Study</td>
<td>Intervention Details</td>
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<tr>
<td>Lum et al. 2002</td>
<td>E: Four point-to-point reaching directions with robot: forward medial (shoulder flexion, adduction), directly forward (shoulder flexion), forward lateral (shoulder flexion, abduction, external rotation), directly lateral (shoulder abduction, external rotation). Each movement progressed from the easiest exercise modes to the most challenging. C: Conventional NDT-based PT: 10 min shoulder preparation, 35 min functional task training (progressive training), 10 min practice of the highest level tasks that was completed, and 5 min exposure to the robot.</td>
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<td></td>
<td>E: 5 min preparation + 50 min/session, 24 sessions in 8 weeks. C: 5 min preparation + 50 min/session, 24 sessions in 8 weeks. Add on intervention: Subjects had completed all formal out-pt therapy but continued with any home-based exercise regimen or community-based stroke programs they were enrolled in at the time of intake into the study.</td>
<td></td>
</tr>
<tr>
<td>Lum et al. 2006</td>
<td>E1: Robot combined reaching movements (Robot combined reaching (50% unilateral mode, 50% bilateral mode) E2: Robot unilateral reaching movements E3: Robot bilateral reaching movements. C: Conventional NDT-based therapy</td>
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<tr>
<td></td>
<td>E1: 10 min preparation, 50 min robotic training/session, 15 sessions in 4 weeks. E2: 10 min preparation, 50 min robotic training/session, 15 sessions in 4 weeks. E3: 10 min preparation, 50 min robotic training/session, 15 sessions in 4 weeks. C: 10 min preparation, 50 min conventional therapy/session, 15 sessions in 4 weeks. Add on intervention: Subjects were allowed to continue any out-pt therapies in which they were enrolled at the time of study acceptance. Intensity not reported.</td>
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<tr>
<td>Masiero et al. 2006</td>
<td>E: Robot assisted and guided the weak limb through stereotyped movement patterns focusing on shoulder and elbow movements (flexion/extension, abduction/adduction). E: 4 hours/week for 4 weeks</td>
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</tbody>
</table>
C: Exposure to the robot, but exercises was performed with the unimpaired limb.

Masiero et al. 2007

E: Robot provided shoulder and elbow movements (alternative flexion/extension, adduction/abduction, pronation/supination about 20 reps per cycle).
C: Exercises with the robot were performed with the unimpaired limb.

All subjects received similar multidisciplinary post-stroke rehabilitation. Intensity not reported.

E: Additional robotic therapy starting < than 1 w post-stroke 2 x/day, 5 x/week (4 hrs/week) for 5 weeks (total of 25 sessions).
C: Exposure to the robot for 30 min/week, twice a week for 5 weeks.
Add on intervention: Standard rehabilitative treatment based on the Bobath -concept and OT the same time and length for both groups – not described the exact intensity.

E: 1 hour/week for 4 weeks

Mayr et al. 2008

E: Practice of UL exercises with robot. Robot provided assistance (4 degrees of freedom) or resisted the movement (8 DOF) when needed
C: EMG-ES: Self-triggered stimulation for UL muscles if capable, 35–50 Hz, 5 ON: self administered OFF time, ramp up and down 1 s, intensity by the subjective feeling

AB-BA cross-over study
E: 5 days a week for 2 weeks
Break in between the training periods A/B

C: 5 days/week for 2 weeks
During robot and EMG-ES training for 30 min each (total 60 min)/5 days a week (total of 4 weeks).
Add on intervention: During the 2 week break, no OT or PT.

Stein et al. 2004

E Reaching tasks with robot. Robot provided resistance to the desired movement.
C: Reaching tasks with robot. Robot provided assistance in

E: 1 hr/day (40 minutes of robot-aided exercise, rest for set up and relaxation), 3 days/week for 6 weeks (total of 18 hrs). About 18,000 repetitions during 6 weeks.
C: 1 hr/day (40 minutes of robot-aided exercise, rest for set up
reaching if the subject was unable to reach it independently. If pt was able to perform independently, robot provided guidance to improve the quality and efficiency of the movement and provided tactile cue by nudging the arm toward the target. and relaxation), 3 days/week for 6 weeks (total of 18 hrs). About 18,000 repetitions during 6 weeks

