Session #430
Athletic Post-rehabilitation Conditioning with Core Stix

FOUR FOUNDATIONS OF FUNCTIONAL MOVEMENT

#1. Dynamic Stability
Static Stability: is the ability to maintain proper alignment and muscle activation in a given joint or structure through a defined range of motion.
Dynamic Stability: adds the consideration of the body moving through space; it is the ability to maintain traditional stability on one end of a joint while efficiently moving the attached structures (limbs, joints, and so on, down the kinetic chain) on the other end.
Functional movement starts with the spine and moves outward. From the spine to the pelvis and shoulder girdle and then to the extremities. The more strength, stability and flexibility a body has in the core and spinal musculature, the safer and more efficient it will be in motion.8
Proximal Stability leads to Distal Mobility!

#2. Integrative Movement
This is the combination of a dynamically stable core with the proper sequencing of muscles to execute a given movement/exercise.
Activating a group of muscle synergists and antagonists in the optimal way now becomes a critical issue. From a motor control point of view, we often use the analogy of an orchestra – we must get the orchestra to play together, or in clinical terms we must get the full complement of the stabilizing musculature to work together to achieve stability. One instrument out of tune ruins the sound – one muscle with inappropriate activation amplitude can produce instability, or at least unstable behavior will result at lower applied loads.5
-Stewart McGill
Component motions must be properly sequenced in order to provide effective and efficient movement as a whole.

#3. Increased ROM/Flexibility
Comprised of 2 components, static and dynamic. Static refers to the ROM available to a joint or series of joints. While Dynamic refers to the ease of movement within the obtainable ROM.
While this is a controversial topic among fitness experts what is clear is that proper muscle length, joint movement and overall function will result in better quality of movement, which can be translated into better performance.
The unique balance of flexibility and resistance that the Stix provide produce a comfortable stretch without compromising the joint integrity. They also provide excellent muscle feedback to ensure a safe and effective ROM.
FOUR FOUNDATIONS OF FUNCTIONAL MOVEMENT

#4. Ground Force Stability

We spend the majority of our waking lives in an upright position. Most of our movements therefore occur in a standing or seated upright posture. When performing a complex movement we need to summon our power from the ground up. We need to stabilize our bodies with the ground in order to perform at a high level.

Studies have shown that training the core in the standing position is far superior for strengthening the muscles than training on the floor. Often people train the core like a suit of armor, from the outside in. We know that it is more important to train the core from the inside out. Working from the spine outward gives us a stronger, more stable and more mobile platform from which to perform dynamic movements such as driving forward, rotating and pushing/pulling. This creates better efficiency of movement while improving muscle sequencing/firing order, which in turn helps prevent undue injuries.

FACTS ON ATHLETIC INJURIES

• 85% of Elite And Recreational Athletes are injured annually.
• 65% of Runners are injured annually.
• 21% of Walkers are injured annually.

FACTS ON BASEBALL INJURIES

• Baseball sees 627,000 baseball injuries occurring each year
• The most common injuries include repetitive use injuries to the shoulder and elbow, although knee injuries are also very common.
• Injuries caused by exercise and exercise equipment increased almost 45% between 2007 and 2010.

FACTS ON FOOTBALL INJURIES

• The knee is the most common location of injury in college football players in both practice and competition, accounting for 17.1 percent of the injuries overall with a median seven days lost from participation.
• Acute non-contact (24.1 percent) was the most common injury mechanism
• Ligament sprains are the most common injury reported, accounting for more than 30 percent of all injuries, with the ligaments of the knee most commonly affected. Data collected from 2004/5 - 2008/9 seasons
FACTS ON BASKETBALL INJURIES

- American Journal of Sports Medicine in 2008 looked at Basketball found 1.94 injuries per 1,000 athlete. Most injuries occurred in the lower limb (62.8%) and more often to women than men. (2.08/1000 vs 1.83/1000)

- Study done of NBA players over a 17 year period, 1094 players appeared in the study 3843 times.

