**APPENDIX**

**Traditional Home Therapy and Hippotherapy Progression of Exercises**

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| **Session** | **Traditional Home Therapy Treatments** | **Hippotherapy Treatments** |
| **1** | \* **Evaluation**  \* Home exercise program started with mother and adolescent educated on ascending and descending the 6 in step, stairs without handrail, up down from the floor and standing at computer station  \* Wearing schedule for use of UE splints for 1 hr the first night with an additional hour every other night up to goal of 8 hrs overnight  \* DAFOs scheduled to be worn throughout the day  \* **Ther Ex and Com-pressorTM belt .5 lb**  \* 1 set of 5 reps (1 x 5) of quadruped to tall kneel without UE support | **\*** **Com-pressorTM belt with .5 lb**  **\*** **10 mins warm–up**  **\*** **10-15 mins of clockwise and counter clockwise** 360o turns  **\*** **15-20 mins of transitions**  \* **Forward sit into quadruped** with quadruped held 1 minute with horse on straight lines and gentle turns  \* **Quadruped to tall kneel** on stationary horse with high kneel maintained for 1 minute with the horse at a steady, rhythmical walk on straight lines and gentle turns with UEs on the hoop  \* **Tall kneel** **to** ½ **kneel into stand** on stationary horse  \* **Stand** with the horse at a steady, rhythmical walk on straight lines and gentle turns with initiation of head turns in the same direction for 1½ s  **\*** **15 mins of UEs holding reins bilaterally** with acceleration and deceleration of the horses speed and circles  \* **5 mins cool down** forward sit position with the horse at a steady, rhythmical walk on straight lines and gentle turns |
| **2** | **\*** **Ther** **Ex and Com-pressorTM belt with 1.5 lb**  \* 1 set of 10 reps (1 x 10) - quadruped to tall kneel with mod a and mod cues without UE support  \* 1 x 10 - tall kneel on therapy ball with max to mod a and mod cues for L LE motor control  \* 1 x 10 - tall kneel to ½ kneel with max a and mod cues  \* 1 x 5 - ½ kneel with trunk rotation to the R with max a to mod a and mod cues  \* 1 x 5 - floor to stand from a mat with max a  \* 1 x 5 - ascend and descend stairs without handrail with reciprocal steps with mod a of 1 and mod cues  \* 1 x 5 - up and down 6 in step without UE support min a x 1  \* 1 x 5 - transfer from 1 chairto another without UE supportwith min a and mod cues  \* Static stand eyes closed and feet apart with mod a to min a x 10 s and feet together max a x 5 s  \* Step up R LE onto 6 in step and balance on L LE5 s max a x 1  \* Single leg stance continual max a R and L LE  \* Backward walk 1 x 3 ft max a x 1 | **\* Com-pressorTM belt with 1.5 lb**  **\*** **10 mins warm–up**  **\*** **10-15 mins of clockwise and counter clockwise** 360o turns  **\*** **15-20 mins of transitions**  \* **Forward sit into quadruped** on stationary horse and quadruped maintained for 2½ mins during straight lines and gentle turns  \* **Quadruped to tall kneel** on stationary horse with tall kneel maintained for 2 mins with the horse at a steady, rhythmical walk on straight lines and gentle turns with UEs on the hoop  \* **Tall kneel** **to ½ kneel into stand** on stationary horse  \* **Stand** with the horse at a steady, rhythmical walk on straight lines and gentle turns with head turns in the same direction for 2½ mins  **\*** **15 mins of UEs holding reins bilaterally** with mod a x 1 and mod cues incorporated with acceleration and deceleration of the horses speed and circles  \* **5 mins cool down** forward sit position with the horse at a steady, rhythmical walk on straight lines and gentle turns |
| **3** | **\*** **Ther** **Ex and Com-pressorTM belt with .91 kg (2 lb)**  \* 1 set of 12 reps (1 x 12) - quadruped to tall kneel to ½ kneel with mod a and min cues without UE support  \* 1 x 12 - ½ kneel with trunk rotations to the R with UE activity with mod a  \* 1 x 12 –floor mat to stand with mod a  \* 1 set of 8 reps (1 x 8) – ascend and descend stairs without handrail with reciprocal steps with mod –min a x 1 and mod cues  \* 1 x 12 – up and down 6 in step at home without UE support cga x 1  \* 1 x 12 - Transfer from one chairto another without UE supportwith cga and min cues  \* Static stand eyes closed and feet apart with min a 20 sec and feet together max a 15 sec  \* Step up R LE onto step and balance on L LE10 s min a x 1  \* Single leg stance continual mod a R and L LE  \* Backward walk x 5 ft mod a x 1  \* Standing at computer station to complete homework with B hips and knees extended bilaterally with max cues | **\* Com-pressorTM belt with .91 kg (2 lb)**  **\*** **10 mins warm–up**  **\*** **10-15 mins** **of clockwise and counter clockwise** 360o turns  **\*** **15-20 mins of transitions**  \* **Forward sit into quadruped** on stationary horse and quadruped maintained for 2½ mins with the horse at a steady, rhythmical walk on straight lines and circles with head turns  \* **Quadruped to tall kneel** on moving horse with tall kneel maintained for 4 mins with horse at a steady, rhythmical walk on straight lines and gentle turns alternating 1 hand on the hoop and 1 hand behind back  \* **Tall kneel** **to ½ kneel into stand** on stationary horse  \* **Stand** with the horse at a steady, rhythmical walk on straight lines and turns with head turns in both directions for 3 mins and UEs abducted and extended out to side for 30 s  **\*** **15 mins of UEs holding reins bilaterally** with acceleration and deceleration of the horses speed, circles, weaving cones and abrupt stops and starts  \* **5 mins cool down** forward sit position with the horse at a steady, rhythmical walk on straight lines and gentle turns |
| **4** | **\*** **Ther** **Ex and Com-pressorTM belt with 2.5 lb**  \* 1 x 12 - quadruped to tall kneel to ½ kneel with min a and min cues without UE support  \* 1 x 12 - ½ kneel with trunk rotations to the R with UE activity with min a  \* 1 x 15 – stand to floor mat to stand with min a  \* 1 x 12 – ascend and descend stairs in home with hands behind his back with reciprocal steps with min a x 1 and mod - min cues  \* 1 x 12 - 6 in step negotiation at home without UE support with supervision  \* 1 x 12 - Transfer from 1 chairto another without UE supportwith supervision and min cues  \* Static stand eyes closed and feet apart with min a 45 sec and feet together max a 35 s  \* Step up R LE onto step and balance on L LE15 s min a x 1  \* Single leg stance continual mod-min a R and L LE  \* Backward walk x 10 ft mod a x 1  \* Standing at computer station to complete homework with hips and knees extended bilaterally with mod cues | **\* Com-pressorTM belt with 2.5 lb**  **\*** **10 mins warm–up**  **\*** **10-15 mins** **of clockwise and counter clockwise** 360o turns  **\*** **15-20 mins of transitions**  \* **Forward sit into quadruped** on stationary horse and maintained 3½ mins with the horse at a steady, rhythmical walk on straight lines and circles with head turns in both directions  \* **Quadruped to tall kneel** on moving horse with tall kneel maintained for 4 mins with horse at a steady, rhythmical walk on straight lines and gentle turns alternating 1 hand on the hoop and 1 hand behind back  \* **Tall kneel** **to ½ kneel into stand** on stationary horse  \* **Stand** with the horse at a steady, rhythmical walk on straight lines and turns with head turns up and down and in both directions for 3 mins  **\*** **15 mins of UEs holding reins bilaterally** with acceleration and deceleration of the horses speed, circles, weaving cones and abrupt stops and starts  \* **5 mins cool down** forward sit position with the horse at a steady, rhythmical walk on straight lines and gentle turns |
| **5** | **\*** **Ther** **Ex and Com-pressorTM belt with 3 lb**  \* 1 x 12 - quadruped to high kneel to ½ kneel with min a and min cues without UE support  \* 1 x 12 - ½ kneel with trunk rotations to the right with UE activity with cga and min cues  \* 1 x 15 – stand to floor mat to stand with min to cga  \* 1 x 12 - - stair negotiation in home with hands behind his back with reciprocal steps with min a x 1 and min cues  \* 1 x 12 - 6 in step negotiation at home without UE support  \* 1 x 12 - Transfer from 1 chairto another without UE support  \* Static stand eyes closed and feet apart 1½ min and feet together 1 min  \* Step up R LE onto step and balance on L LE15 s with sup x 1  \* Single leg stance continual mod-min a R and L LE  \* Backward walk x 5 ft with sup and min cues  \* Standing at computer station to complete homework with hips and knees extended bilaterally with mod to min cues  \* Tying shoes with max a and max cues | **\* Com-pressorTM belt with 3 lb**  **\*** **8 mins warm–up**  **\*** **15 mins** **of clockwise and counter clockwise** 360o turns  **\*** **20 mins of transitions**  \* **Forward sit into quadruped** on stationary horse with quadruped maintained for 4 mins with the horse at a steady, rhythmical walk on straight lines and circles with head turns and lateral bends at trunk  \* **Quadruped to tall kneel** on advancing horse with tall kneel maintained 5 mins with horse at a steady, rhythmical walk on straight lines and gentle turns with both hands behind back with head rotation and retraction with the turn of the horse  \* **Tall kneel** **to ½ kneel into stand** on stationary horse  \* **Stand** with the horse at a steady, rhythmical walk on straight lines and turns with head turns in both directions for 3½ mins and UEs extended at sides for 45 s  **\*** **15 mins of UEs holding reins bilaterally** with acceleration and deceleration of the horses speed, circles, poles, weaving cones and abrupt starts and stops  \* **5 mins cool down** forward sit position with the horse at a steady, rhythmical walk on straight lines and gentle turns |
