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**THE NEOTIA
UNIVERSITY**

ज्ञानम् आत्म प्रदीपाय

UGC Enlisted & Recognised

Department of Physiotherapy

School of Health Science

Bachelor of Physiotherapy

(BPT)

***Exercise Therapy II Practical
Manual***

Course Code: BPT 472

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Certificate

This is to certify that Mr./Ms. with
UID number of Bachelor of
Physiotherapy Semester 4th has satisfactorily completed the practical prescribed by
the Neotia University for the year

.....
Signature of Student

.....
Signature of Faculty

Date of Submission:

PROPEICEPTIVE NEUROMUSCULAR FACILITATION

(PNF)

The technique of proprioceptive neuromuscular facilitation (PNF) was first developed by Hermankabat and it was latter continued and explained by Margaret Knott. This technique was mostly related to patients with paralysis along with diagonal patterns.

BASIC TECHNIQUE

The technique of PNF relies mainly on stimulation of proprioceptors which are present in muscle spindles.

PNF Upper Limb

PNF Lower Limb

CO-ORDINATION

Frenkel's Exercise

It is a smooth, rhythmical and accurate harmonial activity performed in correct sequence of action of the group of muscles called as coordination.

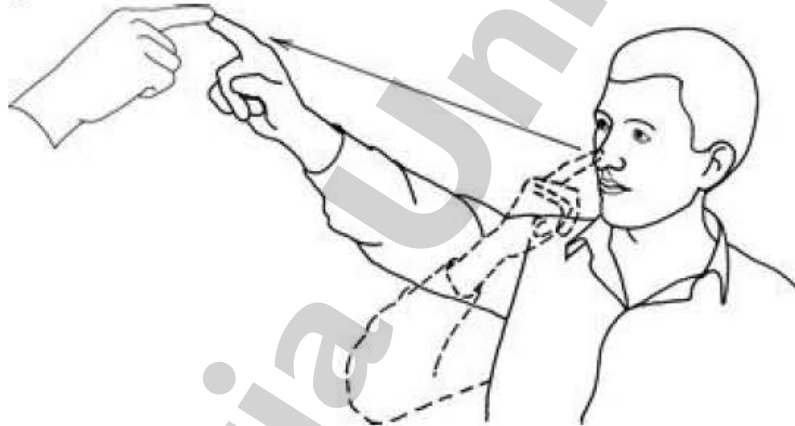
Lack of coordination is said to be incoordination or asynergia.

Test for Incoordination

Upper Limb

Finger Nose Test

Patient is asked to touch the tip of the index finger of the one hand and the nose alternatively with the index finger of another hand.

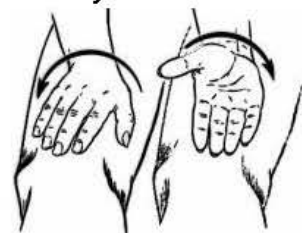


Finger-to-Finger Test

Patient is asked to abduct both the shoulders 90° with elbow in extension and ask the patient to bring both the index finger towards midline and touch each other.

Dysdiadochokinesia (Rapid Alternating Movement)

The patient is asked to do the pronation and supination movement alternatively.



Lower Limb

Romberg's Test

Patient is made to stand straight with the eyes opened.

Patient is instructed to close the eyes.

