



# ACE Group Fitness Instructor University Curriculum

## Chapter 2: Principles of Pre-class Preparation and Participant Monitoring and Evaluation



# Learning Objectives

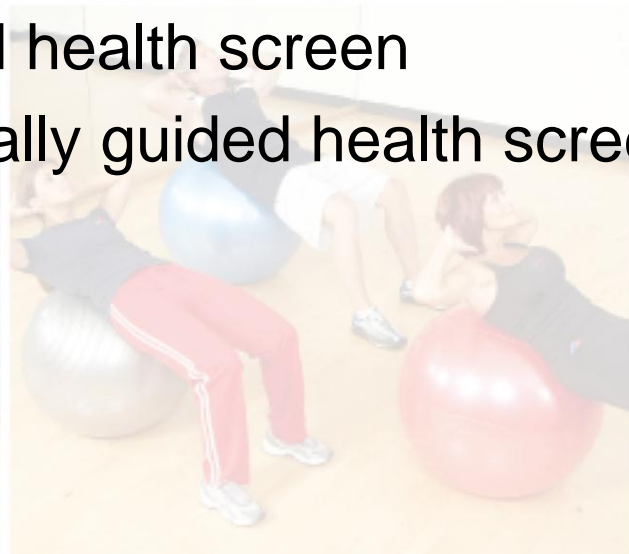
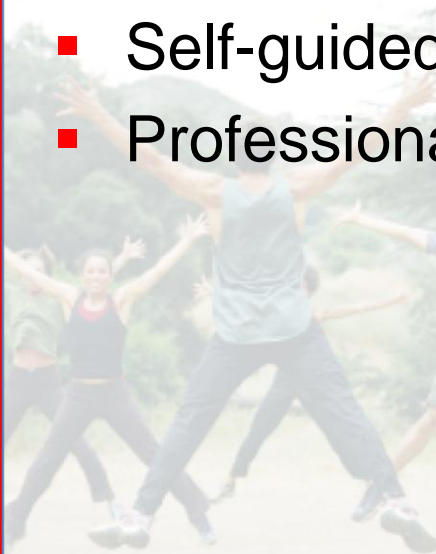
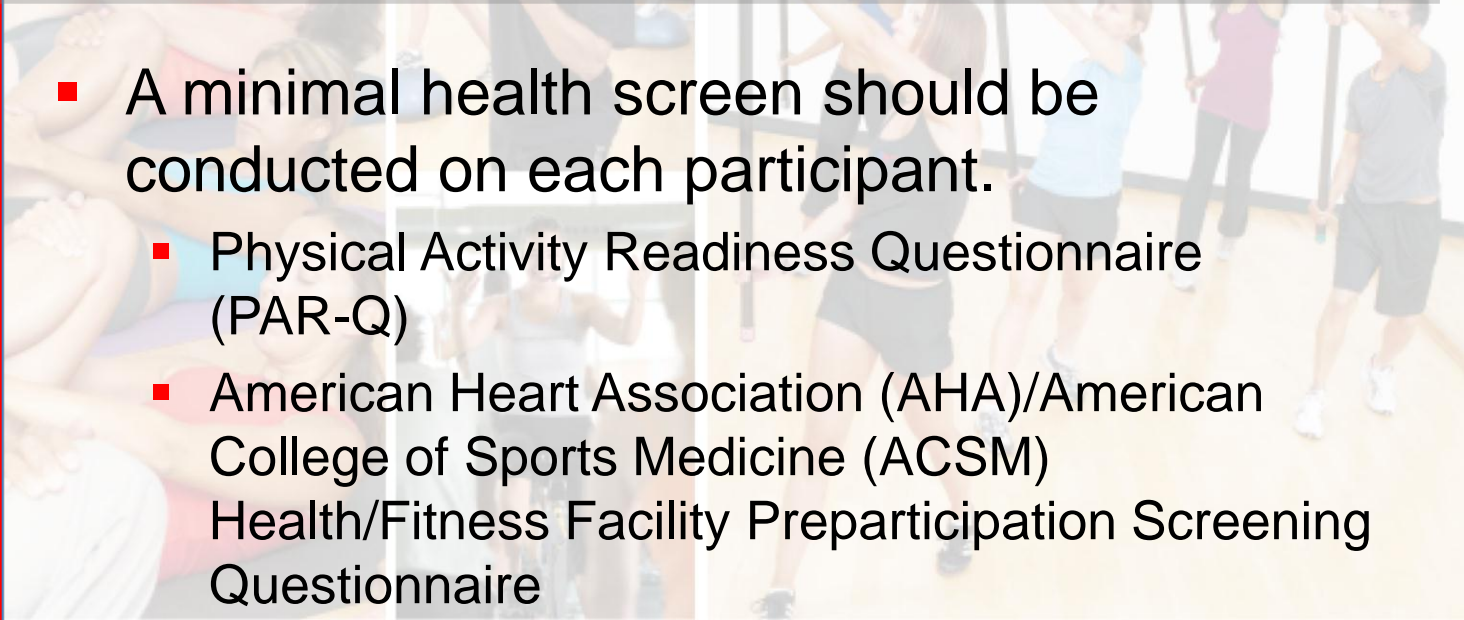
- Upon completion of this chapter, you will be able to:
  - Administer a basic health screen to group fitness participants
  - Perform a cardiovascular disease risk stratification on group fitness participants
  - Determine the need for medical referral of group fitness participants
  - Perform pre-class preparation strategies
  - Orient and acknowledge both new and veteran class participants
  - Use methods of monitoring intensity
  - Recognize warning signs during exertion
  - Assess basic characteristics of posture
  - List physical-fitness assessments related to health

