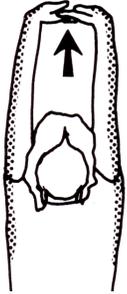


Advanced Orthodynamics Inc.

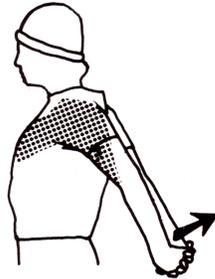
235 Locke St. South, Suite 1, Hamilton, ON L8P 4B8
(905) 527-1225 1-800-400-9203 Fax (905) 527-1745 www.advancedortho.ca

Exercises for treatment of PE and PC

Shoulder/Pectoral Stretches



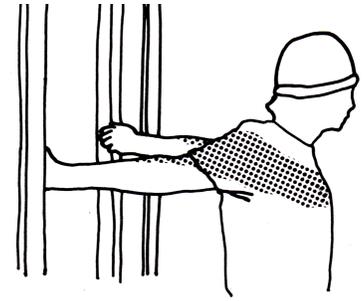
1. Interlace fingers above head, palms upwards; push arms upwards; push arms slightly back and up. Breathe normally. Hold 20 sec.



2. Interlace fingers behind back, lift arms up behind you. Breathe normally. Hold 10 sec.



3. Arms over head, slowly and gently pull elbow behind head with opposite hand. Hold 10 sec., repeat for other side.



4. Hold door frame with hands behind at shoulder level, let arms straighten as you lean forward. Keep chest up and chin in. Hold 15 sec.

Neck Stretches



Flexion-extension: Inhale while slowly moving head backwards and exhale while moving head forward. Repeat 6 times.



Rotation: Exhale while turning head slowly to Rt, inhale moving head to face forward, exhale while turning head to Lt, then inhale while returning to face forward. Repeat 6 times.



Lateral tilt: Exhale while slowly tilting head to Rt, inhale moving head upright, exhale while tilting head to Lt, then inhale while returning to upright. Repeat 6 times.

Circular Motion: Inhale while circulating head backwards and exhale while circulating head forwards. Movement should be slow and gentle. Repeat 6 times in each direction.

Increased Intrathorasic Pressure:

Pec Deck: Sit on bench with back and head resting against the bench. Hold arms bent at 90° with palms on padded surface. Inhale and contract stomach muscles while slowly squeezing arms around in an arc until handles touch. Pause then exhale while moving arms back to initial position.



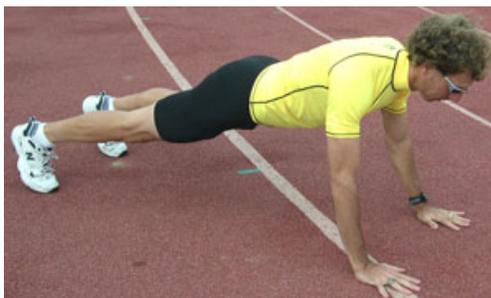
Sit-ups (upper abdominals): Lie with legs bent and feet on the floor, rest your hands at your sides or on the navel, exhale while contracting stomach muscles and raise the chest for 6-12" off the floor; maintain the neck and the chest straight (it helps if you look up to the ceiling); inhale while lowering to the floor. Move slowly and concentrate on the abdominal muscles. Start with 5 and work up to 3 sets of 15. Then increase resistance by moving your hand position to across your chest then up to head (do not interlace fingers behind head or pull on neck).

Knees to Chest: Lie flat keeping your lower back and head in contact with the floor; lift both feet off the floor keeping ankles and knees together and lower back against the floor. Inhale as you smoothly pull your knees towards your chest; exhale while moving back to initial position. Avoid letting the legs come up or go out too far, as this can cause injury to the lower back. Start with 2 sets of 10 reps with rest in between and work up to 3 sets of 20 reps. Squeezing a soft ball between your knees during the movement can make the exercise harder.



Side Curl: Lie on your back with knees bent and legs together; roll to knees one side; touch hands on back of head (don't pull neck). Gently raise shoulders off floor by contracting oblique abdominal muscles. Alternatively lie on your back with knees bent and legs together; roll knees to Rt and extend Rt hand to side and touch Lt hand to head (don't pull neck). Gently curve Lt shoulder and ribcage toward pelvis. Start with 5 curls on each side and work up to 3 sets of 10 reps. Additional resistance can be added by holding a weight in your hand.

Push-ups: Lay on floor with hands under shoulders; raise your body off the ground so that weight is supported by the balls of feet and extended arms. Inhale as you lower your torso toward the ground until your elbows form 90°. Keep your head facing forward. Exhale while you raise yourself until your arms are almost straight. Keep your body straight.



Suggested Exercise Program (____sessions/day)

1. Forward arm stretching

Purpose: Stretch all anterior chest wall muscles especially the pectoralis major and extend the upper back. The patient is positioned in an inclined prone kneeling position with hands stretching forward and supported by wall (2-3 feet above the ground). Slowly lower the upper body and press scapula towards floor. The patient should feel stretching at the front axilla and shoulder. Hold 8 seconds (chest wall stretching may be increased by holding a deep breath). Repeat 20 times/session.



