AOTA® The American Occupational Therapy Association, Inc.

Occupational Therapy: Living Life To Its Fullest®

December 15, 2011

Jacqueline Tiley, Executive Director
American Hippotherapy Association

Dear Ms. Tiley:

The American Occupational Therapy Association, Inc. (AOTA) recognizes the use of the movement of the horse (hippotherapy) as one of many interventions that may be used by occupational therapy practitioners, as long as it is based on an appropriate occupational therapy evaluation, and integrated into a broader occupational therapy program and plan of care with the overall goal of supporting engagement in daily activities and occupational performance. Documentation should be explicit in linking the occupational therapy intervention to the client goals and outcomes.

Selection of an appropriate intervention is dependent on the medical diagnosis (e.g. neurological, muscular, psychosocial) and the specific client's performance goals (e.g. improvement in mobility, balance, or sensory responses), for occupational therapy (OT). Therapeutic horseback riding in which the goal is to achieve the skill of riding would not be considered occupational therapy. For example, an occupational therapy goal might be to work on dynamic balance, a skill involved in the performance of various daily activities e.g. completing morning dressing, playing on playground, etc.

In addition, from both an ethical and reimbursement perspective, it is incumbent upon the occupational therapist to provide documentation which objectively supports the rationale for this choice of intervention, how and why it is appropriate to meet the specific goals and needs of the client.

As per the Code and Ethics Standards of the profession, the occupational therapy practitioner using this approach must be competent to provide this intervention, which will likely require receipt of special training to work in this area.

Sincerely,

Maureen Freda Peterson, MS, OTR/L, FAOTA
Chief Professional Affairs Officer

AOTA's Centennial Vision 2017
4720 Montgomery Lane
Bethesda, MD 20814-1220
301-652-2682
301-652-7711 fax
800-377-8555 TDD
www.aota.org

Barbara Heine, PT, HPCS
President, American Hippotherapy Association
5001 Woodside Road
Woodside, CA 94062

Dear Ms. Heine:

The American Occupational Therapy Association, Inc. (AOTA) recognizes the use of the movement of the horse (hippotherapy) as an intervention tool as long as it is based on an appropriate occupational therapy evaluation, treatment plan, and goals and assists in achieving the appropriate functional outcome.

It is appropriate for occupational therapy services using the movement of the horse (hippotherapy) as a treatment tool to be billed as neuromuscular reeducation, therapeutic activities, therapeutic exercise, or sensory integrative activities provided that all payer requirements have been met and depending upon the treatment goals and the way hippotherapy is used during the treatment session. Therapeutic horseback riding in which the goal is to achieve the skill of riding would not be considered occupational therapy.

The occupational therapy practitioner using the movement of the horse also should be specifically trained in the use of this tool.

Sincerely,

Deborah Lieberman

Deborah Lieberman, MHSA, OTR/L, FAOTA

Practice Department

V. Judith Thomas

V. Judith Thomas, MGA
Director
Reimbursement and Regulatory Policy

AHA, INC. BIBLIOGRAPHY AND REFERENCE LIST

PEERED REVIEWED HIPPOTHERAPY RESEARCH ARTICLES

This section includes articles that use scientific research and inquiry methods that include more than one research participant. Although some articles use the term "therapeutic riding", "riding therapy", "horse therapy", or "equine assisted therapy" in their title or text, the description of the actual methods is consistent with current AHA, Inc. definition of hippotherapy and are therefore included in this category. Many of these are older articles or were conducted in countries where terminology differs slightly from current AHA, Inc. definitions.