# Introduction

- There are numerous health advantages of being regularly active.
- However, there are some instances when embarking on a new physical-activity program is contraindicated.
- Certain individuals should have a pre-exercise medical examination and exercise stress test.
  - A person with cardiac disease is at an increased risk for suffering from a cardiac event during exercise.

# Health Screening

- A minimal health screen should be conducted on each participant.
  - Physical Activity Readiness Questionnaire (PAR-Q)
  - American Heart Association (AHA)/American College of Sports Medicine (ACSM) Health/Fitness Facility Preparticipation Screening Questionnaire
- Self-guided health screen
- Professionally guided health screen



# PAR-Q

## PAR-Q & YOU

(A Questionnaire for People Aged 15 to 69)

Physical Activity Readiness  
Questionnaire - PAR-Q  
(revised 2002)

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Being more active is very safe for most people. However, some people should check with their doctor before they start becoming much more physically active.

If you are planning to become much more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly: check YES or NO.

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	1. Has your doctor ever said that you have a heart condition <u>and</u> that you should only do physical activity recommended by a doctor?
<input type="checkbox"/>	<input type="checkbox"/>	2. Do you feel pain in your chest when you do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	3. In the past month, have you had chest pain when you were not doing physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	4. Do you lose your balance because of dizziness or do you ever lose consciousness?
<input type="checkbox"/>	<input type="checkbox"/>	5. Do you have a bone or joint problem (for example, back, knee or hip) that could be made worse by a change in your physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
<input type="checkbox"/>	<input type="checkbox"/>	7. Do you know of any other reason why you should not do physical activity?

If  
you  
answered

### YES to one or more questions

Talk with your doctor by phone or in person BEFORE you start becoming much more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.

- You may be able to do any activity you want — as long as you start slowly and build up gradually. Or, you may need to restrict your activities to those which are safe for you. Talk with your doctor about the kinds of activities you wish to participate in and follow his/her advice.
- Find out which community programs are safe and helpful for you.

### NO to all questions

If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can:

- start becoming much more physically active — begin slowly and build up gradually. This is the safest and easiest way to go.
- take part in a fitness appraisal — this is an excellent way to determine your basic fitness so that you can plan the best way for you to live actively. It is also highly recommended that you have your blood pressure evaluated. If your reading is over 144/94, talk with your doctor before you start becoming much more physically active.

### DELAY BECOMING MUCH MORE ACTIVE:

- if you are not feeling well because of a temporary illness such as a cold or a fever — wait until you feel better; or
- if you are or may be pregnant — talk to your doctor before you start becoming more active.

