Finding Your Inner Core

Brandi Smith-Young, PT
Perfect 10.0 Physical Therapy

Fellow, American Academy Orthopaedic Manual Therapy
Board certified orthopedic specialist

www.perfect10physicaltherapy.com
perfect10pt@gmail.com
Introduction

- Competitive gymnast
- Two time USAG Collegiate National Champions at TWU
- Bachelors in Kinesiology at TWU
- Masters in Physical Therapy at Tx St
• Practicing for 9 years
• Fellowship trained in Orthopedic manual physical therapy
• Board certified orthopedic specialist in PT
• One of 300 therapist in the US with these certifications
My passion:

- Bring sport specific quality care to gymnast
- Decrease the number of injuries in gymnast
- Improve performance, recovery time, decrease time lost in the gym, and improve return to sport status
- Performance Enhancement
- Give you tools to do injury prevention in your gym
Why is the core important?

• Offers Stability to protect the spine
• Offers foundation for the legs and arms to move
• Improves amplitude
• Improves Shapes
Anatomy of Low Back
What muscles make up the “core”

- Diaphragm
- Pelvic Floor
- Transverse Abdominus
- Internal Obliques
- External Obliques
- Paraspinals and Multifidus

Graphic from Lee 2001 www.discoverphysio.ca
Anatomy cont’d

- All these muscle provide stabilization for the trunk and all other movements.

- If these muscles are not functioning in the proper sequence increased stress will eventually lead to injury.
Muscle imbalance

- Some muscles are strong
- While opposing muscles are weak
- Some muscles are stretched out
- While opposing muscles are too tight
- Muscle imbalances occur when we use compensatory movement patterns.
• Due to the stringent requirements placed on gymnast certain muscles tend to develop stronger than others

• Certain muscles get weak

• Other muscles develop tighter

• And some develop looser or stretched

• This leads to compensatory motor sequencing/ motor firing patterns.
Common muscle imbalances

- Greatest underlying contributing factor to most injuries in gymnastics
  - Imbalance in the “core” muscles
  - They over utilize their superficial core muscles (rectus, Obliques) to stabilize
  - They hold their breath during skills/exercises
  - They translate their thoracic cage/rib cage behind their pelvis
“BALLOON”

- Central stability does not rely on strength of any one muscle group alone.
- It is about balancing the pressure inside the abdominal cavity, achieved with teamwork all ms surrounding the cavity deep to superficial.
- Think of this pressure system inside the abdomen as an air-filled balloon
- Figure A balanced pressure system

Concept from Julie Wiebe, PT www.juliewiebept.com
• Squeeze the balloon in the middle like a sustained abdominal hold.

• This causes the air to shift up & out top, down & out bottom.

• Alters the diaphragm resulting in change in breathing patterns (chest breathing & holding breath)

• Alters the Pelvic Floor, may not be able to match the excessive pressure from above leads to incontinence or the pelvic floor over-recruit to try to match the pressure can lead to pelvic, LBP, and/or hip pain

Figure B

Concept from Julie Wiebe, PT www.juliewiebept.com
Normal Piston
diaphragm-pelvic floor system

- During inspiration the breath in increases intra abdominal pressure causes the diaphragm to drop and the pelvic floor to drop (Inc IAP = Inc stability).
- However, many times PF doesn’t drop in our gymnast who chest breath/bad alignment. The pelvic floor is working too hard to try & overcome the pressure allow the drop and thus they lose the natural stability that should occur during inhalation.
• During expiration the diaphragm and pelvic floor should contract together to create stability.
  • However if they don’t drop all the way down to get proper pre-stretch they can’t contract optimally. It’d be like training half a biceps curl instead of the full range.
TEAM WORK: Normalize the PISTON

- Normalizing Pelvic floor-diaphragm relationship will:
  - Promote good shapes/posture
  - Decrease injury risk (ACL [seen in research], dec LB, hip, Shd, neck pain)
  - Increased postural alignment = increased biomechanical alignment in skills = increased amplitude and performance
  - Decrease for women, women’s health issues later in life (incontinence, organ prolapse, & much more)
Alignment

