

ÆLDRESAGEN Temadag om udvikling af sundhedstilbud for de ikke-motionsvante og mindre mobile. Odense, 11. maj 2017.

'Fodbold Fitness – Kan boldspil få flere ikke-motionsvante ældre med?!'

Peter Krstrup

Professor i Sport og Sundhed
Syddansk Universitet, Odense
Institut for Idræt og Biomekanik



Exeter Universitet, UK
Professor i Sport og Sundhed



Fitness and health effects of intense interval training
- from skeletal muscle to man

Københavns Universitet
Professor i Holdspil og Sundhed



Fitness and health effects of intense interval training
- from skeletal muscle to man

Syddansk Universitet
Professor i Sport og Sundhed



***"Promoting Health and Boosting Performance: Football Fitness,
'FIFA 11 for Health' in Europe and Elite Football Research"***

SDU

75 artikler
100 forfattere

Muskelfysiologi



Boldspil og sundhed



125 artikler
240 forfattere

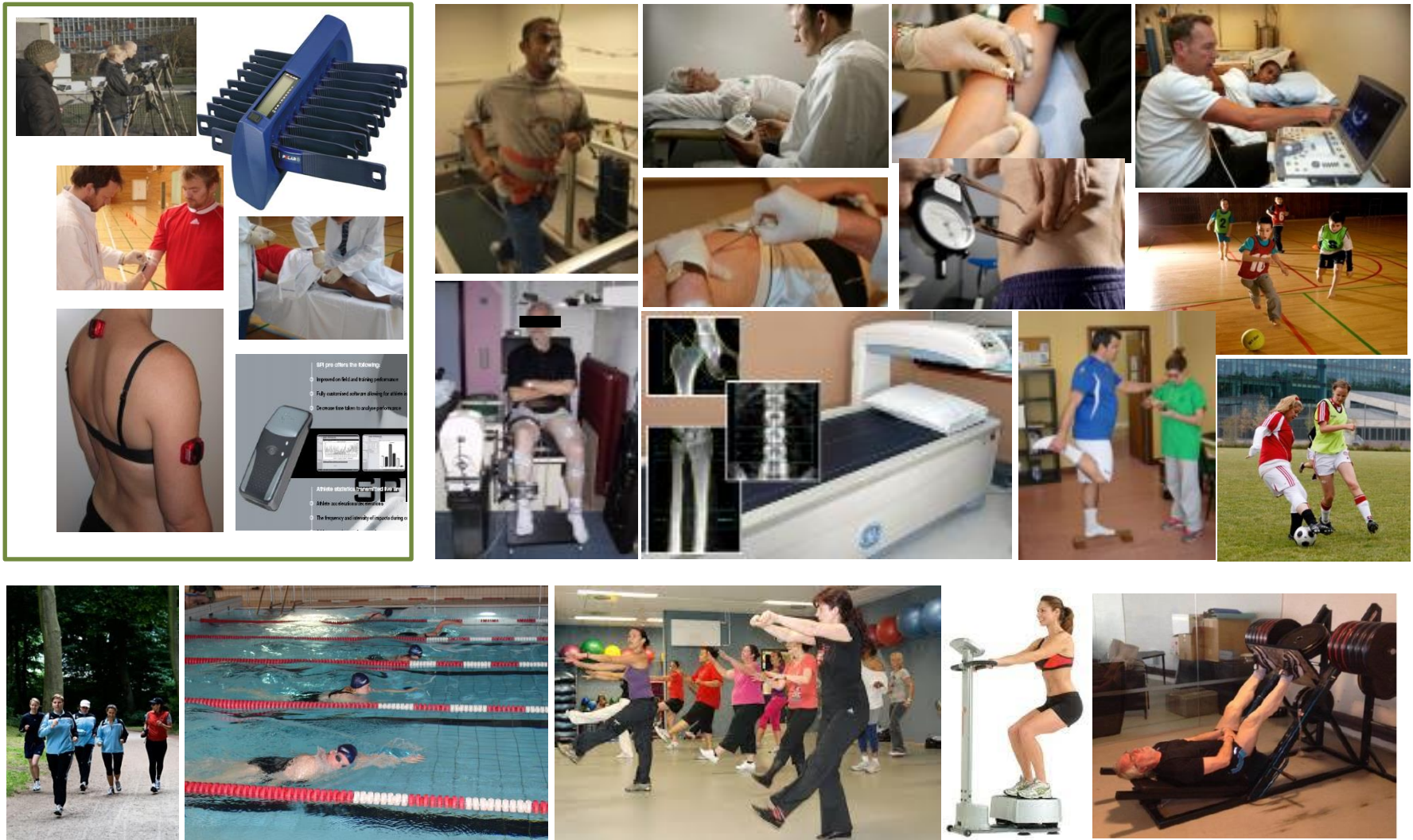
80 artikler
130 forfattere



Præstation i elitesport

Forsknings- områder

Metoder: Trænings- og sundhedseffekter af sport



Peter Krstrup

11. maj 2017

Department of Sports Science and Clinical
Biomechanics

SDU 

Boldspil og Sundhed 2003-2017

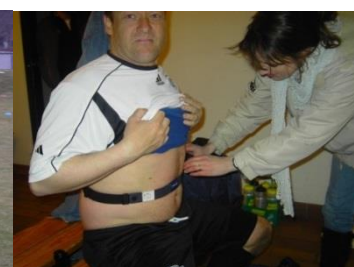
Hjemløse mænd

FC Zulu

Serie 5

Old Boys

Pilot
studier
2003-
2006



20-40 år
mænd

20-45 år
kvinder

50-60 år
m/k

60-75 år
mænd

60-70 år
kvinder

7-12 år
piger/dr

Studier om
forebyggelse
2006-
2017



Fodbold
Fitness
ABC

Hypertensive
mænd

T2D
mænd

T2D
kvinder

Hypertensive
kvinder

FC
Prostata

Studier om
behandling
2010-
2017



Copenhagen Centre for Team
Sport and Health

Peter Krstrup

11. maj 2017

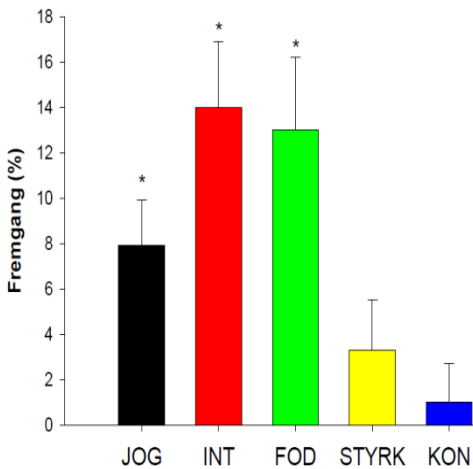
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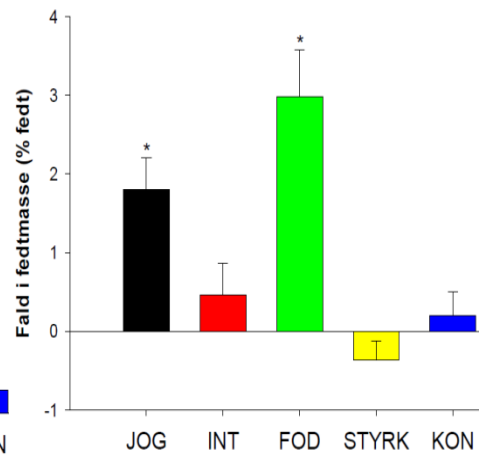
Effekt af 12 ugers træning ved 4 træningsformer

Jogging (JOG), intervalløb (INT), fodbold (FOD) og styrketræning (STYRK)

