

CHILD & ADOLESCENT
ATHLETES LOWER LIMB
PAIN/INJURIES (HIP TO LOWER
LEG)

Dr D. S. Hanson

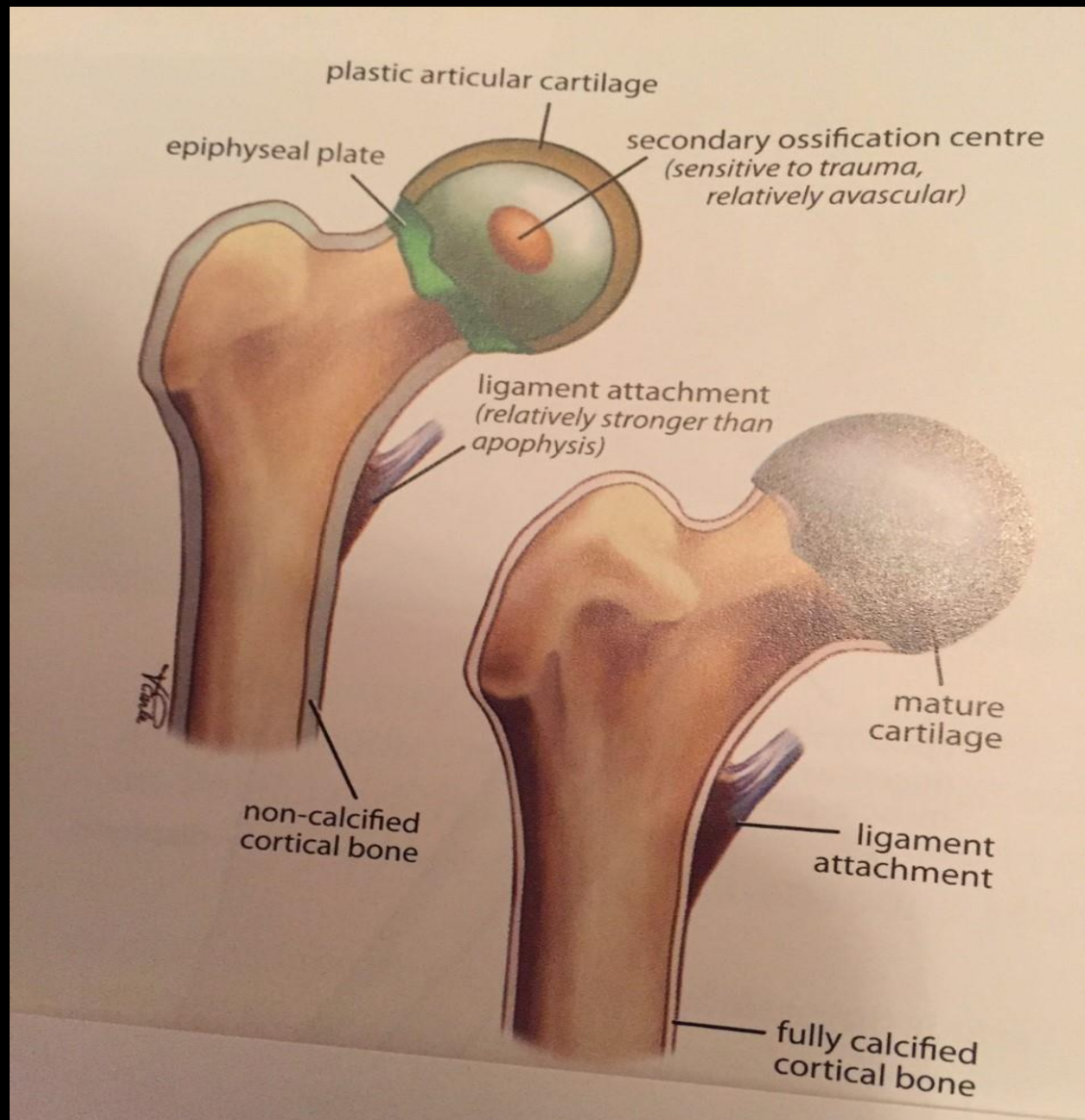
USA AND KIPP (KNEE INJURY PROTECTION PROGRAM)

- 30 – 45 mill youth (6 – 18 yrs.) in USA participate in sports annually
- 50% of injuries are related to overuse

