Aerobics: Knowledge and Practice

Brought to you by the Wellness Center and Vanderbilt Recreation Group Fitness Program
Overview

The goal of this self-study course is to provide aspiring aerobics instructors with the knowledge necessary to lead successful fitness classes. Upon completion of this course you will have a basic understanding of the human body and the essential components of an organized, safe, and enjoyable class.

Note: This class does not take the place of a national certification, which is required by most facilities before you begin teaching, including Vanderbilt Student Recreation Center. However, this course is a great opportunity to begin preparing for a national certification as well as the requisite Aerobics Instructor audition. Additionally, this course does not guarantee employment at the Vanderbilt Student Recreation Center as an Aerobics Instructor.

Fitness is a fun and exciting industry, and being a fitness professional is one of the best jobs to have!
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Muscle Conditioning

Muscle conditioning is the improvement of strength and endurance in the major muscles of the body. It is important to have an understanding of the muscular foundations of the body in order to provide the safest, most effective workout for your class.

**Terms**

- **Muscular Strength**: The maximum force a muscle can exert against a resistance in a single effort.
  
  Ex. Few repetitions, high resistance

- **Muscular Endurance**: The number of times a muscle can exert force against a given submaximal resistance.
  
  Ex. Higher repetitions, lower resistance

- **Muscle**: A special bundle of fibrous tissues that contract, pulling bony attachments, to create movement.

- **Agonist**: The muscle that is primarily responsible for the movement (prime mover).

- **Antagonist**: The muscle that produces the opposite joint action to that of the agonist.

- **Joint**: The location where two bones meet.

- **Stabilizer**: For a desired movement to occur in joints, other joints must not move. Muscles that perform this joint stabilizing function are stabilizers.

- **Tendon**: Connects muscle to bone. Example: Achilles

- **Ligament**: Connects bone to bone. Example: ACL

**Types of Muscular Contractions**

- **Isometric**: Contraction where there is little no change in the angle of the involved joint(s); the muscle contracts but does not shorten
  
  Ex) Rest elbow on a table and squeeze bicep muscle

- **Isotonic**: Contraction where a constant or variable load is moved through a range of motion of the involved joint(s). There are two types: concentric and eccentric.

- **Concentric**: Muscular contraction with shortening
  
  Ex) Bicep curl up
- Eccentric: muscular contraction with lengthening
  Ex) Bicep curl down
- Isokinetic: the muscle contracts and shortens at a constant rate of speed. This type usually requires special, expensive training equipment that increases the load as it senses that the muscle contraction is speeding up.

**Strength Training Guidelines**

- Range of Motion (ROM): an activity aimed at improving movement of a specific joint. There are three types: Passive, Active, and Active Assists
  Ex) Full Arm Circle
- Speed: Slow & Controlled
- Breathing: Exhale during exertion
  Ex) Bicep curl: contract = exhale, relax= inhale
- Balance: Equal amounts of sets/repetitions with opposing muscle groups
  Ex) If you perform bicep curls, balance with tricep dips
- Rest between sets: vary exercises intermittently between major muscle groups

**Training Principles**

- Overload Principle: When the muscle works against workloads that are above those normally encountered, muscular strength and endurance will increase.
  Ex) Using weights during a standard squat set
- Progressive Resistance Principle: resistance against which a muscle works should be increased periodically to achieve the desired results.
- Principle of Specificity: weight training programs should simulate as closely as possible the movement patterns involved in the use of the particular muscles being worked.
  Ex) conditioning quadriceps using an aerobic step mimics daily walking or stair climbing.

**Strength Training Postural Cues**

- Knees slightly bent: locked knees equal more stress on the joint and decrease blood flow
- Abs in: pull bellybutton toward the spine and slightly bear down
- Neutral head and back, straight spine: a straight line from back of neck to tailbone
- Shoulders down: rotate shoulders once forward and once backward as this will force the body to relax.
Cardio Training

Class Intensity and Heart Rate

- Resting heart rate: the heart rate upon waking up
- Maximum heart rate: the fastest the heart can pump. This rate cannot be changed or trained and decreases with age.
- Target heart rate: heart rate intense enough to produce and improve cardiovascular functioning.
- Recovery heart rate - rate of the heart as it returns to a normal or resting rate after exercise.