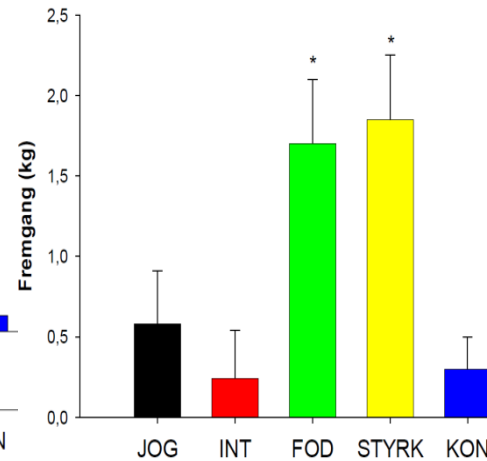
Kondital



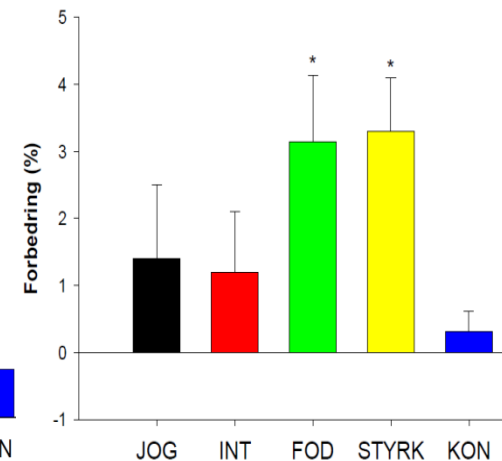
Fedtmasse



Muskelmasse



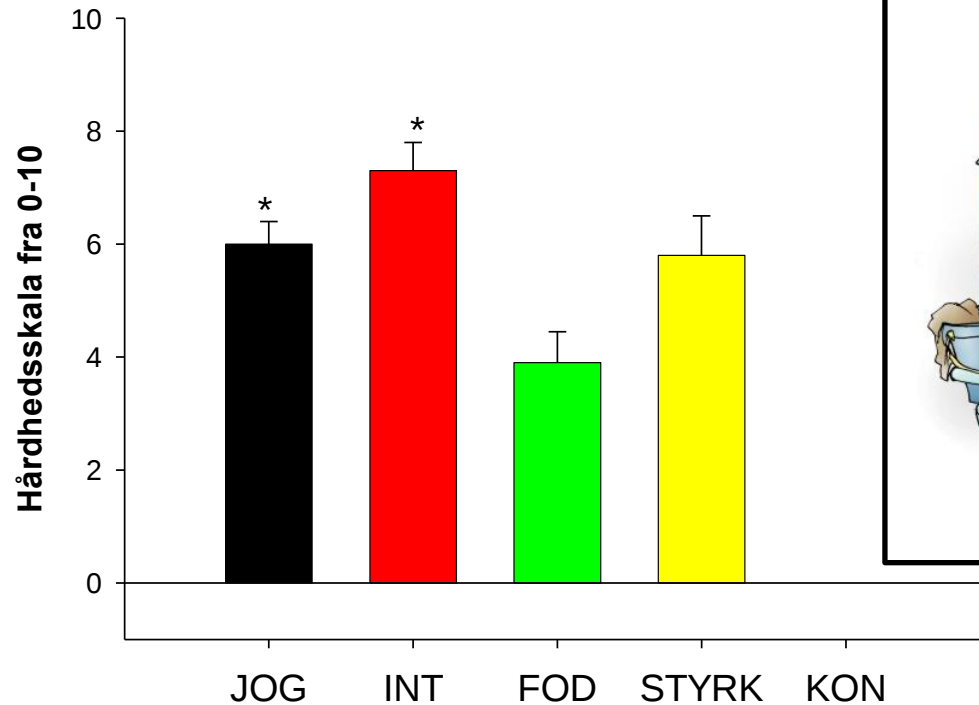
Knoglemasse



Krustrup et al. 2009, 2010

Selvoplevet belastningsgrad

Social kapital, netværks- annelse og fastholdelse



Ottesen et al. 2010

Krustrup et al. 2009, Elbe et al. 2010

Formidling



FC Prostata besiegt Testosteronmangel
Freitag,
20. Juni 2014

Estudio demuestra que correr a largas distancias ayuda a perder grasa

El científico Peter **Krstrup** y sus colegas de la Universidad de Copenhague ... conseguidos tras el estudio: los jugadores de **fútbol** habían perdido 3.5 kilos ...

CNN: Soccer burns more fat than jogging

Soccer burns more fat than jogging Author: University of Copenhagen Published on Aug 22, 2007, 06:34. The experiment: Sports scientist Peter **Krstrup** and ...



There's a new slogan for weight-watchers:
Burn it like Beckham.

How football is improving the lives of Denmark's homeless

10 August 2014, **By Malcolm Brabant**
BBC Health Check



Goal-den years:
Over-70s should play football to keep fit



Fußball als Wunderwaffe gegen Alter und Krankheit

von Madeleine Amberger:
23.06.14, 06:00 „24st“



Was in Fußball alles drinnen steckt
Wie kommt es, dass Fußball auch gegenüber anderen anstrengenden Sportarten wie etwa Joggen besser abschneidet? Als sportliche Betätigung fällt Fußball in die Kategorie von HIIT: High Intensity Interval Training. „Es gibt beim Fußball außerdem viele verschiedene Bewegungsabläufen, die jeweils schnell und mit hohem Energieeinsatz durchgeführt werden“, erklärt Peter Krstrup. „Man kickt, dribbelt, springt, dreht sich, tackelt. Alles zusammengenommen ist das eine spannende



Home > Life > Mind and Body

Soccer a great way to kick high blood pressure, study finds

CELIA MILNE
METRO CANADA
February 04, 2010 5:00 a.m.

Be the first to comment
Print article
Text size
Exercise reduces high blood pressure. Doctors have known this for a long time. But what kind of exercise is best?



The New York Times

March 4, 2010, 2:25 pm

Health Gains for Grown Up Soccer Players



Adults who regularly kick around a soccer ball with friends have better heart and bone health, a new study found. Being a soccer mom usually means carpooling kids to games and watching them play. But new research shows that women who join in the fun and kick around a soccer ball can dramatically improve their bone and heart health.

LE FOOT, C'EST BON POUR LA SANTE

FOOTBALL ET SANTÉ,

10 FEB, 2015

Peter Krstrup
11. maj 2017

Department of Sports Science and Clinical
Biomechanics



Football for Health: Publikationer, forskere



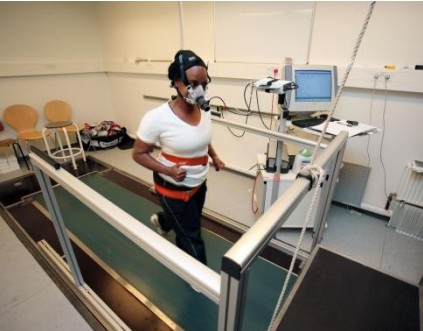
**125 videnskabelige artikler
2007-2017**