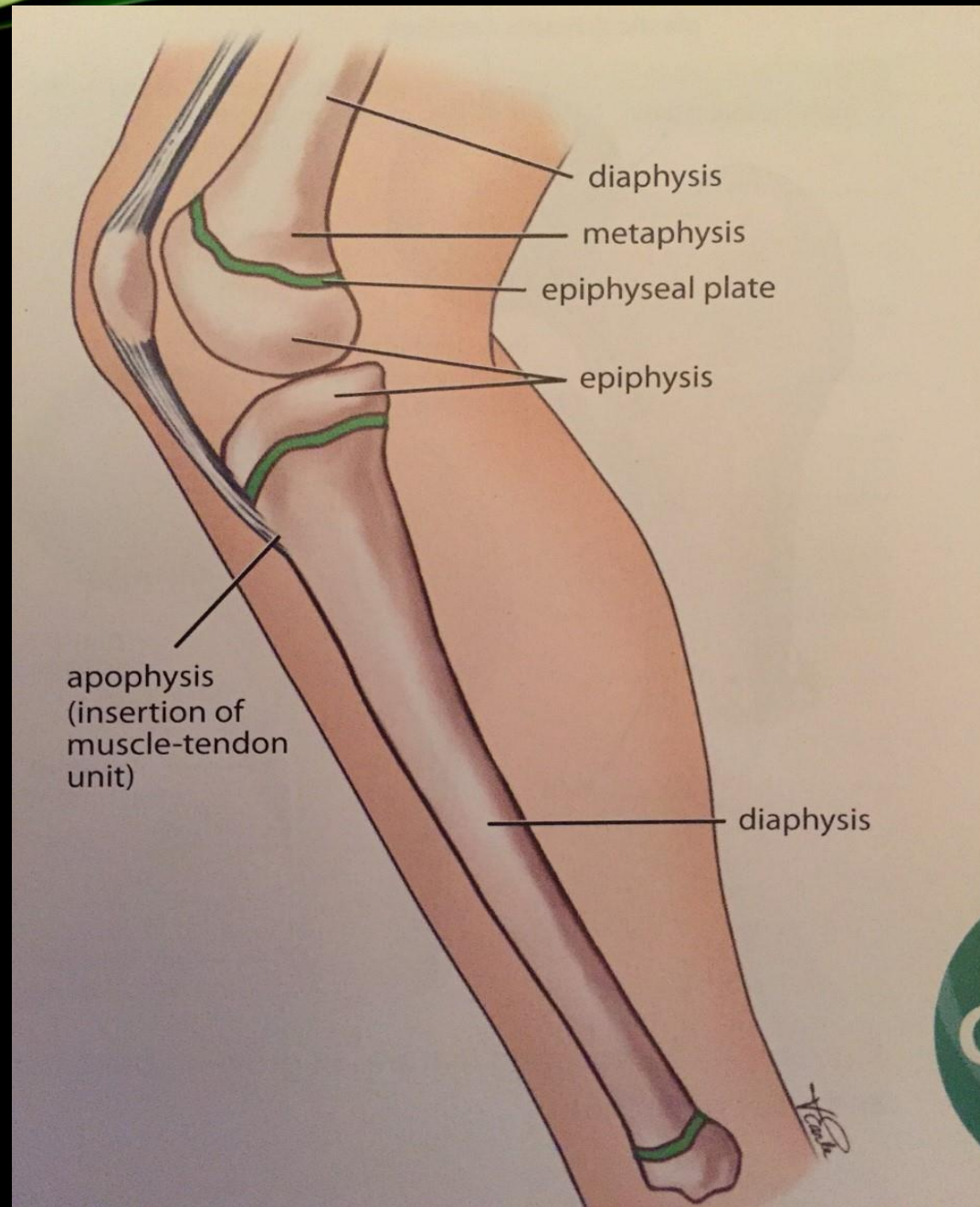
Teen Girls

- >20,000 high school girls suffer sports related knee injuries
- Girls six times more likely to injure ACL than boys in similar sports
- Usually results from landing from a jump or sudden change of direction
- Risk of degenerative arthritis increased ten fold

IMMATURE VS. ADULT BONE (HARDWARE)