<table>
<thead>
<tr>
<th>Study</th>
<th>Experimental (E) Intervention</th>
<th>Control (C) Intervention</th>
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<tbody>
<tr>
<td>Volpe et al. 2000</td>
<td>E: Drawing round targets in a support board with robot.</td>
<td>C: Similar as experimental group but 50% of the trials performed with unimpaired upper limb or assisted by the unimpaired limb or assistant. Robot never actively moved the limb.</td>
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<tr>
<td></td>
<td>E: 1 hour/day, 5 days/week (total: 5 hour/week) Min 25 sessions (25 hrs) including min 1500 repetitions goal directed movements.</td>
<td>C: 1 hour/week</td>
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<tr>
<td></td>
<td>Add on intervention: Standard multidisciplinary rehabilitation program (PT and OT). Intensity not reported.</td>
<td></td>
</tr>
<tr>
<td>Volpe et al. 2008</td>
<td>E: Practice of UL exercises with robot actively or assisted. Robot provided assistance if patient could not move the arm.</td>
<td>C: Intensive movement protocol = Static stretches, active-assisted arm exercises, goal-directed planar reaching tasks based on Carr and Shepherd principles. Tone inhibition and trunk upright positioning was encouraged.</td>
</tr>
<tr>
<td></td>
<td>E: 1 hour/day, 3 x/week for 6 weeks (total of 18 hours)</td>
<td>C: 1 hour/day, 3 x/week for 6 weeks (total of 18 hours)</td>
</tr>
<tr>
<td>Wang et al. 2007</td>
<td>E: Pt is asked to grasp the robot rod and move it against the resistance of the springs with an inferior-posterior-superior-anterior sequence in a circle. The spring resistance can be adjusted according to the patient’s strength.</td>
<td>C: –</td>
</tr>
<tr>
<td></td>
<td>E: 10–15 encircling motions per unit, 5 units/day, 5 days/week for 4 weeks</td>
<td>Add on intervention: 60 min PT 5 x/week for 4 weeks. PT included stretches to UL’s, weight bearing for LL’s, walking and balance training with neuromuscular facilitation technique.</td>
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<td>C: –</td>
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Wang et al. 2007
### Balance training

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<thead>
<tr>
<th>Study</th>
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<tbody>
<tr>
<td>Allison et al. 2007</td>
<td>E: conventional pt including work on strengthening, improving movement, mobility and upper limb function + standing practice by pt assistant, typically involved the use of either standing frames, tilt tables or standing at tables to provide support while enabling standing to occur (progressed standing as able). Patient practiced reaching tasks, sit-to-stand movements etc. while standing, rest periods as necessary</td>
<td>E: 45 min pt + 45 min standing/day, 5 x/week</td>
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<tr>
<td></td>
<td>C: conventional pt</td>
<td>C: 45 min pt/day, 5 x/week</td>
</tr>
<tr>
<td></td>
<td>E + C: Treatment was continued throughout the patients stayed in the rehabilitation unit, typically 3–4 weeks.</td>
<td>E + C: Program last 1 h 5 days a week for 4 weeks</td>
</tr>
<tr>
<td>Bonan et al. 2004</td>
<td>E + C: training was same for both groups. Patients applied a rehabilitation program; improving balance in different positions + treadmill + walking on a foam rubber track. E: with visual cue deprivation C: without visual cue deprivation (free-vision)</td>
<td>E + C: Program last 1 h 5 days a week for 4 weeks</td>
</tr>
<tr>
<td>Britton et al. 2007</td>
<td>E: practiced sit-to-stand repetitions (with pt assistant). Got visual feedback from monitor (measured ground reaction forces) when rising up + verbal feedback from pt assistant. When the participant fatigued strengthening exercises (extensor muscles) were carried for any remaining time. C: received arm and hand training tasks and/or stretch positioning, was in addition to the routine rehabilitation programme</td>
<td>E + C: 30 min on weekdays for 2 weeks</td>
</tr>
<tr>
<td>Study</td>
<td>Intervention Details</td>
<td>Comparison Details</td>
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<tr>
<td>----------------</td>
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</tr>
<tr>
<td>Chen et al. 2002</td>
<td>E + C: Conventional physical therapy and occupational therapy programs including muscle strengthening, therapeutic exercise, and ADL training were provided. + E: Visual feedback balance training with the Smart Balance Master was used. Subjects trained static balance and dynamic function training.</td>
<td>E + C: 2 weeks training + E: visual feedback 20 min/day, 5 days/week for 2 weeks</td>
</tr>
<tr>
<td>Dean et al. 1997</td>
<td>E: practice of reaching beyond arm’s length. Systematically varied conditions. C: sham training involving completion of cognitive-manipulative tasks within arm’s length. Subjects considered themselves involved in a training program.</td>
<td>E + C: 10 session x 30 min into 2 weeks</td>
</tr>
<tr>
<td>Dean et al. 2007</td>
<td>E: Sitting training protocol that involved practising reaching tasks beyond arm’s length using the unaffected hand. Training was progressed by increasing the reach distance and the number of repetitions. C: Sham sitting training protocol that involved practising cognitive-manipulative tasks within arm’s length (well supported chair with back and armrests with their forearm resting on the table).</td>
<td>E + C: 10 x 30 min sessions spread over a 2-week period</td>
</tr>
<tr>
<td>Engardt et al. 1993</td>
<td>E: received a vertical ground reaction force (platform consisted separately under each foot) feedback through the auditory output (bio-feedback signal: received knowledge of performance immediately when the load of the paretic leg reached the preset body-weight distribution) while rising and sitting down. Instructed to put equal weight on both feet during the exercises. C: without feedback (but feet on the platform) while rising and sitting down.</td>
<td>E + C: 15 min, 3 x daily, 5 days a week for 6 weeks</td>
</tr>
</tbody>
</table>
Eser et al. 2008
E: 15 session of balance training using force platform biofeedback (Nor-Am Target Balance Training System).
Provides visual representation of a person’s center of gravity;
Menu-Driven exercises
+ conventional rehabilitation (patient specific;
neurodevelopment facilitation techniques, physiotherapy
(positioning, range of motion, progressive resistive exercises,
endurance, walking, activities of daily living), occupational
therapy, speech therapy (if needed))
C: Conventional rehabilitation
E + C: 5 days/week, 2–5 h/day for 8 weeks
+ E: 15 min of balance training once daily, 5 days a week for 3 weeks

