

Is there a best strategy to prevent ankle sprains?



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Clarify terminology.....

- First time sprains
- Chronic instability
 - Mechanical instability
 - Functional instability
- Recurrent sprains



Need for prevention?

- 20% of all injuries in under 18"s = ankle sprains
 - Girls 25% > boys 15%
- Adolescents 7 times more likely than adults to sprain their ankles (*Doherty 2014*)
- 30% recur within the first year
- 30 – 60% develop chronic instability
- Lasting effect of sprain into adulthood
- Evidence after 45 years of research in prevention; Still not strong or convincing

Adolescent athlete: risk factors?

- Less ability to hold stability for long period of time in frontal plane
- Only reach similar ability in balance at **age 10** as compared to an adult
 - Not yet developed smooth small oscillations to stabilise
- At time of growth spurt – struggle to integrate proprioceptive inputs
- Application of rules in sport
 - Refereeing at youth level?
 - Emotions of the young?
- Shoe wear
- Girls and general hypermobility

Current management for sprains?

- Most sprains are managed conservatively:

- No surgery
- Individualized functional rehabilitation
 - Early mobilisation
 - PRICE

(van den Bekerom, Kerkhoffs, Hertel, McKeon, Gribble, Wikstrom 2010 – 2015)

- Return to sport: 0 – 7 days after first time and recurrent sprains *(McKeon 2014)*
- Quick recovery does not preclude ongoing long term pain: Osteo-chondral- lesions

Preventative strategies: Evidence ?

Most **consistent** evidence exists for:

- Use of external supports/ braces
- Taping
- Neuromuscular training



External supports? Type?

- Recommended: Semi-rigid and lace-up supports



External supports: clinical benefits

Several well controlled studies amongst school children (*McGuine 2012*)

- Limited data exists that sprains return to sport sooner (*Kemmler 2011*)
- Immediately re-assure + improve self confidence (*Lardenoye 2012*)
- Easy application + tighten during play + lasts a year (*McGuine 2015*)
- Effective in reducing swelling of acutely sprained ankle (*Kerkhoffs 2012*)

Braces: Negative connotations?

- **Long term use:**
 - Causes weakness of lower limb? – no evidence (*McKeon 2008*)
 - Not detrimental to performance (*Cordova 2005, Newman 2012, Putnam 2012, McKeon 2008*)
- Not associated with other lower limb injuries: Knee (*West 2013*)
- Fitness and performance - not affected (*Gunay 2014, Handoll 2011*)
- Bulky
 - McDavid Ultralight 195
- Does not fit all shapes
- Sizing for young athletes?

Taping

Limited data and smaller studies only

- Decrease risk of sprains in previous sprains
- Kinesio tape studies – no available data on young athletes

- **Benefits?**
 - Customised
 - Comfortable
 - Type of sport i.e. dancing, soccer

Negative connotations of taping?

- Needs an expert to apply the tape
- Costs and time to apply
 - R 55 times 3 times per week
 - for 8 week season = R5 320?
- Skin issues



Recommended type of neuromuscular training?

- Closed chain
- Functional and Fun!
- Goal orientated
- 4 sessions per week
- Pre-season or post injury: at least 6 – 8 weeks recommended
- Minimal equipment required: wobble board

Rehabilitation of young athletes?!

- Cognitive development – language
- Physical and motor control
 - Growth spurt
- Compliance
 - Attention span, motivation, supervision
- Maintain the fun
 - Wii Fit
 - Smartphone apps (*van Reijen 2014, Vriend 2015*)



Cost benefit analysis for a season:

- Bracing more cost effective to taping (*Olmsted 2004, Lin 2010, McGuine 2014*)
 - Speed agility and vertical jump unchanged
- Neuromuscular training:
 - Team approach
 - Smartphone Apps < 2% (*Wikstrom 2014*)
- Combination studies:
(*Janssen 2014: ABrCt study with 384 athletes; Witjes 2012: ANKLE trial*)
- Cost of brace = cheaper than visit to emergency room & investigations (*Caldwell 2013*)

Summary

To prevent a first time sprain: **brace** = better option

To prevent another sprain?

- Brace and tape – more immediate effect
- Brace more cost effective than taping
- BUT **neuromuscular training** effective and in team scenario – more cost effective too + other benefits of training!

Other ideas to prevent sprains

- Warm up + stretching of calf muscles
 - Growth spurts
- Shoe wear + tie shoe laces
 - Orthotics?
- Involve parent and coach
- Screen hypermobility, young female



Criteria before return to sport:

- Questionnaire: Cumberland Ankle Instability Tool (CAITY)
- Fitness tests / Performance tests:
 - Vertical jump, figure of 8, Edgren side-step
 - Time to stability after drop landing
 - Star test
- Range of dorsi-flexion
- General fitness: running speed



Thank you



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