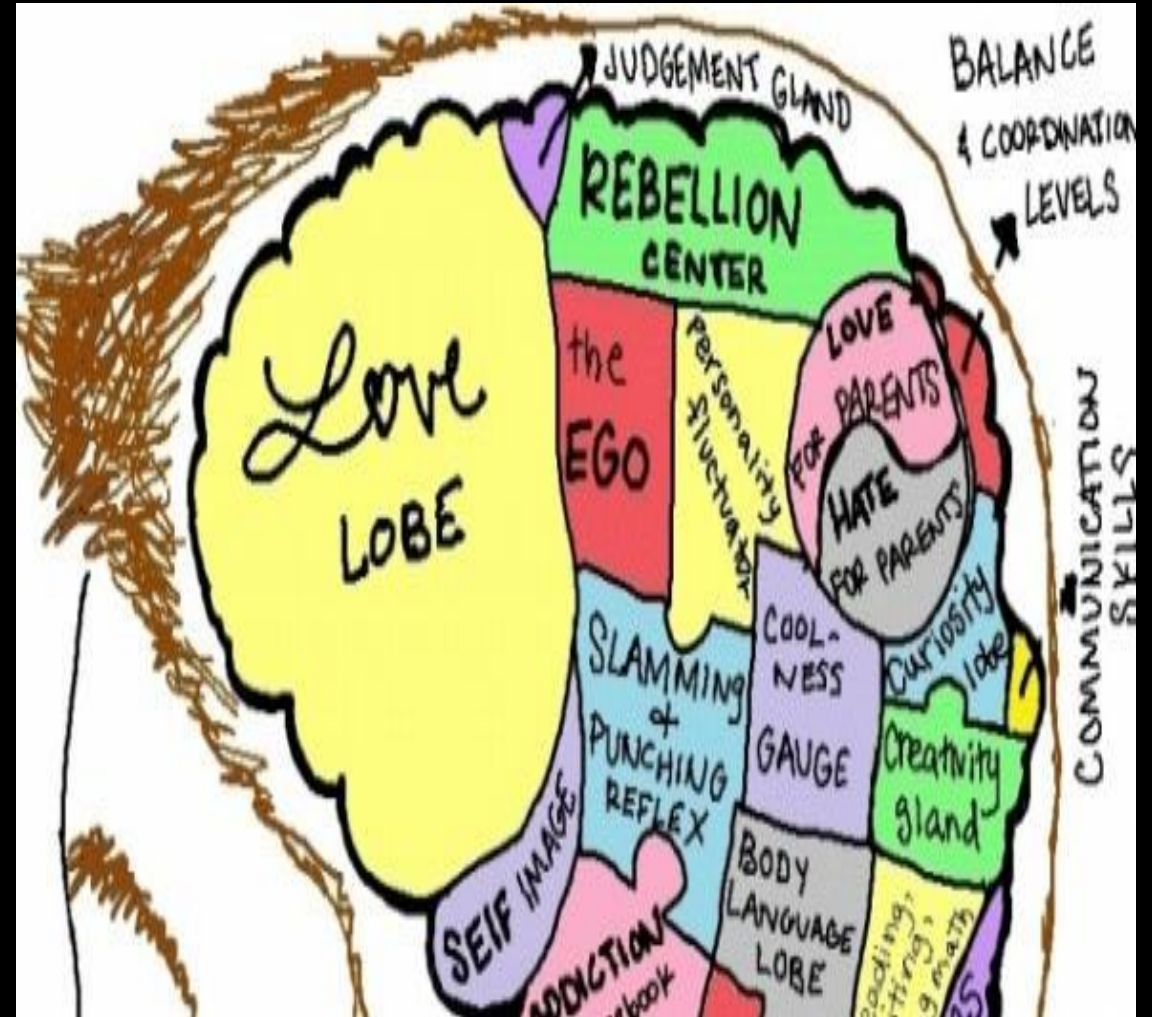
IMMATURE BONE (HARDWARE)



Bruckner & Khan's
Clinical Sports Medicine

BRAIN AND ENDOCRINE SYSTEM (SOFTWARE)

- Non-linear growth patterns
- Immature motor skills
- Growth spurts: periods of greater risk
- Variable biological maturation within the same year group



CHILD/ADOLESCENT HIP PAIN

- Apophysites :