Geiger et al. 2001
E + C: Pt interventions including pt techniques aimed at improving muscle force, range of motion, balance and mobility.
Mat activities (stretching and strengthening), weight bearing or shifting and standing lower-extremities exercise in parallel bars and balance activities + training in functional activities.
E: Trained on the NeuroCom Balance Master, standing position, one foot on each force plate; weight-shifting, limits of stability
C: Conventional balance training; for ex. weight shifting → functional balance activities
E: 50 min treatment sessions (incl. 35 min physical therapy, 15 min training on NeuroCom Balance Master)
2–3 x/week for 4 weeks
C: 50 min, 2–3 x/week for 4 weeks

Grant et al. 1997
E: Training on the balance master – visual feedback; standing with each foot positioned on force platform, progressive tasks (at the end reaching, stepping etc.)
C: Conventional balance training; for ex. weight shifting → functional balance activities
E + C: 30 min balance training session/day, 5 days/week as inpatient (min 3 weeks) and 2 days/week as outpatient for a max 8 weeks
for an average of 19 sessions

Hart et al. 2004
E: received Tai Chi Chuan practice (spec. instructor, practice of slow, graceful and precise movements carried out with a lowered center of gravity, knees and hips flexed, movements require well-coordinated sequencing of body segments)
IE + C: 1 h, 2x a week for 12 weeks
C: received group exercises focusing on improvement of balance (provided by a pt)

Howe et al. 2005
E: Usual care + additional therapy; improving lateral transference in sitting and standing based on the work of Davies, delivered by trained pt assistant. Self-initiated goal-orientated activities, where appropriate, manual guidance and verbal encouragement of these movement strategies (feedback)
C: Usual care

E: 12 additional therapy sessions, totally 6 h over 4 weeks

Katz-Leurer et al. 2006
E: Patients continued with regular therapy in the department + Session of leg cycle ergometer (active passive trainer, electrically powered trainer, operated by hand or foot pedals). Pt supervised the training. Intensity was less than 40% of heart rate reserve adjusted for age.
C: Regular therapy (physical therapy based on the Bobath approach; occupational therapy, speech therapy if needed, group activity for general exercises)

E: 3 weeks regular therapy and in addition ergometer 5 days/week for 3 weeks (at the beginning 10 min sessions, at the end 30 min sessions)
C: 3 weeks (group therapy 5 days/week)

Kluding et al. 2008
E: 5 min ankle joint mobilization on the hemiparetic leg.
C: 5 min breathing exercise and sitting active ROM exercise for the upper and lower extremities
E & C: next 15 min for both groups: functional training, STS, walking, climbing stairs
E & C: final 10 min for both groups: activities to challenge sitting and standing balance

E + C: pt sessions 2 x/week (30 min) for 4 weeks
First 5 min of each 30 min sessions differed between the groups.