225 forskere fra 20 lande

To særnumre 2010, 2014

Fitness- og sundhedseffekter af kvindefodbold



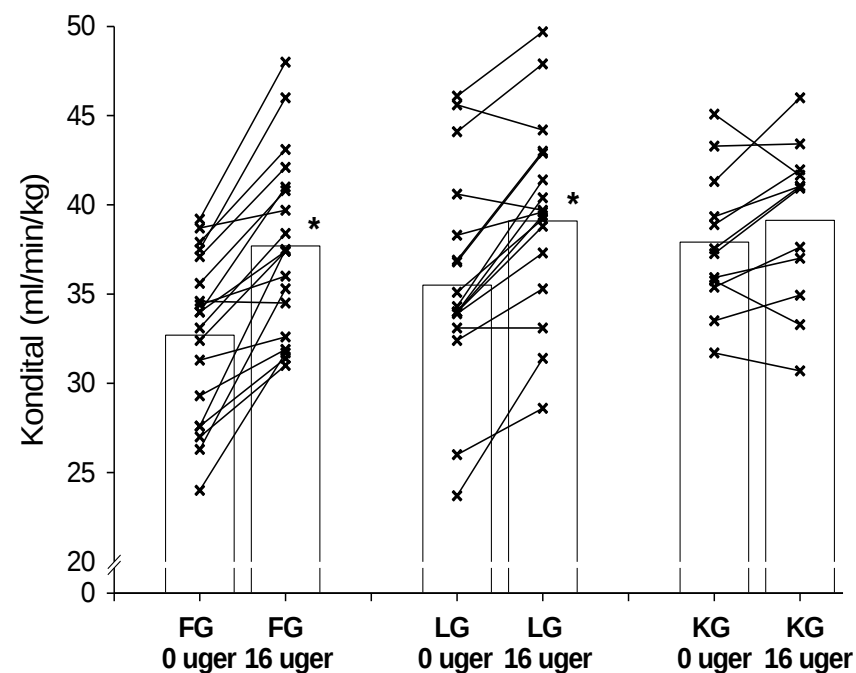


Effekter af 16 ugers fodbold for 20-47 årige kvinder

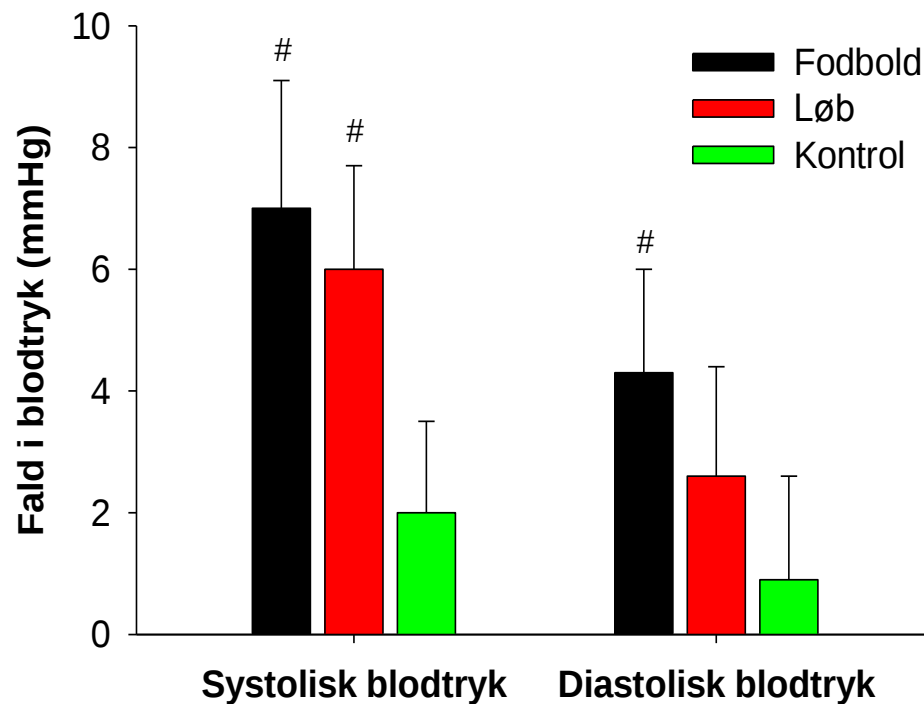
2x1 time om ugen, fodbold eller løb



Kondital



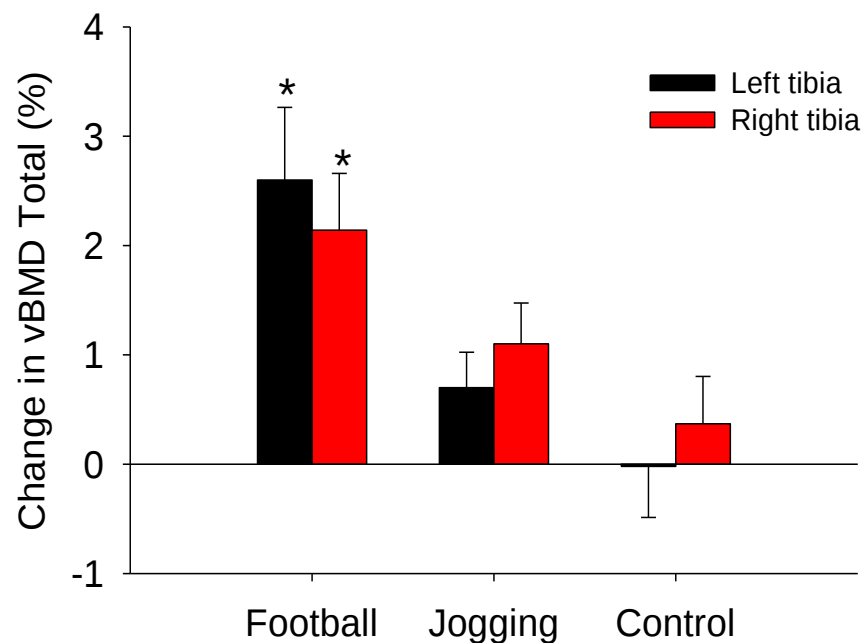
Blodtryk



Krustrup et al. 2010

Knogleeffekter ved fodboldtræning

Knogletæthed



Helge et al. 2010



The New York Times

March 4, 2010, 2:25 pm

Health Gains for Grown Up Soccer Players



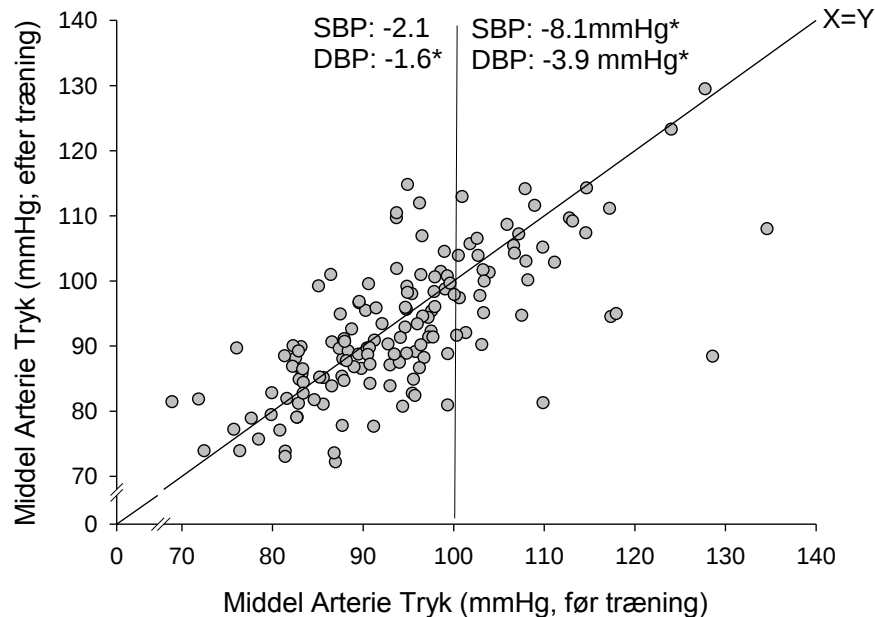
Adults who regularly kick around a soccer ball with friends have better heart and bone health, a new study found. Being a soccer mom usually means carpooling kids to games and watching them play. But new research shows that women who join in the fun and kick around a soccer ball can dramatically improve their bone and heart health.

Fodbold Fitness på Færøerne

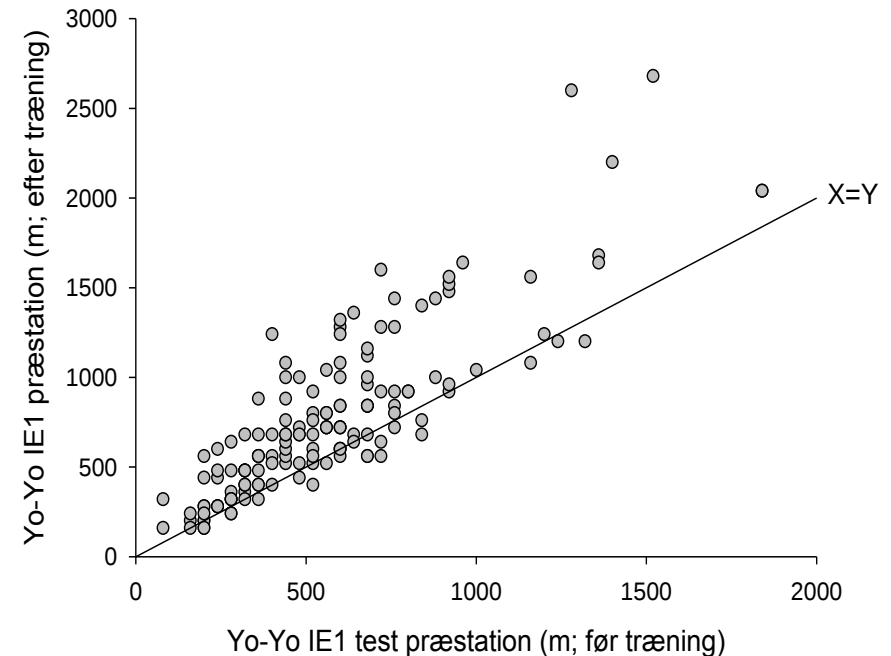


Fodbold Fitness på Færøerne

Effekt på blodtryk



Effekt på kondition



Fløtum et al. 2016

Fodbold Fitness som forebyggelse, behandling og rehabilitering for deltagere i alle aldre!