ASIS – Sartorius

AIS – rectus femoris

Ischial tuberosity - hamstring

Lesser trochanter – iliopsoas

Fractures

Slipped capital femoral epiphysis

Avulsions

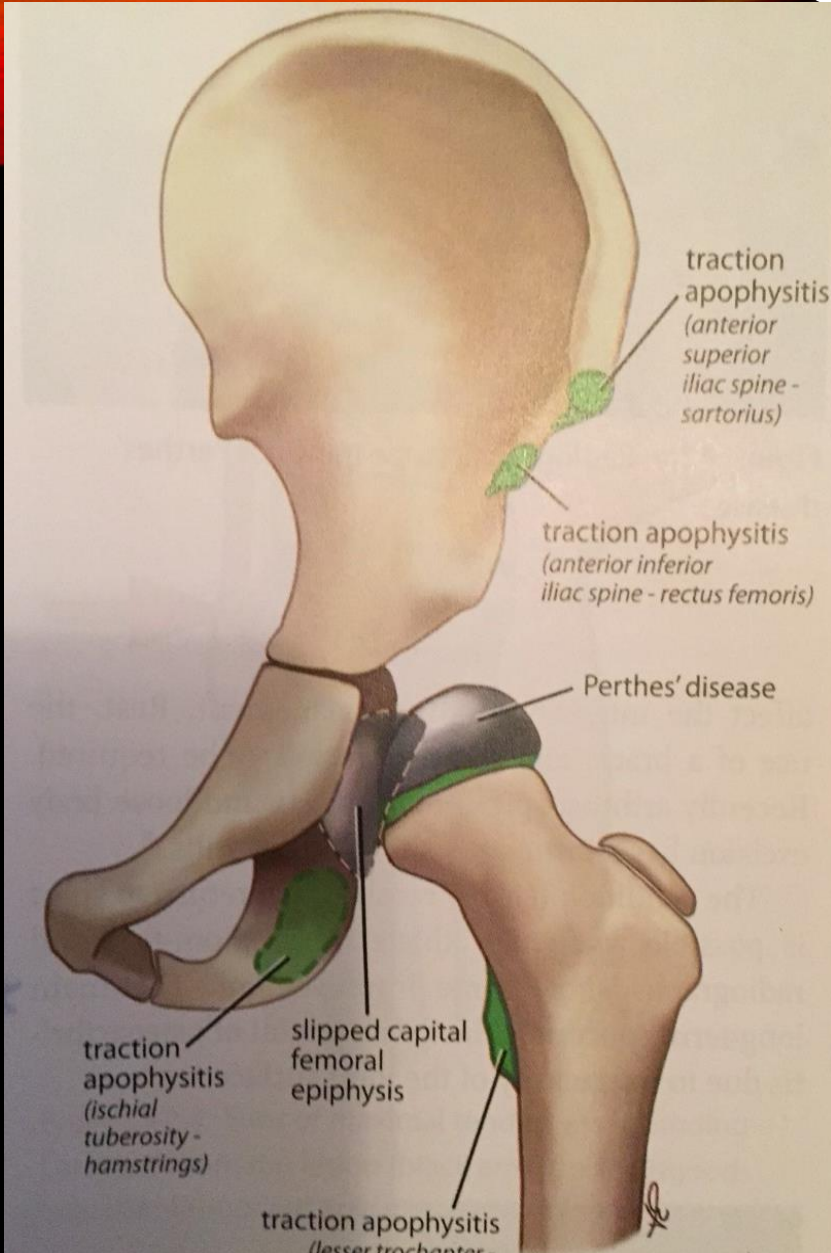
Greenstick fracture

Salter-Harris

Osteochondrosis – Perthe's disease

Irritable hip- hip pain, decreased ROM, negative blood test, radiographs, and scans

Referred pain



KNEE PAINS

Osteochondrites

Osgood-Schlatter lesion – tibial tuberosity growth plate

Sinding-Larsen-Johansson lesion – inferior pole of patella

Anterior cruciate ligament – female teens

Patello-femoral joint pain

Patellar tendinopathy

Referred hip pain

Sprained collateral ligaments

Meniscal injury

LEG AND THIGH PAIN

Salter-Harris fractures

Greenstick fractures

Muscle strains

Bone strain/periostitis

Stress fractures

Compartment syndrome

Inflammation



MANAGEMENT

RECENT COMMENTS ON OVERTRAINING

- Glen Mills – JASM conference early 2017
- Ambassador Stewart Stephenson – Sunday Gleaner, Sept. 3, 2017
- Incidents of sudden death of young athletes
- Turf Talk with Dr. Paul Wright and Stratton Palmer- knowledgeable guest