Figure 1. Forward arm stretching in prone kneeling position

2. Upper trunk rotation

Purpose: Rotation gives the greatest range of movement for thoracic vertebrae to stretch ligaments, muscles and joints around the chest wall. The patient stands oblique to a wall. The hand nearest the wall is placed on the wall slightly above the shoulder. The patient turns the pelvis away from the wall leaving the hand fixed to the wall. Hold 8 seconds, then release and return to original position. Relax. Turn and do same exercise with other hand. Repeat 20 times each side/session.



Figure 2. Upper trunk rotation in standing position

3. Upper trunk side flexion

Purpose: Similar to previous exercise. In a seated position the patient bends to one side with the opposite hand crossing over the head. The patient should feel a stretching sensation along the side of the trunk. Hold for 8 seconds (chest wall stretching may be increased by holding a deep breath). Then return to the original position. Relax then repeat bending to the other side. Repeat 20 times on each side/session.



Figure 3. Upper trunk side flexion in sitting position

4. Weight lifting in stretched supine lying

Purpose: By this technique the arms are fixed and the anterior chest wall is lifted up mainly by pectoralis major and minor. Maximal force exertion allows recruitment of the surrounding respiratory muscles. The patient is positioned in supine with upper trunk on a 2-3 inch foam roll (if the patient can't tolerate the roll, lie flat). Stretch the arms up over the head and hold a fixed object or weights about 10 inches above the surface (pillows may be used to support weights). Deeply inhale and exert maximal force in lifting the fixed object/weights. Hold for 8 seconds and relax. Repeat 3 lots of 10 times each, rest between lots.



Figure 4. Lifting bar in stretched supine position with foam roll.



Figure 5. Weight lifting in stretched supine position (pillows support weights)

5. Upper trunk extension lying prone

Purpose: Strengthened upper back muscles to balance the improvement to anterior chest wall muscle and prevent the development of thoracic kyphosis and keep correct posture. Lay face down with one or two pillows under the pelvis and lower abdomen (avoid lower anterior chest pressing on pillow) place hands behind head. Feet may be held in place by a fixed object or weight. Deeply inhale and extend the upper trunk with arms arching back. Hold for 8 seconds and relax. Repeat 3 lots of 10 times each, rest between lots.



Figure 6. Upper trunk extension while lying prone

6. Push up

Purpose: General strengthening of the chest wall with possible enhanced bone mineralization and chest wall reshaping.

Lay prone and use hands to push body upwards. Work at an appropriate level of difficulty. 1st level- only upper trunk is lifted; 2nd level- whole body is kept rigid and lifted; 3rd level- push up whole body and clap hands in mid air. Repeat 3 lots of 10 times each, rest between lots.



Figure 7. Push up

7. Arm stretches with resistance

Purpose: To strengthen neck, shoulder, upper back and anterior chest muscles.

In a standing position hold a theraband with one end in each hand. The resistance of the theraband should be such that the patient can do 10 repetitions and no more. With straight elbows stretch the theraband above your head then slowly move hands down so that the band moves down the back to below the buttocks. Rest 3 seconds then slowly move hands up the same track to the starting position. Repeat 3 lots of 10 times each, rest between lots.

* Theraband can be purchased by the foot at most pharmacies.

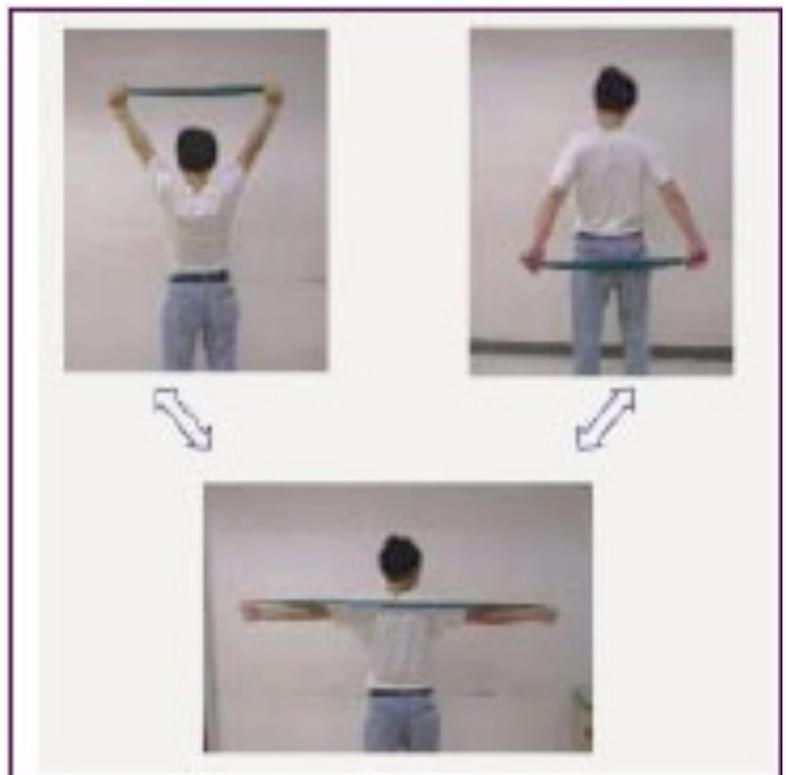


Figure 8. Arm stretches with a theraband