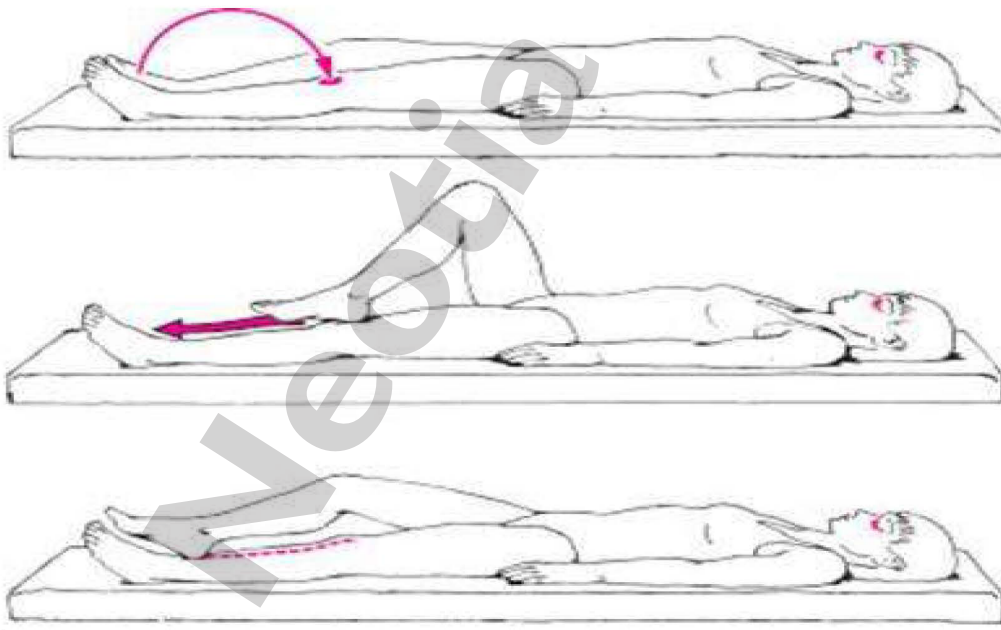


Finger Toe Test

The therapist's finger is pointed two feet above the patient's great toe and instructs him to touch with the great toe.

Heel-Shin Test

Patient is asked to touch the knee with the opposite side heel and is sliding on the shin towards the great toe.



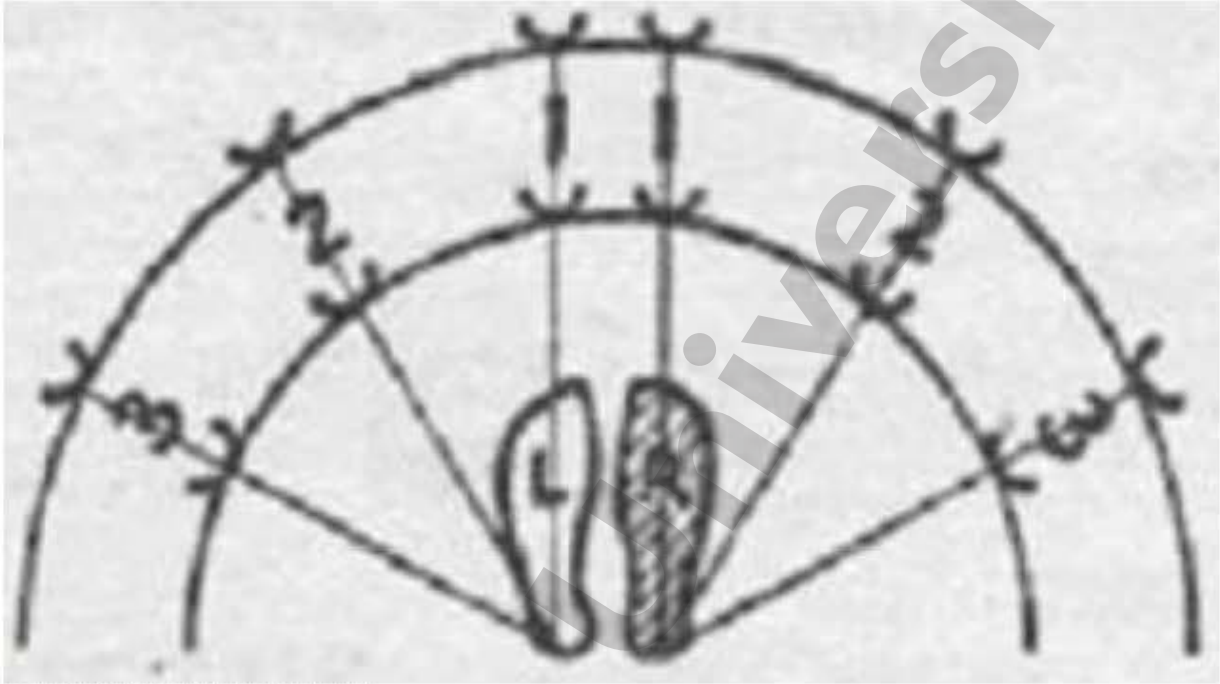
FRENKLE'S EXERCISE

This is the specialized exercise regimen .

