

Stress- Fracturen Onderste Extremiteit



Remco van Reen
NVFS-
Sportfysiothera-
peut

Janssen van
Dijke
Fysiotherapie,
Zelhem &
Hengelo Gld

PREVALENTIE

- Moen et al. Sports Medicine, Arthroscopy, Rehabilitation, Therapy & Technology 2012

- 4-35% (van OE letsel)

- Patel et al. Am Fam Physician 2011 (locatie)

- tibia 23.6%,
- tarso naviculair 17.6%,
- metatarsaal 16.2%,
- fibula 15.5%,
- femur 6.6%,
- pelvis 1.6%,
- spine 0.6%.

- Bhatnagar et al. J Clin Diagn Res. 2015 (locatie)

- tibia 87,7%
- metatarsaal 2%
- fibula 7,8%
- Femur 2,4%



Table 1. Risk Factors for Stress Fracture

Consuming more than 10 alcoholic drinks per week

Excessive physical activity with limited rest periods

Female athlete triad (eating disorders, amenorrhea, osteoporosis)

Female sex

Low levels of 25-hydroxyvitamin D

Recreational running (more than 25 miles per week)

Smoking

Sudden increase in physical activity

Track (running sports)

Patel et al. Am Fam Physician 2011

STERKE RELATIE

- Herhaaldelijke hoog intensieve trainingen / belastingen zoals bij militairen en atleten
- Recreatieve atleten / hardlopers > 25 km

Patel et al. Am Fam Physician 2011

ALGORITME

Diagnosis and Treatment of Stress Fractures

Pain with activity, recent increase in training, edema, or bone tenderness

Hulpvraag

Sportarts, Sportmasseur, sportfysiotherapeut

Plain radiography

Diagnostiek

Positive

Negative

Sportarts

Urgent diagnosis required?

No

Yes

Avoid stress, repeat radiography in two to three weeks

Positive

Negative

Clinical suspicion persists?

No

Yes

Stress fracture likely ruled out; proceed with treatment

MRI or bone scintigraphy

Positive

Negative

High-risk fracture?

Reconsider differential diagnosis

No

Yes

Treatment (Table 4): rest (stress avoidance), activity modification, analgesics

Consider referral to orthopedist or sports medicine subspecialist

MEEST VOORKOMEND



KENMERKEN

- Pijn, met name bij lopen (81%)
- Lokale (gebied) gevoeligheid (65,9-100%)
- Oedeem (18-44%)