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PEER REVIEWED CASE STUDIES

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ARTICLES/ BOOK CHAPTERS

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APTA
American Physical Therapy Association

1111 North Fairfax Street
Alexandria, VA 22314-1488
703 684 2782
703 684 7343 fax
www.apta.org

May 5, 2012

Debbie Silkwood-Sherer PT, DHS, HPCS
President, American Hippotherapy Association
P.O. Box 2014
Fort Collins, CO 80522-2014

Dear Dr. Silkwood-Sherer:

On behalf of the American Physical Therapy Association's (APTA) more than 80,000 member physical therapists, physical therapist assistants, and students of physical therapy, I am happy to provide a letter to the American Hippotherapy Association on the use of a hippotherapy as a treatment strategy that is an appropriate part of physical therapy practice. Physical therapists' practice in a wide variety of settings and perform evidenced-based screening and evaluation for individuals with neuromuscular, cardiovascular, integumentary, and musculoskeletal conditions and provide interventions that focus on mobility and function to enable an individual's participation and improving their quality of life.

The physical therapy plan of care is based upon an individualized examination and evaluation of the patient to address impairments and functional and participation limitations and environmental barriers. The plan of care consists of the patient's/client's goals and intended outcomes and the treatment strategies and interventions directed to achieve a functional outcome. Hippotherapy is a treatment strategy that when incorporated into the physical therapist plan of care utilizes the equine movement as part of an integrated program to achieve outcomes such as improved balance, strength and flexibility. In cases where a physical therapist treatment plan utilize hippotherapy, the services rendered by that physical therapist, in such a context, should be recognized as physical therapy interventions and not the specific treatment strategy, device, equipment or adjunct used to deliver these interventions. In contrast, therapeutic horseback riding in which the goal is to achieve the skill of riding or other equine-related activities is not considered physical therapy intervention due to it not being a component of the individuals' physical therapy plan of care.

While the 2003 *Guide to Physical Therapist Practice* does not specifically mentioned hippotherapy, it is considered a treatment strategy consistent with interventions of therapeutic exercise. The *Guide* states that therapeutic exercise may include "balance and coordination training; motor function training or retraining; neuromuscular education or re-education; neuromuscular relaxation, inhibition and facilitation; perceptual training; posture awareness training; and sensory training or retraining".

When an individual's physical therapy plan of care includes hippotherapy as a treatment strategy it is appropriate for services to be billed as neuromuscular education, therapeutic exercise, therapeutic activities or sensory integration, depending the intent of the intervention, the patient goals, and assuming all other payer requirements are met.

Thank you and if you need any further information, please feel free to contact APTA's Clinical Practice and Research Department at practice@apta.org

Sincerely,

R. Scott Ward, PT, PhD
President

RSW/jm/mfd

American Hippotherapy Association, Inc. (AHA, Inc.)
PO BOX 577, Lafayette, CO 80026 • (877) 851-4592 • FAX: (877) 700-3498 • info@americanhippotherapyassociation.org • americanhippotherapyassociation.org

APTA
American Physical Therapy Association

April 12, 2000

Barbara Heine, PT, HPCS
President, American Hippotherapy Association
5001 Woodside Road
Woodside, CA 94062

Dear Ms. Heine:

The APTA recognizes that hippotherapy is a treatment tool in which the movement of the horse and related activities are used to address impairments and functional limitations in patients primarily with neuromusculoskeletal dysfunction in order to achieve functional outcomes. Within the 1997 *Guide to Physical Therapist Practice* hippotherapy is not specifically mentioned because it is considered a treatment tool under the specific direct intervention of therapeutic exercise. In this context, therapeutic exercise uses a horse, where the horse should be regarded similar to a piece of equipment and not the treatment itself. The Guide does not mention any particular piece of equipment in its description of therapeutic exercise, but states that therapeutic exercise may include "balance and coordination training; motor function training or retraining; neuromuscular education or re-education; neuromuscular relaxation, inhibition and facilitation; perceptual training; posture awareness training; and sensory training or retraining."

It is appropriate for physical therapy services that include hippotherapy as a treatment tool to be billed as neuromuscular education, therapeutic exercise or therapeutic activities depending on the way in which the horse is used in the treatment session, assuming all other payer requirements are met.

