BENEFITS AND LIMITATIONS OF VOJTA´S APPROACH OF REFLEX LOCOMOTION

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By specifically defined proprioceptive afferent stimulation, a specific CNS motor program is addressed.

Stimulation: the initial body position “attitude“ + stimulation of specific localized zones
“Coordination complexes“

- global locomotor patterns

Automatic - not under voluntary control, “Subconscious” motor activity is stimulated

Involve the basic elements “partial patterns” of physiological motor behavior: this is specific only to the human species
Evoking ipsilateral pattern

REFLEX TURNING
Evoking contralateral pattern

REFLEX CREEPING
1st Position of RL
Both patterns are "artificial patterns" and they are not present in its entirety in postural and motor development. This is due to the fact that patterns can be elicited only from certain position and by stimulation from certain zones.
Reflex creeping is not present in human development of locomotion but it contains partial patterns which are present in child ontogenesis.
When comparing reflex turning and spontaneous turning there are some different components - initiation of turning, final end-position.
RL is the universal rehabilitation method which address:

- **Motor function**
  - stabilization function, supporting functions, “phasic” movements, oro-facial functions, deep paraspinal muscles

- **Sensory function**
  - stereognosis, sensation

- **Respiratory function**
  - diaphragm, abdominals

- **Bowel and bladder function, sphincters function, pelvic floor**
Cerebral palsy (central co-ordination disorder)
Peripheral nerve palsy
**Hemiparesis following brain stroke**
Spinal cord injury
Multiple sclerosis
Myopathy
Poor posture, scoliosis
**Spinal pain, nerve root involvement**
11 healthy subjects (ages 21-25 years) underwent 2 - 5 sessions of Vojta RL for about 30 minutes.

SEMG measurement was used during Reflex turning phase 1 for all sessions.
Responses usually appeared after 3rd to 5th RL session.

Responses were elicited quicker after a few session of RL.

Responses usually initiated by change of respiration, & a deeper breath, followed by

Responses in trunk muscles activation with a tendency towards trunk rotation.
Legs had a tendency to bend in hips and knees
Arms had tendency to lift, elbows slightly bend, wrists dorzally flexed
Level of responses elicited was different in each individual but the characteristics (aim) of the response was the same and led the individual towards turning
30 hemiparetic patients:
- 16 male (mean age 61.5) and 14 females (mean age 64)

Treatment of Vojta RL 2 - 3 times a day for approximately 15 days stay in hospital

Evaluation
1. Spasticity
2. Patient ability of co-operation
3. Articulation
4. Gait
5. Psychological state
RESULTS:

- 87% gait improvement
- 90% decrease in spasticity
- 83% improvement in speech/articulation
- 90% improvement in psychological state
BENEFITS IN TREATMENT OF HEMIPARETIC PATIENTS

- Adresses the brain plasticity
- Adresses the ability of stereognosis and deep sensation
- Evokes the global pattern of movement (coordination complexes) to influence complex motor movement such as gait, reaching, grasping and other activities of daily living
Can be used in early stages after spinal cord injury (after spinal shock)

Motor function stimulation - supporting natural neuroplasticity

Positive influence on respiratory function - pneumonia prevention
Positive influence on bladder function - prevention of inflammation
Positive influence on bowel function - prevention of constipation
21 MS patients had daily therapy sequence TT-VT-TT

On the 2\(^{nd}\) 12\(^{th}\) and 22\(^{nd}\) day the therapy sequence changed to VT-TT-TT

Evaluation
- gait parameters
- SEMG during Vojta therapy
- Neurological examination - disability status, cerebellar function, spasticity and muscle strength
SEM activity in the VT was far greater when TT took place before VT.

When sequence TT-VT-TT was chosen, distance walked during the second TT was significantly longer than in the first TT.

Gait velocity and stride length improved significantly (p< 0.0001)
16 of 19 neurologically examined patient improved by 0.25 - 1 level of disability status

Noticeable improvements in cerebellar function (by 68 %) and muscle strength of more affected leg (by 79 %)
44 years old woman with proved facial-scapular-humeral type of myopathy

- Waddling gait, slow progression of legs weakness
- Atrophy of peri-scapular muscles, week arm abduction, flexion, elbow flexion
- 2006 inflammation of airways - decrease of breath volumes
REFLEX TURNING 4TH B PHASE
SPIROGRAPHY RESULTS

Flow [l/s]

Volume [l]
SPIROGRAPHY RESULTS
Offers GP for up-righting the spine and pelvis on arms with C and T spine straightening.

