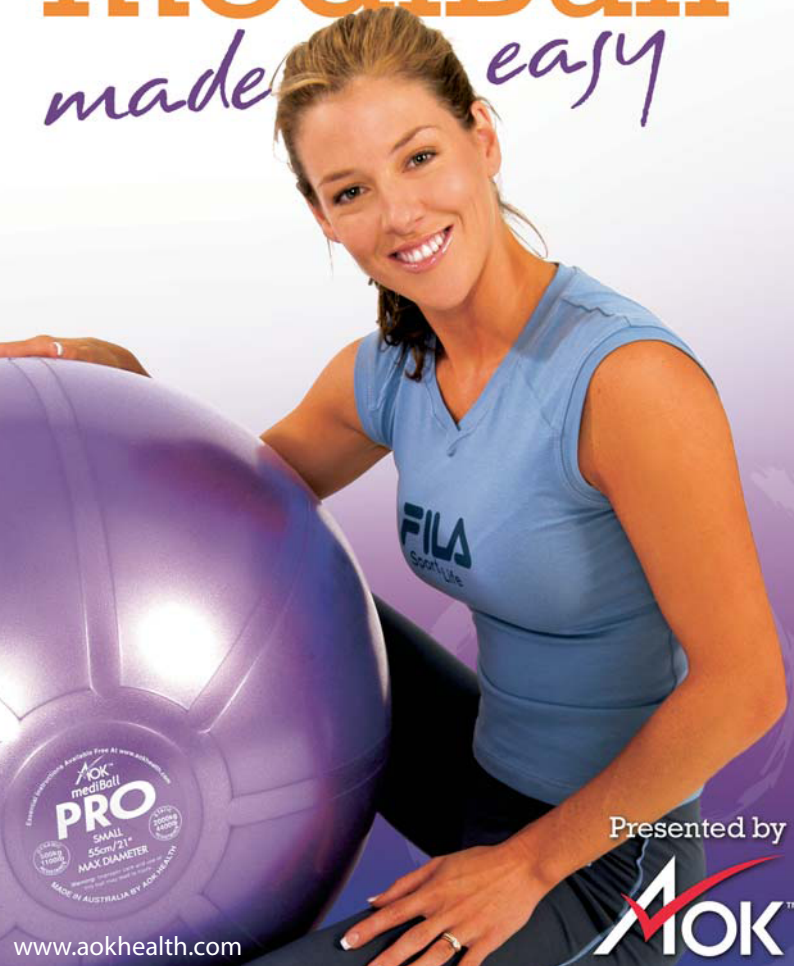


mediBall®

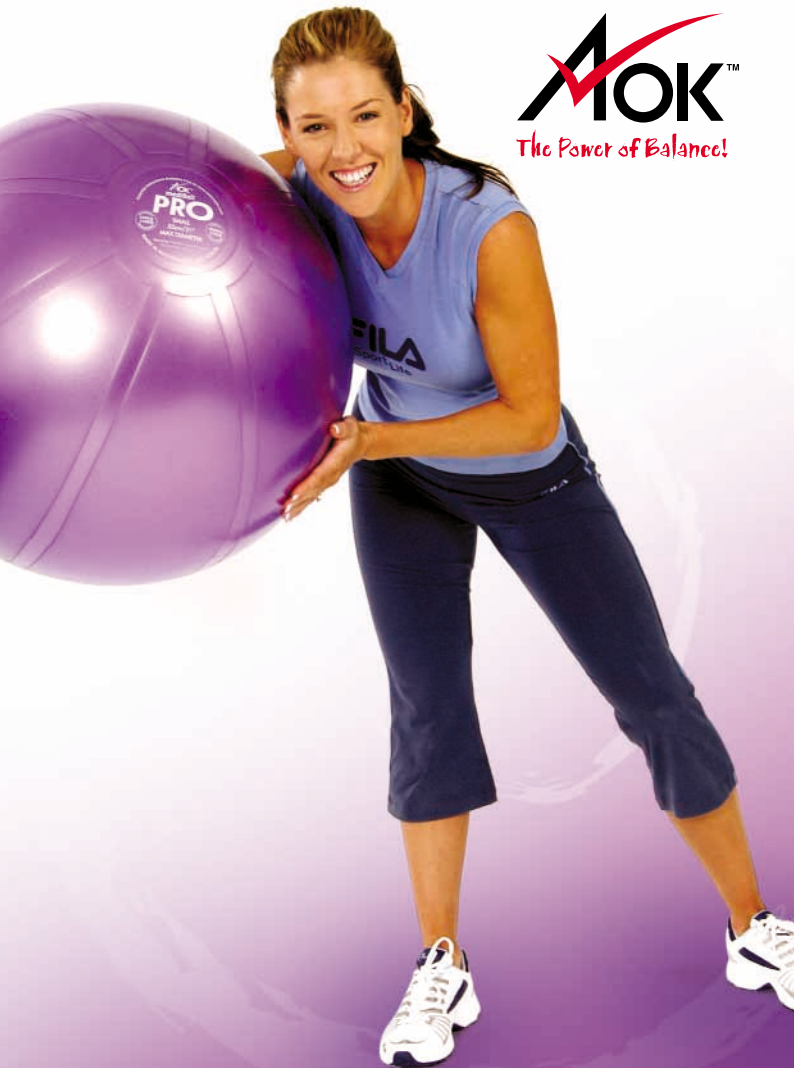
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AOK™
The Power of Balance!

