

Exercise Therapy

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Define coordination. Write in detail about coordination test and exercises for upper extremity

Definition: Coordinated movement, which is smooth, accurate and purposeful, is brought about by the integrated action of many muscles, superimposed upon a basis of efficient postural activity.

Coordination Test for Upper Limb:

Sr. No.	Coordination Test	Purpose	Procedure	Scoring / Interpretation
1	Finger-to-Nose Test	Assess cerebellar coordination, accuracy, and tremor of the upper limb.	Patient alternately touches the tip of their nose and the examiner's finger repeatedly.	Normal: Smooth, accurate movement. Abnormal: Dysmetria (overshooting/undershooting), intention tremor, decomposition of movement.
2	Finger-to-Finger Test	Assess upper-limb coordination and proprioception.	Patient brings the index fingers of both hands together repeatedly with eyes open and then closed.	Normal: Accurate finger contact. Abnormal: Missing the target or unsteady movements.
3	Alternate Nose-to-Finger Test	Evaluate coordination and movement accuracy.	Patient alternately touches their nose and the examiner's moving finger.	Normal: Smooth and accurate movement. Abnormal: Dysmetria or intention tremor.
4	Rapid Alternating Movements (RAM) Test	Assess ability to perform rapid alternating movements (diadochokinesia).	Patient rapidly pronates and supinates hands on thighs or taps hand alternately.	Normal: Fast, rhythmic movement. Abnormal: Dysdiadochokinesia (slow, irregular, clumsy movements).

5	Past Pointing Test	Assess cerebellar control of movement.	Patient closes eyes, raises arm, and attempts to touch examiner's finger.	Normal: Accurate pointing. Abnormal: Overshooting or deviation from target.
6	Rebound Phenomenon (Holmes Test)	Assess ability to stop movement and eccentric muscle control.	Patient flexes elbow against resistance; examiner suddenly releases resistance.	Normal: Limb movement is quickly controlled. Abnormal: Limb rebounds excessively and may strike the body.
7	Point-to-Point Test	Assess voluntary movement accuracy.	Patient touches two designated targets repeatedly and rapidly.	Normal: Smooth and accurate movement. Abnormal: Inaccuracy, tremor, or delayed movement.
8	Finger Opposition Test	Assess fine motor coordination and dexterity.	Patient rapidly touches the thumb to each fingertip sequentially.	Normal: Smooth, quick sequence. Abnormal: Slow, irregular, or inaccurate movement.
9	Nine-Hole Peg Test	Measure fine motor coordination and hand dexterity.	Patient places and removes 9 pegs from holes as quickly as possible.	Score: Time (seconds) required to complete the task. Lower time = better performance.
10	Purdue Pegboard Test	Assess fine motor coordination and bilateral hand function.	Patient places pins into holes within a specified time.	Score: Number of pins correctly placed in allotted time.
11	Box and Block Test	Assess gross manual dexterity and coordination.	Patient moves blocks one at a time from one compartment to another for 60 seconds.	Score: Number of blocks transferred in 60 seconds.
12	Hand Tapping Test	Assess speed and coordination of	Patient taps a surface as rapidly as	Score: Number of taps completed within the specified time.

		upper-limb movement.	possible for a fixed duration.	
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Coordination Exercise for Upper Limb:

Sr. No.	Exercise	Procedure
1	Finger-to-Nose Exercise	Sit comfortably. Extend the arm and alternately touch the tip of the nose and a target placed in front. Repeat slowly, then increase speed while maintaining accuracy.
2	Finger-to-Finger Exercise	Extend both arms and repeatedly bring the tips of the index fingers together accurately. Perform with eyes open and progress to eyes closed if appropriate.
3	Target Touching (Point-to-Point Exercise)	Place two targets at different positions. Move the hand from one target to the other repeatedly while maintaining smooth and accurate movement.
4	Rapid Pronation-Supination Exercise	Place the forearm on the thigh or table and rapidly turn the palm up and down while maintaining rhythm and control.
5	Finger Opposition Exercise	Touch the thumb sequentially to the tip of each finger (index to little finger and back) as quickly and accurately as possible.
6	Ball Toss and Catch Exercise	Toss a small ball into the air and catch it with the same hand or alternate hands. Gradually increase speed and difficulty.
7	Pegboard Exercise	Pick up pegs and place them into holes one at a time, focusing on accuracy, speed, and fine motor control.
8	Cup Stacking Exercise	Stack and unstack cups in a specific sequence using one or both hands to improve coordination and dexterity.
9	Tracing or Drawing Exercise	Trace geometric patterns, shapes, or lines on paper while maintaining smooth, controlled movement.
10	Reach-and-Grasp Exercise	Reach toward objects placed at different heights and distances, grasp them, and place them at a designated location with controlled movement.

Ref:

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2. O'Sullivan SB, Schmitz TJ. Physical Rehabilitation. 7th ed.
3. Umphred DA. Neurological Rehabilitation.
4. Shumway-Cook A, Woollacott MH. Motor Control: Translating Research into Clinical Practice.

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