

Module 2: Physical Training Fitness Principles

Topic 6 Content: Resistance-Training Exercises

Introduction

The graphic is a dark-themed interface for learning about resistance exercises. It features a central white information box with a purple 'i' icon. To the right, the text 'RESISTANCE EXERCISES' is displayed in large white letters, with 'CLICK on EACH to LEARN' written below it. Below this, three categories are listed with colored circular buttons: 'ISOMETRIC' (green), 'ISOTONIC' (yellow), and 'ISOKINETIC' (orange). Each category has a list of example exercises. A large green silhouette of a person is visible in the background.

Introduction

Isometric exercises are activities that use muscle tension to improve muscle strength with little or no movement of body parts.

Isotonic exercises are activities that combine muscle contractions and repeated movement.

Isokinetic exercises are activities in which a resistance is moved through an entire range of motion at a controlled speed.

Click the colored buttons to explore examples of these three types of resistance-training exercises.

ISOMETRIC

- ALL PUSH-UPS
- PLANKS
- WALL SITS

ISOTONIC

- PUSH-UPS
- PULL-UPS
- SIT-UPS

ISOKINETIC

- STATIONARY CYCLING
- TREADMILL with INCLINE
- ELLIPTICAL with RESISTANCE

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Module 2: Physical Training Fitness Principles

Topic 6 Content: Resistance-Training Exercises

Wall Push-Ups

The screenshot shows a fitness application interface. At the top, it says "Resistance-Training Exercises". Below this, there is a large green circle containing a silhouette of a muscular man flexing his arms. To the right of this circle, the words "RESIS" and "EXER" are partially visible. Below the circle, the word "ISOTONIC" is written in yellow. Underneath "ISOTONIC", there is a list of exercises: "PUSH-UPS", "PULL-UPS", and "SIT-UPS", each preceded by a yellow circle. To the right of this list, there are several orange circles, some of which are partially obscured. A video player is overlaid on the right side of the screen, showing a person performing a wall push-up. The video player has a play button and a progress bar showing "00:02 / 00:01".

To perform a wall push-up, position yourself a little farther than arm's length away from a wall, with your feet shoulder-width apart. Place your hands on the wall and slowly bend your arms until your nose almost touches the wall. Then slowly extend your arms straight, pushing against the wall. Do this for ten repetitions, and then rest. Repeat this exercise two to three more times.

Module 2: Physical Training Fitness Principles

Topic 6 Content: Resistance-Training Exercises

Planks

Resistance-Training Exercises

RESISTANCE TRAINING EXERCISES

ISOTONIC

- PUSH-UPS
- PULL-UPS
- SIT-UPS

Planks

To perform a plank, assume a push-up position, but place your elbows underneath your chest and rest your body on the floor. Much of your body weight will be resting on your forearms. Push yourself up from this position with your weight still resting on your forearms. Hold for ten seconds. Repeat this exercise two to three times.



00:03 / 00:01

To perform a plank, assume a push-up position, but place your elbows underneath your chest and rest your body on the floor. Much of your body weight will be resting on your forearms. Push yourself up from this position with your weight still resting on your forearms. Hold for ten seconds. Repeat this exercise two to three times.

Module 2: Physical Training Fitness Principles

Topic 6 Content: Resistance-Training Exercises

Wall Sits

Resistance-Training Exercises


RESIS EXER

ISOTONIC

- PUSH-UPS
- PULL-UPS
- SIT-UPS

Wall Sits

To perform a wall sit, stand with your back against a wall, keeping your feet shoulder-width apart. Lower yourself to a sitting position, keeping your feet underneath your knees. Imagine that you were sitting in a chair and someone pulled the chair out from underneath you, leaving you in the sitting position. Stretch your arms straight out in front of you and hold this position for thirty seconds. Repeat this exercise three to four times. A wall sit causes isometric contractions. Your muscles are not being lengthened or shortened; they are simply contracting as you hold the pose.

A photograph showing a person in a dark blue athletic outfit performing a wall sit. They are standing with their back against a light-colored wall, their feet flat on the floor and shoulder-width apart. They have lowered their body into a sitting position, with their knees bent at a 90-degree angle and their feet positioned directly under their knees. Their arms are extended straight out in front of them, resting on their thighs.

To perform a wall sit, stand with your back against a wall, keeping your feet shoulder-width apart. Lower yourself to a sitting position, keeping your feet underneath your knees. Imagine that you were sitting in a chair and someone pulled the chair out from underneath you, leaving you in the sitting position. Stretch your arms straight out in front of you and hold this position for thirty seconds. Repeat this exercise three to four times. A wall sit causes isometric contractions. Your muscles are not being lengthened or shortened; they are simply contracting as you hold the pose.