Bell up,
Rib cage
behind pelvis

Bell Down,
Rib cage
behind the
pelvis

Bell level,
Rib cage over
pelvis
Slt comp in
eck
ALIGNMENT

- Start tumbling pass, run down the run way, skills, etc. in good alignment.
- Fix alignment when standing at the chalk bucket or waiting in line.
- Allow the bell to melt
- Cue to umbrella breath during skill and alignment will improve
PREPERATION

- Use the umbrella breathing to prepare the Diaphragm-pelvic floor strategy prior to movement/skills
- Breath in allowing the pelvic floor to drop, TA to expand.
- Breath out and lift the pelvic floor.
- Then perform skill, pass, or conditioning.
TIPS

• “BLOW Before You GO”
• TAP (Team work, Alignment, Preparation)
• BREATH (umbrella breathing)
• Keep proper Rib cage over pelvis ALIGNMENT
• Train the shape you want in your skills.
Demonstration Time
Lying posture/breathing

- Lying face up on a firm surface like the floor with a 1-2 inch soft back book under your head.

- Begin by feeling where your body is on the ground. What’s touching? What’s not touching? What’s tight or contracting?

- Breath in like an umbrella allow the rib cage to open in ALL directions and breath out, think of letting your 1st cervical vertebra (C1) drop down to the floor and allow the head to scoop forward.

- Continue this as you begin to think of letting your low back and rib cage fall to the ground. Think of widening across the low back and rib cage.

- X2-5-10 min (as much time you have, as often as you can)
Abdominal Drawing In Maneuver

- Pelvic tilt (fig 1 & 2)
  - Breath into umbrella, as breath out lift the pelvic floor.
  - Belly button must move up toward the nose and in toward the spine (40-50 on blood pressure cuff)
  - Not straight down into the floor
  - x20

- Marching (fig 3)
  - Start breathing and doing ADIM
  - No motion in the hips, hips stay level (keep at 50)
  - Breath while alternate legs
  - x20
Core cont’d

- Heel Slides (fig 4 & 5)
  - Start with breathing and ADIM (40-50 with blood pressure cuff)
  - Breath while slide R leg out maintaining the cuff at 50
  - No rocking of the hips
  - Monitor hips with hands
  - Slide L leg out back still flat
  - Slide R leg in
  - Slide L leg in
  - = 1 rep
  - x20

Figure 4

Figure 5
Planks

- Elbows under the shoulders. Knees behind hips.

- Umbrella breath in relaxing the abs & feel the pelvic floor lower. Breath out.

- Keep the pelvic floor lifted as go up to your toes and off your knees. Keep proper alignment with pelvis in line with the rib cage.

- Breath into the umbrella and out lifting the pelvic floor as hold.

- Hold on toes as long as maintain form.

- Hold 30 sec Repeat x5

Good: aligned plank

Bad: plank with bottom tucked

Bad: plank with sagging belly

www.juliewiebept.com
Side Plank

• One elbow under the shoulders. Knees, Hips, and shoulder in a straight line. Rib cage inline with pelvis. Knees bent 90 degrees.

• Umbrella breath in relaxing the abs & feel the pelvic floor lower. Breath out & lift pelvic floor.

• Keep the pelvic floor lifted as you press the shoulder blade away from the spine through the elbow.

• Keep proper alignment with pelvis in line with the rib cage.

• Breath into the umbrella and out lifting the pelvic floor as hold.

