ACTIVE AND PASSIVE MOVEMENT

DEFINITION

- Movement is a fundamental characteristic of all animal life and the means by which the organism adapts itself to demands made upon it by the environment in which it lives.

ACTIVE MOVEMENT

- Movement performed or controlled by active contraction of muscle
- Voluntary
- Involuntary
- Active voluntary movements –
- Free
- Assisted
- Resisted
- Active involuntary movements: -
- Reflex - Associated

PASSIVE MOVEMENT

- Relaxed passive movement
- Forced or manipulative passive movement
- Manipulation

RELAXED PASSIVE MOVEMENT

- A state of relaxation is presupposed, and the joint is movement through the existing free range and within the limits of pain.
- PRINCIPLES:
- Relaxation
- Fixation
- Support
- Traction
- Range
- Speed and duration

EFFECTS AND USES:

- Prevent adhesion formation
- Maintain free range of movement
- When active movement not possible
- Extensibility of muscle maintained
- Assist circulation and vascular dynamics
- Induce relaxation

FORCED OR MANIPULATIVE PASSIVE MOVEMENT

- Movement in a joint is limited; these movements are carried beyond the existing free range, in an attempt to restore the normal range
- By sudden but controlled application of force at the limit
- A steady sustained passive stretch
- Aims at increasing the existing ROM in a stiff joint by tearing or stretching the limiting structure

TECHNIQUE

- Differs in speed and range
- Fixation
- Accuracy of movement to be maintained
- Sudden forceful over pressure at the limit of movement
- Steady and sustained traction

EFFECTS AND USES:

- Breakdown of recently formed adhesion
- Accessory movements which cannot be localized actively
- Sudden forceful movement may relace or alter position of interarticular structure
- Stretch can overcome resistance of shortened structures

MANIPULATION

- Performed by surgeons under general anaesthesia
- Eliminates pain or spasm
- Use of greater force
- Maximum effort after manipulation to maintain the ROM gained

ACTIVE MOVEMENT

- Active voluntary movements –
- Free exercise :
- subject only to the forces of gravity
- Assisted exercise :
- inadequate co-ordination or strength of muscle performed by an external force
- Resisted exercise :
- forces of resistance offered

FREE EXERCISE

- Performed by patients own muscular efforts without the assistance or resistance of any external force
- Uses only gravity
- TYPES:
- LOCALIZED: Specific joint or muscle.
- GENERALIZED: many joints and muscles all over body - example: running, walking

FREE EXERCISE

TYPES:

- Subjective
- Objective.
- TECHNIQUES:
- Starting position
- Instruction
- Speed of movement
- Duration

EFFECTS AND USES

- Relaxation by pendular and rhythmical swinging
- Joint mobility
- Muscle power and tone
- Neuromuscular co-ordination
- Confidence
- Increase Circulatory and respiratory function

ASSISTED EXERCISE

- If the strength or the coordination of the muscle is insufficient to perform an activity, the external force is utilized to compensate the lack.
- The muscle has the strength or endurance but is not sufficient to perform an activity or control an action.

TECHNIQUES

- Starting position
- Pattern of movement
- Fixation
- Support
- Traction
- Assisting force
- Repetition
- Co-operation of patient
- Character of movement: smooth and uniform speed

EFFECTS AND USES

- Muscle power can only be maintained or increased by contraction
- Their power and endurance is increased.
- Resisted exercises are used to build up weak muscles
- Restore the balance of muscle power which is essential for stability and co-ordinated movement

EFFECTS AND USES

- Co-operation of working muscle in which they are capable
- Strength and hypertrophy
- Neuromuscular re-education
- Co-ordination training
- Confidence and encouragement for patient to make maximum effort
- Increasing range of motion

RESISTED EXERCISE

- An external force is applied to the body levers to oppose the force of muscular contraction.
- Tension increased by opposing force to increase power
- Factors that contribute the development of muscular efficiency –
- Power: progressive resistance-low rep.
- Endurance : low resistance-high rep.
- Volume - Speed - Co-ordination

TECHNIQUES

- Starting position
- Pattern of movement
- Stabilization
- Traction
- Resisting force
- Repetition
- Co-operation of patient

TYPES

- Manual
- The physiotherapist
- The patient
- Mechanical
- Weight
- Pully circuits
- Springs
- Water