Peter Krstrup
11. maj 2017

Department of Sports Science
and Clinical Biomechanics

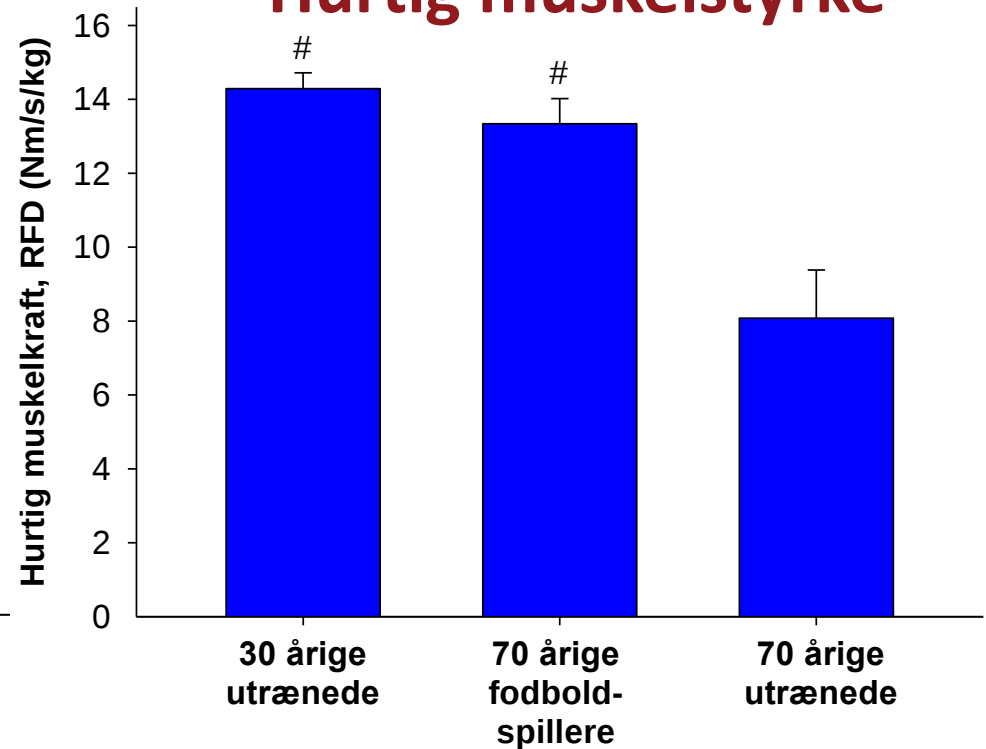
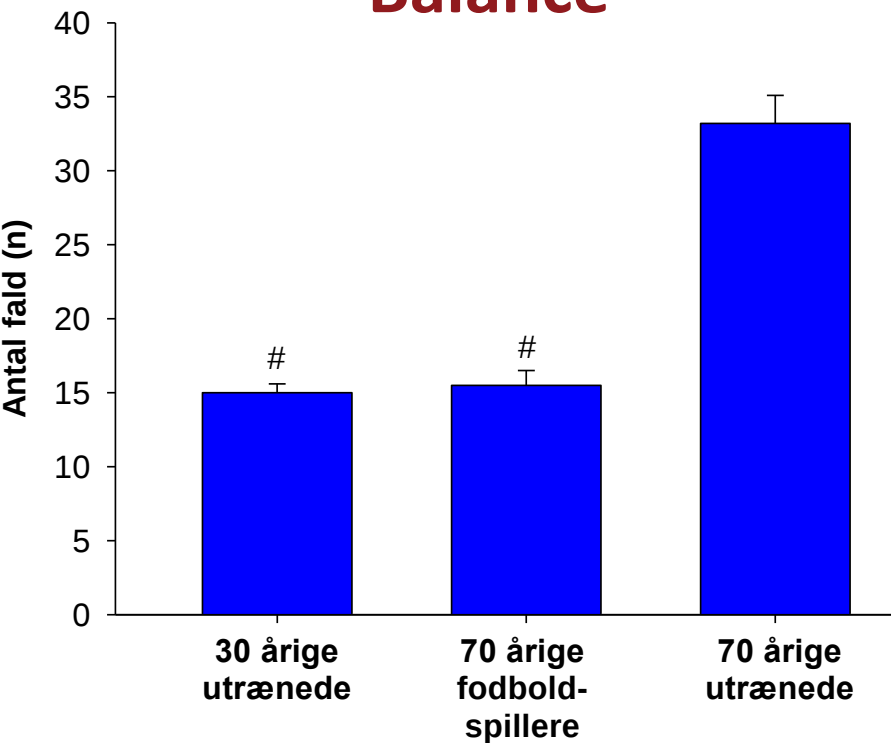