**PLEASE NOTE:** If your health changes so that you then answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.

**Informed Use of the PAR-Q:** The Canadian Society for Exercise Physiology, Health Canada, and their agents assume no liability for persons who undertake physical activity and if in doubt after completing this questionnaire, consult your doctor prior to physical activity.

**No changes permitted. You are encouraged to photocopy the PAR-Q but only if you use the entire form.**

NOTE: If the PAR-Q is being given to a person before he or she participates in a physical activity program or a fitness appraisal, this section may be used for legal or administrative purposes.

"I have read, understood and completed this questionnaire. Any questions I had were answered to my full satisfaction."

NAME \_\_\_\_\_ DATE \_\_\_\_\_  
SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
SIGNATURE OF PARENT \_\_\_\_\_ WITNESS \_\_\_\_\_  
or GUARDIAN (for participants under the age of majority)

**Note: This physical activity clearance is valid for a maximum of 12 months from the date it is completed and becomes invalid if your condition changes so that you would answer YES to any of the seven questions.**



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# Disease Risk Stratification

- Cardiovascular disease (CVD) risk-factor thresholds can be used to determine risk.
- Risk stratifications
  - Low
  - Moderate
  - High
- Risk stratification determines the:
  - Need for medical referral or supervision
  - Recommended intensity of exercise

# CVD Disease Risk Factor Thresholds

Atherosclerotic Cardiovascular Disease Risk Factor Thresholds for Use With ACSM Risk Stratification		
Positive Risk Factors	Defining Criteria	Points
Age	Men ≥45 years Women ≥55 years	+1
Family history	Myocardial infarction, coronary revascularization, or sudden death before 55 years of age in father or other first-degree male relative, or before 65 years of age in mother or other first-degree female relative	+1
Cigarette smoking	Current cigarette smoker or those who quit within the previous six months, or exposure to environmental tobacco smoke (i.e., secondhand smoke)	+1
Sedentary lifestyle	Not participating in at least 30 minutes of moderate-intensity physical activity (40–60% $\dot{V}O_2R$ ) on at least three days/week for at least three months	+1
Obesity*	Body mass index ≥30 kg/m <sup>2</sup> or waist girth >102 cm (40 inches) for men and >88 cm (35 inches) for women	+1
Hypertension	Systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg, confirmed by measurements on at least two separate occasions or currently on antihypertensive medications	+1
Dyslipidemia	Low-density lipoprotein (LDL) cholesterol ≥130 mg/dL (3.37 mmol/L) or high-density lipoprotein (HDL) cholesterol <40 mg/dL (1.04 mmol/L) or currently on lipid-lowering medication; If total serum cholesterol is all that is available, use serum cholesterol >200 mg/dL (5.18 mmol/L)	+1
Prediabetes	Fasting plasma glucose ≥100 mg/dL (5.50 mmol/L), but <126 mg/dL (6.93 mmol/L) or impaired glucose tolerance (IGT) where a two-hour oral glucose tolerance test (OGTT) value is ≥140 mg/dL (7.70 mmol/L), but <200 mg/dL (11.00 mmol/L), confirmed by measurements on at least two separate occasions	+1
Negative Risk Factor	Defining Criteria	Points
High serum HDL cholesterol	≥60 mg/dL (1.55 mmol/L)	-1
<b>Total Score:</b>		