• Hold on knees as long as maintain form.
Ski Jumper

- Umbrella breath in relaxing the abs & feel PF lower.
- Breath out & lift PT.
- Keep the PF lift as lean forward like a ski jumper.
- Keep PF lift as return to start position.
- Repeat x10
- Do 1-5 in between skills/routine/tumbling passes
Side step squat

- Umbrella breath in relaxing the abs & feel PF lower as squat down.
- Breath out & lift PF.
- Keep the PF lift as squat up.
- Then Relax. Step together
- Repeat x10

*When easy can breath in on the down and breath out-lift PF as squat up. Then increased speed/add jump (squat jumps/sumos)
Tuck Jump

- Umbrella breath in relaxing the abs & feel PF lower.
- Breath out & lift PT.
- Hold the breath as tuck jump up.
Handstand

with Umbrella breath and pelvic floor lift

- Umbrella breath in relaxing the abs & feel PF lower.
- Breath out & lift PT.
- Kick into handstand.
- When easy: Kick into the handstand and then umbrella breath in allow PF to lower and breath out & lift PF while upside down.
TIPS

- “BLOW Before You GO”
- TAP (Team work, Alignment, Preparation)
- BREATH (umbrella breathing)
- Keep proper Rib cage over pelvis ALIGNMENT
- Train the shape you want in your skills.
Active Straight Leg Raise

- Ly on back with band above the head.

- Pull band to the floor with straight arms & hold

- Raise one leg with the opposite straight leg staying flat on floor.

- Toes point upward, no rolling of hips.

- Slowly lower straight leg and return arms above head.

- X15-20 fwd, X15-20 side
Active Lower Abdominals

- Ly on back with band above the head

- Pull band to the floor with straight arms & hold

- Both knees bent to 90, keeping the back flat to the ground lift both knees toward the chest

- Keep back flat as lower both legs to the ground

- Return arms above head x15

- To progress begin to straighten knees
Stagger balance with band pulls

• Stagger the feet with rib cage & pelvis in proper alignment
• Umbrella breath in relaxing the abs & feel PF lower.
• Breath out & lift PT.
• Pull 1 arm back following your hand with your eyes
• Maintain proper rib-pelvis alignment.
• Repeat other side with breath.
• Repeat x20
Trunk Stability Rotation

- Ly on back hips and knees flexed to 90, shoulder at 90 degrees arms straight out

- Place ball or towel between knees

- Rotate the knees to one side, keeping opposite shoulder blade down. Hand on side of rotation turns down the opposite hand stays turned up.

- Return to starting position, repeat on opposite side
Tweaking current conditioning

- Gymnasts are great at compensating

- Make sure they remain flat back when doing core exercises (not rounded in upper back or arched in lower back...neutral spine)

- Do not allow an arch throughout the entire exercise
  - Ie. V-ups on floor or from the bars, hollow holds, sit-ups, crunches, hanging sit-ups, etc

- Modify by decreasing the lever arm (bend knees or bring arms closer to the body if unable to maintain good form. Progress as strength and control improves.
Bird Dog with Band

- Start with stick across low back
- Tighten abs
- Ph I alternating arms
- Ph II alternating legs
- Ph III alternating opposite leg with opposite arm
- No motion at hips, no movement of stick
Bird Dog Phase 3
Golfer

- Stand on one leg

- Create arch in foot and hip level

- Bend knee about 30 degrees and keep knee over 2nd toe.

- Breath in allow the pelvic floor to drop. Breath out and lift the pelvic floor.

- Keeping everything flat to the stick (head, between shoulder blades, and tail bone) tip forward, letting opposite leg go back to counter balance. Only go as far as you can keeping form.

- Repeat x20
Leg Lock Bridge

• Ly on back and hold one knee to chest, place a ball or towel between your thigh and chest.

• Bend other knee and place the foot on the floor.

• Lift the hips off the floor form a straight line from shoulder through the hip to the knee.

• Progress with the ground knee straight
Leg Lock Bridge Knee Straight
Contact Information

Perfect 10.0 Physical Therapy & Performance Training

www.perfect10physicaltherapy.com

perfect10pt@gmail.com

512-426-6593

Follow: PERFECT10PT on
All information from:
- Julie Wiebe, PT
  - www.juliewiebept.com
- The Manual Therapy Institute
  - www.themanualtherapyinstitute.com
- Shirley Sahrmann.
  - Diagnosis and Treatment of Movement Impairment Syndrome.
- Gray Cook
  - Functional Movement System