Influencing deep paraspinal muscles and thus decreasing pressure on the disk

Create spine stabilization by evoking diaphragm, abdominals and pelvic floor co-activation
VERIFICATION OF EFFECT OF REFLEX LOCOMOTION ACCORDING TO VOJTA IN PATIENTS WITH PERIPHERAL FACIAL PALSY

AIM OF THE RESEARCH:

- To verify the effect of Reflex locomotion according to Vojta in patients with peripheral facial palsy by surface electromyography

- Immediate effect was evaluated by:
  - 1. SEMG
  - 2. Functional tests of mimic muscles
  - 3. Subjective response of the patient
- 7 patients with peripheral facial palsy due to inflammation
- 4 men and 3 women age from 9 - 70 (mean age 31 years)
- All patient underwent neurological examination which was diagnosed as peripheral facial palsy
- 16 channel surface electromyograph Telemyo-Noraxon with telemetric signal transfer

- Software MyoClinical (version 2.10)
two electrodes were placed on cleaned and scrubbed skin above muscular belly and parallel to the muscular fibres

Measured muscles:
- m. frontalis dexter et sinister,
- m. orbicularis oris dexter et sinister
- mm. suprahyoidei dexter et sinister
Sampling frequency 100Hz
Full rectification
Smoothing RMS - 100 ms
Filtration from frequencies above 500Hz
Data collection - mean amplitude, peak amplitude, difference in % from side to side
1) **quiet** supine lying
2) **eye brows elevation** in supine
3) **eyes closing**
4) **forced eyes closing**
5) **mouth puckering up** in supine
6) **showing teeth** in supine
7) **liquid swallowing (by stick)** in sitting
Initial position:

Stimulation zone - “breast zone”
Stimulation points:
proc. mastoideus on occipital side
angulus mandibulae
os zygomaticum - laterally to the eye lid
m. mylohyoideus - stimulation of swallowing
- Total time of stimulation was 20 minutes - 10 minutes each side

- Side of facial palsy was treated first as occipital side
RESULTS

- mean amplitude increased in palsy side muscles in 48 out of 105 cases
- peak amplitude increased in palsy side muscles in 51 out of 105 cases
- Side difference of mean amplitude decreased between palsy and healthy side in 46 out of 105 cases
- Side difference of peak amplitude decreased between palsy and healthy side in 42 out of 105 cases
Voluntary movement:
• 5 patients reported improvement
• in 1 no change
• 1 became worse

Articulation:
• 6 patients improved (in 4 patients improvement was observed visually by the therapist)
• in 1 no change

Swallowing:
• improvement reported all tested patients
Lagopthalmus:
- in 2 patients disappeared completely
- in 3 decreased
- in 1x decreased during forced eyes closing

Inability to close the mouth when pucker up:
- This was observed in two patients and in both patient improved after RL treatment
Synkinesis:
- in 2 p. eye closing disappeared during mouth puckering up
- in 2 decreased lip corner depression during forced eyes closing
- In 1 decreased platysma tension during eye closing
PATIENT WITH BILATERAL FACIAL PALSY

Before RL  

After RL
RIGHT SIDE FACIAL PALSY

Before RL

After RL
RIGHT SIDE FACIAL PALSY

Before RL

After RL
SurfaceEMG:

- positive effect of Rl considering improvement in symmetry of muscular activity was measured in less than 50% of cases
- This could be due to onset of muscular fatigue after long period of RL treatment
Patient’s subjective self-evaluation:
- Vojta’s approach of RL (reflex turning 1) had mostly positive effect on voluntary movement, articulation and on swallowing

Comparative evaluation of photos before and after RL:
- RL had a significantly positive influence on lagopthalmus, synkinesis and on disability of mouth closing during puckering up
RL is an approach which can be used in order to activate muscles which are difficult for patients to activate voluntarily.

Can be used prior to voluntary exercise in order to facilitate correct muscular synergies and promote these synergies into movement patterns.

Should be used in adult patients besides other techniques and methods (facilitation, inhibition, strengthening, stretching, mobilization).

GENERAL CONCLUSIONS FOR RL IN TREATMENT
GENERAL LIMITATIONS OF RL

- Complete lesion of spinal cord - ?
- Lack of neuroplasticity
- Lack of patient or family members cooperation
- Lack of expected (anticipatory) responses
- Lack of skillful and well trained therapists
THANK YOU FOR YOUR ATTENTION!

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