

High Performance Swiss Ball Training

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Session #339

DEVELOPMENT OF RIGHTING AND TILTING REFLEXES

Righting reflexes are used to keep the body upright any time you move across a stable object, such as a balance beam, street curb or even when walking across the ground.

Tilting reflexes (also called equilibrium reflexes) are used to keep your body upright when atop a moving surface. A classic example of a situation requiring the use of tilting reflexes is stepping onto the moving sidewalk in the airport.

Most gym exercises require the use of righting reflexes. For example, if you were performing a squat and someone walked by and bumped into your bar, you would have to use righting reflexes to keep your body upright.

Problem

There are very few situations in traditional gym training environments that afford development of tilting reflexes, although there are many sports and work situations that require the use of tilting reflexes. A few common examples are:

- ✓ Working on a fishing boat or any sea going vessel
- ✓ Riding a horse
- ✓ Surfing



- ✓ Riding a motorcycle
- ✓ Water Skiing

Solution - improving tilting reflexes

If you want to improve performance in any activity or sport requiring tilting reflexes, it is logical that exercises requiring activation of tilting reflexes should be included in the conditioning program. To activate tilting reflexes you can either toss the ball to a client who is sitting or kneeling on a Swiss ball or you can move the ball under them enough to perturb their balance. Because most people's balance and tilting reflexes are not too developed, just trying to sit on a Swiss ball, kneel, or stand on

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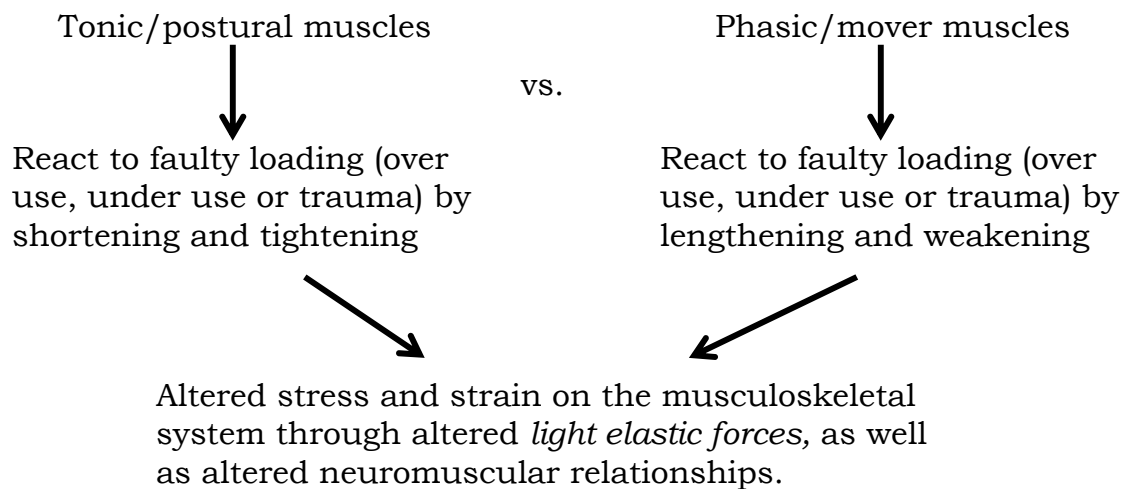
it will be a significant challenge and will develop their tilting reflexes.

Solution – improving righting reflexes

Development of righting reflexes on the Swiss Ball only requires that you move across the ball, with the ball being relatively stable. Examples of Swiss Ball exercises that develop righting reflexes are the Swiss ball crunch with the feet anchored or a back extension with the hands anchored. Anchoring the arms or legs stabilizes the body and the ball enough to ensure that you move across the ball, much like moving across a stable balance beam; it still requires balance, just a different kind.

FLEXIBILITY – STABILITY – STRENGTH – POWER

MUSCLE IMBALANCE SYNDROMES



BRINGING BALANCE TO THE BODY

Before beginning an exercise program, particular any program using high-speed and/or high/force lifts or exercises, it is critical that we seek to balance the neuromuscular system.

Stretch only the *shortened muscles*:

- ✓ Can often be appreciated by a sense of tightness or an observable loss of range of motion.
- ✓ Lengthens the muscle and alters the spindle cell system.

Minimal imbalance:

- ✓ Dynamic stretching to warm the tissues and lengthen the series elastic element of the muscle
 - ➔ Leads to balance in the fascial system and balanced light elastic forces through joints and antagonists.

Significant muscle imbalance:

- ✓ If the muscle imbalance is adequate to make an observable change in structural alignment (posture), then it is likely that the nervous input to shortened muscles will need to be inhibited.
- ✓ This can be accomplished with both static and contract/relax stretching techniques; it is safer to use contract/relax prior to exercise.

Obtaining optimal static and dynamic postures is critical to providing an optimal motor learning experience for the neuromuscular system.

See *The Golf Biomechanic's Manual 3rd edition*, by Paul Chek for length-tension assessments and corresponding stretches

ACTIVE WARM-UP EXERCISES

Very important!

- ✓ Warms the tissues of all the major joints.
- ✓ Elevates core temperature.

After the active warm-up, perform one set of each exercise at an intensity of no greater than 60% maximum.

For high velocity and/or high force exercises, two or three warm-up sets of progressively increasing intensity may be necessary to warm both the tissues and the nervous system in the relevant patterns of recruitment.