It was presented by Dr HS Frenkle who was the Medical Superintendent of the sanatorium, Freihof in Switzerland.

He made the special study on the Tabes dorsalis patients and derived the procedure for treating the sensory ataxia.

Frenkel's exercises are used to bring back the rhythmic, smooth and coordinated movements. The principle he used was the sensory mechanism like sight, sound and touch in order to compensate for the loss of kinesthetic sensation.



TECHNIQUE OF EXERCISE

- Explanation of the procedure is very essential. The patient is briefly explained about the exercise program and demonstration is done prior to rendering of the exercises.
- The patient is positioned comfortably in order to be relaxed as well as watch the limb while movement is performed.
- The patient is in suitable clothing in order to watch the limb being exercised.
- In order to maintain smooth and rhythmic movement, the patient has to be attentive.
- Rhythmic counting controls the speed of the movement.
- Frequent rest between the exercises is given.

Functional Re-education

Re-education of function is of utmost importance in achieving the patient rehabilitation.

ACTIVITIES ON THE BED/MAT

- Rolling
- Birding
- Prone Lying with Arm Support
- Prone Kneeling (Four-foot Position)
- Kneeling
- Siting
- Standing
- Standing

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Walking Aids

Walking aids are appliances which may be a means of transferring weight from the upper limb to the ground or which may be used to assist balance.

Crutches are used mostly to relieve the weight-bearing in the one or both the lower extremities and provide additional support where the balance is impaired for the patients.

Types of crutches 1. Axillary crutch 2. Elbow crutch 3. Gutter crutch.



These crutches help in mobility of the patient who has weak lower limb or painful joint. In ambulation crutches particularly bear partial body weight.

Axillary crutches: They are made of wood with an axillary pad, a hand piece and a rubber ferrule. The position of the hand piece and the total length are usually adjustable.

Elbow crutches: They are made of metal and have a metal or plastic forearm band. They are usually adjustable in length by means of a press clip or metal button and have a rubber ferrule. These crutches are suitable for patients with good balance and strong arms.

Forearm crutches (gutter crutches): They are made of metal with a padded forearm support and strap, an adjustable hand piece and a rubber ferrule. These are used for patients with rheumatoid disease for providing support. They cannot take weight through hands, wrists and elbows because of deformity or pain.

Preparation for crutch walking:

- a. Arms: shoulder extensors, adductors and elbow extensors must be assessed and strengthened before the patient starts walking. The hand grip must also be tested to see that the patient has sufficient power and mobility to grasp hand piece.
- b. Legs: the strength and mobility of both legs should be assessed and strength need if necessary. Main attention to the hip abductors and extensor, the knee extensors and the plantar flexors of the ankle should be given.
- c. Balance: sitting and standing balance must be tested.

POSTURE & GAIT

Posture is the attitude assumed by the body either with support during muscular inactivity, or by means of coordinated action of many muscles working to maintain stability.

Posture Assessment - 1- 4 Scale

Grading

1. Normal
2. With head protruding
3. Head protruding with Kyphosis
4. Marked flexion of all joints.

Gait - It is the forward propulsion of the body by the lower extremity with the coordinated rotated movements of the body segment. The lower extremity support and carries the head, trunk and arm.

Gait is the style, manner, or a pattern of walking. The walking pattern or style may differ from individual to individual.