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Important Note: Consult your physician before starting any exercise program, especially if you have had recent injuries, surgery, physical problems or if you have been inactive for some time.

Disclaimer: Your *mediBall® Made Easy* booklet is a basic guide to improving balance, muscle tone and flexibility. All exercises should be performed with care and caution, if unsure about an exercise please seek professional assistance, we take no responsibility for injuries caused by stretches performed incorrectly. Reproduction of any material without written permission from the publishers is strictly prohibited.

Special Thanks to FILA for providing a great outfit for this workout.

Model: Gorgi Quill

Photography by: Charlie Suriano

Designed by: Lauren Sims

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Approximately 80% of the population will suffer from back pain at some time in their lives and 30% to 40% suffer from back pain at any one time. Using an appropriately inflated mediBall, offers considerable benefits over all forms of exercise and seating.

MediBall is designed and manufactured in Australia after extensive safety testing at the University of Newcastle. It offers the user a cushioned orthopedic platform which encourages good posture while simultaneously allowing the users balance and sensory mechanisms to retrain deep muscular (known as "core") movement reflexes essential in supporting and protecting the spine in day to day activities. Recent research from Queensland University has linked dysfunction of deep trunk muscles in patients with back pain. Using mediBall is not only fun but a very cost effective method of beating back pain.

History of Swiss Balls

AOK Health Pty Ltd of Australia have been manufacturing the mediBall (Swiss Ball) since 1994 and have gained an international reputation for producing the best therapy balls in the world. They are, however, not a recent invention. The large balls originated in 1963 when Italian plastics engineer Aquilino Cosani, owner of Ledraplastic Toy Manufacturing Company in Italy, started producing them out of vanilla-scented vinyl

instead of pungent rubber. However, it was an innovative physical therapist, Mary Quinton, in Switzerland who first used the balls for therapy treatments with neurologically impaired children. Other therapists such as, Dr. Susanne Klein-Vogelbach and Maria Kucera, P.T, then pioneered ball techniques for posture retraining and back pain rehabilitation.

Since the large balls could only be purchased in Switzerland, they got their nickname "Swiss Balls" and are widely known to rehabilitation professionals by that name. The Swiss Balls first found their way to the United States in the early 1970s through a few Australian therapists who went to Switzerland to learn from the pioneering Swiss therapists. It wasn't until the early 1990s that the balls could be readily purchased in Australia and they were mostly used by therapists treating children with cerebral palsy.

In the spring of 1988, Vlatka Zeller, a Swiss therapist, concerned with the escalating numbers of teenagers with back pain, hypothesised that excessive sitting was responsible for the

postural weakness and damage she saw in her patients. With the help of an elementary school doctor and principal, she introduced balls as a replacement for their traditional chairs thinking that sitting on a dynamic surface would prevent the back pain found in teenagers.