70-årige med >50 års fodboldtræning

Balance

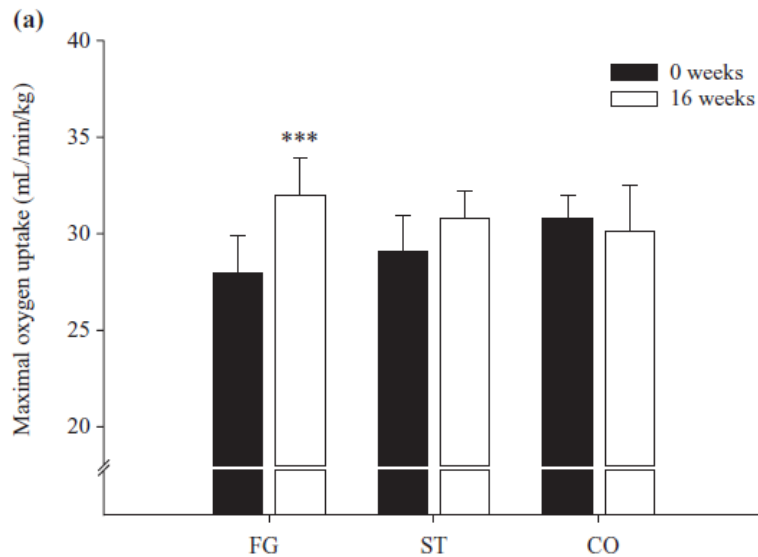
Hurtig muskelstyrke



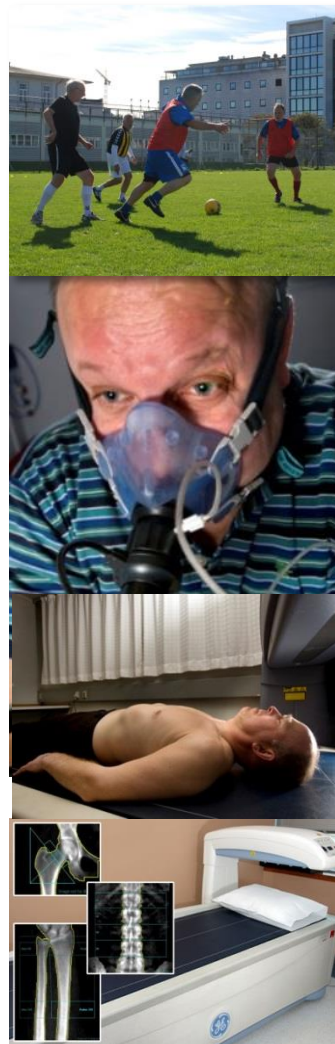
Sundstrup et al. 2010

Effekter af 4 og 12 mdr Fodbold Fitness for 70-årige utrænede mænd

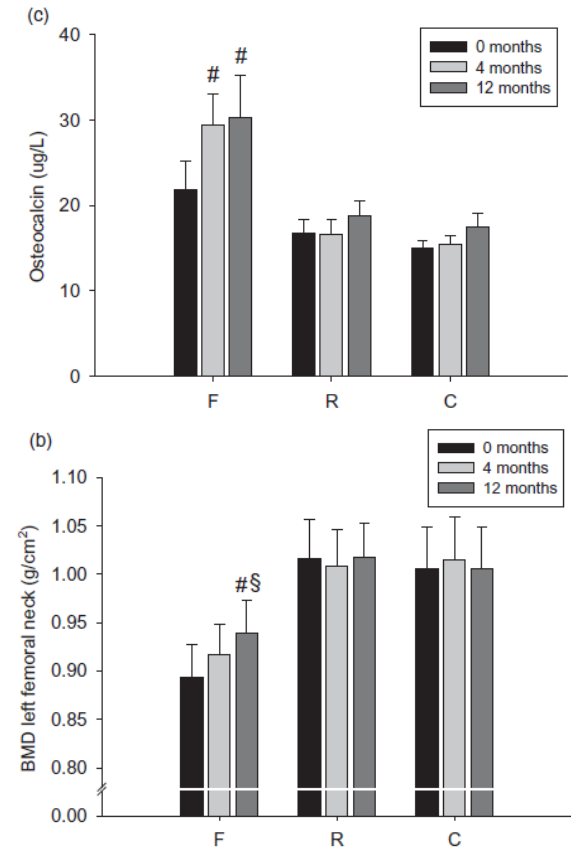
Maximal iltoptagelse



Rostgaard et al. 2014



Knogleadaptationer



Helge et al. 2014

Fodbold Fitness for 60-80 årige



Fodbold for patientgrupper

**Mænd med
højt blodtryk**

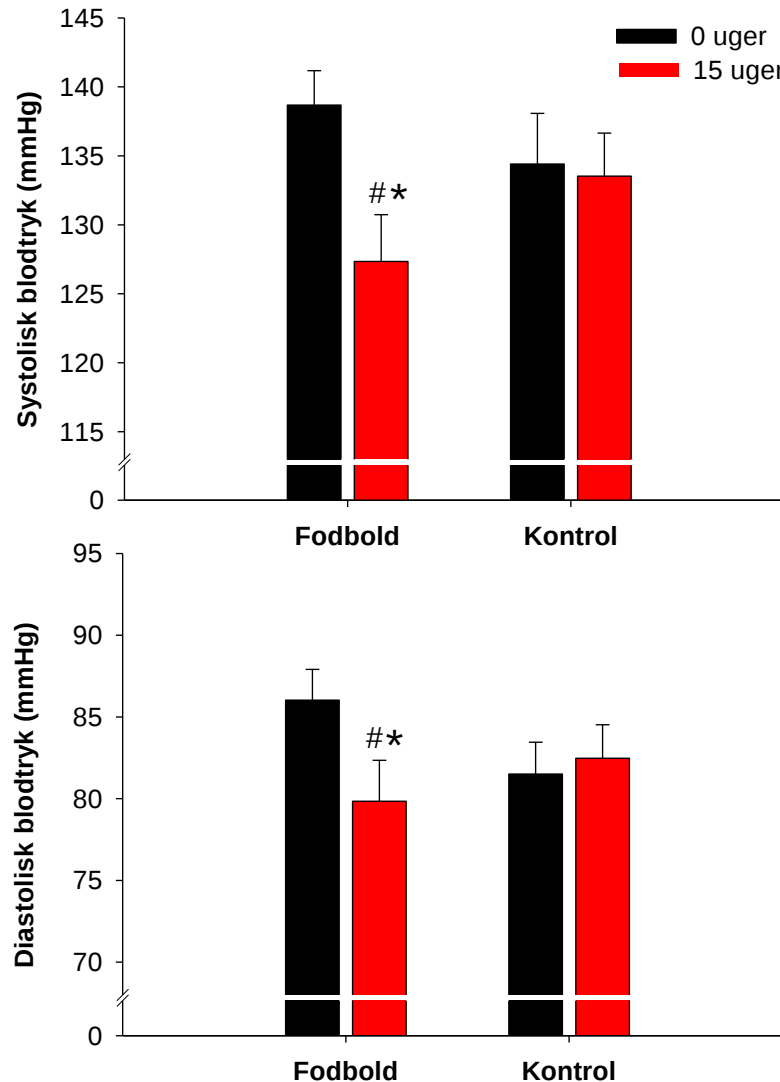
**Kvinder med
højt blodtryk**

**Kvinder/mænd
med diabetes 2**

**FC
Prostata**



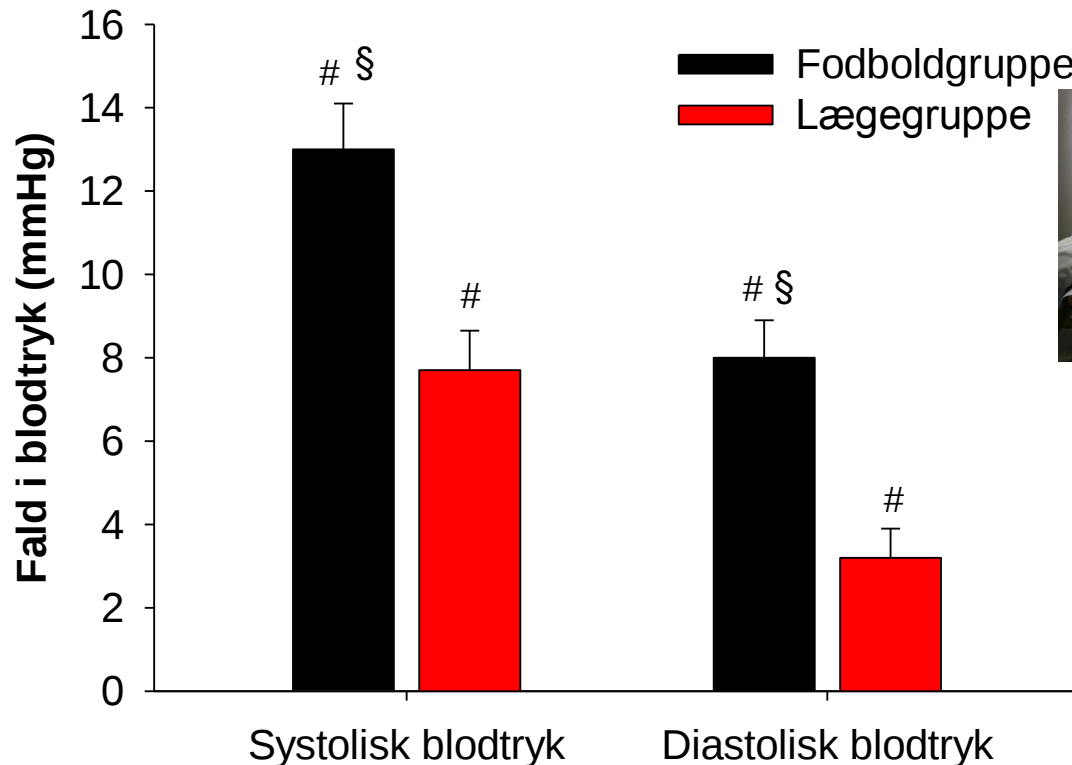
Effekter af 15 ugers fodbold for 35-50-årige kvinder med forhøjet blodtryk



Mohr et al. 2014

Fodbold som forebyggelse og behandling af livsstilssygdomme

Effekter 3 måneders motionsfodbold for 30-55 årige mænd, mildt-moderat forhøjet blodtryk, 2x1 time pr. uge