Kwakkel et al. 2002
All groups:
Lower-extremity (LE) program + Upper-extremity (UE)

All groups: 15 min LE + 15 min UE training, 5 days/week during the first 20 weeks after onset of stroke + 1.5 h training in
program + weekly 1.5 h session of training in activities of daily living

Lower-extremity-rehab (LE): turning over, maintaining sitting and standing balance, symmetry in interlimb coordination during walking

Upper-extremity-rehab (UE): grasping, reaching, leaning and dressing and hair combing

Immobilization (I): immobilization of the paretic LE and UE by means of an inflatable pressure splint, applied in a lying position

Lynch et al. 2007

E: Sensory retraining intervention; divided evenly between education regarding sensation and sensory retraining (practice in detection and localization of touch at 7 points on the soles of the feet)

C: Relaxation session; standing and lying in supine eyes closed, performing guided relaxation techniques.

E + C: 10 x 30 min sessions over 2-weeks period

E + C: standard pt; 1 h/day group session and 30–60 min individual session

Marigold et al. 2005

E: agility group; dynamic balance, the task progressively increased in difficulty based on set criteria and dependent on an individual’s ability (emphasize agility and multisensory approach), standing in different postures, walking with various challenges, additional exercises; sit-to-stand and standing perturbation. Eyes-closed conditions and foam surfaces were incorporated in many of the tasks.

C: stretching/weight-shifting exercise group; slow, low-impact movements consisting of stretching (by standing and mats on the floor) and weight shifting (tai chi-like movements and reaching tasks). Getting down and up from the floor was exercise itself.

E + C: 1 h, 3 x/week for 10 weeks
<table>
<thead>
<tr>
<th>Study (Year)</th>
<th>Control Group (C)</th>
<th>Experimental Group (E)</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>McClellan et al. 2004</td>
<td>C: home-based program of upper-limb exercises (i.e. “sham” mobility exercises), pat. met pt only 3 times</td>
<td>E: home-based mobility program (improving mobility in standing and walking; challenge to balance), pat. met pt only 3 times (+videotaped instructions, telephone contact, self-monitoring)</td>
<td>E + C: instructed to practice each exercise 2 x/day for 6 weeks</td>
</tr>
<tr>
<td>Morioka et al. 2003</td>
<td>C: 2 weeks</td>
<td>E + C: Rehabilitation program consisting of pt and occupational therapy, included ordinary postural control exercises (standing, shift of the weight loads)</td>
<td>E: daily 10 days–2 weeks</td>
</tr>
<tr>
<td>Pang et al. 2008</td>
<td>C: Arm exercise group. 3 different stations; shoulder muscle strengthening exercises, upper limb weight-bearing exercises and range of motion exercises, hand muscle strengthening exercises</td>
<td>E: Leg exercise group. 3 different exercise stations; aerobic exercises (intensity increased progressively), balance exercises, leg muscle strengthening exercises</td>
<td>E + C: 3 x 1 h sessions per week for 19 weeks</td>
</tr>
<tr>
<td>Pomeroy et al. 2000</td>
<td>C: Subjects were instructed to adjust the weights and garments on a daily basis according to how able or unable they felt. They were asked to wear the garments from when they got dressed in the morning to when they went to bed at night for 6 week.</td>
<td>E: Weighted garments consisting wrist, biceps, thigh, ankle, pelvis and shoulder girdle bands worn on the paretic side only. All garments have number of pockets which 60 g lead weights can be inserted</td>
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</tbody>
</table>
C: No weighted garments during first 6 weeks. After that controls were given weighted garments and asked to complete the logbook. During weeks 8–12 they were contacted by telephone.

E + C: During weeks 2–6 subjects was contacted by pt asking if they had any difficulties with balance or walking.

Richards et al. 2004
E: Conventional pt; neurodevelopment approach were incorporated with a motor learning, task-oriented approach + Specialized locomotor training: using a tilt table (if needed), reciprocal stepping on a Kinetron isokinetic exerciser and use of a limb-load monitor to induce weight bearing on the affected side, Treadmill walking with full weight bearing.

