Exercise Therapy

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Parallel bar

Parallel Bars: Definition, Types, Indications, Contraindications, Uses and Training

Definition: Parallel bars are assistive rehabilitation devices consisting of two parallel handrails supported by vertical posts. They are used in physiotherapy to provide support, stability, and safety during standing balance training, gait training, transfer training, and lower-limb rehabilitation exercises.

Types of Parallel Bars

A. Based on Adjustability

1) Fixed Parallel Bars: Height and width cannot be adjusted.
2) Adjustable Parallel Bars: Height and/or width can be modified according to patient needs, Suitable for patients of different ages and body sizes.

B. Based on Mobility

1) Stationary Parallel Bars: Permanently fixed to the floor.
2) Portable Parallel Bars: Movable units with a stable base, Used in temporary treatment settings.

C. Based on Design

1) Standard Parallel Bars
2) Pediatric Parallel Bars
3) Foldable Parallel Bars
4) Body-Weight Supported Parallel Bars

Parts of a Standard Parallel Bar

1. Handrails (Bars): Two parallel rails grasped by the patient.
2. Vertical Supports (Uprights): Support the handrails.
3. Height Adjustment Mechanism: Allows alteration of bar height.
4. Width Adjustment Mechanism: Allows modification of distance between bars.
5. Base Frame: Provides stability.
6. Floor Platform/Walking Surface: Area where the patient walks.
7. Rubber Feet/Anchors: Prevent slipping.

Uses of Parallel Bars

1. Gait training.
2. Balance and coordination training.
3. Standing tolerance exercises.
4. Weight-shifting activities.
5. Transfer training.
6. Post-operative rehabilitation.
7. Strengthening exercises for lower limbs.

8. Neurological rehabilitation.
9. Prosthetic and orthotic training.
10. Early ambulation after injury or surgery.

Indications:

1. Orthopedic Conditions
2. Fractures
3. Joint replacement surgery
4. Ligament injuries
5. Lower limb weakness
6. Neurological Conditions
7. Stroke
8. Spinal cord injury
9. Cerebral palsy
10. Parkinson's disease
11. Multiple sclerosis
12. Geriatric Rehabilitation
13. Balance deficits
14. Fall prevention training
15. Amputee Rehabilitation
16. Prosthetic gait training
17. General Deconditioning
18. Muscle weakness
19. Prolonged bed rest

Contraindications

Absolute Contraindications

1. Unstable fractures without medical clearance.
2. Severe cardiovascular instability.
3. Acute deep vein thrombosis (DVT).
4. Uncontrolled hypertension.
5. Conditions where weight-bearing is prohibited.

Relative Contraindications

1. Severe pain during standing.
2. Marked dizziness or vertigo.
3. Severe osteoporosis.
4. Cognitive impairment affecting safety.
5. Extreme fatigue.

Precautions

1. Ensure bars are properly adjusted to patient height.
2. Check stability before use.
3. Use gait belt whenever necessary.
4. Supervise high-risk patients.
5. Monitor vital signs in medically compromised patients.

6. Follow prescribed weight-bearing status.
7. Remove obstacles from walking area.
8. Ensure patient wears appropriate footwear.
9. Stop training if pain, dizziness, or shortness of breath occurs.

Techniques of Training in Parallel Bars

A. Standing Training

Supported standing.

Static standing balance.

B. Weight-Shifting Exercises

Side-to-side shifting.

Forward-backward shifting.

C. Gait Training

Step-to gait.

Step-through gait.

Reciprocal gait.

Heel-toe walking.

D. Balance Training

Single-leg standing.

Tandem standing.

Dynamic balance activities.

E. Transfer Training

Sit-to-stand.

Stand-to-sit.

F. Prosthetic Training

Weight acceptance.

Equal weight distribution.

Prosthetic gait practice.

G. Functional Activities

Turning.

Reaching activities.

Obstacle negotiation (advanced stage).

Standard Parallel Bar – Line Figure

Typical Dimensions:

Length : 3–5 m (10–16 ft)

Width : 45–70 cm

Height : 75–100 cm (adjustable)

Standard Positioning

Height of bars: approximately at the level of the patient's greater trochanter or wrist crease when standing upright with elbows flexed about 20–30°.

Width: allows comfortable standing and walking without excessive shoulder abduction.

References:

Kisner & Colby: Therapeutic Exercise: Foundations and Techniques.

O'Sullivan & Schmitz: Physical Rehabilitation.

Dena Gardiner: The Principles of Exercise Therapy.

Braddom: Physical Medicine and Rehabilitation.