The success of this initial program led to a large scale test in Switzerland which showed that children sitting on balls produced the following results:

- Hyperactive children became calmer and could focus for longer periods.
- Other children could generally concentrate better.
- Handwriting skills improved for children with poor penmanship.
- Children often showed a better understanding of subject material.
- Disorganised children developed a better sense of organisation. (Illl 1994)

In Switzerland over the past 6 years in a cooperative effort between Swiss physical educators and classroom teachers there are approximately 5,000 Swiss classrooms using the balls for sitting, and use of the balls has spread to other European countries to promote improved posture and physical activity while sitting.

In Australia since the early 1990s, therapists who were trained in Switzerland, began introducing the

Swiss Ball techniques not only to other physical and occupational therapists but also to physical educators such as AOK Health, along with classroom teachers, athletic trainers, and fitness professionals. Since that time, children in Australia have been observed by their teachers to show the same positive effects from ball use as their Swiss counterparts. There have been several informal studies on the beneficial effects of balls in classrooms but no scientific studies have been published at the time of this printing.

mediBall and Sitting. Why should you sit on a mediBall®?

The main problem with sitting in a NORMAL chair, is that it does not encourage movement. We may be able to sit "properly" for 10-12 minutes, but after that our muscles become tired and we fall in to bad posture, most often using a back rest. We get involved in what we are doing on our computer, and forget about our bodies. Our muscles switch off! In time, our muscles become weaker, and less able to support us. This is true particularly of the small, deep trunk muscles which are of great importance in supporting our spine.

Even though we may go and "work-out" in the gym regularly, we are only exercising the major muscles. With

the smaller deeper muscles being weaker, we are creating an imbalance. How often do you hear of someone "doing their back in" when they are performing some relatively minor task?

One probable reason is that their deeper trunk muscles (multifidus and transverse abdominus) are not in good working order and are not able to support the spine. These muscles work on reflex and because the reflex is not stimulated when sitting on a normal chair, the reflex action becomes a bit "rusty".

Something else to consider is the spine itself. When we sit, our spine should stay in roughly the same alignment as when we stand. When we fall into bad posture, this alignment is distorted. When we stay in this distorted position for hours at a time, we are placing unusual pressures on the discs in between each vertebrae, and on the ligaments and muscles supporting the spine.

What about the well designed, ergonomic chair? Well, at least in some of these types of chairs, when you have it adjusted properly, your spine is held in correct alignment. The problem is that there is still very little movement permitted, and certainly no encouragement to move. The end result is that our body

becomes weaker, less able to support itself, and less able to cope with the pressures that we put on it when we are not sitting.

mediBall® and Exercise – The benefits of ball training

Increased Kinesthetic Awareness

Because of the unstable nature of the ball, the user is forced to be intrinsically aware of the positioning of their body in space.

Dynamic Flexibility

Flexibility training on the ball has the advantage of training a certain degree of strength at the end range. Having strength at the end of a range of motion not only prevents injury (most muscle tears occur at end range) but allows the user to have control throughout the full potential of the movement while muscles are lengthening (eccentrically contracting). Because the movements come from a stable core, coaches can isolate specific areas for flexibility training and reach goals quickly (distal mobility on core stability).

Balance

The unstable nature of the ball forces the user to make constant weight shifts while on the ball, to find their balance points.

Prime Mover Strength

Free weights can be performed on the mediBall. Exercises such as the dumbbell press can isolate the prime

movers (pectoralis major, anterior deltoid and triceps) to perform the action, while the stabilisers and neutralisers are working to prevent any other unnecessary movement. Because of the high neural demand of mediBall training, the reps and sets performed can be minimal to gain a training effect. Time efficiency is as important as any other factor of training.

Stabiliser/Neutraliser Strength

Because the ball is unstable, the various stabiliser muscle groups are challenged. If the user is unstable, the stabilisers engage to prevent the user from falling off the ball. Good strength and endurance function in joint stabilisers can not only have a performance enhancing role, but may also play a role in injury prevention in the long run. The user will be able to hold form longer, leading to better efficiency.