C: Conventional pt + Locomotion – as soon as possible with external support. Stair-climbing, walking on inclined planes and various transfers were gradually added

E + C: 1 h /day, 5 days/week for 2 months

Sackley et al. 1997
E: training from a pt using the feedback program of the Nottingham Balance Platform (NBP) – visual feedback. 3 stages about 20 min each

C: same but placebo programme (the display doesn’t move)

E: 1 h, 3x per week for 4 weeks

C: same

Salbach et al. 2004
E: 10 functional tasks designed to strengthen the lower extremities and enhance walking balance, speed and distance (pt)

C: the practice of upper extremity activities (occupational therapy): manipulating cards, using a keyboard and writing (tasks while sitting)

E + C: 3 x per week for 6 weeks

C: First 6 weeks no garments. During weeks 8–12 they were given weight garments
Séze et al. 2001

- **E**: **Phase 1**: Rehabilitation using the Bon Saint Come device (BSC, based on learning to control trunk movements in the framework of spatial exploratory tasks) and conventional rehabilitation (Bobath-inspired approach and functional therapy)
- **C**: **Phase 1**: rehabilitation using only conventional rehab.

**Phase 2**
All patients received only the conventional rehab. regimen (neuromuscular, Bobath-inspired approach and functional therapy)

Tihanyi et al. 2007

- **E**: Vibration group; received 20 Hz vibration while standing (knees flexed 40 degrees, grasped the railing in front of them) on a vibration platform (Nemes-Bosco). Patient shifted their body mass over the affected leg. During rest patient sat on a chair.
- **C**: Same procedure; pat. stood on the platform but did not receive vibration

Walker et al. 2000

- **E1**: Visual feedback group: got information about their center-of-gravity (CoG) position (visual, if necessary tactile and verbal cues also) as they shifted their weight during various activities
- **E2**: Conventional therapy group: got verbal and tactile cues to encourage symmetrical stance and weight shifting

**C**: Regular therapy

Van Nes et al. 2006

- **E**: strong stimulation of their proprioceptive afferent on the Galileo (30 Hz frontal plane oscillations of 3-mm amplitude),

**E + C**: Standing; whole body vibration six 1-min-long bouts separated 2 min of rest.
muscular fatigue was prevented. Standing on the platform – vibration for the whole body. Allowed to hold the support bar.

C: Exercise therapy on music group. Same standing position as the WBV group had. Regular exercises for the trunk, arm and leg muscles interrupted by periods of relaxation

C: same amount of exercise therapy on music

<table>
<thead>
<tr>
<th>Walking training</th>
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<tbody>
<tr>
<td>Ada et al. 2003</td>
<td>E: Treadmill (aim of increase step length, speed, balance, fitness and automaticity) and over ground (aim of reinforce improvements in walking pattern and speed achieved on the treadmill) walking</td>
<td>E: 45 min/session, 3 x week, for 4 weeks</td>
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<td></td>
<td>C: Home exercise program consisting lengthening and strengthening lower-limb muscles as well as training balance and coordination. Subjects were also encouraged to go for a walk every day.</td>
<td>C: 3 x week, for 4 weeks</td>
</tr>
<tr>
<td>Barbeau and Visintin 2003</td>
<td>E: Treadmill training with body weight support</td>
<td>E: Maximum of 3 trials for no more than 20 min, 4 x week, for 6 weeks</td>
</tr>
<tr>
<td></td>
<td>C: Treadmill training without bodyweight support</td>
<td>C: Maximum of 3 trials for no more than 20 min, 4 x week, for 6 weeks</td>
</tr>
<tr>
<td>Bogataj et al. 1995</td>
<td>E1: First conventional therapy (Bobath approach purpose e.g. normalizing posture and facilitating activities, with passive approach purpose was e.g. to reduce reflex activity, increase or preserve the range of motion in the joints), then MFES.</td>
<td>E1: 1 to 2 hours per day, for 3 weeks + 3 weeks</td>
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<td>E2: First MFES, then conventional therapy (Bobath).</td>
<td>E2: 3 weeks + 1 to 2 hours per day, for 3 weeks</td>
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<tr>
<td>Chu et al. 2004</td>
<td>E: Water-based leg exercises (in chest-lever water)</td>
<td>Both groups: 1 h/session, 3x/week, for 8 weeks</td>
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<td>C: arm exercises while sitting (a 6-station circuit focused</td>
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</table>
primarily on the paretic upper extremity unless there was time remaining within each of the 7-minute stations)

Cozean et al. 1988

E1: BFB (biofeedback)
E2: FES (functional electric stimulation)
E3: BFB + FES
C: standard PT: passive and active range of motion and strengthening exercises with all major joints and muscle groups of both legs Special attention focused on ankle and foot control in the affected limb