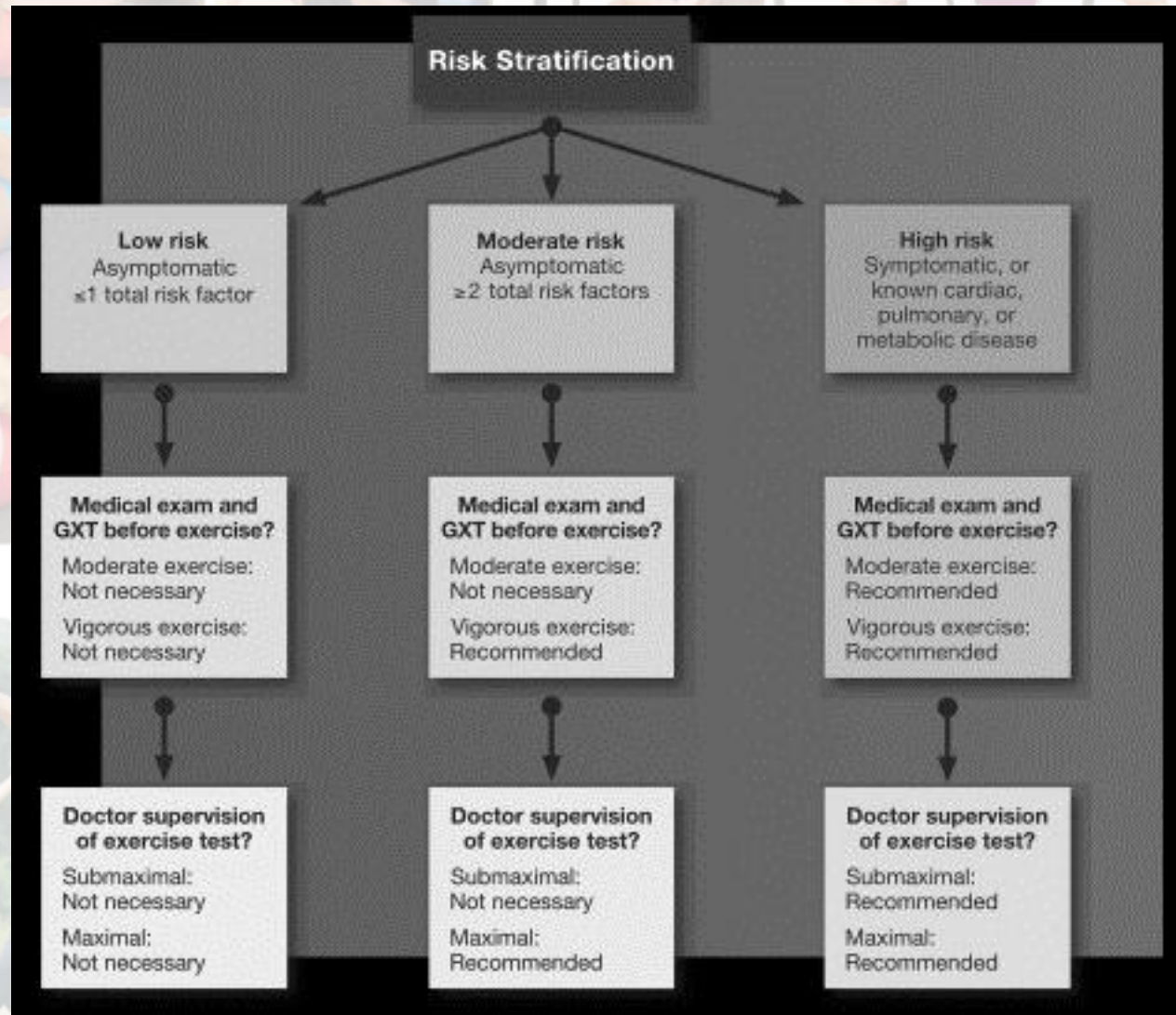
\*Professional opinions vary regarding the most appropriate markers and thresholds for obesity; therefore, allied health professionals should use clinical judgment when evaluating this risk factor.

Note:  $\dot{V}O_2R = \dot{V}O_2\text{reserve}$

Note: It is common to sum risk factors in making clinical judgments. If HDL is high, subtract one risk factor from the sum of positive risk factors, because high HDL decreases cardiovascular disease risk.

American College of Sports Medicine (2010). *ACSM's Guidelines for Exercise Testing and Prescription* (8th ed.). Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.