| **6** | **\*** **Ther** **Ex and Com-pressorTM belt with 3.5 lb**  \* 1 x 15 - quadruped to tall kneel to ½ kneel with min a without UE support  \* 1 x 15 - ½ kneel with trunk rotations to the R with UE activity with mod a and mod cues  \* 1 x 12 – stand to floor mat to stand with cga  \* 1 x 12 - stair negotiation in home with hands behind his back with reciprocal steps with cga x 1  \* 1 x 12 - 6 in step negotiation at home without UE support physically I  \* 1 x 12 - Transfer from 1 chairto another without UE support  \* Static stand eyes closed feet apart 2 min and feet together 1 min 50 s with head turns  \* Step up R LE onto step and balance on L LE5 s with sup  \* Single leg stance continual min a R and L LE  \* Backward walk  \* Standing at computer station to complete homework with hips and knees extended bilaterally min cues  \* Tying shoes with mod a and mod cues | **\* Com-pressorTM belt with 3.5 lb**  **\*** **5 mins** **of warm–up**  **\*** **15 mins** **of clockwise and counter clockwise** 360o turns  **\*** **20 mins of transitions**  \* **Forward sit into quadruped** on stationary horse with quadruped maintained for 4 ½ mins with the horse at a steady, rhythmical walk on straight lines and circles with eye and head turns and lateral bends at trunk  \* **Quadruped to tall kneel** on advancing horse with tall kneel maintained 5 mins with horse at a steady, rhythmical walk on straight lines and gentle turns with both hands behind back with head rotation and retraction with the turn of the horse  \* **Tall kneel** **to ½ kneel into stand** on stationary horse  \* **Stand** with the horse at a steady, rhythmical walk on straight lines and turns with head turns in both directions for 3½ mins and B UE’s extended at sides for 60 s  **\*** **15 mins of UEs holding reins bilaterally** with acceleration and deceleration of the horses speed, circles, weaving cones and abrupt starts and stops  \* **5 min cool down** forward sit position with the horse at a steady, rhythmical walk on straight line /gentle turns |
| **7** | **\*** **Ther** **Ex and Com-pressorTM belt with 4 lb**  \* 1 x 15 – stand to floor and floor to stand via quadruped to high kneel to ½ kneel to stand with cga without UE support  \* 1 x 15 - ½ kneel with trunk rotations to the right with UE activity with mod a and mod cues  \* 1 x 12 - stair negotiation in home with hands behind his back with reciprocal steps with cga x 1  \* 1 x 10 - 6 in step negotiation at home without UE support physically I  \* 1 x 12 - Transfer from 1 chairto another without UE support  \* Static stand eyes closed feet apart 3 mins and feet together 2 mins with head turns  \* Step up R LE onto step and balance on L LE5 s sup x 1with trunk rotation to the R  \* Single leg stance continual min cga R and L LE  \* Backward walk  \* Standing at computer station to complete homework with hips and knees extended bilaterally  \* Tying shoes with min a | **Cancelled due to illness in family**  **Additional hippotherapy treatment make up performed on week 10 with equivalent exercises** |
| 8 | **\*** **Ther** **Ex and Com-pressorTM belt with 5 lb**  \* 1 x 10 – stand to floor and floor to stand via quadruped to high kneel to ½ kneel to stand with cga to sup without UE support  \* 2 x 10 - ½ kneel with trunk rotations to the R with UE activity physically I  \* 1 x 10 – ascend and descend stairs in home carrying an object with both hands with reciprocal steps with cga x 1 (no Com-pressorTM belt with weight)  \* 2 x 10 - 6 in step negotiation at home without UE support  \* 2 x 10 - Transfer from 1 chairto another without UE support  \* Static stand eyes closed feet together 3 mins with head turns I  \* Step up R LE onto step and balance on L LE10 s with trunk rotation to the R  \* Single leg stance sup R and min a L LE  \* Backward walk  \* Standing at computer station to complete homework with hips and knees extended bilaterally min cues  \* Tying shoes I | **Cancelled due to illness in family**  **Additional hippotherapy treatment make up performed on week 10 with equivalent exercises** |
