Breathing Technique during Exercise

dr. M.Ikhwan Zein, Sp.KO

The 18th International meeting on respiratory care Indonesia (Respina).
Breathing : Diamond of Life
Benefit of Exercise Based on Evidence

- Lower risk of early death
- Prevent of chronic degenerative disease (Cancer, High BP, Diabetic, breast-colon cancer)
- Improved cardiorespiratory and muscular fitness
- Prevent of fall and improve quality of life (geriatric patient)
- Reduced depression (psychology)
- Better cognitive function
- Supporting management of DM, Osteoporosis, Hypertension, CVD, Asthma, COPD etc
Response of Respiratory system during exercise

Exercise → Increase demand of energy → Increase demand of oxygen

Ventilation
Respiratory responses
Eksternal respiration
Internal respiration
Health – Related Fitness

- Cardio respiratory fitness
- Musculoskeletal fitness
- Body Composition

Aerobic

Strength/Resistance

Flexibility
Component of Exercise Session

- Warm up
- Stretching
- Conditioning
- Cool-down
Breathing in Exercise

• Breathing seems simple (inhale-exhale), but doing it properly during exercise surprisingly complex

• The average person’s lungs move about 0.5 liters of air with each relaxed breath. \( \rightarrow \) can jump to 3 liters during vigorous exercise

• Effective breathing is as important as the exercise itself.

• Proper oxygen delivery to the body's tissue safeguards the performance and can increase
Aerobic Exercise

• Cardiorespiratory exercise

• Mode of exercise:
  – Walking, running, elliptical
  – Cycling, swimming, aquatic exercise (for patient with knee problem and obesity)

• American College of Sports Medicine (ACSM) Recommendation:
  – Aerobic exercise moderate intensity
  – 3-5 times/week
  – 30 minutes/day Or total 150 minutes per week
Breathing during Aerobic Exercise

• Proper breathing during aerobic exercise i.e. running:
  – Depend on the speed or pace
  – 3 : 2 inhale to exhale ratio (full inhale and full exhale) is effective for improve endurance
  – INHALE on the LEFT, RIGHT, LEFT foot strikes and EXHALE fully on the RIGHT, LEFT foot strikes
  – This pattern is not that hard to turn into a habit → May require you to slow your pace down for a few runs to master the technique
  – Naturally drop to a 2:1 ratio when try to increase speed (pushing it to the finish).
→ No problem, But realize it is difficult to maintain a pace that requires to breathe at a 2:1 ratio.
→ CO2 in the body will increase if the breathing patterns are short and hurried → It will increase the heart rate and lactic acid production, and decrease the endurance in any cardiovascular event (running, swimming, biking, etc.)
Strength Training

• Strength training or Resistance training or weight training
• It is very useful to maintain muscle fitness, especially for strength and muscle growth.
• Strength training method:
  - Calisthenics: own body weight
  - Weight machine: weights
• ACSM recommendation for strength training
  – 2-3 times/week with non consecutive days
  – 10-15 repetition
  – 1-3 set
  – 8-10 training in major muscle group

• Strength training have a potential risk:
  – Musculoskeletal injury → poor technique, overweight
  – Hernia, High BP → poor breathing technique
Prevent injury during Weight Training

• Learn Technique FIRST !!
• Start Low go Slow when choosing weight

Neutral Head Position

Straight Back

Knees behind toes

Hips below parallel

Weight on heels

Good

Bad

Poor Technique
Breathing Technique during Weight Training

• Inhale $\rightarrow$ In easy part, less strenuous phase
• Exhale $\rightarrow$ In hardest part, in exertion phase/maximum contraction phase
• Inhale-exhale ratio 3:2 to 3:3
Take Home Massage

• Breathing technique is very IMPORTANT when we do exercise
• Understand and Practice of Breathing technique is needed to get optimal result of exercise
• Aerobic training : Apply inhale-exhale ratio 3:2 and pace adaptation to improve endurance
• Strength training :
  – Learn movement technique for target muscle
  – Start low go Slow in choosing weight
  – Proper breathing technique
Dr. M. Ikhwan Zein, Sp.KO

➢ CEO and Owner of Jogja Sports Clinic (JSC)
➢ Sports Medicine Doctor in ISMC Jakarta
➢ Lecturer in Faculty of Sports Science Universidad Negeri Yogyakarta, Indonesia
➢ Sports Medicine Doctor in JIH Hospital, Yogyakarta
➢ Medical Doctor of Indonesia Football Association (PSSI)
➢ Medical Doctor of Indonesia National Team in SEA GAMES 2015
➢ Medical Doctor of Indonesia National Team in AIMAG 2014