- Lateral ankle injuries were the most common injury (13.2%) followed by PFS (11.9%), lumbar strains (7.9%), and hamstring strains (3.3%)

- PFS was the cause of most games missed (10,370 games), followed by ankle sprains (5223) knee ligament issue (4369) and lumbar strains (3933)

FACTS ON HOCKEY INJURIES

- In a 4 year observation study of professional hockey players

- Contusions were the most frequently seen injuries (38%) followed by strains/sprains (29%), with knee and shoulder being the most frequently injured part of body (both 12%)

- In another study, a University of British Columbia varsity team was tracked over a 6 year period a total of 46215 injuries were recorded.

- Sprains and strains accounted for 40% of all injuries, followed by concussions (13%).

FACTS ON ATHLETIC INJURIES

- Recent Study of Crossfit has shown that 73.5% of participants having sustained an injury during CrossFit training. A total of 186 injuries were reported with 7.0% requiring surgical intervention

- Injuries caused by exercise and exercise equipment increased almost 45% between 2007 and 2010 

MOST COMMON INJURIES

- Shoulder Strains/Rotator Cuff
- ACL Repairs/PFS
- Lumbar Strains/LBP
ANATOMY (BONES)
- Humerus
- Mobility
- Scapula
- Stability
- Clavicle
- Fulcrum

GLENO-HUMERAL JOINT
- Sub-acromial Space
- Bursa (subacromial-subdeltoid)
- Labrum
- Deltoid
- Supraspinatis
- Capsule (Tear Drop)

IMPELLGEMENT SYNDROME
- Decreased sub-acromial Space,<6 mm
- Weak Rotator Cuff muscles
- Weak Parascapular muscles=needed to stabilize the scapula against the thorax.

ROTATOR CUFF
- Primary Action: Pull humeral head down and in.
- Secondary action: Rotate Humerus
- Force Couple: 4 small muscles vs 1 big muscle
**PROTOCOLS IMPINGEMENT/TEAR**

- Increase Sub-Acromial Space
- Stretch Anterior Shoulder Girdle
- Strengthen entire Rotator cuff
- Strengthen Parascapular Muscles
- Stabilize the Scapula under load, various positions
- 2:1 ratio Post. vs Ant Shoulder Girdle

**EXERCISES**

- External Rotation Bilateral
- Wide Pulldowns
- X-Pulldowns
- X-Lat Pull

**ANTERIOR KNEE**

**SUPERIOR KNEE**
STABILITY OF THE KNEE

• ACL = 82-88%
• Meniscus = 2-4%
• MCL = 4-8%
• LCL = 1-2%

GOALS FOR ACL

• Recruit VMO
• Strengthen Hamstrings
• No open chain TKE
• Strengthen Glute Med!!!
PATELLO-FEMORAL SYNDROME

- Always lurking after knee injury
- AKA Chondromalacia
- "Noisy Knee" (No its not OK)
- Often see Swelling, Pain, VMO Shut Down
- Tight IT Band (To roll or not to roll?)
- Strengthen Glute Med!!!

EXERCISES

- Forward Drive
- Knee Stability X-Body
- 3-D Hip Shift Drive
**MULTIFIDI**

- Dynamic Stabilizer of the Spine
- Type 2 Fibers
- Segmentally Innervated

**TRANSVERSUS ABDOMINIS**

- Acts like a corset to draw in the abdominal muscles and decrease the diameter of the waist.
- The fibers of the transversus abdominis wrap horizontally around the abdomen creating the deepest layer of the abdominals.

**SPINAL STABILIZATION PRINCIPLES**

- Maintain Neutral Spine
- Progression: Full Support to No Support
- Always Monitor Pain
- If there is any Radiating Pain or N/T - **Discontinue**
SPINAL STABILITY PROGRESSIONS

• Find and Maintain Neutral
• Determine Functional ROM without losing Neutral
• Maintain Neutral in Static Positions
• Maintain Neutral with Dynamic Movements
• Full Support to No Support

SPINAL STABILIZATION ACTIVITY LEVELS

• Level 1: Activities are Fully Supported
• Level 2: Activities Partially Supported
• Level 3: Activities are Non Supported

CORE STIX EXERCISES

• Stir the Pot
• Lateral Step Out
• Chest Press (Unilateral, Feet close together)

Thank You So Much!

Come to the Booth in the Expo Hall for Special Expo Deal!

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