Core Strength and Control

The concept of core stability should be taught in a stable environment (ie on the floor) initially, and then that stability can be challenged by putting the user on the ball. The user should be able to control movements performed on the ball by using their core stability. Many abdominal strengthening exercises can be performed on the ball in a variety of positions, allowing eccentric, isometric and concentric contraction. Oblique abdominii, rectus

abdominis and transversus abdominis may all benefit from these exercises, unlike the traditional rectus abdominis work.

MediBall® Exercise Check List

When sitting on the ball:

- Sit slightly forward of the ball,
- Hips should be slightly higher than the knees when using the ball as a chair (i.e. sitting only)

Safety Check

Prior to exercising, ensure the area is an adequate size, and free from sharp objects &/or other obstacles

Body Check

Tongue on roof of mouth
Head, neck & shoulder deactivation
Chin tucked slightly
Activate TVA (pull umbilicus towards spine)
Activate multifidus (confirm with tape or by pressing fingers against multifidusæ the back muscles mirroring the belly button)
Pelvic Floor Activation
Maintain Neutral Spine
Postural Alignment Check
Ear, shoulder & hips in alignment
Knees & ankles in alignment

NB. Fatigue is always the guide to repetition i.e stop, rest & then try a few more reps.

mediBall® Pregnancy & Birthing

mediBalls can be used to improve posture, coordination, balance, muscle strength and flexibility. They enhance labour with gentle pelvic movement, optimal positioning, and support. A useful non-invasive, non-medical, woman-friendly tool for midwives to offer their clients.

Over recent years midwives around the world have actively sought ways of de-medicalising childbirth, and restoring to the woman her authority over her body in the birth process. Women are encouraged to be active in labour; to choose their support people; to use local warmth and touch rather than unnecessary dependence on medical analgesia; to stand under a shower or rest in a tub of warm water; and to choose their place and position for giving birth.

You could say balls have bounced onto the birthing agenda. This has happened as midwives have seen the balls in use in other areas of health and fitness. The principles of good posture, muscle balance and stabilisation, gentle pelvic movement, and relaxation can be readily applied to the birthing woman. Balls also bring with them potential for relieving nervous tension - memories of childhood play, and the occasional 'balls' joke have a way of putting people's minds at ease. The ball is easy to clean, can be used on the floor, in the shower, or on the bed, and provides a comfortable alternative seat or back support for a member of the 'team' if the labouring woman is not using it.

What happens when a labouring woman sits on a ball? The knees are apart, with no adduction muscle tension. Pressure on the whole sitting area is equalised, as opposed to the excessive pressures experienced when sitting on toilet or

birthing stool. The woman's pelvic inlet is tilted forward in relation to her spine, encouraging an occiputo-anterior position of the fetal head. The dynamic nature of the supporting surface means that any movement by the woman initiates a wave of corresponding movements. Pelvic tilting, both laterally and antero-posteriorly is easy. Gentle exercise of the muscles of the woman's abdomen, back and pelvic floor occurs

without conscious control. It is easy to get up off the ball and return to it later.

Balls are an exciting new inexpensive device for use in the maternity scene. In this booklet we have limited it to use in labour. There are many more uses that are being explored in general women's health, and pelvic floor and back strengthening postnatally, that are of significance to midwifery.

NOTE: These sizes are not definitive but only a guide. Larger/bulkier individuals may need a larger size ball than shown purely for comfort and not bio-mechanics. Using the ball for weight lifting also is best with a larger ball than normal. There is only 10-20% loss of efficiency if using a larger ball size for exercise. You will rarely use a mediBall at its maximum inflated diameter. Best results at 90-95% inflation.

CAUTION: All balls like car tyres wear out with heavy use - we have balls 5 years old and still performing well. If you use your ball in a commercial environment you may need to upgrade on a regular basis. mediBall Pros are not indestructible and may be weakened or damaged by sharp objects which may result in the ball deflating. Do not use a mediBall that has been damaged. Always keep your activity area clear of sharp objects or corners, and check your ball regularly.