Krustrup et al. 2013



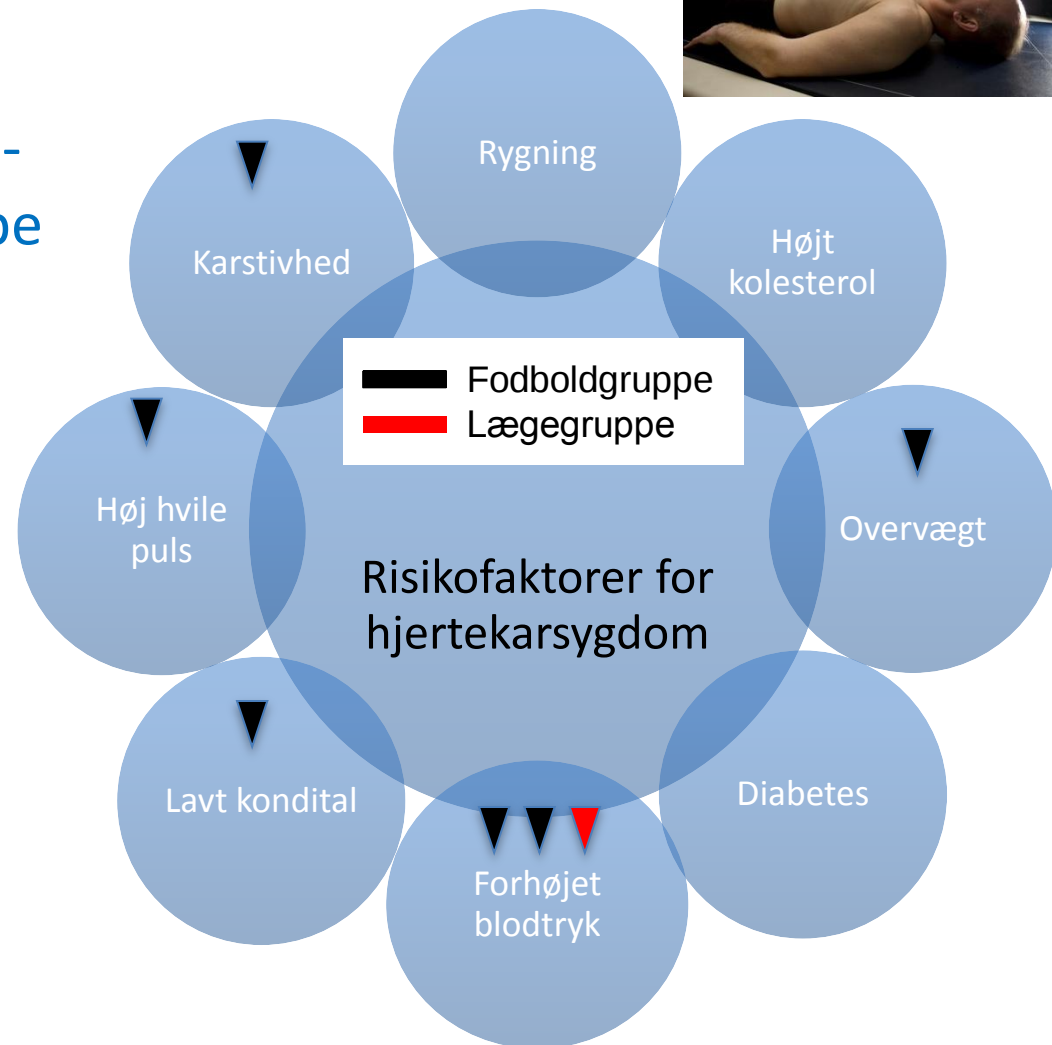
Risikofaktorer for hjertekarsygdom



Fodbold- gruppe Læge- gruppe

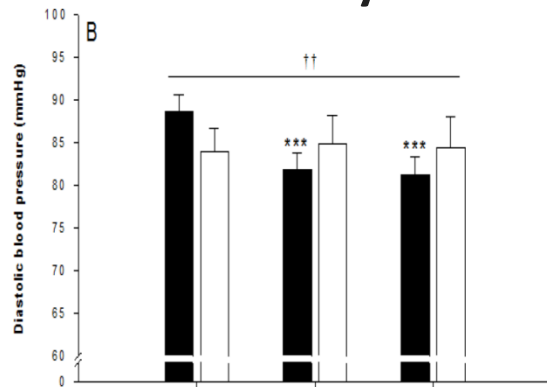
Kondital (ml/min/kg)	+9% #	NS
Hvilepuls (slag/min)	-8 #	NS
Fedtmasse (kg)	-2.0 #	NS
Karstivhed (AI)	-7 #	NS
Arbejdspuls (slag/min)	-12 #	NS
Mælkesyre (mmol/l)	-0.9 #	NS
Fedtforbrænding (%)	+19 #	NS

Krustrup et al. 2013



Fodbold for mænd/kvinder med type 2 sukkersyge

35-60-årige mænd Blodtryk

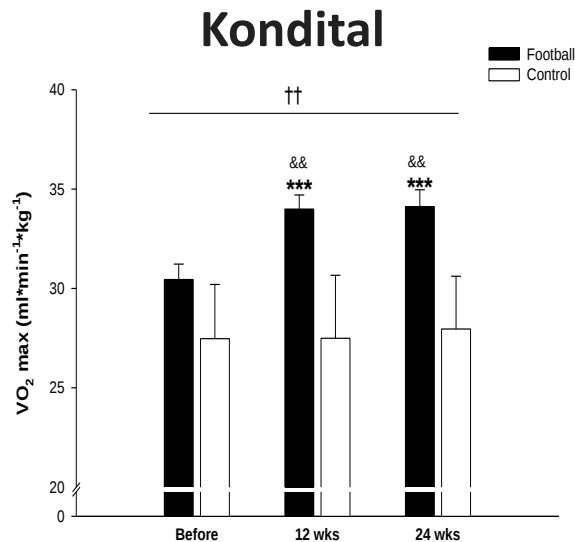
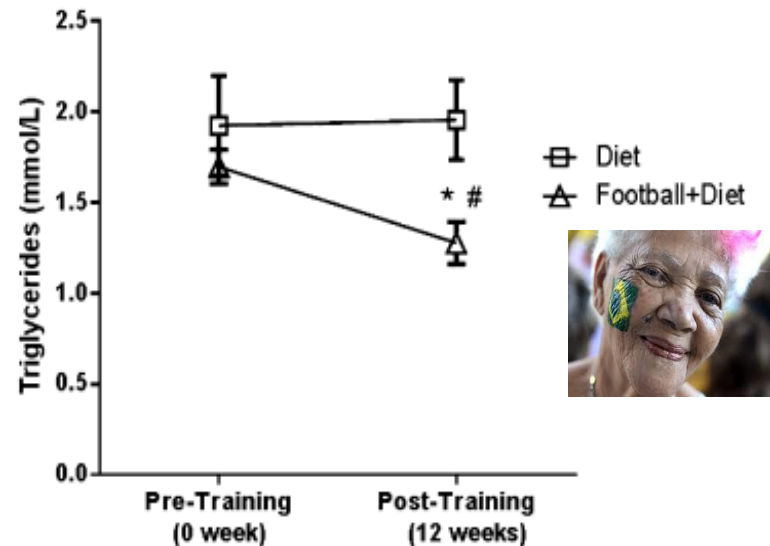


48-68-årige mænd og kvinder

Kropssammensætning

	Football + diet (n = 19)		Diet (n = 15)	
	Pretraining (0 weeks)	Post-training (12 weeks)	Pretraining (0 weeks)	Post-training (12 weeks)
BMD (g/cm ²)	2.3 ± 0.1	2.4 ± 0.1*	2.1 ± 0.1	2.1 ± 0.1†
Fat mass (kg)	30.7 ± 2.0	27.3 ± 1.6*	31.3 ± 2.3	27.6 ± 1.9†
Fat percentage (%)	34.6 ± 1.6	32.2 ± 1.5	37.5 ± 1.8	35.1 ± 1.8
Fat-free mass (kg)	58.1 ± 2.7	57.9 ± 2.4	51.6 ± 3.1	50.6 ± 2.8