# ACSM Exercise Testing/Supervision Recommendations





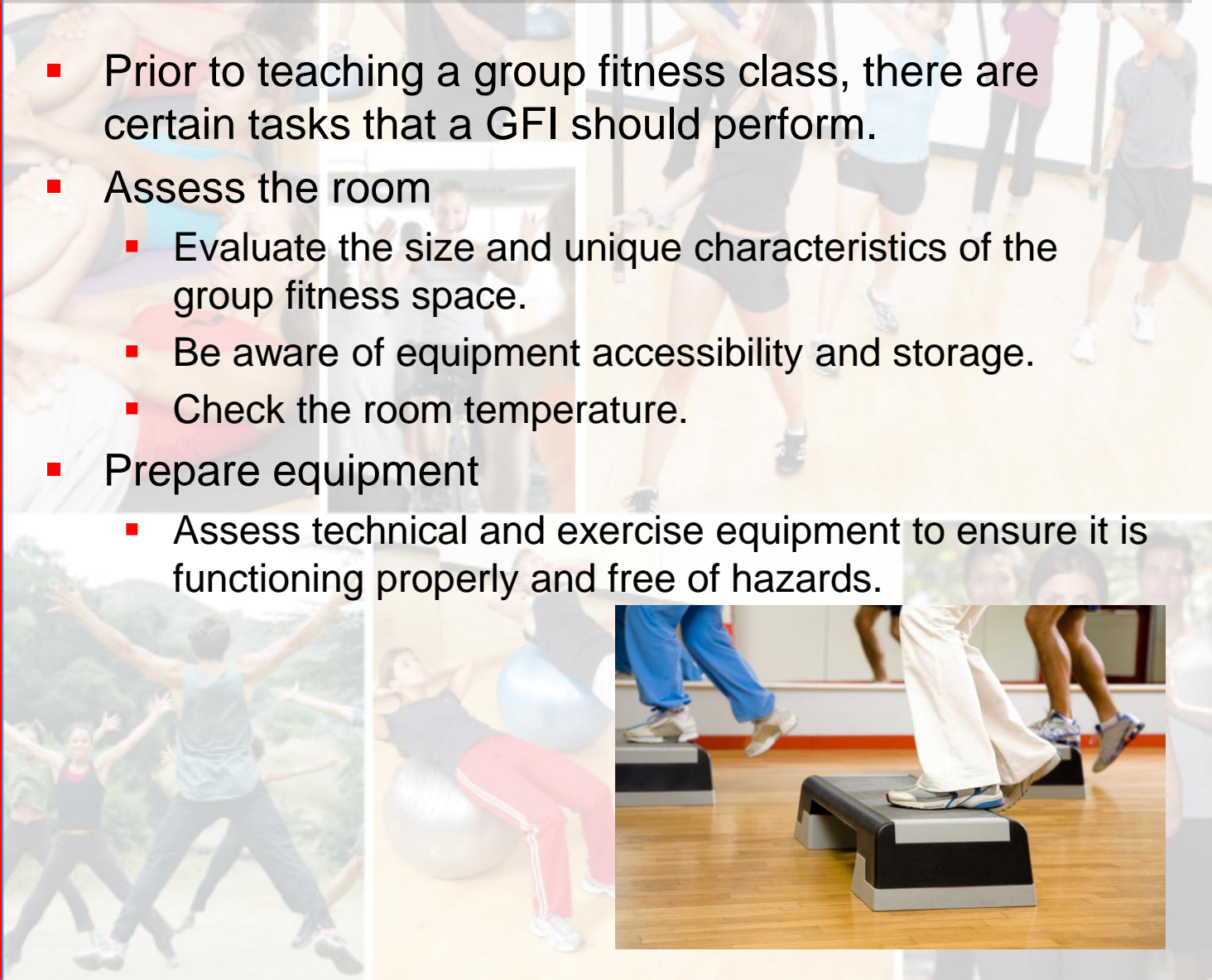
# Medical Referral

- Individuals categorized as “high risk” for CVD must be referred to their physicians for evaluation.
- Medical release form
- Physician-approved physical-activity limitations or guidelines