Ball Size	Junior	Small	Medium	Large	Ex Large
Diameter	45cm	55cm	65cm	75cm	85cm
Use for mainly sitting					
User's height (cm)	Less than 150cm	150 – 165cm	165 – 180cm	180 – 200cm	Over 200cm
User's height (foot & inches)	Less than 5'	5' – 5'6"	5'6" – 6'	6' – 6'8"	Over 6'8"
Use for mainly exercise					
User's height (cm)	Less than 160cm	160 - 175cm	175 – 195cm	Over 195cm	
User's height (foot & inches)	Less than 5'4"	5'4" – 5'10"	5'10" – 6'6"	Over 6'6"	

The mediBall exercises focus on developing the muscles that promote spinal stability—a key component of spinal health focussing on the muscles that keep the spine stable. Recent scientific research from Queensland University in Australia has identified spinal stability in the prevention and recovery of back related pain and injury.

Seated Base Exercise Position

Purpose of exercise: Develop postural awareness and strength in a seated position.

Instruction: Sit on the ball with straight back and knees close together.
Note: Hips should be slightly higher than knees on the correct ball size. Sit tall. Relaxed breathing. Tuck your lower stomach in.



Pelvic Tilt

Purpose of exercise: Activate muscles that control the lower spine and the pelvis.

Instruction: From Seated Base position, tilt hips from side to side.

Single Leg Lift

Purpose of exercise: Challenge your balance by minimising your base of support.

Instruction: From Seated Base position, lift one leg and extend. Alternate legs. Keep your back straight.



Supine Feet on Ball—Base Position

Purpose of exercise: Activate muscles which control the lower spine and the pelvis.

Instruction: Lie on floor with feet on ball. Raise hips until back is straight.



Hip Extension Feet on Ball

Purpose of exercise: Strengthen back of thigh (hamstring) and bottom muscles. Activate muscles that control lower spine and pelvis.

Instruction: From Supine Feet on Ball position, lower hips to floor and return to base position.



Hip Extension—Single Leg

Purpose of exercise: Same target area as hip extension—just more intense.

Instruction: From Supine Feet on Ball position, raise one foot off ball. Return to base position and repeat alternating legs.

Hamstring Curl

Purpose of exercise: Strengthen hamstrings.

Instruction: From Supine Feet on Ball base position, roll the ball towards your bottom, then return to base position. Maintain neutral lordosis.



Russian Twist—Lower Body

Purpose of exercise: Mobilise lower spine and strengthen abdominals in rotation.

Instruction: Lie on floor with feet on ball, knees bent. Roll ball to one side and return to base position. Continue rolling ball to alternate sides.



Always perform mediBall exercises in a slow and controlled manner

Supine Feet on Floor—Base Position

Purpose of exercise: Strengthen hamstrings, bottom muscles and activate muscles that control the lower spine and pelvis.

Instruction: With knees bent and ball behind back, slowly roll backwards until ball is under shoulders and back is straight. Palms up.



Hip Extension Feet on Floor

Purpose of exercise: Strengthen hamstrings, bottom and activate muscles of lower spine and pelvis.

Instruction: From Supine Feet on Floor base position, roll forward arching back and return to base position.



Russian Twist—Upper Body

Purpose of exercise: Strengthen abdominal wall in rotation.

Instruction: From Supine Feet on Floor base position, raise arms toward the roof and clasp. Roll arms and shoulders from side to side.



Lateral Ball Roll

Purpose of exercise: Strengthen hamstrings, bottom, upper and lower back.

Instruction: From Supine Feet on Floor base position, stretch arms out to the side. Roll ball under shoulders, alternating from side to side.



Always brace your abdominals and do not arch your back.

Prone Feet on Ball—Base Position

Purpose of exercise: Strengthen shoulders, abdominals & activate muscles that support lower spine & pelvis.

Instruction: With arms directly under shoulders and one foot on the ball slowly place second foot on ball until body is in a prone position.



Push Up

Purpose of exercise: Strengthen shoulders, abdominals and activate muscles around the lower spine and pelvis.

Instruction: From Prone Feet on Ball base position, lower body toward the floor keeping back straight. Return to base position and repeat.



Prone Jack Knife

Purpose of exercise: Strengthen shoulders and abdominals.

Instructions: From Prone Feet on Ball base position, roll ball towards hands keeping back straight. Return to base position.



Do not attempt the exercise progression until you've mastered the base exercise.

Prone Hands on Ball—Base Position

Purpose of exercise: Strengthen shoulders, abdominals and activate muscles around lower spine and pelvis.

