

香港中文大學 運動表現及力學實驗室 Sport Performance and Biomechanics Laboratory The Chinese University of Hong Kong

HKSI Athlete and Scientific Services Division 香港體育學院運動員及科研事務科 Elite Training Seminar 精英培訓研討會

Neuromuscular training for sport-related lower-limb injury prevention
預防下肢運動創傷的神經肌肉訓練 – 國際足協 11+

Prof. Daniel Tik-Pui FONG, 方迪培教授
Sport Performance and Biomechanics Laboratory,
Division of Sports Medicine, Department of Orthopaedics and Traumatology,
Prince of Wales Hospital, Faculty of Medicine, The Chinese University of Hong Kong
香港中文大學 醫學院 威爾斯親王醫院 矯形外科及創傷學系 運動醫學組 運動表現及力學實驗室

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Prof Daniel Fong 方迪培教授

BSc in Physics
MSc in Exercise Science
PhD in Orthopaedics and Traumatology
Fellow of International Society of Biomechanics in Sports

Hardaway Chan 陳振坤 (Coaching Science & Sports Medicine)
Mandy Chung 鍾敏玲 (Exercise Science & Mechanical Engineering)
Aaron Hung 洪忠朗 (Kinesiology & Biomedical Engineering)
Winslow Ip 葉政麟 (Exercise & Nutrition)

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如何預防運動創傷? 2010年1月18日, 蘋果日報

Prevention 預防 ← Biomechanists 生物力學家
↓
The first defender! 第一道防線!
Diagnosis & Treatment 診斷及治療 ← Physicians 醫生
↓
Rehabilitation 康復 ← Physiotherapists 物理治療師

熱身活動 Warm-up
體能及本體感覺訓練 Proprioception
不同的 訓練
比賽規則 Game rules
保護器材 Prophylactic device
落地技術 Landing skill

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FIFA.com

ABOUT FIFA

The 11

The 11+ – a complete warm up to prevent injuries

主持: 雷英雄博士; 講者: 李焯煜先生

2010年3月7日, 有線電視

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BMJ

Comprehensive in young footballers controlled

Lower extremity injury: Intervention group (solid blue), Control group (dashed blue), P=0.072
Severe injury: Intervention group (solid red), Control group (dashed red), P=0.005

Percentage of players

Exposure to football (hours)

Control group 訓練組
Intervention group 訓練組
Severe injury 嚴重創傷

ABSTRACT
Objective To examine the effect of a comprehensive warm-up programme designed to reduce the risk of lower extremity injury in young footballers.
Design Cluster randomised controlled trial.
Setting 125 football clubs in the middle of Norway in 2007.

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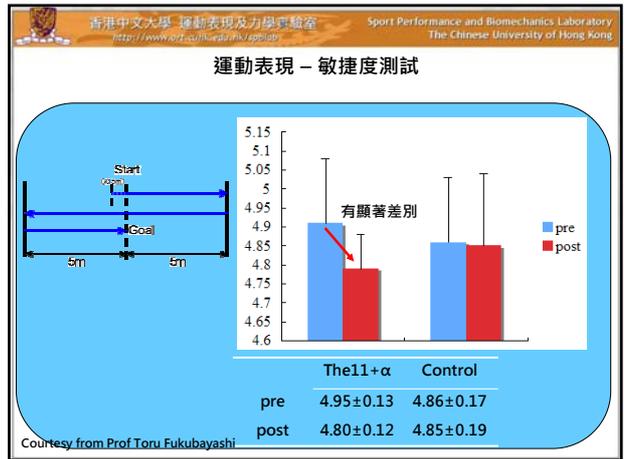
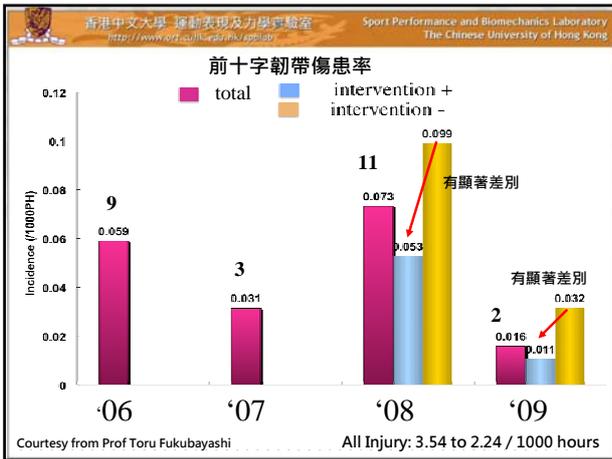
Dr Torbjorn Soligard