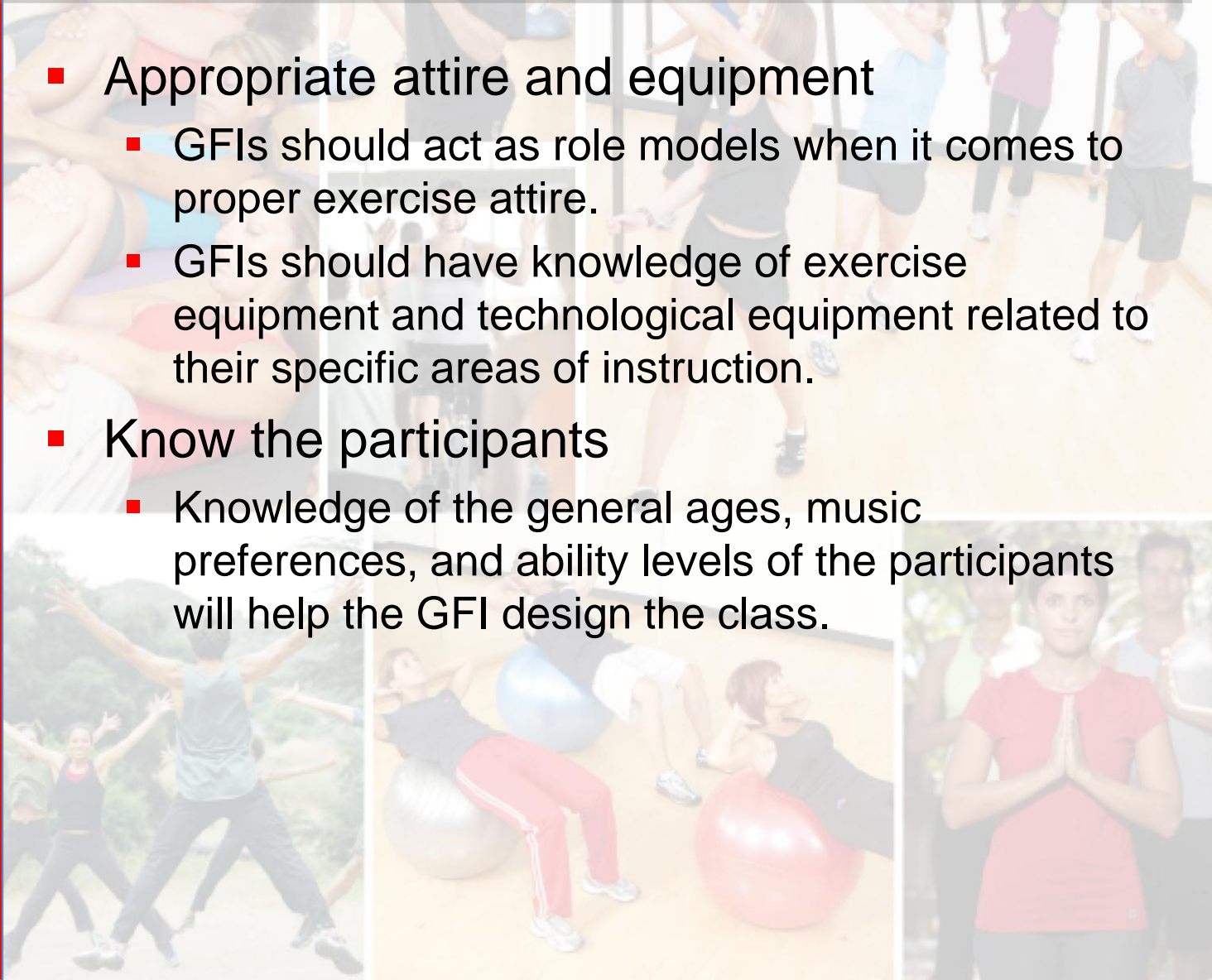
# Pre-class Preparation

- Prior to teaching a group fitness class, there are certain tasks that a GFI should perform.
- Assess the room
  - Evaluate the size and unique characteristics of the group fitness space.
  - Be aware of equipment accessibility and storage.
  - Check the room temperature.
- Prepare equipment
  - Assess technical and exercise equipment to ensure it is functioning properly and free of hazards.



# Pre-class Preparation (cont.)

- Appropriate attire and equipment
  - GFIs should act as role models when it comes to proper exercise attire.
  - GFIs should have knowledge of exercise equipment and technological equipment related to their specific areas of instruction.
- Know the participants
  - Knowledge of the general ages, music preferences, and ability levels of the participants will help the GFI design the class.