- Single leg hop test ✗
- Toonvork test ✗

- MRI ✓

Patel et al. Am Fam Physician 2011

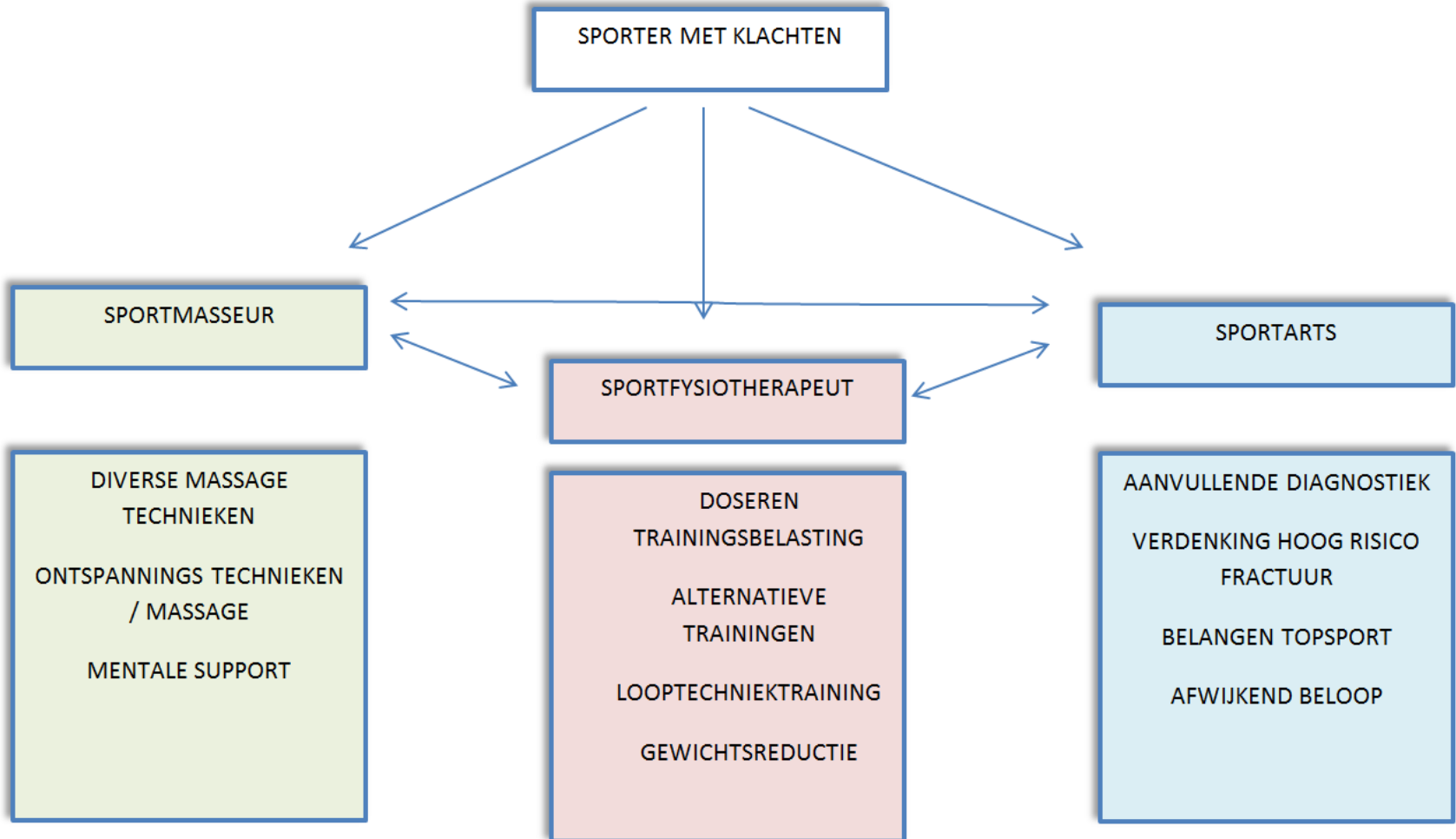
Franklyn et al. World J Orthop. 2015

DIFFERENTIAL

- Tendinopathy
- Compartment syndrome
- Nerve or artery entrapment syndrome
- Medial tibial stress syndrome
 - nonfocal tenderness (diffuse along the mid-distal, posteromedial tibia)
 - lack of edema
- Malignancies
 - Osteosarcoma
 - Ewing sarcoma

Patel et al. Am Fam Physician 2011

VERWIJSMODEL



SPORTFYSIOTHERAPIE

- Dosereren (trainings-) belasting
- Alternatieve training
- Looptechniektraining
- Gewichtsreductie
- En als het doel bereikt moet worden..
- Advies
 - Pneumatische Brace
 - Schokdemping => sport-podotherapeut

DOSEREN (TRAININGS) BELASTING

- Na stellen diagnose, beleid meteen inzetten
 - 4 - 12 weken (of langer) [Patel et al. Am Fam Physician 2011](#)
 - 6-8 weken [KNVB](#)
- Pijnvrij belasten en adequate rust
- Om de 2-3 weken evaluatie, procesmonitoring

ALTERNATIEVE TRAINING

- **Conditioneel => behoud**
 - Zwemmen, crosstrainer, fiets
- **Krachttraining divers zonder piekbelastingen op onderste extremiteit**

BIOMECHANICA EN LOOPTECHNIEK

- smaller bimalleolar width

Nunn et al. Br J Sports Med. 2016

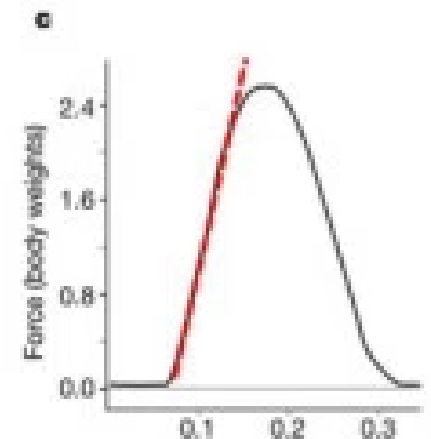
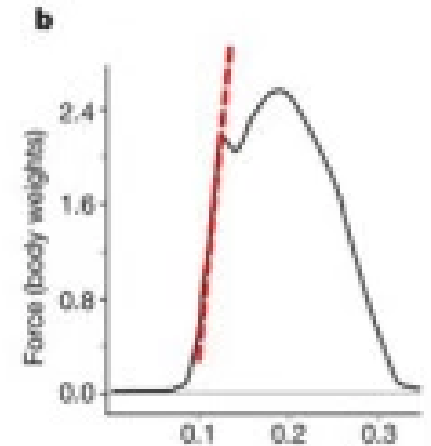
- Vertical load