METHOD: The patient is allowed to walk a fixed distance

No. of steps -

Turning -

Time taken-

Cadence-

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Exercise Regimens

BALANCE BOARD

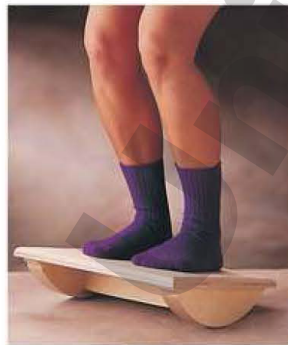
It is a semi-circular board. Usually it is made up of wood.

Indications:

1. Hemiplegia.
2. Cerebral palsy.
3. Weakness of muscles.

Uses:

1. Assist in performing movement.
2. Maintain ROM.
3. Strengthening exercises.



SWISS BALL

It is a large inflated ball made up of plastic and filled with air used in physiotherapy department to give balance exercises. It has transverse ridges for friction.



Indications

1. Balance and co-ordination problems
2. Vestibular disease.
3. Cerebral palsy.
4. Lumbar pain.
5. Weakness of trunk muscles.

Uses

1. For postural training.
2. Gives balance training.
3. Head control training.
4. Strengthening of trunk and limb muscle

SHOULDER WHEEL

It is mainly used for the purpose of shoulder rehabilitation.
It is either made up of metal or wood.

Uses

1. To improve the range of motion of shoulder.
2. For strengthening the upper limb muscles.
3. To improve neuro muscular co-ordination.

PARALLEL BAR

It is equipment used in physiotherapy department. **Parallel bars** are used to help patients regain strength, range of motion, balance and independence as they learn to walk again or regain coordination.



MEASURING LIMB LENGTH –

Leg-length measurement: • Apparent length: – from the umbilicus to the medial malleolus

True length: – from the ASIS to the medial malleolus

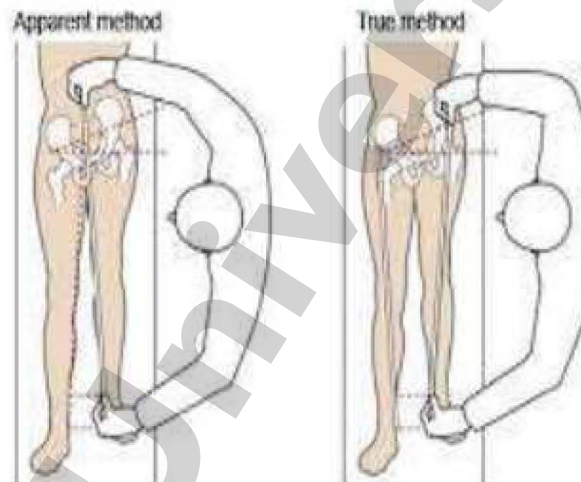
LIMB LENGTH

- **APPARENT LIMB LENGTH**

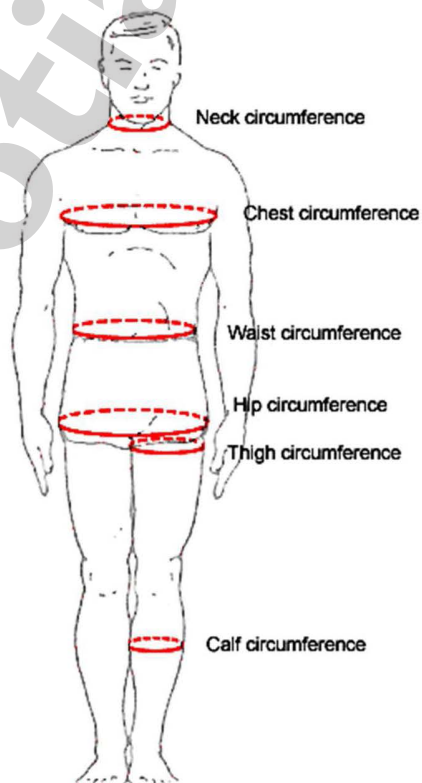
- Measured from xiphisternum or umbilicus to medial malleolus

- **TRUE LENGTH**

- Measured from ASIS TO medial malleolus



BODY CIRCUMFERENCE-



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