MANAGING RISKS

- Reasons
- Moral and ethical obligation to minimize risks and safeguard futures
- Minimizing time away from training/games means maximizing time spent honing skills
- Economics – academies/schools invest a great deal of resources on sports programmes and must minimize losses to remain viable
 - academies are lifeblood of clubs earnings from trades and sales
- Medicolegal – young athletes are potential earners. When things go wrong the doctor, physiotherapist, the academy, and the umbrella organisation may be held liable.

BRITISH FOOTBALL ASS. (FA) ACADEMIES

- 1998 – 38 member clubs of the F.A. established academies for boys aged 9 – 19 yrs

July 1999 – End of May 2001

- clubs engaged by F.A. medical research programme to document/analyse nature and severity of injuries

Definition – a recordable event is one which prevents training/match for at least 48 hrs. after the day of injury

INJURY TYPES

- 3,805 injuries logged at 0.4 injury/player/season
- 82,929 total absent days/mean of 21.9 days/injury: 6 % of season
- 90% lower limb injuries
- 50.4% match injuries vs 48.7% training injuries
- 66% - soft tissue injuries
- 79% - thigh injuries involving quads and hamstrings
- 5% - Osgood-Schlatter's and Sever's disease

Knee injuries – 28% ligament injuries (MCL 85%)

Peak injury periods – return from breaks

Training: August & January

Competition: October

PREVENTION

British Football Association (FA) Academies

- up to age 13 yrs: competitive games are played 7 vs 7
- above age 13 yrs.: games are 11 vs 11
- up to age 17 yrs: training twice per week and games on weekends

New Castle United Club

- 8 – 11 yrs.: focussed training on co-ordination , balance, body awareness
- 12 – 16 yrs: range of motion and anthropometry measurements
 - specific training/conditioning program designed to minimize risk of injury when delayed skeletal maturation detected
- >16 yrs: strengthening, endurance, full-time training, aerobic/anaerobic training



X X X X
SIMON HEIDI MEL B HOWIE

*America's
got talent*



THE END

Thank you

SOURCES

- Brukner, Bahr, Blair, Cook, Crossley, McConnell, McCrory, Noakes, Khan. *Clinical Sports Medicine*, 4th Edition. McGraw-Hill
 - Deehan, D.J., Bell, K., McCaskie, A.W., Adolescent Musculoskeletal injuries in a football academy. *The Bone and Joint journal*. January 26, 2007
 - Price, R.J., Hawkins, R.D., Hulse, M.A., Hodson, A. The Football Association medical research programme: an audit of injuries in academy youth football
British Journal of Sports Medicine 2004, vol. **38**, Is. **3**
bjsm.bmj.com/content/38/4/466
- . www.luriechildrens.org

AETIOLOGY

Neuromuscular control better in boys vs girls with certain activities

- Less hamstring usage
- Less flexion of knees and hips
- Greater inward collapse of knees

Risk management -

KIPP – Knee injury Protection Program (Ann & Robert Lurie Children’s Hosp. of Chicago Inst. For Sports Med)

Coaches – trained to lead knee injury prevention warm-up routine

Athletes – 6/52 neuromuscular exercise program

ACL injuries – ↓82% Sprains -↓ 70% Ankle sprains - ↓62%

PREVENTIVE MEASURES

American Academy of Pediatrics Council on Sports Medicine and Fitness and other American inst.

- limit athletic activity to max 5/7 per wk and 1-2 days rest
- Rest for 1-3/12 per year
- Vary sport activities : reduce burnout, risk of injuries, imbalanced muscle development
- Specialize after puberty
- active warm-up better than static stretching
- Stretching better after work-out. Stretch major muscle grps 20-30 secs
- Hydration: <1 hr. use H₂O. ; >1 hr sports drinks
- Early response to injuries
- Equipment: appropriate for sport, proper fit
- Screening: Sports Medicine Physician