



Course Title: **Gravity vs Buoyancy: Friend and Foe**

Produced by: **Fitness Learning Systems**
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Course Type: **e-Learning Home Study**

Credit hours: AEA 4.0, ACSM 4.0, ATRI 0.4, COPS-KT 0.4,
NFPT 1.0, NCSF 2.0, YMCA 4.0, NSPA 4.0

Author:

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Tina Schmidt-McNulty holds a BS degree in Exercise Science and an MS degree in Clinical Exercise Physiology from Indiana University. Currently, she is an exercise physiologist at the Purdue University Calumet Fitness Center and part-time faculty for the Fitness Management Degree program. She has been in the Fitness Industry for over 12 years as a presenter, author and instructor. In addition, she holds numerous certifications including ACSM Exercise Specialist, ACE Group Fitness Instructor, and AEA Instructor. Tina is also a master trainer for the Arthritis Foundation Greater Chicago Chapter for both the land and aquatic exercise programs. She has contributed to several publications including the Concept II training manual, articles for www.Livestrong.com, Ebony and Better Homes and Gardens magazine. In her spare time, Tina enjoys teaching group fitness classes including Tai Chi and being active with her husband and two children.

Course Summary:

This course explores the basic properties of gravity and buoyancy and how these properties affect movement and equipment use on land and in the aquatic environment. Exercise and equipment options are given for all primary muscle groups for land and water resistance training. This course is an easy to access, comprehensive library of resistance training exercises with video, written explanations, variations and safety information beneficial to both land and aquatic health-fitness professionals. Many video demonstrations are included.

Objectives:

After completing this course, you will be able to:

1. Define mass and discuss its relationship to gravity and center of gravity.

2. Define density and discuss its relationship to buoyancy and center of buoyancy.
3. Identify other forms of resistance in a fluid environment.
4. Identify joint motions and apply different forms of resistance to land and water exercise.
5. Learn several exercises using resistance in land and water exercise.

Outline:

Mass

What is Gravity?

“Weight” Lifting

Buoyancy

Center of Buoyancy

Specific Gravity

Other Factors: Weight Training on “Land”

Weight Training in “Water”:

Viscosity of Water

Water Depth

Velocity of Movement

Surface Drag

Direction Change

Every “Body” is Different

Equipment Available

Different Environments, but Basic Guidelines Remain the Same

Strength Training “Building Blocks”

Don’t Forget to Stretch!

Class Format

Resistance Exercises

Water Exercise Precautions and Variations

Sample Exercises

Biceps

Land Exercise: Biceps Curl

Water Exercise: Biceps

Triceps

Land Exercise: Overhead Elbow Extension

Water Exercise: Triceps Extension

Shoulders

Land Exercises: Lateral Raises

Land Exercise: Overhead Press

Water Exercise: Lateral Raises

Water Exercise: Overhead Press

Chest

Land Exercise: Push Ups

Land Exercise: Chest Press/ Flyes

Water Exercise: Chest Crossover Flys

Upper / Middle Back

Land Exercises: Single or Double Arm Bent Over Rows

Land Exercise: Reverse Flys: Upper Back

Land Exercise: Shoulder Shrugs

Water Exercise: Pull Down and Up (side/front)

Hamstrings

Land Exercise: Standing One-Leg Hamstring Curls/Leg Extension

Water Exercise: Standing One-Leg Hamstring Curls/Leg Extension

Quadriceps / Gluteus Maximus

Land Exercise: Squats, Lunges, and Leg Extension

Water Exercise: Squats, Lunges, and Leg Extension

Gluteus Maximus

Land Exercise: Squats, Lunges, Hip Extension

Water Exercises: Squats, Lunges, Hip Extension

Abdominals

Land Exercise: Crunches/Oblique Crunches

Water Exercise: Spinal Flexion/Rotation

Low Back

Land Exercise: Spinal Extension/Hyperextension; "Supermans"

Water Exercise: Spinal Extension/Hyperextension; "Supermans"

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