The physical therapist is responsible for designing a plan of care that is based upon an examination and evaluation of the patient. In cases where a physical treatment plan and goals utilize a horse to assist in achieving those goals, the services rendered by that physical therapist, in such a context, should be recognized as physical therapy intervention. It is understood that the use of the horse as a treatment tool should be considered no differently than any other treatment tool applied to other interventions within the scope of physical therapist practice. In contrast, therapeutic horseback riding in which the goal is to achieve the skill of riding or other equine-related activities, is not considered physical therapy intervention.

Sincerely,

Andrew A. Guccione

Andrew A. Guccione, PT, PhD, FAPTA
Senior Vice President
Division of Practice and Research

AHA conference, St. Louis, MO, March 2013 Overview of the Literature on Hippotherapy, Tim L. Shurtleff, OTD, OTR/L

	Authors	1st Author MD, PT, T, SLP	Year	Title (may be abbreviated)	Study Type, Control Or WD/SD comparison	Control	N=	Who Cases
	Peer Reviewed research Studies							
1	Araujo, Silva, Costa, Pereira, Safons	PT	2011	**Effect of equine-assisted therapy on the postural balance of the elderly**	Convenience w/ control	Y	e=10 c=7	OA
2	Benda, McGibbon, Grant	MD, PT,	2003	Improvements in Muscle Symmetry in Children w CP after EAT (HPOT)	pre-post w 1/2 rand. control	Y	n=15(c=half)	CP
3	Bertoti	PT	1988	Effectiveness of THR on Posture in children with CP	Baseline-pre-post	N	n=11	CP
4	Casady, Nichols-Larsen	PT	2004	The effect of hippotherapy on ten children with cerebral palsy	Baseline, pre,post, washout	own	n=11	CP
5	Debuse, Gibb, Chandler	PT	2009	Eff of HPOTon people w/ CP from users perspective, a qualitative Study	Interviews & Focus groups	N	n=17	CP
6	Direnzio, Direnzio, Baceski	BA, MBA, MD	2007	Heart rate response to TR in Children with CP, exploratory study.	Compare two groups	N	n=8	CP
7	Encheff, Armstrong, Masterson, Fox, Gribble	PT	2012	HPOT eff on Trnk, Pelv, Hip Motion During Ambulation in C w/ Neuro Impairmntn	Pre-post	N	n=11	CP/BI
8	Granados, Agis	MA, PhD	2011	Why C w/ Spec Needs Feel Better w HPOT sessions, a conceptual review	Literature review	N	NA	Any
9	Haehl, Giuliani, Lewis	PT	1999	Influence of HPOT on kinematics and funct. Perf of 2 Children with CP	2 Case Studies, exp vs. novice	N	n=2	CP
10	Hammer, Nilsgard, Forsberg, Pepa, +2	PT	2005	Eval of TR/HPOT, sgl subj exp design in 11 patients with MS	Sgl Subj Exp design, ABA	own	n=13	MS
11	Hamil, Washington, White	PT	2007	Eff of HPOT on Post. Ctrl in sitting for children with CP	Conv. Sample	N	n=3	CP
12	Herrero, Asensio, Garcia, Marco, +2	not stated	2010	Stud. Of Ther. Eff of Adv. HPOT simulator in C w. CP, a RCT./	RCT	in plan	none	CP
13	Ionatamishvili, Tsverava, Loriya, +2	not stated	2002	Riding therapy as a method of rehab of childen with Cerebral Palsy	RCT	Y	e=50, c=50	CP
14	Kuczinsky, Slonka,	Biomech & PT	1999	Infl of Artificial Saddle riding on Postural Stability of children with CP.	RCT		e=25, C=33	CP
15	Kwon, Chang, Lee, Ha, Lee, Kim	MD, PhD	2011	Eff of HPOT on gait parameters in childen with bilateral CP	RCT	Y		CP
16	Lechner, Tanja, Kakebeeke, Hegemann, Baumberger	PT	2007	Eff of HPOT on Spasticity, mental wellbeing of persons with SCI	X-over, 4 conditions, vol sample		n=12	SCI
17	Macauley, Gurierrez	SLP	2004	Eff of HPOT for children with Language-learning disabilities	Pre-Post HPOT survey	N	n=3	Speech
18	MacPhail, Edwards, Golding, Miller, Mosier, Zwiers	Biomech,PT	1998	Trunk Postural reactions in C w/ and w/o CP during THR	One time comparison CP-WD	Y	e=6, c=7	CP/WD