Perform 10 in each direction and on each extremity where relevant:

- Neck circles
- Shoulder clocks (standing)
- Arm circles
- Trunk twisting (raising and lowering arms)
- Pelvic rotations
- Ankle rotations

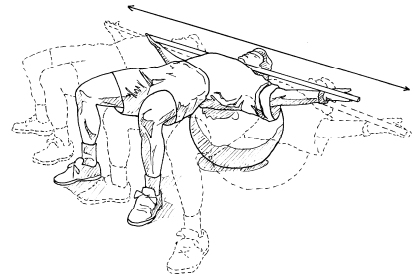
BALL STABILITY TRAINING

EXAMPLES OF STATIC HOLDING EXERCISES

The following exercises are used with extended holding times to develop strength/endurance in the stabilizer system:

Supine lateral ball roll

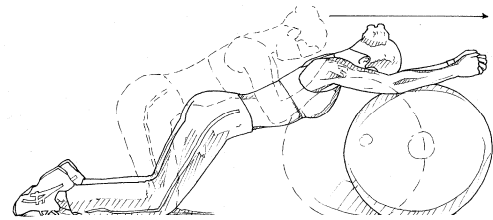
Tempo - 606 with at least 120 seconds work per set



Forward ball roll

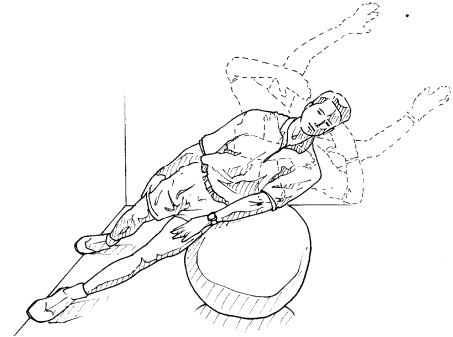
Tempo - 2:00

Sets - 3



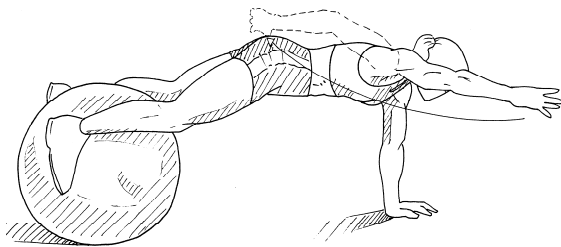
Flag pole (Frontal plane static lean)

Tempo - 30 sec +/- 3:30 max. per set or session
Keep the top leg straight and plant the foot flat on the floor (not shown clearly in the picture)



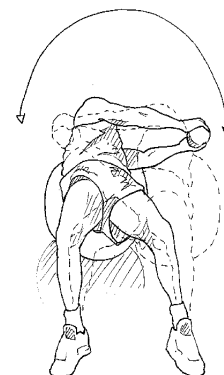
EXAMPLES OF STATIC/DYNAMIC COMBINATIONS

Prone bridge with arm movement



Supine Russian twist

✓ With medicine ball toss



BALL STRENGTH TRAINING

Key Points

- ✓ Ball power strength training exercises should be performed to the form barrier.
- ✓ The maximum repetitions should not exceed 12-16.
 - If you feel you can do more than 16 repetitions of any given exercise, pre-fatigue techniques can be used to force you deeper into your motor neuron pool.
- ✓ The tempo should not exceed 101, with a 202 tempo being optimal in most instances.

Push Jack

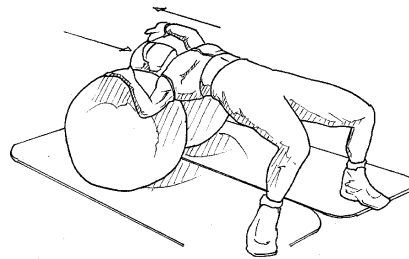
Tempo – 202

- 1 leg on ball
- 1 ball under each hand and one under feet



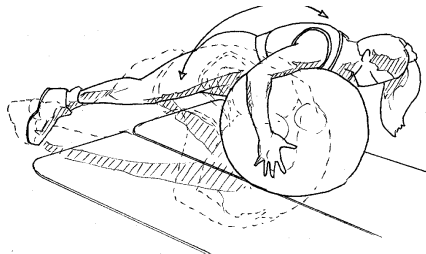
Supine crawler

Tempo - 202

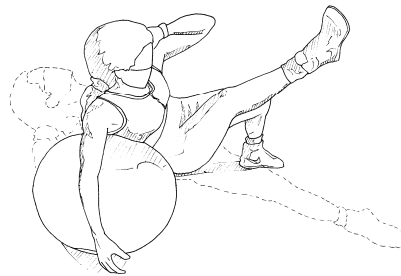


Prone ball roll

Tempo - hold 1 sec.

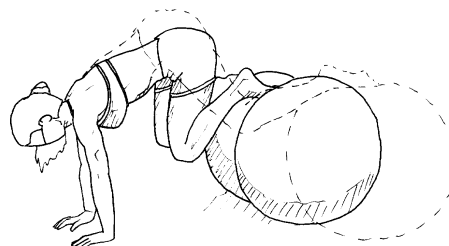


Swiss ball cross crunch with kick



Swiss ball frog kick

- 2 ball frog kick
- Single leg frog kick



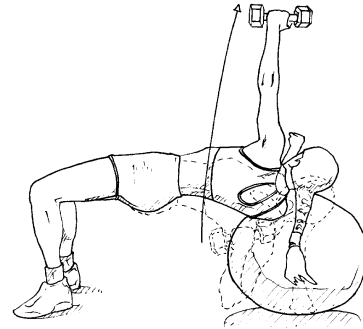
BALL POWER TRAINING

- ✓ All power training drills are performed at a tempo faster than 101, or as close as possible to an X0X, which is as fast as you can possibly go without losing form.
- ✓ Each set should not last longer than 12 seconds and 10 seconds is usually ideal to prevent form loss.

Swiss ball prone ball roll

As shown before using an X0X tempo

Swiss ball drop and recover



KEY REFERENCES

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