Edwards et al. Clin Biomech (Bristol, Avon) 2010

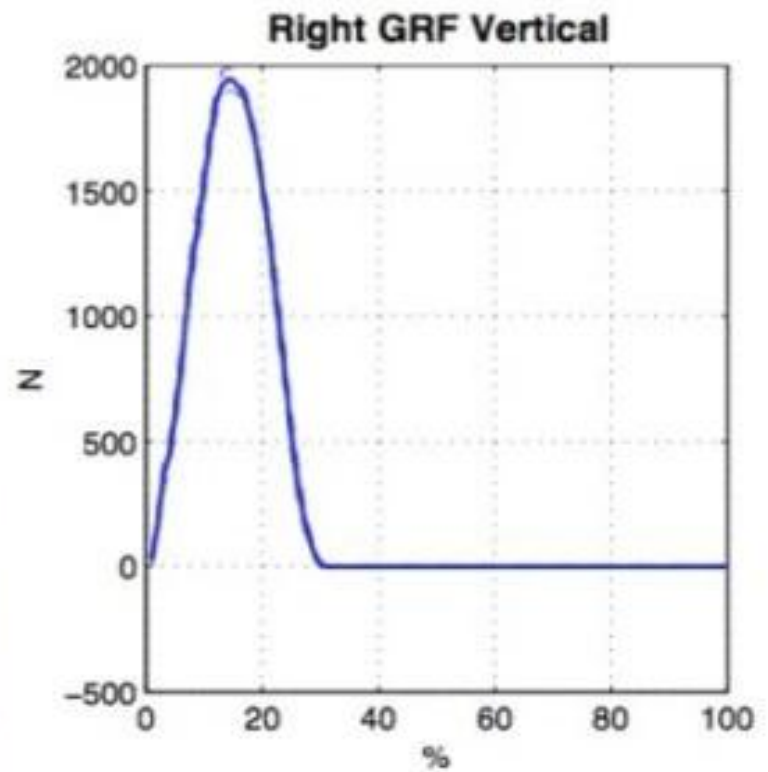
Meardon et al. Clin Biomech Bristol, Avon) 2015

- Decreasing running speed 4.5 to 3.5m/s reduced the estimated likelihood for stress fracture by 7% ($P=0.017$).
Decreasing runningspeed 3.5 to 2.5m/s further reduced the likelihood for stress fracture by 10% ($P<0.001$).

Edwards et al. Clin Biomech (Bristol, Avon) 2010



BIOMECHANICA EN LOOPTECHNIEK



GEWICHT REDUCTIE

- Wel associatie tussen hoge BMI en kans op TSF
Nunns et al. Br. J Sports Med. 2016.
Yagi et al. Knee Surg Sports Traumatol Arthroscop 2013
- Effectonderzoek invloed verlagen BMI bij TSF ontbreekt



PNEUMATISCHE BRACE

- Swenson et al. Am J
- Allen et al. Mil Med.
- Rome et al. Cochran
*Rehabilitation after
fracture may be aided
use of pneumatic brace
more evidence is req
confirm this.*



05

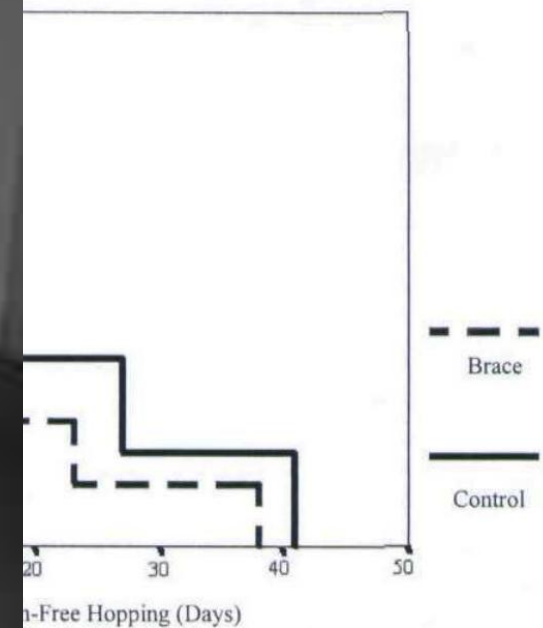


Fig. 2. Survival function for time to pain-free hopping.