19	Mcgee, Reese	PT	2009	Immed Eff of a HPOT session on Gait parameters in C w. Spastic CP	Convenience/Pre-post	N	n=9	CP
20	McGibbon, Benda, Duncan, Silkwood-Sherer phase I	PT	2009	Immed & Long Term eff of HPOT on symmetry & Funct in Children w/ SCP I	Pre-Post RCT, clinical followup	N	n=47	CP
21	McGibbon, et al Phase II (2nd study in above article)	PT	2009	Immed & Long Term eff of HPOT on symmetry & Funct in Children w/ SCP II	base, pre, post, followup meas	Own	n=6	CP
22	McGibbon, Andrade, Widener, Cintas	PT	1998	Eff of Equine Mvmt Therapy pgm on gait, energy, motor func in C w SCP	baseline-pre-post (8wks ea)	Own	n=5	CP
23	Murphy, Kahn-D'Angelo, Gleason	PT	2008	The Effect of HPOT on Func Outcomes for C with Disabilities: A Pilot Study	A-B sgl subj, 6mos base, 6 mos Tx	own	n=4	mixed
24	Shurtleff, Engsberg	OT, Biomech	2010	Changes in Trunk/Head stability after HPOT, a pilot Study	Pre-post with WD comp on mot test	comp grp	n=6	CP (SD)
25	Shurtleff, Standeven, Engsberg	OT, EE, Biomech	2009	Changes in dynamic trunk/head stability and functional reach after HPOT	Pre-Post-washout, w WD comparison	comp grp	n=11	CP (SD)
26	Silkwood-Sherer, Warmbier	PT	2007	Effects of Hippotherapy on Postural Stability In persons with Multiple Sclerosis	pre-post with comparison group	comp grp	n=9	MS
27	Silkwood, Sherer, Killian, Martin	PT	2012	HPOT: Intervention to habilitate balance deficits in children w mvmt disorders	baseline, pre, post		n=16	Balance
28	Taylor, Kielhofner, Smith, Butler, Cahill, Ciukaj, Gehman	Psych & OT	2012	Volitional Chg in C w Autism: A Sgl-Case Study of Impact of HPOT on Motivation	A-B (8wks)-B(8wks)	own	n=3	Autism
29	Aldridge, Schweighart, Easley, & Wagoner	PT	2011	Eff of HPOT on motor performance and function with bilateral DDH	Single Case; A-B design	own	n=1	DDH
30	Champagne, Dugas	OT	2010	Improving gross mot. funct. & post. ctrl w HPOT in down syndrome: cases	2 Case Studies, pre-post	N	n=2	down
31	Collins, Jamieson, Knueven, Hakim , & Sensbach	PT	2005	Case Report: Eff of HPOT on Bal and Func Perform in child w Neurological Disorder	Single Case	N	n=1	cancer
32	Frank, McCloskey, Dole	PT	2011	Eff of HPOT on self-competence&particip. in a child with cerebral palsy	Single Case	N	n=1	CP
33	Shurtleff & Engsberg	OT	2012	Long-term effects of HPOT on 1 child w CP: A research case study		own	n=1	CP
34	Wehofer, Goodson, Shurtleff	OT	2013	Equine Assisted Activities and Therapies: A Case Study of an Older Adult	Single case	own		OA
35	Zadnikar & Rugelj	PT?	2011	Postural stability after HPOT in adolescent with CP	Single Case		n=1	CP
36	Bronson, et al.	PT	2010	**Does HPOT improve balance in persons w MS: a systematic review**	Systematic Review	mixed	n=3 studies	MS
37	Whalen, Case-Smith	PT/OT	2012	Therapeutic Eff of HBRT on GMF in C w CP: A syst. Rev.	Systematic Review	Mixed	n= 9 studies	CP
38	Rollandelli & Dunst	Early childhood consultant	2003	Influences of HPOT on motor and socio-emotional behav of young children w disabilities	Systematic Review	N	n=13 studies	CP
39	Snider, Korner-Bitenshy, Kamman, Warner, Saleh	OT & PT	2007	Horseback Riding as Therapy for Children w CP: evidence of effectiveness?	Systematic Review	NA	n=9 studies	CP
40	Zadnikar & Kastrin	PT?	2011	Effects of HPOT and THR on postural control or balance in children with CP	Meta-analysis	NA	n=8 studies	CP
41	Clayton, Kaiser, de Pue, Kaiser	Eq-biomech, OT		Center of Pressure Movements During Equine-Assisted Activites	Outcome measure Evaluatio	Y	e=4, c=4	CP
42	Janura, Peham, Dvorakova, Elfmark	Biomech	2009	An Assmnt of pressure dist by rider on back of horse during HPOT	NA, not an intervention sudy	N	n=4, 1 equin	NA