Da Cunha Filho et al. 2001

E: Bodyweight supported treadmill training
C: Conventional gait training

Da Cunha Jr et al. 2002

E: Bodyweight supported treadmill training
C: Conventional gait training

Daly et al. 2004

E: Weight supported treadmill training + over ground gait training + strengthening and coordination using functional neuromuscular stimulation (FNS) with intramuscular electrodes at the same time.
C: Weight supported treadmill training + over ground gait training + PT: treatment program was progressed and targeted the lower-limb flexors, and were designed to improve strength and coordination

Daly et al. 2006

E: FNS-IM (neuromuscular stimulation using intramuscular electrodes)
C: No-FNS

All groups: 30 min./day, 3x/week, 6 weeks

E: 20 min/per session, 5 x week, for 2–3 weeks
C: 20 min/per session, 5 x week, for 2–3 weeks

E: 20 min/per session, 5 x week, for 2–3 weeks
C: 20 min/per session, 5 x week, for 2–3 weeks

E: 30 min + 30 min+ 30 min, 4 x week, for 12 weeks
C: 30 min + 30 min+ 30 min, 4 x week, for 12 weeks

Both groups: 1.5 h/session, 4x/week, 12 weeks, including 0.5 h coordination exercises, 0.5 h BWSTT (body-weight-supported walking), and 0.5 h OG (overground walking)
Daly et al. 2007
FNS: gait training with functional neuromuscular stimulation with intramuscular electrodes (FNS-IM)
No-FSN: gait training without FNS
Both groups: 1.5 h/session, 4 session/week for 12 weeks.
Session: 0.5 h coordination exercise, 0.5 h body weight supported treadmill training, 0.5 h over ground gait training

Dias et al. 2007
E: PBWS + GT
C: PT Bobath metod
Both groups: 20 min/session, 5 x/week, for 5 weeks

Eich et al. 2004
E: Treadmill training + individual physiotherapy, Bobath oriented, it included tone-inhibiting and gait preparatory manoeuvres and walking practice
C: Individual physiotherapy, Bobath oriented, it included tone-inhibiting and gait preparatory manoeuvres and walking practice
E: 30 min + 30 min, every workday for 6 weeks
C: 60 min every workday for 6 weeks

Hornby et al. 2008
Robotic-assisted: Robotic locomotor training; continuous symmetrical stepping assistance using the Lokomat (robotic device provided continuous sagittal plane assistance of the hip and knee joints)
Therapist-assisted: therapist-assisted locomotor training (similar weight support and speeds but the therapist provided manual facilitation at the paretic limb, lower extremity orthoses were used if stepping could proceed with minimal risk of orthopedic injury)
Both groups: 12 sessions, 30 min/session

Husemann et al. 2007
E: Walking on a treadmill + a robotic driven gait orthoses and body weight support system (Locomat; Hocoma).
C: Conventional physiotherapy focusing on gait rehabilitation.
E: 20 x 30 min/per session per workday, for 4–5 weeks
C: 20 x 30 min/per session per workday, for 4–5 weeks

Intiso et al. 1994
E: EMG + physical therapy based on Bobath method.
E: First phase: 15 training sessions, 20 x 5 s contractions followed by 30 s of rest, Second phase: 15 trainings sessions with portable
C: Physical therapy based on Bobath method.

EMG-BFB + 60 min daily, for 2 months.

C: 60 min daily, for 2 months.

Kosak and Reding 2000
E: Partial bodyweight supported treadmill training (PBWSTT)
C: Aggressive bracing assisted walking (ABAW)

E: 45 min 5 x/week for 6 weeks
C: 45 min 5 x/week for 6 weeks

Kottink et al. 2007
E: FES (functional electric stimulation)
C: usual treatment (Walking devices)

Both groups: 26 weeks

Kottink et al. 2008
E: FES (implantable stimulator)
C: conventional walking device

Both groups: 26 weeks

Lord et al. 2008
E: whole-tasked practice of functional gait activities in community environment relevant to each participant (local shopping mall, park etc) advised by a pt on community treatment progression

C: hospital-based physiotherapy based upon a Motor Relearning approach (balance activities, open and closed-chain exercises, practice of selective components of the gait cycle, walking tasks, treadmill training)

E: 13 treatments over 7 weeks,
max 2 visits to the pt over the 7-week period

C: 13 treatments over 7 weeks

Macko et al. 2005
E: treadmill aerobic training
C: conventional rehabilitation, included stretching + low-intensity walking