Lipid profil



Schmidt et al. 2013

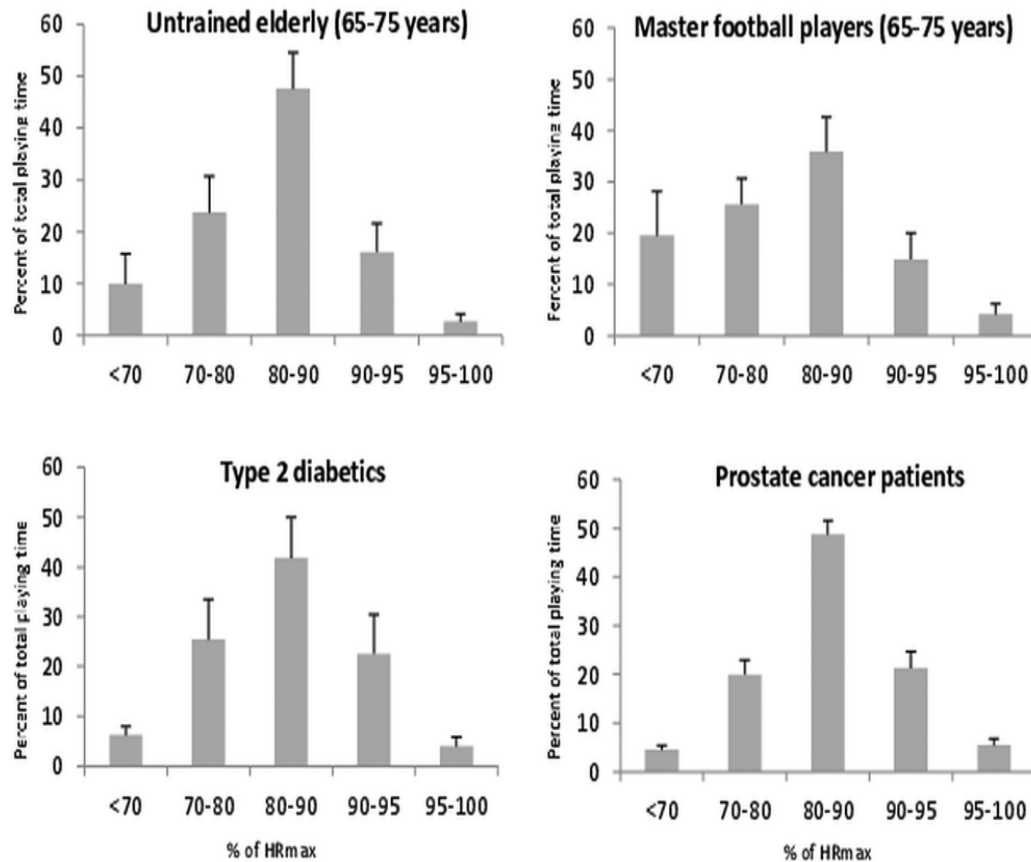
De Sousa et al. 2014



FC Prostata

Intensiteten er høj under Fodbold Fitness

For patientgrupper og raske deltagergrupper



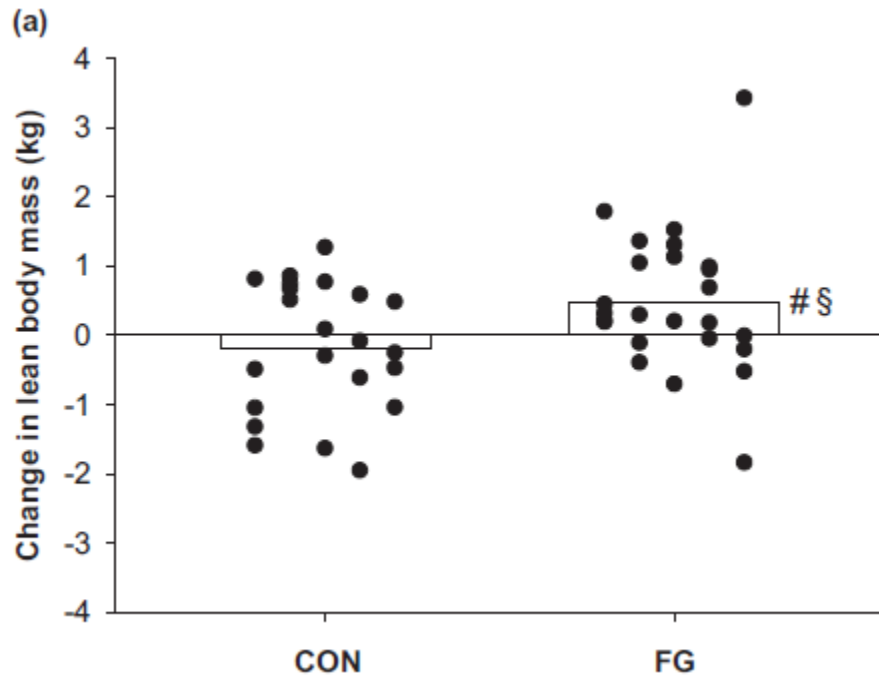
Bangsbo et al. 2015



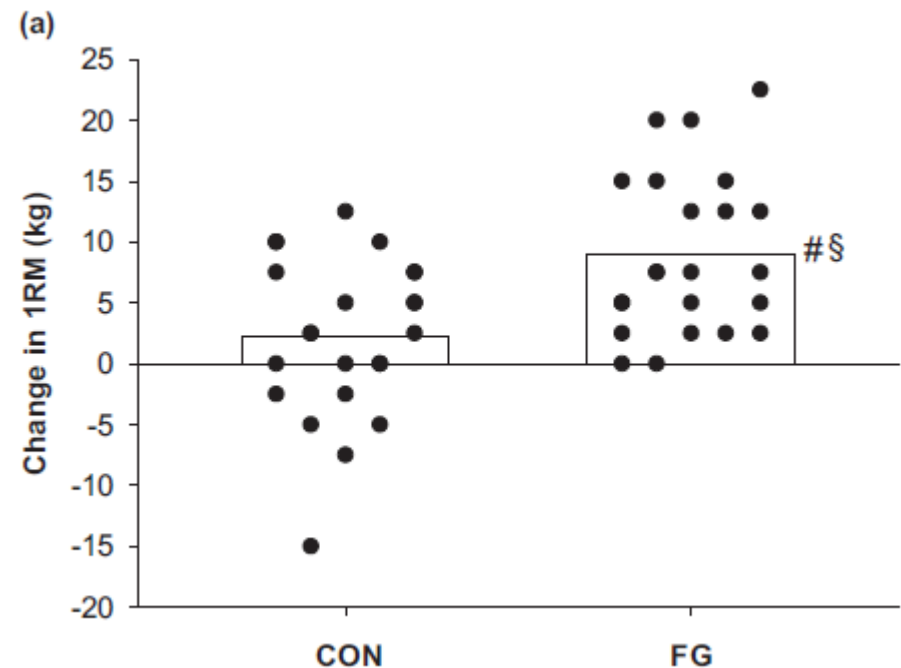
Muskulære effekter af fodbold for mænd med prostatakræft



Muskelmasse



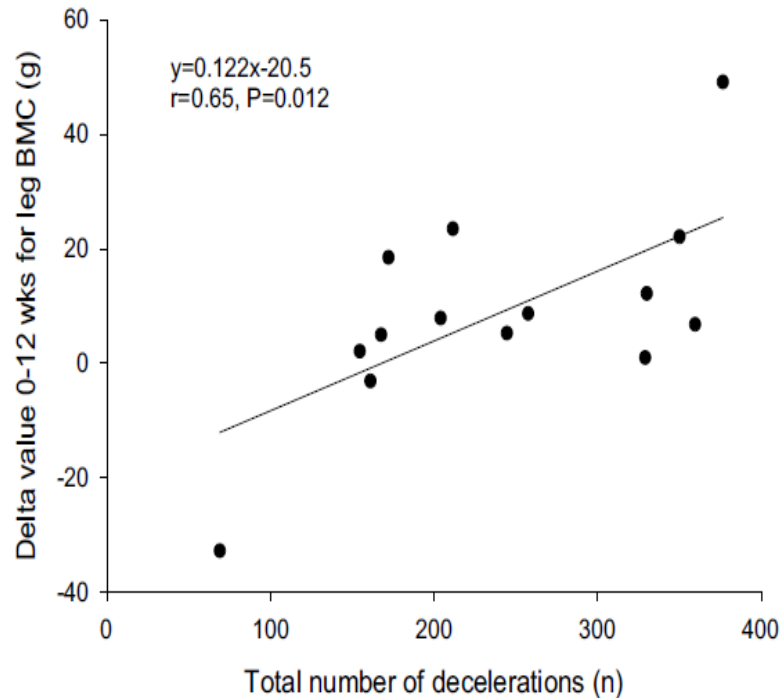
Muskelstyrke



Uth et al. 2014

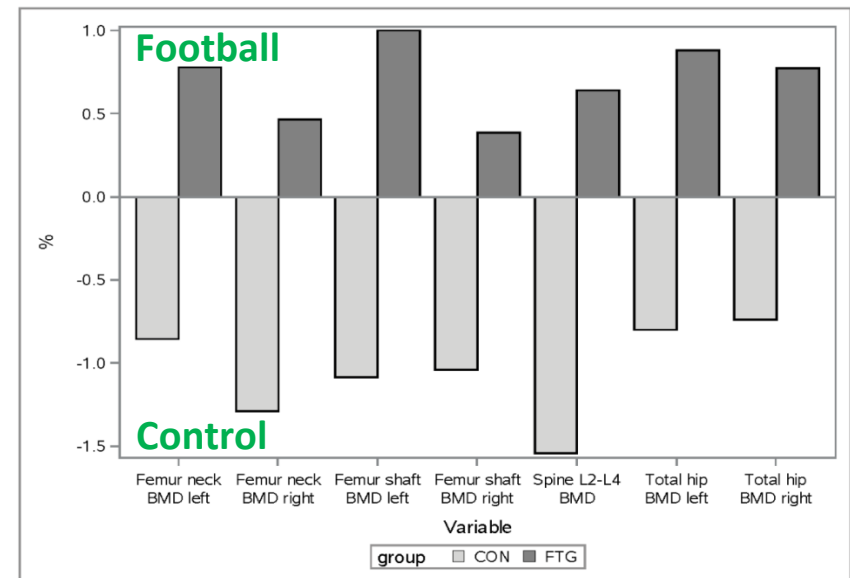
Knogleeffekter af Fodbold Fitness for mænd med prostatakræft

Knoglemasse (12 uger)



Uth et al. 2015

Knogletæthed (32 uger)



Uth et al. 2016

Færre skader med Fodbold Fitness

- Træning i stedet for kampe (1/5 til 1/12 skader under træning)
- Små baner, småspil, 3v3 til 6v6 (1/15 baglårsskader)
- Lav exposure (100 timer om året, 2x1 time om ugen året rundt)
- Fokus på opvarmning, med balance og styrkeøvelser (f.ex FIFA 11+)
- Regelændringer som justerer træningen til målgruppen

200-500 timer/skade,
10% severe

Both of the other studies in women^{25 32} reported 4 injuries among 78 women, for both football and running. The studies among men reported 2/15,²³ 1/13,²⁴ 0/10²⁹ and 1/27²⁷ football-related injuries, and 0/15,²³ 2/12²⁸ and 2/9⁴¹ running-related injuries. These injury rates add up to approximately 1 injury per 700 h of football training and 500 h of running training.

