ROYAL ACADEMY OF DANCE

BENESH MOVEMENT NOTATION FOR CLINICIANS

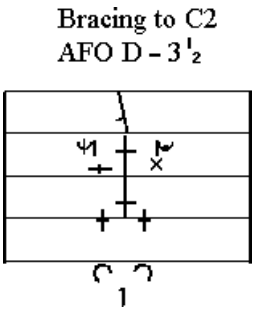
Medical interest in the notation first developed in Italy in the '60s, where it was used on a research project to analyse the movements of cerebral palsy patients, but it was not until the late '70s that a group of English physiotherapists became interested in its clinical value. Since then a small nucleus of therapists based mainly in the UK, Sweden and Japan have studied and used the system in the clinical field and appreciated its potential as a clinical tool.

Clinicians can use BMN as:

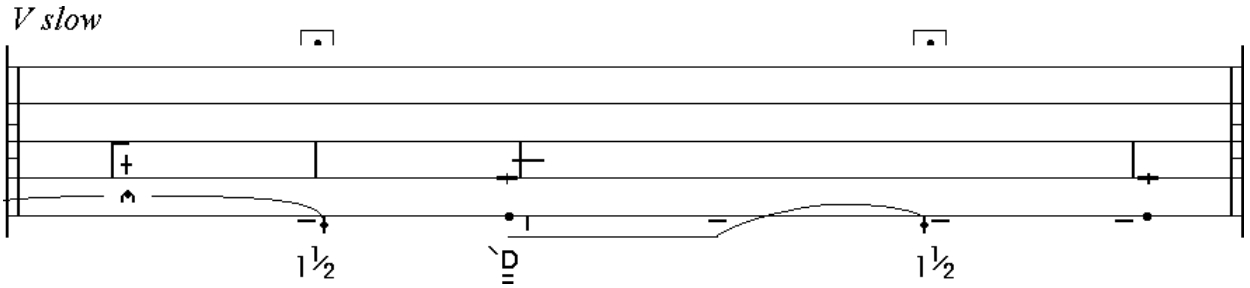
- a recording tool for 'shop floor' assessment and reassessment
- a research tool, either alone or in conjunction with instrumentation methods, to record clinical findings
- a teaching tool to provide a systematic approach for the observation of movement and the conversion of the information into clinical analyses of both functional and dysfunctional movements seen in the clinical field

As a written language of movement, in the same way that musical notation is a written language of music, Benesh Movement Notation has the same international value as sheet music. It is therefore a language which enables the communication of movement regardless of differences in spoken language.

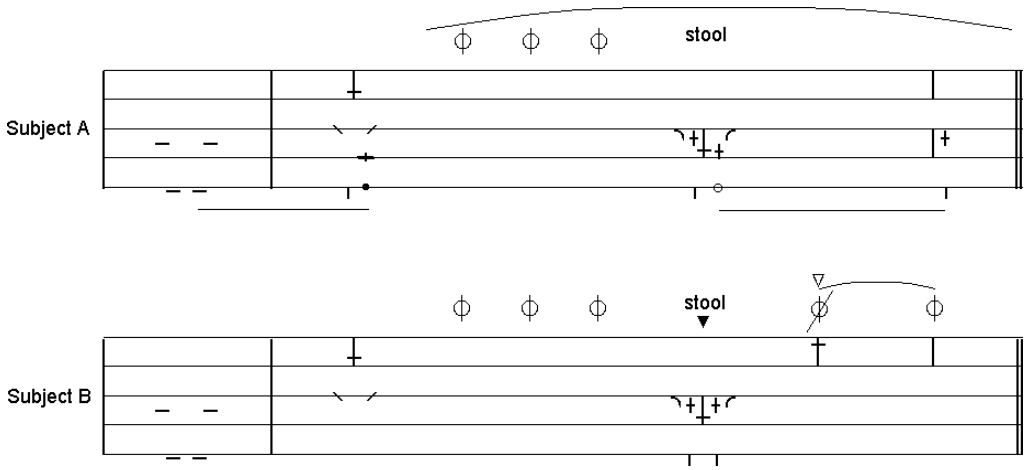
Example 1: A five-year-old girl with moderate cerebral palsy



Example 2: An example of a gait cycle analysis



Two different subjects, who are both standing upright, have been asked to place their hands upon the side of their waist and sit down slowly.