	Intervention outcomes	Stat. Significant improvemt frm HPOT?	Peer rev	Journal	Country
1	TUG improved, COPy (AP static balance).	Yes	Y	Revista Brasileira de Fisioterapia	Brazil
2	Improved L-R muscle symmetry	no	Y	J of Alt. and Comp. Med.	USA
3	Improved posture, tone, balance, function	yes	Y	Physical Therapy	US
4	Valuable TX strategy, can maximzse function	yes	Y	Pediatric Physical Therapy	US
5	User perceptions: HPOT is effective: phys/psych	NA	Y	Physiotherapy Theory and Practice	UK
6	HR response to TR differs between disability levels	Unclear	Y	Pediatric Physical Therapy	USA
7	more normalized pelvic position after HPOT	p used for d, d=mid to high	Y	Pediatric Physical Therapy	USA
8	Recommend further HPOT research, min 12 wks,	NA	?	J of Alt. and Comp. Med.	Spain
9	↑ anticipatory Post coord., functional mobility	Yes, (PEDI norms)	Y	Pediatric Physical Therapy	USA
10	improvement in one or more variables in 10 pts.	Diff. effect by person	Y	Physiotherapy Theory and Practice	Sweden
11	No improvement for high level of impairment	no	Y	Phys & Occ therapy in Pediatrics	USA
12	None, this is a research plan, not implemented	not yet	Unk	BMC Musculoskeletal Disorders	Spain
13	Physical and psychosocial improvements	Physical p<0.001	Y?	Human Physiology	Russia
14	Chgs in stiffness, reduction in sway-> two planes	Yes	Y	Gait and Posture	Poland
15	HPOT improved gait & Balance in C w Bilat CP	no (gait), yes GMFM-E,66, PBS		Archives of Phys Med Rehabilitation	S. Korea
16	HPOT reduces spasticity temporarily, pos mental	Yes on spasticity and mental	Y	Archives of Phys Med Rehabilitation	Switzerland
17	HPOT more successful in improving speech	Yes, on pre-post results	Y	Communications Disorders Quarterly	USA
18	CP move diff on horse vs WD. Kine works as meas	NA, CP & WD signif. different.	Y	Pediatric Physical Therapy	Canada
19	No diff in gait parameters after 1 HPOT Tx	No sig diff.	Y	Pediatric Physical Therapy	USA
20	10 min HPOT improves walking adductor symmetry	ES (d) on one variable	Y	Archives of Phys Med Rehabilitation	USA
21	improved GMFM & Adductor symmetry	ES (d) & p reported as sig	Y	Archives of Phys Med Rehabilitation	USA
22	HPOT improves walking energy, gait & GM function	Yes	Y	Devmtl Medicine & Child Neurology	USA
23	mixed outcomes between 4 participants	1&3 sig ↑on GAS, 2-no, 4 sig decrease	Y	Pediatric Physical Therapy	USA
24	Significant improvement in trunk/head stability	Yes	Y	Physical and occ therapy in Pediatrics	USA
25	Sig improvement, no loss after washout	Yes, no sig change after 12wk washout,	Y	Archives of Phys Med Rehabilitation	USA
26	Balance improved on BBS and POMA	Yes	Y	Journal of Neurologic Physical Therapy	USA
27	improvements in balance	Yes, p=sig, w high d	Y	Physical Therapy	USA
28	Motivation improved after 8 & 16 weeks	not possible with 3, non-par outcomes	Y	Occupational Therapy in Mental Health	USA
29	HPOT improved funct. motor performance	Standing and ball throwing assessment	Y	Journal of Physical Therapy	USA
30	HPOT improved funct. motor performance	GMFM-Y, Acc-no	Y	Physiotherapy Theory and Practice	Canada
31	HPOT improved perceived bal and funct measures	NA	N	Ped PT: Combined Sections Meeting	USA
32	↑walking, Participation,peer acceptance, etc.	NA-sgl case. SD chg reptd	Y	Pediatric Physical Therapy	USA
33	Improved long-term improvement	RM amplitude decreased	Y	British Journal of Occupational Therapy	USA
34	Mounted Balance/Stability trng using HPOT tools	NA - Sgl case showed changes, no stats.	Y	Phys & Occ therapy in Geriatrics	USA
35	Positive effect on postural control	NA		Journal of Novel Physiotherapies	Slovenia
36	small samples, non-random, HPOT eff is Positive	some yes, some no	Y	Eur J Phys Rehabil Med	NZ
37	Varied between studies, mostly showed improvement.	mixed	Y	Physical and occ therapy in Pediatrics	USA
38	small samples, non-random, HPOT is generally posit.	some yes, some no	N	Consulting company summary	
39	Short Term Pos Eff on muscle symm & activites	Mostly yes, some outcomes no	Y	Physical and occ therapy in Pediatrics	USA
40	HPOT and TR have positive effects on postural/balance control,	some yes, some no	Y	Developmental Medicine & Child Neurology	Slovenia
41	children with CP had greater movmement ML&AP than ND	NA	Y	AJOT	USA
42	Pressure increased with skill after 5 HPOT sessions	Yes	Y	Human Movement Science	Czech, Austria