# Orienting and Acknowledging Class Participants

- Building rapport requires that participants feel welcome.
  - Introduction and opening statement
- Rapport is the feeling of mutual trust and respect between people.
  - Acknowledging class participants builds rapport.



# Methods of Monitoring Intensity

- Recommended sites for taking heart rate (HR):
  - Carotid pulse
  - Radial pulse
  - Temporal pulse
- Electronic HR monitors
- Target heart rate
  - Tanaka, Monahan, and Seals:  $208 - (0.7 \times \text{Age})$
  - Gellish et al.:  $206.9 - (0.67 \times \text{Age})$
  - Estimating maximum heart rate (MHR):  $220 - \text{Age}$
  - Karvonen:  $[\text{MHR} - \text{resting heart rate (RHR)}] \times \% \text{ heart-rate reserve (HRR)} + \text{RHR}$



Carotid heart rate monitoring



Radial heart rate monitoring



Temporal heart rate monitoring

# Methods of Monitoring Intensity (cont.)

- Talk test
  - Takes into account the ability to breathe and talk during exercise
- Ratings of perceived exertion (RPE)
  - Takes into account the exerciser's subjective perception of effort
  - Borg 6–20 scale
  - 0–10 category ratio scale
- First ventilatory threshold
  - Takes into account the exponential increase in ventilation during exercise
- Dyspnea scale
  - Takes into account the appropriateness of breathing performance during exercise

# Methods of Monitoring Intensity (cont.)

- A GFI's responsibility of monitoring intensity during class
  - GFIs must be able to teach appropriate intensity-monitoring methods to their participants.
- A participant's responsibility of monitoring intensity during class
  - Ultimately, the responsibility for exercising within an appropriate range of intensity rests with the participant.
- Incorporating intensity-monitoring checks
  - Perform intensity-monitoring checks several times throughout the duration of the workout.

# Warning Signs During Exertion

- Certain warning signs necessitate the lowering of intensity.
  - Breakdown in proper exercise form
  - Labored breathing
  - Excessive sweating
  - Dizziness
- More severe signs necessitate the cessation of exercise and perhaps the activation of EMS.
  - Chest pain or discomfort
  - Heart palpitations
  - Tachycardia
  - Intermittent claudication
  - Severe musculoskeletal pain