Subject A

This subject demonstrates a well co-ordinated and very smooth movement from standing into sitting. The movement goes as follows:

The head tilts interiorly so that the face is directed obliquely downwards. At the same time the hands are placed on the waist and the right foot slides posteriorly so that the right knee bends very slightly. This carries the body weight posteriorly to fall between the two feet and increases the anteroposterior dimension of the supporting base – thus preparing the subject to be able to control the balance during the next stage of the movement.

The subject then lowers the pelvis onto the stool very slowly to a count of four evenly spaced intervals. As this occurs, the pelvis rolls forward over the hip joints and the left lower limb takes up a right angle at the knee whilst the right lower limb is more acutely flexed and the foot is posterior to the knee, but anterior to the coronal plane of the body.

Finally, the right foot slides forward to lie immediately under the right knee and so makes the knee adopt a right angle. At the same time the pelvis rolls posteriorly to become upright over the hip joints and so creates a right angle between the pelvis and thigh. Concurrently, the head regains the normal upright posture. The hands are still on the lateral aspect of the waist and the whole action occurred completely smoothly.

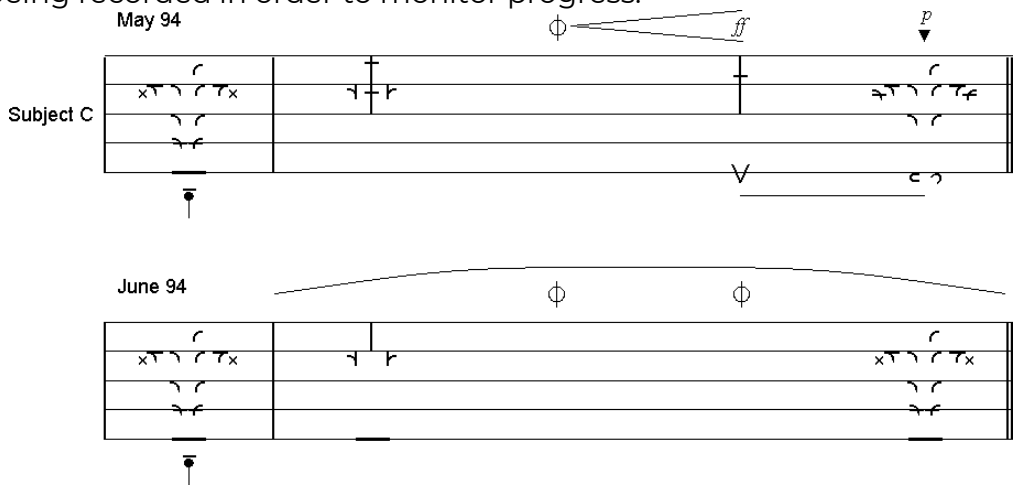
Subject B

This subject demonstrates poor control of movement and associated balance reactions. The movement is as follows: The head tilts forwards in the same way as Subject A and the hands are placed on the lateral aspect of the waist. However, there is no adjustment of the feet to make the anteroposterior dimension of the base more suitable and the knees remain straight with the weight passing evenly between the feet which are both immediately under the body and in alignment with its coronal plane.

The subject then remains poised like this for three evenly spaced intervals and then suddenly drops the pelvis onto the stool, virtually collapsing at the knees and hips. The 'landing' is noisy and sudden, no balance adjustment of the trunk occurs, and the body does not incline anteriorly at the hips.

Finally, the head is tilted posteriorly on the trunk momentarily before being adjusted to the normal upright posture. The final posture is identical to that of Subject A, but the method of attaining it is much more hazardous and traumatic.

Two recordings of a ‘press up’ exercise made during a treatment programme. The recordings are one month apart. The same subject is being recorded in order to monitor progress.