	Population or Hith Cond	HPOT Intervention	Type of Int	Outcome Meas
				Peer Reviewed research Studies
1	OA - 60-84	30 min bi-wkly, 8wks	EAT	TUG, Kinetic
2	4-12 Yrs, Spastic CP	8 min on horse or barrel	EAT/HPOT	EMG(lumbar)
3	28-114 mos. Spastic CP	10 wk baseline, 10 wk "THR"	"THR" (HPOT)	Clinical Scale
4	Spastic CP	45 min wkly, 10 wks	HPOT	GMFM, PEDI
5	CP, 4-63yrs, GMFCS 1-5	6 wks to several years	HPOT, UK, Germ.	Qual. Codes/themes
6	CP, GMFCS II,III(4), IV(4)	20 min wkly, 10 wks	TR	HR during TR
7	Brain injury (7/11 CP)	45 min wkly, 10 wks	HPOT	Kinematic Gait anal.
8	Broad app of HPOT	NA	HPOT	Many
9	CP, 9 & 4 yrs,	20-40 min, wkly, 12 wks	HPOT	Video 2D Kinematic, PEDI
10	MS, 35-61 (47.9) yrs	30 min, wkly, 10-11 wks	TR/HPOT mix	VAS(pain), ADL, HRQOL, SLRMT
11	CP, GMFCS V, 2.25-4.5 yr	50 min, wkly, 10 wks	HPOT, hi support	GMFM88, Sitting Assmt Scale
12	"infantile CP"	15 min, wkly, 10 wks	Horse Simulator	sit bal, hip abd, EMG, mot dvmt
13	"ICP", mixed types	90-120- min, 4-6 times	"RT/TR", grps 4-6	multiple Clinical Scales
14	CP, 3-10 yrs, 9 M &16 F	20 min, 2X wkly, 12 wks	Artificial HPOT	forceplate stabilogaphy/COP
15	CP	30min, 2X wkly, 8 wks	HPOT	GMFM, Kinematic/kinetic Gait, PBS
16	SCI (ASIA AorB)	25 min, 2X wkly, 4 wks	HPOT vs 2 cntrl	Ashworth, Spas VAS, wellbeing
17	Speech dis, (1 w ADHD)	1hr, 2X wkly, 6 weeks	HPOT	21 item Satisfaction questionnaire
18	CP=6.7yr, WD=8.1yr	1 ride, 3 trials each	No intervention	M/L kinematic (video), 4 markers
19	6F,3M, 7-18yrs	1 30-45m session	HPOT	GAITRite Gold Walkway System
20	SCP	10m HPOT vs 10m barrel	HPOT	EMG(add), GMFM66, self percep.
21	SCP	30 min 2X 2wkly, 6 wks	HPOT	EMG(add), GMFM66, self percep.
22	SCP, 9-11yrs,	30 min, 2X wkly, 8 wks	HPOT	Gait (strd, veloc, cadnc), GMFM
