

Table B: Logger Pro results – rationale for measurements of change in relation to the child’s goals (Vernier, 2010)

Rationale for above measurements of change in relation to the child’s goals:

| Child - code | Task Related Posture & Movement Behaviour | RATIONALE |
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| 1. J53, J52 | Head control for vision. - % of total time head remains at least partially in contact with headrest. | Both hands & the hoop & toy can be visually monitored from resting her head on headrest. Periodically her head drops forward during the task. By follow up, this only occurs at the end. |
| 2. J93, J92 | ‘Lean forward’ to use his fork is reduced from pre test to follow. Range of movement is recorded between fingerprint ink dot on most lateral aspect of left iliac crest & ‘virtual line’ between it & the dot on most lateral/superior aspect of left spine of scapula. | The task of using a fork is typically performed with trunk upright & shoulders approximately ‘over hips’, in a seated position. Scapula movement forward is not required (- not required before 60° of humeral movement) (Kapandji I.A.,1982) This measure reflects the range of movement of pelvis (posterior rotation in pretest / upright by follow up), &/or trunk flexion, &/or movement of the acromium process forward in the sagittal plane. It is observed in the pretest that he moves forward with body & wide spread arms* on the table, to assist his balance. This* is absent in both the post test & the follow up, and movement of trunk forward represents ‘a more appropriate weight shift / postural control’ for the task. |
| 3. J93, J92 | There is observable change from pre test to follow up in t ‘expansion’ in size of R.hand - in readiness to grasp ‘biscuit’ from table in front . | Hand expansion for contact with an object to be grasped needs to be sufficient to ‘trap’ & hold object – in this example to hold the ‘biscuit’ in preparation for taking to mouth. The change in this contact is calculated from pre to follow up test. |
| 4. K83, K82 Goal A | Time to initiate reach to successfully grasp a toy with L. hand across midline whilst seated on a bench will be measured. This will be timed from beginning of clip (toy introduced) to toy in child’s hand & clear of assistant’s hand. | Reach to a distant target (toy) at the side is typically performed by weight shifting to that side and dynamically taking weight through the ipsilateral hand adjacent to the body, on the surface, to increase the base of support for safe and successful grasp. This also involves rotation around the body’s axis and so increased skills of balance. This typically not performed by a child with hypotonia. NDT involved her developing these skills – and a change in time to initiate reach at follow up is shown to diminish the overall time taken for the task. She does, however, still require ‘environmental manipulation’ - of restraining her right hand. |
| 5. K83, K81 | Maintenance of feet steady on the surface is measured by presence or absence of movement of feet on or away from the | Maintenance of feet on the surface is an important aspect of postural control for table top tasks, especially when postural musculature is weak. This may include, for example, |

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| | surface of the grid. Measurements are made at pre test & post test. | difficulty in maintenance of concentric control of gluteal muscle and eccentric control of abdominals for activity 'off' the seated base of support together with feet 'pushing into the floor surface - in moving forward to the communication device. |
| 6. K63, K61 | Excursion of SG counter rotation from pelvic girdle during bat swing is recorded. Measurement from 'virtual line' through 'dots' on 'most lateral SG acromial processes - records ROM from 'virtual line' through most lateral aspects of iliac crest at (L. & R. – 'visual judgment'), recorded & compared for duration of video clip during pre test & post test. | Counter rotation between the shoulder girdle & pelvic girdle in the transverse plane is an efficient way to maintain balance / centre of mass over base of support during wide range reach from one side of the body to the other. This occurs, for example, in swinging a bat to hit a ball. This boy demonstrates some increase in this range of movement from pre to post test during this activity. |
| 7. J13, J11 | Movement forward with right foot is measured between R.lateral malleolus & L. medial malleolus at the extent of forward movement of foot in the sagittal plane across the floor grid. Comparison will be made pre to post test. | The ability to move one lower limb away from the midline independently, whilst maintaining 'closed chain' control by the contralateral 'stance' limb is important for completion of the 'Ronde de Jambe'. Maintenance of balance whilst 1 limb moves independently from the other is an important component of many 'mobility tasks' – such as walking and climbing steps. |
| 8. K33, K32 | Speed of unscrewing his drink bottle is measured from closure of right hand on top to unscrew it, to release of hand after unscrewing. | The use of his drink bottle as required in the playground was the focus of this boy's goal. This task requires undoing the top, unscrewing to refill etc. Learning to functionally use his weaker right, slightly more involved, hand for this task(as he did in writing for example), involved improving the dominance of his right hand and increasing strength and timing. A positive change in the speed involved in removing the lid of his drink bottle is an example of measurable change from pre test to follow up test. |
| 9. J43, J41 Goal A | % of time that L. elbow is flexed at 70 ° or more (from beginning walking until ball is released) is measured from 'virtual' lines drawn from shoulder 'dot' to L. lateral epicondyle & to the 'dot' centred on the L.medial wrist styloid process. Angles are measured & timed from pre to post test. | The measurement of the amount of time that elbow/s are flexed is part of a 'high guard' position adopted by more inexperienced, less efficient walkers, to assist postural control 'up against gravity' by also utilising the upper extremities to assist. High guard' generally also incorporates glenohumeral abduction & shoulder girdle elevation – both also demonstrated by this boy at pretest. Use of this synergy potentially limits use of the upper extremities during gait in arm swing for example, or for carrying or throwing. The change from pre to post test in part of this synergy - elbow flexion – has therefore been measured |
| 10. J123, J121 | Measurement of 'angle of leaning' towards the L.side (–while (L.foot off ground stepping .The 2 reference points are R.greater trochanter 'dot' to base of R.posterior axilla. The angle of movement of a virtual straight line drawn between the 2 is recorded - with reference to a virtual line drawn through 'hip dot' to the floor. | This relates to his ability to maintain his centre of mass over his right, involved lower extremity as he steps up with his left foot. It can be observed in the pre test to post test, that the vertical alignment of his trunk & pelvis towards the right side improves, with a more effective weight shift over his right hip to that side for balance, whilst stepping up 1 step with his left foot. |
| 11. | Presence or absence of left hand assisting donning of right sock, | Developing the use of an 'assisting hand' for the child with hemiplegia is an important |

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| | seated, will be measured by counting and adding the time durations in which this occurs. | aspect of emerging motor control targeted by Neuro-Developmental Treatment in the early years. This approach aims towards developing functional skills such as early self care skills. It also aims towards the avoidance of secondary impairments related to structural integrity - such as secondary shortening of soft tissue through disuse. Measurement of change in the ability to use her left 'more involved hand' from pre to follow up test as measured through presence or absence of grasp of sock over time, potentially demonstrates change towards increasing use of this hand as an 'assisting hand'. |
| 12. J113, J112 | 'Environmental assistance' from edge of table used periodically for support in standing is measured from pre test to follow up test as 'present' (at any time during task performance) or 'absent' (throughout task). | The use of support from the environment - presence or absence – is measured in this 'standing to eat task' as a measure of independent control in standing in space. In this case, the edge of the table in front of him provides a surface for periodic support as a 'stability limit' for safety. The follow up test compared to pre test indicates a positive change in no assistance sought by table edge This also follows a combination of NDT, botox to hamstrings and adductors and at least a x3 increase in Baclofen dosage. |

References Table 24 a. and b.:

Excel. (2004). Excel, Microsoft Office 2004. from www.microsoft.com/mac/

Kapandji, I. (1982). *The Physiology of the Joints - Upper Limb* (Vol. 1): Churchill Livingstone, Edinburgh

Vernier. (2010). Logger Pro 3.8.2 for Mac. from <http://www.vernier.com/soft/lpfeatures.html>