Instructions: Kneel in front of ball, place hands on ball and raise hips until in a prone position and arms outstretched.

Note: Keep hands directly under shoulders.



Push Up

Purpose of exercise: Strengthen shoulders, abdominals and activate muscles around lower spine and pelvis.

Instructions: From Prone Hands on Ball base position, lower body toward the ball keeping back straight.

Prone Pelvis on Ball—Base Position

Purpose of exercise: Strengthen muscles around shoulders and spine.

Instruction: Position yourself on the ball with your pelvis placed on top of the ball. Place your hands underneath your shoulders.



Single Leg Extension

Purpose of exercise: Strengthen muscles around lower spine and bottom.

Instruction: From Prone Pelvis on Ball base position, raise one leg and return to base position. Alternate legs. *Note:* Do not raise leg higher than shoulder height.



Trunk Extension

Purpose of exercise: Strengthen muscles around the lower and upper spine and bottom.

Instruction: From Prone Pelvis on Ball base position, cross arms over chest and raise shoulders then return to starting position. Don't over extend.



Prone Knees on Floor—Base Position

Purpose of exercise: Strengthen abdominals and muscles around the lower spine and pelvis.

Instruction: *Kneeling in front of ball, place forearms on ball. Keep back straight.*



When starting any new exercise, perform in front of a mirror to ensure correct technique.

Forward Ball Roll

Purpose of exercise: Strengthen abdominals and shoulders.

Instructions: *From Prone Knees on Floor base position, roll ball away from body then return to start position. Extend at hip and shoulder at same time.*

Abdominal exercises provide a sequential format for abdominal strengthening firstly on gaining control of the key stability muscles of the abdominal wall plays an important role in the prevention and recovery of back related pain and injury.

Ab Crunch

Purpose of exercise: Strengthen upper abdominals.

Instructions: Sit on ball with arms outstretched. Roll forward until lying on ball with back straight and knees bent. Contract abdominals in a forward motion. Release and return to starting position.



Oblique Crunch

Purpose of exercise: Strengthen oblique abdominals.

Instructions: Start in same position as Ab Crunch. Contract abdominals in a sideward motion. Return to starting position and repeat on alternate side.

Flexibility exercises focus on a range of movement of the spine plus stretching key muscles in the upper and lower body which influence healthy back function.

Abdominals

Purpose of exercise: Stretch abdominal muscles.

Instruction: Lie with your back on the ball, stretch over the ball, position your arms above your head and relax into the stretch.



Quadratus Lumborum

Purpose of exercise: Stretch oblique abdominals.

Instruction: Lie on your side on the ball, the ball should be supporting the side of your trunk. Keep your top leg straight and position your top arm over your head. You should feel the stretch in the side of your trunk.

Lumbar Erector

Purpose of exercise: Stretch lower back and quadriceps.

Instruction: Lie on your tummy on the ball. Drop your head and shoulders towards the floor. Maintain foot position and relax into the stretch.



Thoracic Extension

Purpose of exercise: Stretch back and shoulders.

Instruction: Position yourself on your knees, place the ball in front of you. Position your hands on top of the ball allow your back to drop towards the floor.



Pec Major

Purpose of exercise: Stretch chest muscles.

Instruction: Position yourself on your knees, place the ball underneath your arm/shoulder. Drop your upper back.



Quadriceps

Purpose of exercise: Stretch thigh muscles.

Instruction: Assume the same position as the hip flexor stretch. This time, place the ball behind your right foot. Bring the ball towards your bottom to increase the intensity of the stretch.

Hip Adductor

Purpose of exercise:
Stretch inner thigh.

Instruction: Position yourself seated on the ball. Take your left leg out to the side and your right leg in front of your body. Gently lean to the right and maintain your left leg position. You should feel the stretch through your left groin / inner thigh.



Hamstring

Purpose of exercise: Stretch back of thigh and calf muscles.

Instruction: Position yourself seated on the ball. Place your right leg out in front of you, hands on your hips. Bring your toes back towards your chest to increase tension behind your inner thigh and calf, lean forward from your hips.

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AOK mediBall®

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- 45cm to 85cm
- Tested by the University of Newcastle
- Available in a variety of colours



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