

Muscular Strength and Endurance and Fitnessgram

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Muscular strength, the ability of the muscle to exert force, and muscular endurance, the ability of the muscle to perform many repetitions, is combined in the term “muscular fitness. (ACSM, 2006) They are assessed together as they contribute to functional health status. Increasing muscular fitness may improve bone mass, glucose tolerance, muscular integrity, which is related to a lower rate of injury, lean mass and resting metabolic rate, and the ability to carry out the tasks of daily living. The Fitnessgram field tests for muscular fitness include the curl up, trunk lift, the 90 degree push up, modified pull up, and the flexed arm hang. Each appropriate for different ages and populations. The actual assessment of muscular fitness is one component of the assessment process.

Step 1: to understand the concept of aerobic capacity and its importance to health.

Step 2: to participate in conditioning exercises for aerobic capacity.

Step 3: instruction in how to perform the test.

Step 4: actual assessment.

Step 5: the development of a fitness plan and fitness goals.

Step 6: participation in physical activity designed to meet fitness goals.

Step 7: the reassessment of the test.

Step 8: revision of goals to reflect progress made.

(Fitnessgram, 2005)

Curl up

Test objective: to complete as many curl-ups as possible up to 75, at a specific cadence.

The student continues in the test until the 2nd time a form correction is made (heels leaving the ground, head not returning to mat, not maintaining cadence, not touching far side of the measuring strip with fingertips. The test is scored in curl ups completed.

Count the first incorrect curl up.

Trunk lift

Test objective: to lift the upper body off the floor using the muscles of the back and hold for measurement.

The test is scored in inches with a maximum of 12.

90 degree push up

Test objective: to complete as many 90 degree pushups, as possible, at a set cadence. The test is stopped with the second form correction: not maintaining cadence, not achieving 90 degree angle, not maintaining body position, not extending arms to return to starting position.

The test is scored in number completed; counting the first correction.

Modified pull up – not validated against a criterion measure but is based on anatomical principles.

Test objective: to complete as many modified pull ups as possible.

The test is stopped on the second form correction; resting or not maintaining a rhythmic pace, not lifting chin above the elastic band, not maintaining body position, or not fully extending arms in down position.

The test is scored by number of repetitions, counting the first form correction.

Flexed arm hang – validated by logical anatomical principles

Test objective: to hang with chin above bar as long as possible.

The test is stopped when the chin touches or falls below bar, or the student arches head back to keep chin above bar.

The test is scored in seconds the student is able to maintain correct position.

Activities to improve performance

Core and stability training has become a cornerstone of good fitness programs. The big ball provides a venue for improving abdominal and back strength and endurance, stability training for shoulders and hips, and proprioceptor training (balance).

Ball work can be done as part of a stability circuit or a station in a regular strength and cardio circuit. The base level for any exercise is just to maintain posture on the ball.

Things to do with a ball

On the ball	Next to the ball	Prone on ball	On floor
Balance	Side bend	Back extensions	Abdominal curls
Seated lumbar mobility	Side balance w/ leg abduction	Diagonal reach	Leg curl & obliques
Abdominal curls		Roll out	Reverse curls
Bridge hip extension		Hip tuck	Foot to hand
Surf		Walk outs w/ push up	Pilates roll
			Supine hip extension

On the ball

Balance – Sit on top of the ball and balance by lifting feet off the ground.

Seated lumbar mobility – Sit on top of the ball. Shift pelvis forward, backward, and laterally right and left.

Curls – Sit on an angle on the ball. The closer the buttocks are from the floor, the easier the curl. Pull the ribs toward the hips while tucking pelvis to raise the hips.

Bridge hip extension – Resting head and shoulders on ball, stabilize with legs by stacking knees over ankles.

Surf – Balance on top of ball on hands and knees; then just knees.

Next to the ball

Side bend – Lying sideways on the ball, lower leg bent at knee to make a larger base, top leg bracing against floor. Bend laterally to take the rib cage toward the hip.

Side Balance – Lying sideways on the ball, stack ankles to provide a narrow base of support. Raise and lower (abduct) top leg to challenge balance.

Prone on the ball

Back extensions – Bracing toes on floor and hips into ball, raise and lower upper body.

Diagonal reach – Lying prone on the ball, extend opposing arm and leg to balance.

Switch sides.

Roll out – On knees, facing the ball, brace forearms into ball while rolling ball away, taking weight onto ball and off knees.

Hip tuck – Prone on the ball, walk out hands until thighs are on ball. Contract abs to an isometric contraction. Increase stability work by contracting hips and knees to roll the ball under the body.

Walk out with push-ups – From a prone position on ball, walk out on hands and balance on hips, thighs or feet. Add push ups.

Supine on the floor

Abdominal curls – “Sitting” with lower legs on ball, curl up.

Leg curl and obliques – Rest heels on top of the ball. Bend knees to roll the ball toward the buttocks. At full contraction, drop knees to the side to engage obliques.

Reverse curls - Squeeze ball between buttocks and heels. Contract abs to lift the ball off the floor.

Foot to hand – Squeeze ball between ankles and lift legs to pass ball to hands extended above chest. Touch ball to floor behind head while lowering ankles to floor. To protect the lower back, bend the knees and/or brace hands under the buttocks to keep back on the floor.

Pilates roll – With arms out at sides to provide a base of support, squeeze ball between knees, with hips bent. Roll lower body side to side to touch outer thigh to floor. Keeps shoulders and low back on the floor.

Supine hip extension – Rest lower legs on ball. Raise and lower hips.

Cool down and closure

Muscle groups used can be stretched at the completion of each exercise, primarily stretching abdomen and back. Ending the lesson with some balance work (surfing with hand and knees on the ball, sitting on the ball with no feet) gives a nice focus to the end of class.