The subject is prone lying with the head turned to the left and resting on the right side of the face. The shoulders and hops are supported by the floor. The hands are on the floor at shoulder height and are lateral to the shoulder joints. The elbows are flexed, lie posterior to the coronal plane of the body and are abducted but not to shoulder height. They are not supported by the floor. This posture conditions wrist extension, forearm pronation and elbow flexion of a more acute angle than a right angle. The knees are together, very slightly flexed and supported by the floor, thus the metatarso-phalangeal joints are extended. The movement goes as follows.

MAY 1994

The subject begins by extending their elbows to push the upper torso away from the floor, while the pelvis remains in its initial position. This results in a pronounced extension of the trunk relative to the pelvis, likely in the lumbar region, with the cervical spine acutely extended and unrotated.

The hands are positioned in front of the shoulders. Next, the subject makes a strenuous attempt to lift the pelvis off the floor but can only manage this by flexing the hip joints, causing the feet to shift forward and no longer align with the trunk. At this point, the trunk loses its extension relative to the pelvis, and the cervical spine flexes, as if the subject is looking to check whether the pelvis has lifted.

In the final stage, the subject collapses back onto the floor with a noticeable noise. The elbows give way into a flexed position, resting on the ground, while the feet slide as the hips extend. The thighs rotate outward, causing the feet to turn outward as well. The head rests on the side of the face, rotated to the left, returning to the initial position. The subject goes completely limp; the entire sequence appears uncoordinated and leaves the subject exhausted.

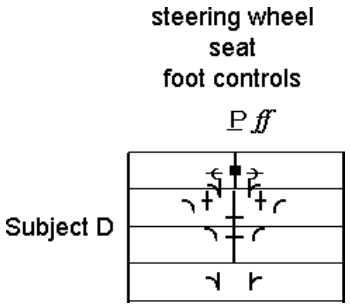
JUNE 1994

The performance of the subject is now excellent. The starting posture is the same as in the first recording, but the ensuing movement is smooth and demonstrates strength and co-ordination.

The elbows extend and the head, trunk, pelvis and knees are raised from the floor. As this occurs, the knees, which are very slightly flexed, pass into full extension and the subject is supported by his hands and the balls of his feet only. The body is inclined in a straight line and the head is no longer rotated to the left but is in alignment with the rest of the body.

The subject then returns to the starting position smoothly within three evenly spaced intervals. There is no sudden collapse and no appearance of exhaustion at the end of the movement.

Example 5: Static posture adopted by the driver of a car



The posture could be the cause of considerable discomfort if maintained for any length of time. If it is not the result of stress, it could eventually cause this and so make the driver more accident prone. The posture is as follows:

The driver is sitting on the seat of the car, but his pelvis has rolled posteriorly, extending his hips. The trunk has flexed over the pelvis so that the vertebral column is compressed anteriorly, and the cervical spine is lordosed so that the chin pokes forward on an extended atlanto occipital joint and flexed lower cervical spine.

The lower limbs are extended at the knees and are supported by the foot controls of the vehicle. This knee posture may be responsible for the posture of the spine through the tension on the hamstring muscle group and may, in turn, be caused by the incorrect adjustment of the relationship of the seat to the foot controls and steering wheel.

The upper limbs are flexed at the elbows and the hands are gripping each side of the steering wheel very tightly with the wrists flexed.

The back is not fully supported, as the scapular area has been brought away from the support of the seat by the flexion of the trunk. Apart from being a posture of musculoskeletal discomfort, this posture will restrict respiration, stretch the hamstring muscles and possibly also the sciatic nerve, may cause root pressure in the cervical region, leading to severe head and neck aches and may interfere with the conductivity of the nerves arising from the brachial plexus. There will be disc pressure in the lumbar region with possible subsequent back pain and nerve root pressure in the lumbosacral regions.

All in all, this posture is body language which may be the result of physical or emotional problems or of vehicle design. Whatever the initial cause, profound physical effects will result if it is adopted for extended periods.

Other components of the subject's clinical assessment will determine where the main cause lies:

- in the car?
- in seat adjustment?
- in primary stress?
- in the fatigue of the driver?

All factors need investigation to isolate the cause of the posture and so enable appropriate steps to be taken to alleviate the situation.