Module 2: Physical Training Fitness Principles

Topic 6 Content: Resistance-Training Exercises

Push-Ups

Resistance-Training Exercises

RESISTANCE EXERCISES CLICK on EACH to LEARN

Push-Ups

To perform a push-up, lie on your stomach. Put your arms underneath your shoulders and push your body off the ground, keeping your body in a straight line. Then lower yourself until your arms are bent in a ninety-degree angle, and push yourself back up. Do this for ten repetitions and then rest. Repeat the exercise two or three more times.

METRIC PUSH-UPS

KINETIC

CYCLING

MILL with INCLINE

CAL with RESISTANCE

00:04 / 00:01

To perform a push-up, lie on your stomach. Put your arms underneath your shoulders and push your body off the ground, keeping your body in a straight line. Then lower yourself until your arms are bent in a ninety-degree angle, and push yourself back up. Do this for ten repetitions and then rest. Repeat the exercise two or three more times.

Module 2: Physical Training Fitness Principles

Topic 6 Content: Resistance-Training Exercises

Pull-Ups

Resistance-Training Exercises

Pull-Ups

To perform a pull-up, find a pull-up bar. Hold onto the pull-up bar and pull yourself up until your head is completely above the bar; then slowly lower yourself to starting position. Try to do this exercise for ten repetitions. When you pull yourself up, your biceps muscles are shortening. This is referred to as a concentric contraction. When you lower yourself down, your biceps are lengthening. This is referred to as an eccentric contraction.

00:02 / 00:02

RESISTANCE
SES
CLICK on EACH to LEARN
METRIC
PUSH-UPS
KS
SITS
KINETIC
ONARY CYCLING
MILL with INCLINE
CAL with RESISTANCE

To perform a pull-up, find a pull-up bar. Hold onto the pull-up bar and pull yourself up until your head is completely above the bar; then slowly lower yourself to starting position. Try to do this exercise for ten repetitions. When you pull yourself up, your biceps muscles are shortening. This is referred to as a concentric contraction. When you lower yourself down, your biceps are lengthening. This is referred to as an eccentric contraction.

Module 2: Physical Training Fitness Principles

Topic 6 Content: Resistance-Training Exercises

Sit-Ups

Resistance-Training Exercises

RESISTANCE EXERCISES CLICK on EACH to LEARN

METRIC

PUSH-UPS

KS

SITS

KINETIC


ONARY CYCLING

MILL with INCLINE

CAL with RESISTANCE

Sit-Ups

To perform a sit-up, lie with your back on the ground. Bend your legs so that your knees are pointing toward the ceiling. Put your arms across your chest or behind your head. Curl your upper body so that your arms are touching your knees, making sure not to pull your head. Then slowly return to starting position. You may need someone to hold your feet so that they do not rise off the floor. Do this for one minute. Rest. Then repeat two or three more times.



00:02 / 00:01

To perform a sit-up, lie with your back on the ground. Bend your legs so that your knees are pointing toward the ceiling. Put your arms across your chest or behind your head. Curl your upper body so that your arms are touching your knees, making sure not to pull your head. Then slowly return to starting position. You may need someone to hold your feet so that they do not rise off the floor. Do this for one minute. Rest. Then repeat two or three more times.

Module 2: Physical Training Fitness Principles

Topic 6 Content: Resistance-Training Exercises

Stationary Cycling

Resistance-Training Exercises

RESISTANCE EXERCISES CLICK on EACH to LEARN

ISOMETRIC

ISOTONIC

- PUSH-UPS
- PULL-UPS
- SIT-UPS

Stationary Cycling

When using stationary cycling, increase the resistance and/or stand slightly.

A photograph of a man in a red tank top and shorts riding a stationary exercise bike. He is holding a water bottle to his mouth with his right hand. The bike is orange and grey.

When using stationary cycling, increase the resistance and/or stand slightly.

Module 2: Physical Training Fitness Principles

Topic 6 Content: Resistance-Training Exercises

Treadmill with Incline

Resistance-Training Exercises

RESISTANCE EXERCISES CLICK on EACH to LEARN

ISOMETRIC

ISOTONIC

- PUSH-UPS
- PULL-UPS
- SIT-UPS

Treadmill with Incline
Increase the resistance on a treadmill by increasing the incline.



Increase the resistance on a treadmill by increasing the incline.

Module 2: Physical Training Fitness Principles

Topic 6 Content: Resistance-Training Exercises

Elliptical with Resistance

Resistance-Training Exercises

RESISTANCE EXERCISES CLICK on EACH to LEARN

ISOTONIC

- PUSH-UPS
- PULL-UPS
- SIT-UPS

Elliptical with Resistance

Some elliptical machines have resistance features, such as increasing incline, increasing difficulty of movement, and adding upper-body components.



The image shows a man and a woman using an elliptical machine. The woman is in the foreground, wearing a red shirt and white pants, and is holding the handles of the machine. The man is behind her, also using the machine. The machine is a standard elliptical with a large flywheel and a console.

Some elliptical machines have resistance features, such as increasing incline, increasing difficulty of movement, and adding upper-body components.