3 - UNDERSTANDING HUMAN MOVEMENT IMPAIRMENTS

MOVEMENT IMPAIRMENT SYNDROME

- Impairment in one place can cause issues elsewhere
- Structural integrity of the human movement system is compromised because components are out of alignment
  - need optimum Static, Translational, Dynamic alignmen

STATIC MALALIGNMENT

- Malalignment in general can alter length-tension relationships

Hypomobility tighter muscles that prevent full range of motion and cause injury cycle

Myofascial Adhesions

Altered Reciprocal Inhibition muscle inhibition caused by tight muscles decreasing neural drive of antagonist
- Tight hip flexor would reduce neural drive of hip flexor for example and create Synergistic Dominance (synergists take over for prime mover) where hip flexor synergists (hamstrings) take over

DYNAMIC MALALIGNMENT

- Movement Impairment Syndromes
- Due to static malalignments & altered muscle recruitment patterns

Lower Extremity Movement Syndrome
- Lower cross syndrome in motion (flat feet, internal knee rotation, etc)
- Can lead to predictable problems like plantar fasciitis

Upper Extremity Impairment Syndrome
- Upper cross and commonly causes things like rotator cuff impingement

COMMON HUMAN MOVEMENT SYSTEM IMPAIRMENTS

Foot & Ankle Impairments

- hyperpronation of foot, big toe joint motion decreases, less posterior glide of talus
- Can lead to tendinitis
- hip control is important for ankle control

Knee Impairments

- 50% of college/high school athlete injuries
  - ACL sprain/tears & knee pain
- hyperpronation of foot, ↑ Q angle, anterior pelvic tilt ↓ flexibility in Quads, ITBand, etc

Low Back & Core Impairments

- 26 Billion $/year spent on low back pain
- Incorrect spine alignment & curvature, ↑ risk in spine injury
- Core & hip stabilizers LPHC
  - may have impaired postural control, delayed relaxation & abnormal muscle recruitment patterns of core/glutes

Shoulder Impairments

- 21% of people report shoulder pain
- 39 Billion $ annually
- 40-65% are shoulder impingement
- 15-25% are dislocations
- 70% with shoulder pain report recurrent instability within 2 years
  - may develop glenohumeral arthritis
- Posterior glenohumeral capsular contracture
  - limit shoulder internal rotation
  - ↑ anterior/superior migration of humeral head during shoulder flexion
- Rounded Shoulders
  - lengthen Rhomboids & traps, shorten pecs, alters scapulothoracic force-couple relationship
  - causes forward tipped scapulae & internally rotated forcing the space where some of the rotator cuff is to narrow and cause impingement