| **9** | **\*** **Ther** **Ex and Com-pressorTM belt with 5 lb**  \* 1 x 10 – stand to floor and floor to stand via quadruped to tall kneel to ½ kneel to stand with s without UE support  \* 2 x 10 - ½ kneel with trunk rotations to the R with UE activity  \* 1 x 10 – ascend and descend stairs in home carrying an object with both hands with reciprocal steps with cga to sup (no Com-pressorTM belt with weight)  \* 2 x 10 - 6 in step negotiation at home without UE support carrying an object  \* 2 x 10 - Transfer from 1 chairto another without UE support  \* Static stand eyes closed feet together 3 mins with head turns I  \* Step up R LE onto step and balance on L LE10 s with trunk rotation to the R  \* Single leg stance sup R and min a L LE  \* Backward walk  \* Standing at computer station to complete homework with hips and knees extended bilaterally for 1 hr  \* Tying shoes I | **\* Com-pressorTM belt with 5 lb**  **\*** **3 - 5 mins** **of warm–up**  **\*** **10 - 15 mins** **of clockwise and counter clockwise** 360o turns  **\*** **20 mins of Transitions**  \* **Forward sit into quadruped** on stationary horse with quadruped maintained for 8 - 10 minutes with starts and stops, serpentines, circles with eye and head turns and lateral bends at trunk  \* **Quadruped to tall kneel** on advancing horse with tall kneel maintained 5 minutes with starts and stops, eyes open and closed, serpentines, circles with eye and head turns and lateral bends at trunk with accelerations and decelerations of horses speed  \* **Tall kneel** **to ½ kneel into stand** on stationary horse  \* **Stand** with the horse at a steady, rhythmical walk on straight lines, starts and stops, eyes open and closed, head turns in both directions with the turning horse for 4 ½ minutes and B UE’s extended at sides  **\*** **15 mins of UEs holding reins bilaterally** with acceleration and deceleration of the horses speed, circles, weaving cones and abrupt starts and stops  \* **5 mins cool down** forward sit position with the horse at a steady, rhythmical walk on straight lines and gentle turns |
| **10** | **\*** **Ther** **Ex and Com-pressorTM belt with 5 lb**  \* 1 x 10 – stand to floor and floor to stand via quadruped to tall kneel to ½ kneel to stand with s without UE support  \* 2 x 10 - ½ kneel with trunk rotations to the right with UE activity  \* 1 x 10 – ascend and descend stairs in home carrying an object with both hands with reciprocal steps with cga to sup (no compressor belt with weight)  \* 2 x 10 - 6 in step negotiation at home without UE support carrying an object  \* 2 x 10 - Transfer from 1 chairto another without UE support  \* Static stand eyes closed feet together 3 mins with head turns I  \* Step up R LE onto step and balance on L LE12 s with trunk rotation to the R  \* Single leg stance sup R and min a L LE  \* Backward walk  \* Standing at computer station 1-3 hrs  \* Tying shoes I | **\* Com-pressorTM belt with 5 lb**  **\*** **3 - 5 mins** **of warm–up**  **\*** **10 - 15 mins** **of clockwise and counter clockwise** 360o turns  **\*** **20 mins of transitions**  \* **Forward sit into quadruped** on stationary horse with quadruped maintained for 8-10 mins with starts and stops, serpentines, circles with eye and head turns and lateral bends at trunk  \* **Quadruped to tall kneel** on advancing horse with tall kneel maintained 5 mins with starts and stops, eyes open and closed, serpentines, circles with eye and head turns and lateral bends at trunk with accelerations and decelerations of horses speed  \* **Tall kneel** **to ½ kneel into stand** on stationary horse  \* **Stand** with the horse at a steady, rhythmical walk on straight lines, starts and stops, eyes open and closed, head turns in both directions with the turning horse for 4½ mins and UEs extended at sides  **\*** **15 mins of UEs holding reins bilaterally** with acceleration and deceleration of the horses speed, circles, weaving cones and abrupt starts and stops  \* **5 min cool down** forward sit position with the horse at a steady, rhythmical walk on straight lines and gentle turns |

Abbreviations: Ther Ex = Therapeutic Exercise; reps = repetitions DAFOs = dynamic ankle foot orthoses; UE = upper extremity; LE = lower extremity; L = left; R = right; I = independent; sup = supervision; cga = contact guard assistance; min a = minimal assistance (25%); mod a = moderate assistance (50%); max a = maximum assistance (75-100%); mod cues = moderate cueing;