23	2CP, 1 seizure, DD, 5-8yr	60 m weekly, 6 mos	HPOT	GAS X4, Visual analysis, binomial test T score
24	6CP, 6-17yrs	45min wkly, 12 wks	HPOT	Video 3D kinematic, motorized barrel test
25	11, CP 5-11yrs	45m wkly, 12wk tx, 12wk Wsh	HPOT	Video 3D kinematic, motorized barrel test, reach test
26	e=9, c=6 with MS	30m, wkly, 14wks	HPOT	BBS, POMA
27	16 w balnc deficits, 5-16yrs	45m, 2Xwk, 6wks	HPOT	PBS, ASKp
28	3 w/ autism, 4-6 Yrs	45min wkly, 16 weeks	HPOT	Pediatric Volitional Questionnaire (PVQ)
29	DDH, ADD	60 min wkly, 7wks/sess	Tx B:PT+HPOT	BOTMP
30	Down Syndrome	30 min wkly, 11 wks	HPOT	GMFM
31	Cerebellar ganglioglioma	30 min wkly/12 wks	HPOT	PBS, Biodex Dynamic Limits of Stability test, COPM
32	6yrs, ataxic CP, GMFCS I	45 min 2X wkly, 8 wks	HPOT	GMFM66, PSPCSAYC, PODCI
33	spastic diplegia CP	45 min wkly, 6 mo follow-up	HPOT	mechanical barrel,
34	Older Adult, 76yr Femald	45min wkly, 10 weeks	EAT(HPOT activities)	Kinematic/Kinetic static balance, BBS, ABC
35	spastic diplegia CP, epilepsy	30 min 3x wkly, 5 wks	HPOT	Stabilometry, modified sensory organization test
36	MS	mean = 11.2 weeks, 7.75 hrs	HPOT	BBS, POMA
37	CP, N varied 3-72 children mixed CP, language delay,	8-26wks	Mixed 6 HPOT & 3 THR	Varied between studies
38	ADD, multiple disablities	btwn 4-30 hrs over 12 wks	HPOT	Muiltiple outcome measures in 13 studies
39	CP	Varied	HPOT & THR	PEDRO scale
40	mixed CP	10-26 weeks, 1 & 2X wkly	HPOT & THR	Functional reach test, barrel test, gait and balance assessments, GMGM, PDMS, BOTMP, VABS, SPPC, CBCL, Bertotti test
41	4 w CP, 4 w no disabilities	sgle ride, test of press matt	none	test utility of pressure matt as outcome measure
42	healthy fem. Avg 23yr	20 min 2X wkly, tot of 5	HPOT	Computerized pressure pad