Krustrup et al. 2010, review SJMSS
(Arnason et al. 2004, AJSM, Parkkari et al. 2004, IJSM)

Oja et al. 2015, BJSM



Fodbold og Sundhed

Systematiske reviews, metaanalyser, kommunikation

Lancet, June 2, 2012

Sport and exercise as contributors to the health of nations

Karim M Khan, Angela M Thompson, Steven N Blair, James F Sallis, Kenneth E Powell, Fiona C Bull, Adrian E Bauman

Key messages

- Regular physical activity, even in small doses, confers substantial health benefits
- Findings from cohort studies and a few randomised trials indicate that regular participation in sports is likely to provide health benefits

British J Sport Medicine
Jan 8, 2015

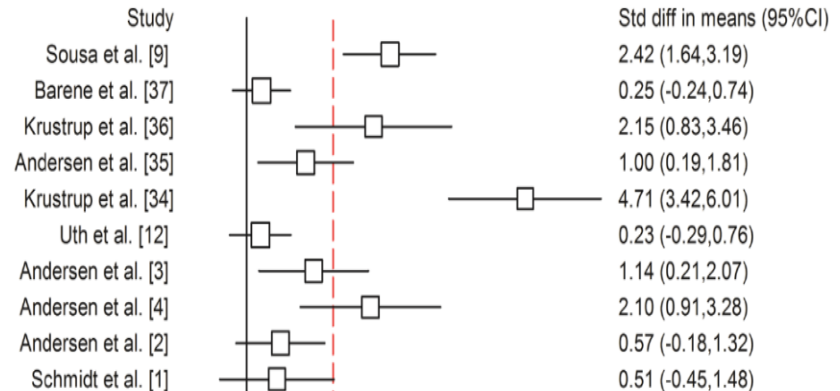
Health benefits of different sport disciplines for adults: systematic review of observational and intervention studies with meta-analysis

Pekka Oja,¹ Sylvia Titze,² Sami Kokko,³ Urho M Kujala,³ Ari Heinonen,³ Paul Kelly, Pasi Koski,⁵ Charlie Foster⁶

What are the new findings?

- Best evidence was found for recreational football and running. These can especially benefit cardiovascular and metabolic fitness.
- There was some, but inconclusive, evidence for health benefits of recreational cycling and swimming. No solid evidence showed health benefits for any other sport discipline.

Sports Med, September 1, 2015
Effects of football on aerobic fitness



Research Communication



How football is improving the lives of Denmark's homeless
10 August 2014, By Malcolm Brabant
BBC Health Check

EXPRESS
Goal-den years:
Over-70s should play football to keep fit



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Estudio demuestra que correr a largas distancias ayuda a perder grasa
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LE FOOT, C'EST BON POUR LA SANTE
FOOTBALL ET SANTE,

10 FEB, 2015



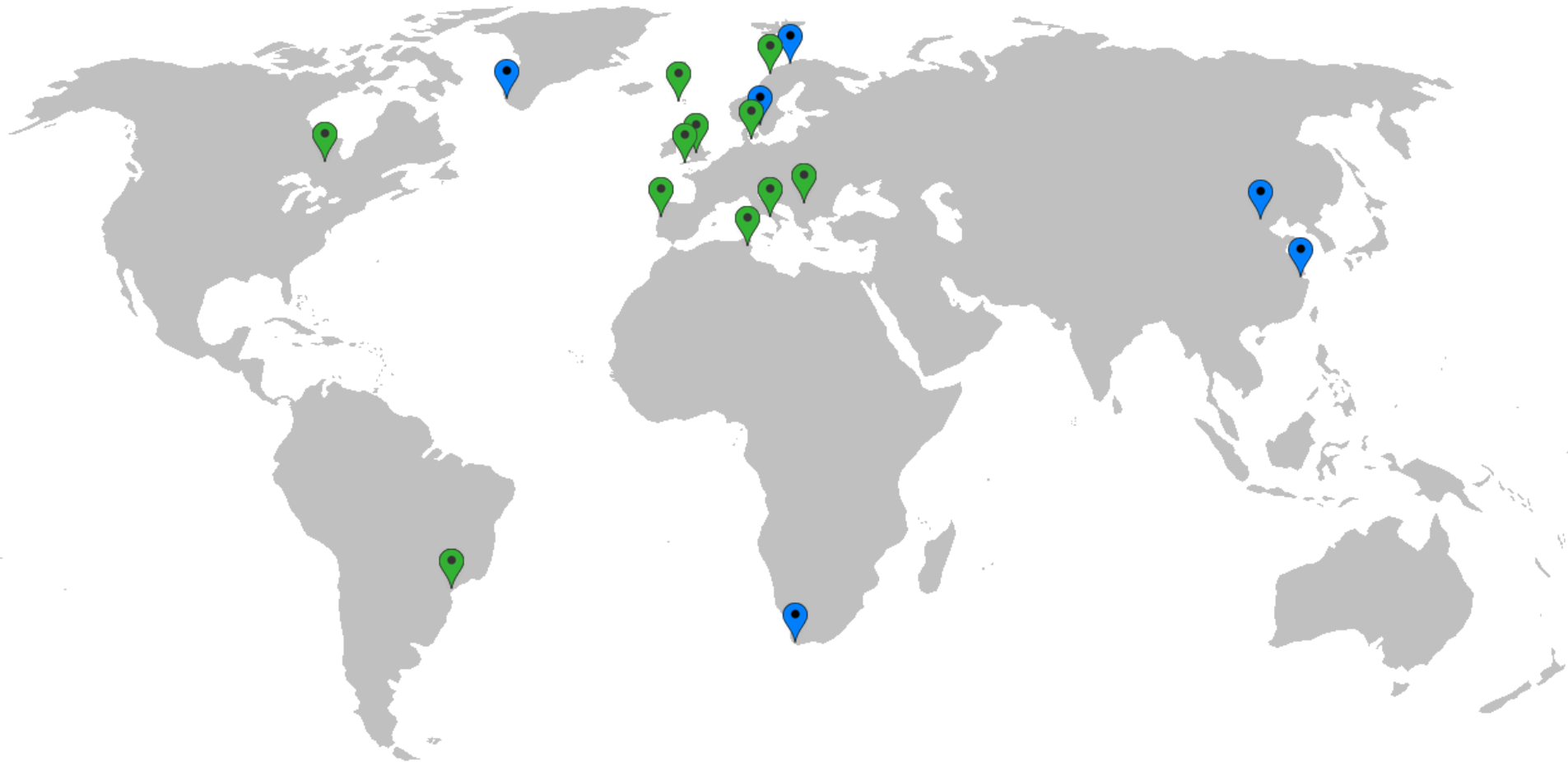
Peter Krustrup

11. maj 2017

Peter Krustrup

Department of Sports Science and Clinical Biomechanics

Fodbold Fitness – forskning og implementering World Wide



Peter Krstrup
11. maj 2017

Department of Sports Science and Clinical
Biomechanics



ÆLDRESAGEN Temadag om udvikling af sundhedstilbud for de ikke-motionsvante og mindre mobile. Odense, 11. maj 2017.

Konklusion

”Fodbold Fitness er medicin”

”Fodbold Fitness er for alle”

”Fodbold Fitness er for livet”

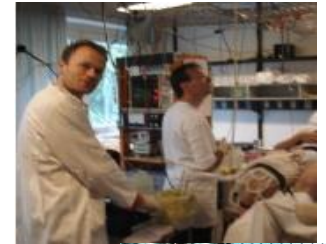
Peter Krstrup

Professor i Sport og Sundhed
Institut for Idræt og Biomekanik
Syddansk Universitet

Peter Krstrup
11. maj 2017

Department of Sports Science and Clinical
Biomechanics

SDU 





Se mere:

Introvideoer om "FIFA 11 for Health"

http://www.holdspil.ku.dk/videoklip/film_fifa-11-health/

<http://video.dbu.dk/video/13184303/fifa-11-for-health>

Introvideoer om "Fodbold Fitness"

<http://video.dbu.dk/video/7067641/fodbold-giver-god-rov>

<http://video.ku.dk/fodboldfitness>