

First Author, Year published	Subjects (n)	Phase	Rehabilitation Robot	Evaluation activity	Loss of somatosensation (feed-forward)		Paresis & Loss of somatosensation (feedback)		Loss of fractionated movement			Abnormal muscle tone					
					Plan	Inter-limb coordination	Temporal efficiency	Accuracy	Efficacy	Movement Efficiency	Intra-limb coordination	Range (ROM)	Ease	Smoothness			
														$\dot{x}, \dot{\theta}$	$\ddot{x}, \ddot{\theta}$	$\overset{\cdot}{\ddot{x}}, \overset{\cdot}{\ddot{\theta}}$	-sub
Reinkensmeyer [128] 2000	3	Chronic	ARM-Guide	Multi-level PTP	③							③					
Burgar [129] 2000	21	Chronic	MIME	• Shape tracing • Multi-level PTP						③							
Kahn [62] 2001	14	Chronic	ARM-Guide	Multi-level PTP			③	③				③				③	
Rohrer [1] 2002	31	Acute (n=12) Chronic (n=19)	MIT-Manus	CO-PTP			① ③							①	① ①		③
Lum [83] 2002	27	Chronic	MIME	Targeted Reaching									③*				
Lum [63] 2004	13	Chronic	MIME	Multi-level PTP			③										
Daly [71] 2005	12	Chronic	InMotion2	CO-PTP				③									③
Toth [85] 2005	8	Sub-acute (n=2) Chronic (n=6)	REHAROB	Therapist guided full ROM slow movement										② ③			
Colombo [68] 2005	16	Chronic	MEMOS	Shape tracing				③	③ ③ ③					③			
Kahn [14] 2006	19	Chronic	ARM-Guide	Multi-level PTP				③						③ ③	③ ③	③	
Lum [84] 2006	27	Sub-acute	MIME	Multi-level PTP										③			
Colombo [27] 2006	19	Chronic	MEMOS	Shape tracing				③	③ ③ ③	③				③			

$\dot{x}, \dot{\theta}$  : Speed metric       $\ddot{x}, \ddot{\theta}$  : Acceleration metric       $\overset{\cdot}{\ddot{x}}, \overset{\cdot}{\ddot{\theta}}$  : Jerk metric      -sub: sub-movement metric  
**①** significant improvement in acute patients (P<0.05)      **②** significant improvement in sub-acute patients (P<0.05)      **③** significant improvement in chronic patients (P<0.05)  
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All the indicator has asterisk (\*) if the parameter used is reported to have strong correlation to any standard clinical scales.

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Sanchez [74] 2006	5	Chronic	T-WREX	• Free reaching • PTP			③ ③	③				③ ③				
Dipietro [39] 2007	117	Chronic	MIT-Manus InMotion2	Circle drawing			③* ③*				③*					
Chang [55] 2007	20	Chronic	BFIAMT	Reach and touch	③ ③		③									③
Fazekas [87] 2007	15	Chronic	REHAROB	Therapist guided full ROM slow movement									③ ③			
Beer [77] 2008	5	Chronic	MACARM	Multi-level PTP							③ ③					
Colombo [13] 2008	22	Sub-acute (n=9) Chronic (n=13)	MEMOS	Shape tracing				② ③	② ③	② ③				② ③	② ③	② ③
Iwamura [54] 2008	10	Chronic	T-WREX	Multi-level PTP	③							③				③
Sanguineti [56] 2009	9	Chronic	BdF	Outward PTP reaching												③
	10	Chronic	BdF	Tracking									③			
Squeri [75] 2009	4	Chronic	BdF	Bimanual forward/backward reaching												③
				Bimanual forward/backward reaching												
Nef [44] 2009	3	Chronic	ARMin	• Passive mobilization • Active virtual catch & hit												③ ③ ③

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Lewis [29] 2009	15	Chronic	Haptic MASTER	Voluntary constrained reaching	③		③					③		③					
				Voluntary free reaching	③		③				③		③						
				Assisted constrained reaching	③		③				③		③						
				Assisted free reaching	③		③				③		③						
Vergaro [69] 2010	10	Chronic	BdF	Tracking figure-8									③						
Dukelow [58] 2010	45	Sub-acute	KINARM	Bimanual matching												② ② ②			
Coderre [18] 2010	52	Sub-acute	KINARM	CO-PTP										②		② ②			
Conroy [51] 2011	62	Chronic	InMotion2 InMotion (Linear)	• CO-PTP • Multi-level reaching												③ ③ ③			
Mazzoleni [52] 2011	17	Chronic	InMotion2	CO-PTP												③ ③ ③			
Zollo [10] 2011	24	Chronic	InMotion2 InMotion3	Unperturbed & resistive point-to-point												③* ③ ③ ③ ③ ③ ③ ③			
Squeri [57] 2011	1	Chronic	BdF	CO-PTP												③ ③ ③			
Abdullah [70] 2011	8	Sub-acute	Uni of Guelph Therapeutic Robotic Sys.	Shape tracing												②			
Johnson [11] 2011	7	Chronic	BiAS-ADLER	Drink												③ ③ ③			
				Pour													③ ③ ③		

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Mazzoleni [59] 2012	11	Chronic	InMotion2	CO-PTP								③	③				
Panarese [67] 2012	18	Chronic	MEMOS	Square and Diamond path PTP				③	③				③	③			
Dukelow [20] 2012	100	Sub-acute	KINARM	Bimanual matching													
				CO-PTP	② ② ②		②									②	
Frisoli [64] 2012	7	Chronic	L-Exos	Sagittal CO-PTP				③									③*
Frisoli [61] 2012	8	Chronic	L-Exos	Sagittal CO-PTP				③									③*
Mazzoleni [53] 2013	50	Sub-acute (n=25)	InMotion3	CO-PTP	②												
		Chronic (n=25)			③									② ③		② ③ ② ③	② ③
Wu [15] 2013	53	Chronic	Bi-ManuTrack	Reach and press				③									③
Simkins [89] 2013	15	Chronic	EXO-UL7	Constrained reaching, Pong-style games													③
Semrau [19] 2013	113	Chronic	KINARM	Bimanual matching	③* ③*												③

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