Both groups: 40 min/session, 3x/week, for 6 months

Mayr et al. 2007
E1: 3 weeks Lokomat training + followed by 3 weeks of conventional PT, Bobath and Perfetti (e.g. exercise for improving balance) + followed by 3 weeks of Lokomat training (ABA)

E2: 3 weeks conventional PT, Bobath and Perfetti + followed by

Both groups: actual training time 30min/session/5x week for 9 weeks
3 weeks of Lokomat training + followed by 3 weeks of conventional PT, Bobath and Perfetti (BAB)

Morris et al. 1992
E: EMG (electrogoniometric feedback)
C: standard PT (MRP incorporated the use of instruction, explanation, demonstration, manual guidance, verbal and visual feedback)
E: First phase: EMG
C: First phase: PT 45 min/day, 5 x/week, for 4 weeks

Ng et al. 2007
CT: Conventional overground gait training treatment
GT: Electromechanical gait trainer
GT-FES: Electromechanical gait trainer with functional electrical stimulation
All groups: 4 weeks, 20 min session gait training every weekday

Nilsson et al. 2001
E: Bodyweight support treadmill training
C: Over ground walking training individually according to the Motor Relearning Programme (MRP). For the patients who could not walk, exercises in standing designed to allow weight-bearing on the hemiparetic leg and training to maintain appropriate segmental alignment for balance.
E: 30 min/session, 5 x week, for variation between 3–19 weeks
C: 30 min/session, 5 x week, for variation between 3–19 weeks

Peurala et al. 2005
GT: Electromechanical gait trainer without FES
GT+FES: Electromechanical gait trainer + Functional Electrical Stimulation
WALK: Over ground walking or walking over uneven terrain with individual walking aids.
GT: 20 min x 15 during 3 weeks
GT+FES: 20 min x 15 during 3 weeks
WALK: 20 min x 15 during 3 weeks

Pohl et al. 2002
LTT: Limited progressive treadmill training + conventional physiotherapy
CGT: Conventional physiotherapy based on PNF and Bobath concepts.
LTT: 12 x 30 min + 8 x 45 min during 4 weeks
CGT: 12 x 45 min + 8 x 45 min during 4 weeks
Pohl et al. 2007

E: Repetitive locomotor therapy on the gait trainer + immediately followed 25 min one-on-one PT concentrating exclusively on the restoration of stance and gait.
C: PT concentrating exclusively on the restoration of stance and gait.

E: 60(30) min loco walk/session + 30 min/session pt every workday, for 4 weeks
C: 30min conventional walk/session + 30 min/session pt every workday, for 4 weeks

Richards et al. 1993

E: early as possible intensive, specific gait training activities, including use of tilt table, limb-load monitor, resisted exercises with isokinetic device and treadmill and conventional therapy
C1: early and intensive PT, contained more traditional approaches to care based on older neurophysiological techniques and practice
C2: PT started later, not intense, composed of similar techniques as C1-group

E: 2 x/day/5 weeks (8.3±1.4 days after stroke)(intensive 1.74±0.15 h)
C1: 2 x/day/5 weeks (8.8±1.5 days after stroke)(intensive 1.79±0.10 h)
C2: 1 x/day/5 weeks (13±2.8 days after stroke)(intensive 0.72±0.10 h)

Salbach et al. 2005

E: Progressive walking intervention program of 10 tasks.
C: Practice of functional upper extremity tasks while sitting.

Both groups:18 training sessions, 3 x week, for 6 weeks

Schauer et al. 2003

E: walking with music motor feedback (sensor insoles that detect the ground contact of the heels, and a portable music player)
C: warming up and common exercises, such as slow walking with support of parallel bars and handrails, stepping sideways and backwards, etc.

E: 20 min/session, 5 x week, for 3 weeks
C: 20 min/session, 5 x week

Sullivan et al. 2002

S: Bodyweight supported treadmill training at slow speed (0.5 mph)
V: BWSTT at 4 different speed
F: BWSTT at fast speed (2.0 mph)

S: 20 min/day, 12 sessions/4–5 week.
V: 20 min/day, 12 sessions/4–5 week.
F: 20 min/day, 12 sessions/4–5 week.
Sullivan et al. 2007 | E1: body weight supported treadmill training (BWSTT) + PT: upper extremity exercise (UE-EX),
E2: limb-loaded resistive leg cycling (CYCLE) + PT: UE-EX
E3: BWSTT + CYCLE
E4: BWSTT + PT: lower extremity exercise (LE-EX)  |
| 60 min/session, 4 x week, for 6 weeks, total of 24 sessions PT-time? |