**CALCULATING TARGET HEART RATE**

In order to get aerobic benefits at a SAFE and CONSISTENT pace, you should exercise at 50-85% of your maximum heart rate.

Maximum Heart Rate: \(220 - \text{Age} = \text{__________} \)

\(220 - \text{Age} \times .50 = \text{_______(a)________} \)

\(220 - \text{Age} \times .85 = \text{_______(b)_______} \)

Target Heart Rate: range between (a) and (b)
**Measuring Heart Rate**

- Use index and middle finger to locate pulse
- Begin count at zero, take for six seconds, add a “0” to the number = pulse
- Compare this number to your target heart rate

**Measuring Exertion**

Perceived Exertion: A method where participants self-evaluate the intensity of their workout.

Borg’s Scale of Perceived Exertion 0-10 scale

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</tr>
<tr>
<td>10</td>
<td>Very, very strong</td>
</tr>
</tbody>
</table>

Talk Test: During the workout, participants should be able to carry on a conversation. If they cannot talk, decrease intensity. If they can sing, increase intensity.
**Stretching**

One of the main goals of stretching is to increase flexibility. Flexibility refers to the total range of motion of a joint or group of joints. Flexibility differs from person to person and from joint to joint. However, flexibility is beneficial and necessary for all age groups.

**Benefits**

1. Increase in range of motion.
2. Reduction in the incidence and severity of injury.
3. Improvements in posture and muscle symmetry.
4. Prevention and alleviation of muscle soreness.
5. Promotion of mental relaxation.

**Types**

1. Passive: usually performed with an outside force such as a towel or partner
2. Active: muscle or joint being stretched is actively moved through the ROM
3. Static: muscle group is gradually stretched to the point of limitation and then held in position for 15-30 seconds
4. Ballistic: rapid movements requiring jerking and bouncing (not safe)
5. PNF (proprioceptive neuromuscular facilitation): involves stretching a muscle for a short period, contracting, stretching again, contracting, and then one last relax stretch.

**Guidelines**

- Warm up before stretching to increase body temperature and range of motion
- Hold stretches statically between 15 and 30 seconds
- Stretch to limited movement not to the point of pain
- Keep breathing slow and rhythmic while holding stretches
- Support forward flexion stretches by putting hands on thighs to support upper body
- Transitions between stretches are smooth
**Stretching Postural Cues**

- Feet shoulder width apart
- Knees soft
- Pelvis neutral and Abs in
- Shoulders relaxed and back
- Head is in neutral extension of the spine

**Formatting an Aerobics Class**

**Basic Breakdown**

- Warm Up: 8-12 minutes
  
The purpose of the warm-up is to prepare the body for more intense movements. Keep it simple and use active stretching.

- Body: 20-60 minutes
  
  Intensity should progress throughout the class, with the highest amounts of work being in the middle so that participants may bring their heart rate down before the cool down portion.

- Cool Down/Stretching: 5-10 minutes
  
  The final portion focuses on bringing down the heart rate and increasing flexibility. Keep it simple and use static stretching.

**Choreography Basics**

  Movements and combinations should progress logically and smoothly

- Provide recovery movements so that less advanced participants have an option to perform is they need a break. These should allow the participant to join back into the flow of the class when they have sufficiently recovered.
  EX) During a Zumba class, show participants an easy Salsa move so that they can easily break and jump back in when ready.

- Break down choreography into small, basic chunks. Demonstrate each chunk and then perform as a whole.

- Consist of a 32 count of music (each movement representing a certain number of beats)
• Have different levels of difficulty. Begin with basic and work up to more difficult and advanced combinations.