SCHOKDEMPING



SPORT-PODOTHERAPIE



EN ALS HET DOEL BEREIKT MOET WORDEN..

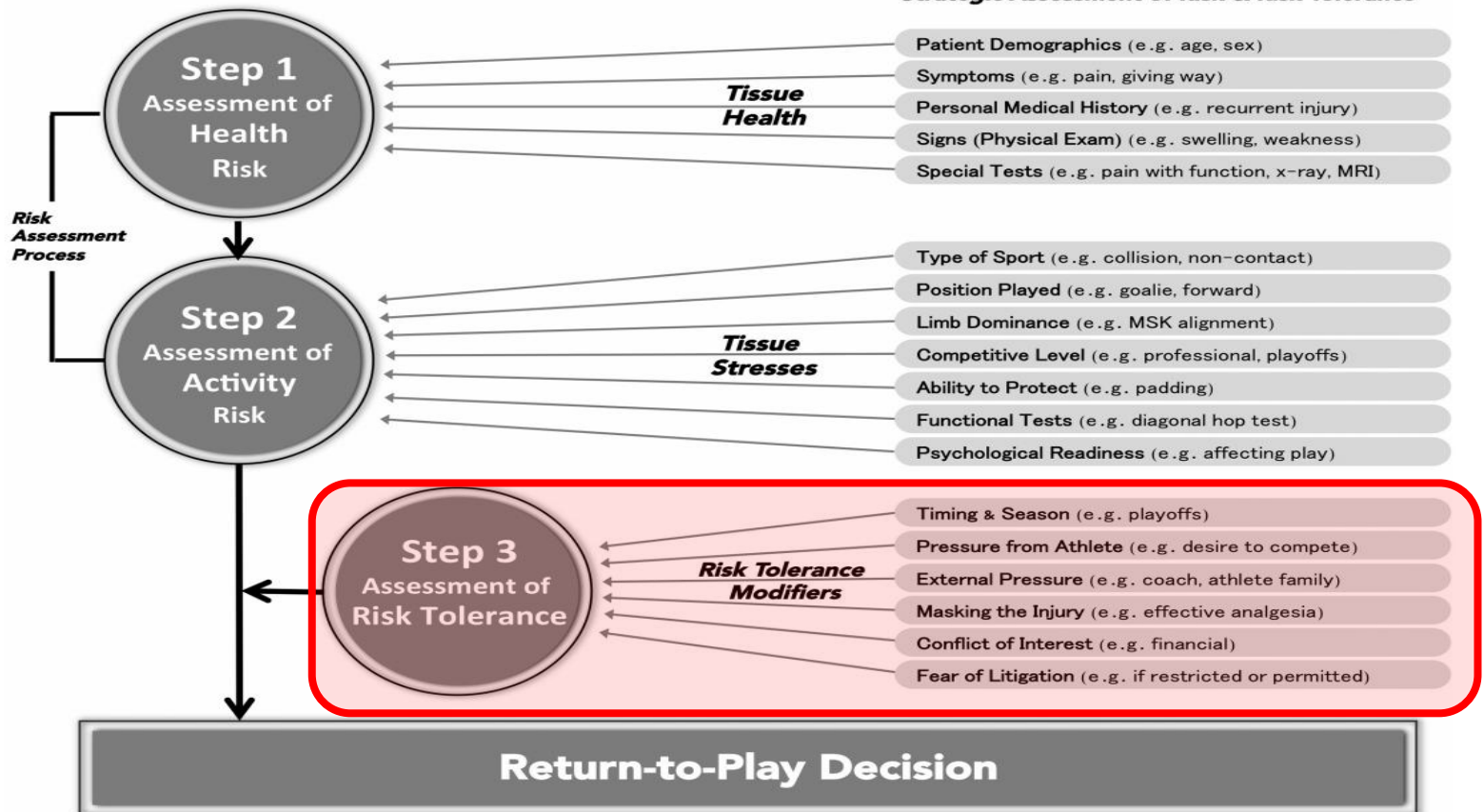
- Bij (top) sporter gedurende ‘seizoen’ kiezen voor doortrainen en competieren met aangepaste belastingen.
 - Exacerbaties voorkomen
 - Kans op noodzaak grotere interventie neemt toe

Patel et al. Am Fam Physician 2011

RETURN-TO-PLAY IN SPORT

- Creighton et al. Clin J Sport Med. 2010

StARRT Framework



SPORTER

NOS

Sport

12:08



**DANK VOOR DE
AANDACHT**

VRAGEN?