MOVEMENT ANALISYS

Movement analysis has important components:

- Occupational relevance and context
- Description of starting position
- Breakdown of movement into sequential stages
- Description of any postural adjustment within each stage, followed by the movements of the limbs, starting proximally and moving distally, with identification of multijoints movements
- Attention to cognitive and emotional factors that relate to the specific movement

The physical impairments in body functions and motor skills result in movement limitations that can cause deficits in all areas of human occupations (self-care, work, leisure and social activities).

The occupational based functional motion assessment is a way of assessing ROM (range of motion), strength and motor control in task performance by observing the client during performance in ADL (activity of daily living), IADL (instrumental activities of daily living), work and leisure activities.

CLINICAL OBSERVATION

The OT observe the client during the performance of ADL and IADL, work and leisure, looking for performance difficulties and movements patterns that may signal limited ROM (Range of Motion), muscle weakness, muscle imbalance, poor endurance, limited motor control, compensatory motion used for function. When observing a client perform a task the OT is doing an individual activity analysis to diagnose the occupational performance problem of the client.

The occupational based functional motion assessment is better than a functional motion assessment because the client will perform the motion with the added resistance of the body structure that will occur as the resulting of using equipment such as manipulative objects (such as a spoon or scissors) or resisting fatigue and having endurance during repetitive activities (such as climbing stairs).

Another advantage of the OT assessment is that the client performs a meaningful task, increasing his full participation and engagement.

The following questions guide the clinical observation and the clinical reasoning process

- Does the client has adequate ROM to perform the task?
- Where are the joint limitations? What are some possible causes of limitations?
- Are there true ROM limitations or are caused by decreasing muscle strength?
- Does the client have enough strength to perform the task?
- In which muscle group is there apparent weakness?
- If strength appears inadequate to perform a task because the client cannot complete the ROM, is there truly muscle weakness or is there limited ROM

- Does the client have enough motor control to perform the task?
- Is the movement smooth and rhythmic?
- Is the movement slow and difficult (spasticity and or rigidity)?
- Are there extraneous movements when the client perform the task (tremors, athetoid or choreiform movements)?

The assessment of joint ROM, manual muscle testing and motor control assessment will give the therapist specific information about the function of musculoskeletal system, but the therapist will not be able to determine the client ability to perform a specific task, rather the therapist will have information about movement of a specific part of the body but the client's motor performance capabilities are not measured by these assessments. Manual muscle test cannot measure muscle endurance (number of time the muscle can contract at his maximum level and resist fatigue), motor control or the client ability to use the muscles in functional activities.

These knowledge are only the base, the OT must have to evaluate a client's functional activities.

THE START POSITION IN MOVEMENT ANALYSIS

Muscular work

In all activities of daily living the actions of the muscles can take place throw muscle shortening, while keeping the same muscle length or during a controlled lengthening of the muscle involved in the action.

Muscles functions:

- Move a part of the body
- Hold the position of a body part while the action take place
- Control the effect of the external forces acting on the body
- Balance the action of the muscle involved in the task to avoid excessive use of the force necessary to complete the action (agonist-antagonist, synergy)

Stability

The stable equilibrium of the body is necessary in all the ADL and this it means stability in standing such as in sitting. The features of bones, connective tissues and muscles contribute to the body stability.

Stability depend on the fact that the line from the centre of gravity of the body falls within its base of support (the feet). If during action the body become instable equilibrium reactions occur to restore balance (Old people!)

The base of support : it refers to the area beneath that includes every point of contact the person has with the supporting surface, i.e in standing the feet: the base of support may be widen to shoulder length width apart

Activity: sit to stand- sagittal plane

The person is in sitting position

- Look at the base of support , at the hip and the trunk
- Look at the hand
- Look at the shoulder
- Knees flexion is greater or lesser than 90°?
- Is femur parallel tothe ground?
- Are the knees lower than the hip?
- How much is the trunk flexion on the fips?
- Observe the trunk: is weight bearing more on one side?
- Is there thoracic rotations?
- Look at the iliac crest
- Pelvic rotation or tilt: is the person sitting on the sacrum?
- Is the head in the midline?

Sit to preparation for standing

- Flex the trunk
- Pull the feet a little bit back
- Bring the feet wide about hip width (for e better balance
- Flex the ankle so stretching the calves