• Vary the lead leg of combinations.  
  EX) Shuffle left then right.

• Provide closure: Each combination set is clearly separate from another. The warm-up and cool down mark the start and end of each class.

  **Cueing Basics**

• Movement Cue: a cue that describes “When, Where, How” of the action to be done  
  EX) Let’s go left with that salsa combo is 8,7,6,5…!

• Safety Alignment Cue: a cue that informs about an action, specifically for the purpose of safety and effectiveness  
  EX) Remember to tap each salsa step on the ball of your foot!

• Motivational Cue: a cue designed to increase or decrease the energy, attitude and response of the class  
  EX) Great salsa movement guys, let me see you work those hips!

• Visual Cue: a cue that uses hand motions to aid in directional changes  
  EX) Alright guys, let’s take this front (point to the mirror)...and now to the right (point right).

**Remember:**

• The cue should PRECEDE the movement
• The inflection in your voice can add energy as well as a sense of urgency during your class.
• Once you choose a name for a movement- Stick with it!

**Music**

Music is essential to the success of any group exercise class. Music provides timing for the group and makes the class fun, enjoyable and motivating. It can make or break your class!

**Terms**

Beat: even pulsations that occur in a continuous pattern

Tempo: the frequency of the beat patterns

Down Beat: the strongest pulsations; EX) bass drum
Up Beat: the weakest pulsations; EX) snare drum

Beats per Minute (BPM): the number of down beats occurring in one minute

**Example Guidelines**

Class:

Step – 122 - 128 bpm  
Hi/Lo – 130 - 150 bpm  
Toning – 115 - 130 bpm  
Kick Boxing – 125 - 140 bpm

**32 Count Patterns**

32 count phrasing: 4 sets of 8 counts

EX) 5,6,7,8...

**How many patterns should I teach in one class?**

This is a difficult question to answer. Being a good instructor means being able to adapt to your class. Sometimes your class may not “get it” and you may need to break things down a little longer. You may even have to get rid of an entire combination if you see they are getting frustrated. Alternatively, you may “fly” through your combinations and need to add something to fill the time. Practice, experience, and knowing your class, will determine the number of combinations you will use. Remember: Always be prepared to improvise!

**Putting it all Together**

There are several different ways to put choreography together in your class. The way you decide to do it will depend on you and your class!

1. Link Method:
   A
   B
   A + B
   C
   A + B + C
   D
   A + B + C + D

2. Add-on Method:
5 Questions

Now that you know how to safely and effectively work the body, ask yourself these five questions when designing the format for your class.

1. What is the purpose of this exercise?
   - Muscular strength/endurance, cardiorespiratory conditioning, flexibility, warm-up or activity preparation, skill development and/or stress reduction

2. Are you doing that effectively?
   - Proper range, speed or body position against gravity

3. Does the exercise create any safety concerns?
   - Potential stress areas, environmental concerns, or movement control

4. Can you maintain proper alignment and form for the duration of the exercise?
   - Form, alignment, or stabilization

5. For whom is the exercise appropriate or inappropriate?
Practice/Test Yourself

MUSCLE CONDITIONING WORKSHEET

Use the space provided to list exercises that can be done for each muscle group

LOWER BODY

1. Quadriceps
2. Hamstrings
3. Hip Adductor (inner thighs)
4. Hip Abductors (outer thighs)
5. Gluteal
6. Gastrocnemius

UPPER BODY

1. Chest
2. Shoulders
3. Upper Back
4. Lower back
5. Biceps

6. Triceps

7. Abdominals
Proper Stretching Examples

**Shoulder Stretch:**
*Pull anywhere but your elbow*

**Low Back stretch:**
standing (pre):

on floor (post):

**Quads:**
Hamstrings & Tibialis Anterior (Shins):

Calves, Ankles, Achilles Tendon:

Inner Thigh: standing (pre):
*Keep head above heart
*Pause at center
*Knees stay behind toes

on the floor (post):