Thaut et al. 1997 | E: Rhythmic auditory stimulation (RAS) + Conventional physiotherapy based on NDT
C: Conventional physiotherapy based on NDT  |
| IE 30 min/twice a day, 5 x week, for 6 weeks
C: 30 min/twice a day, 5 x week, for 6 weeks |

Thaut et al. 2007 | E: gait training, Rhythmic Auditory Stimulation using metronome and specifically prepared music tapes (RAS)
C: neurodevelopmental therapy NDT/Bobath-based training  |
| E:30 min/day, 5 times per week for 3 weeks
C: time? |

Tong et al. 2006 | EGT: Electromechanical gait trainer
C: CGT: Conventional over ground gait training based on the principles of proprioceptive neuromuscular facilitation and Bobath-consept.
EGT-FES: Electromechanical gait trainer + FES  |
| EGT: 20 min/session per day, 5 x week, for 4 weeks
CGT: 20 min/session per day, 5 x week, for 4 weeks
EGT-FES: 20 min/session per day, 5 x week, for 4 weeks |

Visintin et al. 1998 | I: Bodyweight supported treadmill training
C: Treadmill training without bodyweight support  |
| I: 20 min, 4 x week, for 6 weeks.
C: 20 min, 4 x week, for 6 weeks. |

Werner et al. 2002a | A=2 weeks of gait trainer therapy
B=2 weeks of partial bodyweight support treadmill therapy
E: A-B-A pattern
C: B-A-B pattern  |
| E: 15–20 min/session, every workday, for 6 weeks
C: 15–20 min/session, every workday, for 6 weeks |
<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention A Details</th>
<th>Intervention B Details</th>
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<tbody>
<tr>
<td>Werner et al. 2002b</td>
<td>E: Treadmill training with partial body weight support + physiotherapy following the Neurodevelopmental or Bobath concept including gait-preparatory manoeuvres whilst sitting and standing and the practice of gait itself either on the floor or on the stairs.</td>
<td>E: 30 min/session, 5 x week, for 3 weeks + 40 min/session, 5 x week, for 3 weeks</td>
</tr>
<tr>
<td></td>
<td>C: Treadmill training</td>
<td>C: 30 min/session x 15 during 3 weeks</td>
</tr>
<tr>
<td>Yagura et al. 2006</td>
<td>E: BWSTT, swing and stance phase of the paretic leg assisted by physiotherapist</td>
<td>E: 40 min/session, 3 x week, for 6 weeks</td>
</tr>
<tr>
<td></td>
<td>C: BWSTT, swing and stance phase of the paretic leg assisted mechanically</td>
<td>C: 40 min/session, 3 x week, for 6 weeks</td>
</tr>
<tr>
<td>Yang et al. 2005</td>
<td>E: Backward walking training + conventional physiotherapy focused strengthening, function and mobility activities, including gait training.</td>
<td>E: 30 min session, 3 x week, for 3 week + 40 min/session, 3 x week, for 3 weeks</td>
</tr>
<tr>
<td></td>
<td>C: Conventional physiotherapy focused strengthening, function and mobility activities, including gait training.</td>
<td>C: 40 min/session, 3 x week, for 3 weeks</td>
</tr>
<tr>
<td>Yang et al. 2007</td>
<td>E: dual-task: walking forward/backward/on a circular route/on an s-shaped route while manipulating 1–2 balls</td>
<td>E: 30 min/session, 3 x week, for 4 weeks</td>
</tr>
<tr>
<td></td>
<td>C: no rehabilitation training</td>
<td>C: –</td>
</tr>
<tr>
<td>Yen et al. 2007</td>
<td>E: 12 sessions of body weight-supported treadmill training (BWSTT) + general PT including stretching, muscle strengthening, balance and overground walking training</td>
<td>E: 30 min/session, 3 x week, for 4 weeks + 50 min/session, 2–5 x week for 4 weeks</td>
</tr>
<tr>
<td></td>
<td>C: general PT including stretching, muscle strengthening, balance and overground walking training</td>
<td>C: + 50 min/session, 2–5 x week for 4 weeks</td>
</tr>
<tr>
<td>You et al. 2005</td>
<td>E: Virtual reality training</td>
<td>E: 60 min/day, 5 x week, for 4 weeks.</td>
</tr>
<tr>
<td></td>
<td>C: No training</td>
<td>C: –</td>
</tr>
</tbody>
</table>