SMART 2009 Convention

足球醫學實地工作坊

FIFA "11+"

Nike SPARQ 訓練方案



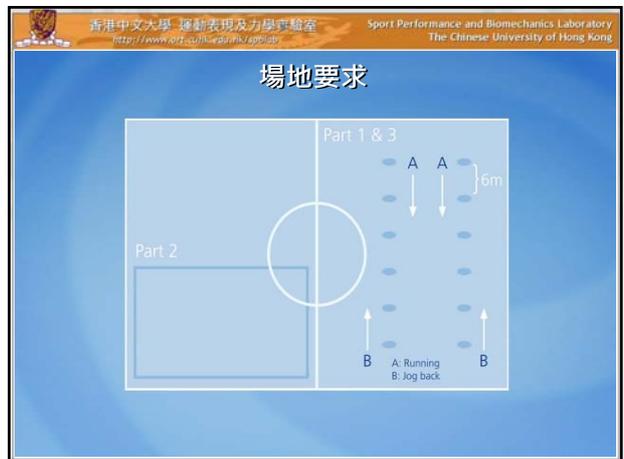
The 11+

- 需時20分鐘, 分三組, 共十五套動作

第一組 (8分鐘):
下肢熱身運動

第二組 (10分鐘):
協調、力量及平衡

第三組 (2分鐘):
爆發力



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PART 1 RUNNING EXERCISES - 8 MINUTES

1 RUNNING STRAIGHT AHEAD
The participant runs straight ahead for 10 seconds. The participant should maintain a steady pace and avoid overstriding.

2 RUNNING HIP OUT
The participant runs straight ahead for 10 seconds. The participant should maintain a steady pace and avoid overstriding.

3 RUNNING HIP IN
The participant runs straight ahead for 10 seconds. The participant should maintain a steady pace and avoid overstriding.

4 RUNNING CIRCLES PARTNER
The participant runs in a circle around a partner for 10 seconds. The participant should maintain a steady pace and avoid overstriding.

5 RUNNING SHOULDER CONTACT
The participant runs in a circle around a partner for 10 seconds. The participant should maintain a steady pace and avoid overstriding.

6 RUNNING QUICK FORWARDS & BACKWARDS
The participant runs in a circle around a partner for 10 seconds. The participant should maintain a steady pace and avoid overstriding.

4 QUICK FORWARDS & BACKWARDS



- 保持面向前
- 落地時髖、膝關節輕微屈曲
- 膝關節切勿向內



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PART 2 STRENGTH · PLYOMETRICS · BALANCE - 10 MINUTES

LEVEL 1

1 THE BENCH STATIC
The participant lies on their back with feet flat on the floor and arms extended forward. They hold this position for 10 seconds.

LEVEL 2

2 THE BENCH ALTERNATE LEGS
The participant lies on their back with feet flat on the floor and arms extended forward. They alternate lifting one leg at a time for 10 seconds.

LEVEL 3

3 THE BENCH ONE LEG LIFT AND HOLD
The participant lies on their back with feet flat on the floor and arms extended forward. They lift one leg and hold it for 10 seconds.

LEVEL 4

4 SIDEWAYS BENCH STATIC
The participant lies on their side with feet flat on the floor and arms extended forward. They hold this position for 10 seconds.

LEVEL 5

5 SIDEWAYS BENCH RAISE & LOWER HIP
The participant lies on their side with feet flat on the floor and arms extended forward. They raise and lower one hip for 10 seconds.

LEVEL 6

6 SIDEWAYS BENCH WITH LEG LIFT
The participant lies on their side with feet flat on the floor and arms extended forward. They lift one leg for 10 seconds.

LEVEL 7

7 HAMSTRINGS BEGINNER
The participant lies on their back with feet flat on the floor and arms extended forward. They lift one leg and hold it for 10 seconds.

LEVEL 8

8 HAMSTRINGS INTERMEDIATE
The participant lies on their back with feet flat on the floor and arms extended forward. They lift one leg and hold it for 10 seconds.

LEVEL 9

9 HAMSTRINGS ADVANCED
The participant lies on their back with feet flat on the floor and arms extended forward. They lift one leg and hold it for 10 seconds.

LEVEL 10

10 SINGLE-LEG STANCE HOLD THE BALL
The participant stands on one leg and holds a ball with the other hand for 10 seconds.

LEVEL 11

11 SINGLE-LEG STANCE THROWING BALL WITH PARTNER
The participant stands on one leg and throws a ball to a partner for 10 seconds.

LEVEL 12

12 SINGLE-LEG STANCE TEST YOUR PARTNER
The participant stands on one leg and tests their partner's balance for 10 seconds.