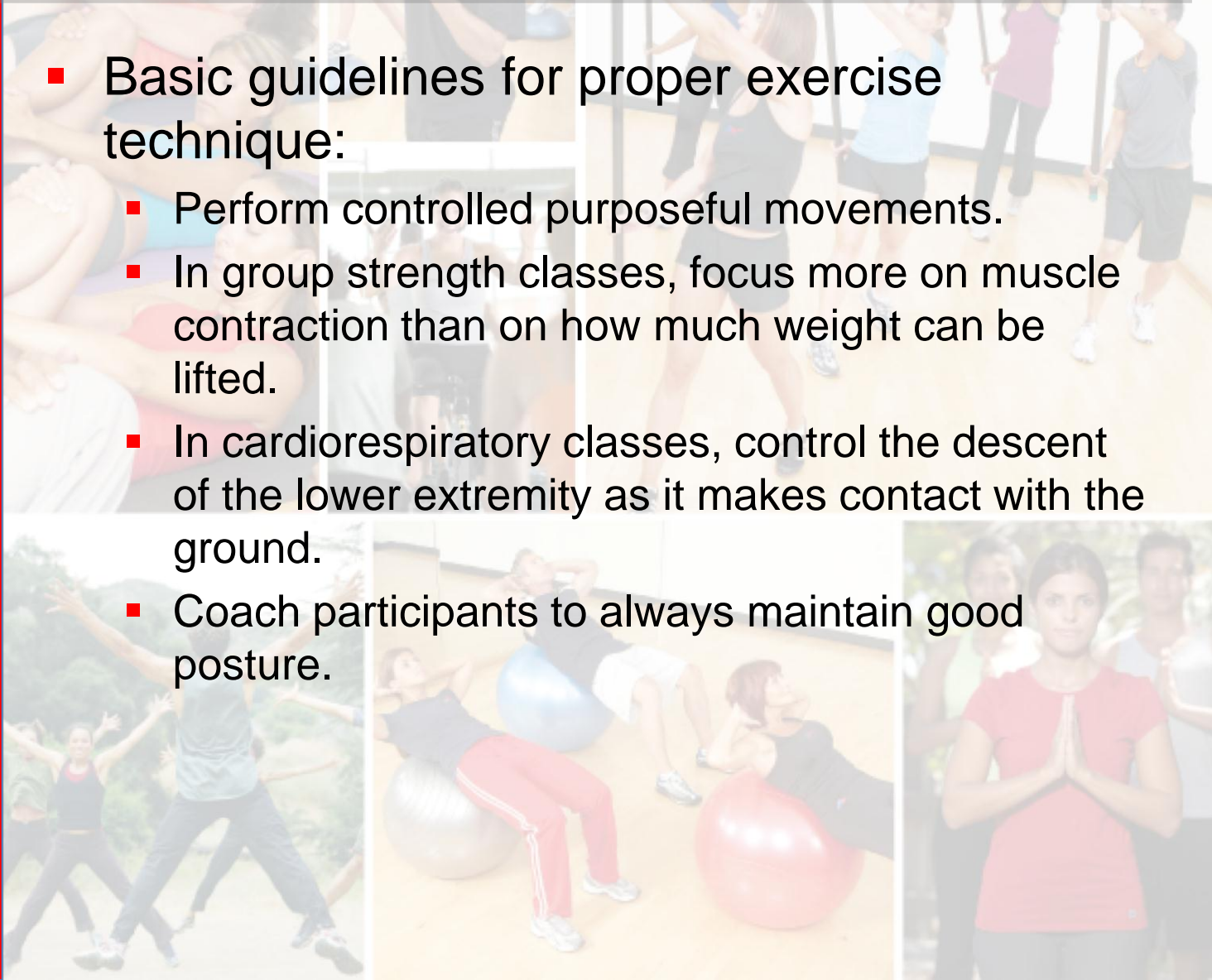
# Assessing Posture and Movement

- All movement is based on posture.
- Posture can be observed from three views:
  - Lateral
  - Anterior
  - Posterior
- Exercise form and technique are affected by postural alignment.
  - Thus, good posture is always an exercise technique priority.



# Assessing Form/Technique

- Basic guidelines for proper exercise technique:
  - Perform controlled purposeful movements.
  - In group strength classes, focus more on muscle contraction than on how much weight can be lifted.
  - In cardiorespiratory classes, control the descent of the lower extremity as it makes contact with the ground.
  - Coach participants to always maintain good posture.



# Exercise Tolerance/Fatigue

- Participants must be carefully observed for signs of exercise intolerance and fatigue.
  - These warning signs were mentioned earlier in this chapter.
  - The most obvious sign of exercise fatigue is improper exercise technique.
- A participant's inability to perform a movement with good technique is an indication to stop performing the exercise.



# Physical-fitness Assessments

- Conducting physical-fitness assessments is not a common practice in the group fitness setting.
  - However, as short-term group exercise programming becomes more popular there may be more opportunities to assess fitness.
- Reasons to perform fitness tests:
  - Helps to develop motivation in new exercise participants
  - Fitness tests act as feedback.
  - Fitness tests act as points of reference for program design.
  - Providing fitness assessments sets a GFI apart from other GFIs who do not provide the service.

# Health-related Components of Fitness

- Body composition
  - Hydrostatic weighing
  - Bioelectrical impedance
  - Anthropometry
- Cardiorespiratory endurance
  - Submaximal tests
- Muscular strength and endurance
  - Push-up test
  - Half sit-up test
- Neuromuscular efficiency
  - Static balance
  - Movement screens
- Flexibility
  - Sit-and-reach test
  - Shoulder-flexibility test



# Summary

- This chapter covered:
  - The basics of administering a health screen to group fitness participants
  - Performing a cardiovascular disease risk stratification on group fitness participants
  - Determining the need for a medical referral for group fitness participants
  - Pre-class preparation strategies
  - Orienting and acknowledging both new and veteran class participants
  - Using methods of monitoring intensity
  - Recognizing warning signs during exertion
  - Assessing the basic characteristics of posture
  - Physical-fitness assessments