LEVEL 13

13 SQUATS WITH TOE RAISE
The participant squats and raises one toe for 10 seconds.

LEVEL 14

14 SQUATS WALKING LUNGES
The participant squats and walks lunges for 10 seconds.

LEVEL 15

15 SQUATS ONE-LEG SQUATS
The participant squats on one leg for 10 seconds.

LEVEL 16

16 JUMPING VERTICAL JUMPS
The participant jumps vertically for 10 seconds.

LEVEL 17

17 JUMPING LATERAL JUMPS
The participant jumps laterally for 10 seconds.

LEVEL 18

18 JUMPING ROW JUMPS
The participant jumps in a row for 10 seconds.

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7 THE BENCH
PART 2: STRENGTH · PLYOMETRICS · BALANCE

- 支撐身體時，保持身體筆直
- 頭部勿向後仰
- 臀部不要向上提
- 腰背不要擺動
- 上臀在肩正下方作支撐



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LEVEL 4

4 SIDEWAYS BENCH STATIC
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LEVEL 5

5 SIDEWAYS BENCH RAISE & LOWER HIP
The participant lies on their side with feet flat on the floor and arms extended forward. They raise and lower one hip for 10 seconds.

LEVEL 6

6 SIDEWAYS BENCH WITH LEG LIFT
The participant lies on their side with feet flat on the floor and arms extended forward. They lift one leg for 10 seconds.

8 SIDEWAYS BENCH
PART 2: STRENGTH · PLYOMETRICS · BALANCE

- 支撐身體時，保持身體筆直
- 頭部勿傾向肩部作支撐
- 臀部不要向下墜
- 肩、腰背及腿部不要前後擺動
- 上臀在肩正下方作支撐



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LEVEL 9

9 HAMSTRINGS ADVANCED
The participant lies on their back with feet flat on the floor and arms extended forward. They lift one leg and hold it for 10 seconds.

9 HAMSTRINGS
PART 2: STRENGTH · PLYOMETRICS · BALANCE

- 同伴必須讓小腿貼緊地面作支撐
- 保持身體筆直
- 頭部勿傾向後仰
- 髖部不要屈曲
- 先以慢速作嘗試，慢慢加快



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The participant stands on one leg and throws a ball to a partner for 10 seconds.

LEVEL 12

12 SINGLE-LEG STANCE TEST YOUR PARTNER
The participant stands on one leg and tests their partner's balance for 10 seconds.

10 SINGLE-LEG STANCE
PART 2: STRENGTH · PLYOMETRICS · BALANCE

- 面向前方，髖、膝、踝關節保持垂直
- 膝關節切勿向內
- 髖及膝關節保持微曲
- 以足底趾骨(前腳掌)支撐身體
- 盆骨保持水平位置



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LEVEL 1
11 SQUATS

- 面向前方，髖、膝、踝關節保持垂直
- 膝關節切勿向內
- 屈髖、膝及踝關節時，身體向前傾，背部挺直
- 頭部切勿向後仰
- 以足底趾骨(前腳掌)支撐身體

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LEVEL 1
12 JUMPS

- 面向前方，髖、膝、踝關節保持垂直
- 膝關節切勿向內
- 屈髖、膝及踝關節時，身體向前傾，背部挺直
- 雙腳一同跳高，落地時以足底趾骨(前腳掌)支撐
- 切勿以直膝落地
- 嘗試以爆發力跳高，及溫和著地

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LEVEL 1
RUNNING EXERCISES

13 ACROSS THE PITCH

- 75-80% 最快速度
- 跑大約40米
- 40米後緩步跑
- 膝關節切勿向內

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LEVEL 1
RUNNING EXERCISES

14 BOUNDING

- 先跑數步，然後作6-8次羚羊跳
- 膝關節及另一邊手臂盡量向上提
- 以足底趾骨(前腳掌)支撐

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LEVEL 1
RUNNING EXERCISES

15 PLANT & CUT

- 先跑數步，然後以外側腳抓地，再向另一方變向跑
- 以80-90%最快速度跑，再作下一次轉向
- 膝關節切勿向內

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千萬不要 Knee In Toe Out!!
這會對膝關節造成很大威脅!!

KNEE POSITION

correct incorrect

Michael Owen, UK Footballer
ACL Rupture during World Cup 2006

鄭家豪, 香港武術運動員
2005年10月19日於練習時受傷



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1. 運動員身體檢查

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2. 體能及運動表現評估

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3. 體適能及預防創傷訓練計劃

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4. 運動醫學及物理治療

