



# Geschlechtergleichheit Ja oder Nein?

 **REIUS.**  
alster running.de

# PERSONA

## PSYCHOLOGIN & COACH

- **Promovierte** Neurowissenschaftlerin
- Dozentin & **Forscherin** MSH Hamburg
- **DLV-C-Trainerin**
- **Coach** LT Haspa Marathon Hamburg

## ATHLETIN

- **Hamburger Meisterin** Halbmarathon & Cross
- **PBs:** Halbmarathon 1:19h / 10km 36min
- Jahresbestzeit **Alsterrunning** (2023 / 2024)



## FLUGZEUGINGENIEUR & COACH

- Flugzeugingenieur bei **Airbus**
- **DLV-A-Trainer** + Diplom-Trainer (TA Köln bis 2025)
- **Coach** LT Haspa Marathon Hamburg
- **Hamburger Landestrainer** Straßenlauf

## ATHLET

- 3x **Hamburger Meister** Marathon (2021 / 2022 / 2024)
- **PBs:** Marathon 2:25h / Halbmarathon 1:09h
- Jahresbestzeit **Alsterrunning** (2023 / 2024)



# Gedanken und Impulse für heute



Der lange Weg der  
**Gleichberechtigung**  
Frauen und Wettkämpfe



Warum laufen **Männer**  
**schneller als Frauen?**  
Alles unfair?



**Zyklus der Frau**  
vs. Zyklus des **Mannes**  
Ist der Rhythmus gleich?



Sollten Frauen anders als  
Männer **trainieren?**  
**Training und Risiken**



Sport und  
**Schwangerschaft**  
**Weitermachen oder Pausieren?**



**Menopause**  
Soll ich anders trainieren?



# Der lange Weg der Gleichberechtigung





UN  
WOMEN

**CHANGE THE GAME**

# Der lange Weg zur Gleichberechtigung

**1896:** 1. Olympische Spiele. Frauen werden **nicht** zugelassen  
»Die weiblichen Unterleibsorgane verwelken«

**1921:** »Jeux Olympiques Féminins« (Monte Carlo, Monaco, Teilnehmerinnen aus 5 Länder)

**1928:** Frauen durften in der **Leichtathletik** an den Start gehen. Die Teilnahme begrenzte sich allerdings auf **5** Leichtathletik-Wettbewerbe (100m, 800m, 4x100m Staffel, Hochsprung, Diskuswerfen)

**1960:** Frauen durften keine Laufstrecken über 800m absolvieren

**1984:** 1. **Frauen-marathon** Teil der Olympischen Spiele.



Joan Benoit in 02:24:52h  
(Siegerin des 1. Frauen-marathons bei den Olympischen Spielen 1984)



# Der lange Weg zur Gleichberechtigung

- Fanny Blankers-Koen gewinnt bei den Olympischen Spielen von 1948 **vier** Goldmedaillen.
- Diane Leather läuft als erste Frau die **Meile unter fünf Minuten**.
- Kathrine Switzer wird beim **Boston-Marathon 1967** von Rennleiter Jock Semple attackiert.



Derzeitige **Weltrekordhalterin**:  
Tigst Assefa (2023) in **02:11:53h**



Derzeitiger **Weltrekordhalter**  
Kelvin Kiptum (2023) in **02:00:35h**





# Warum laufen Männer schneller als Frauen?





# Wieso laufen Männer schneller als Frauen?

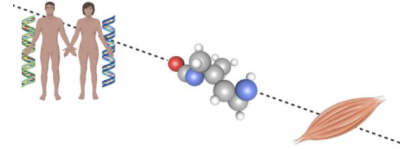
Medizinische Unterschiede im männlichen und weiblichen Körper

- **Körperbau**

- Körpermaße (Größe, Gewicht)
- Relativer Anteil an **Körperfett vs. Muskelmasse**
- Muskelzellen: **Mitochondrienvolumen** der Frauen um 22% kleiner
- 

- **Herz - Lungen - System**

- Unterschiede in der **Lungenkapazität**
- Unterschiede in der **Herzgröße** & Herzgewicht
  - → Herzfrequenz/Herzvolumen
- maximale **Sauerstoffaufnahme** (VO<sub>2</sub>max)
  - **Frau:** 77ml/kg/min ← → **Mann:** 94 ml/kg/min
- **Hämoglobin** (Hb) Wert (eisenhaltiger roter Blutfarbstoff)
  - **Frau:** 13,8 g/dl ← → **Mann:** 15,5 g/dl
  - Abnahme des Hämoglobins um 0,1 Prozent → Abnahme der max. Sauerstoffaufnahme um 1 Prozent



# Wieso laufen Männer schneller als Frauen?

Medizinische Unterschiede im männlichen und weiblichen Körper

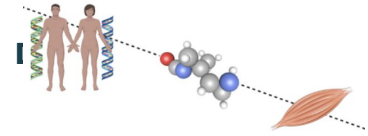
- **Hormonproduktion & Stoffwechsel**

- **Starke Unterschiede in der Testosteronkonzentration (TK)**

*Niedr. TK → niedr. Muskelkraft, erhöhte Fettspeicher in Muskeln/ Haut*

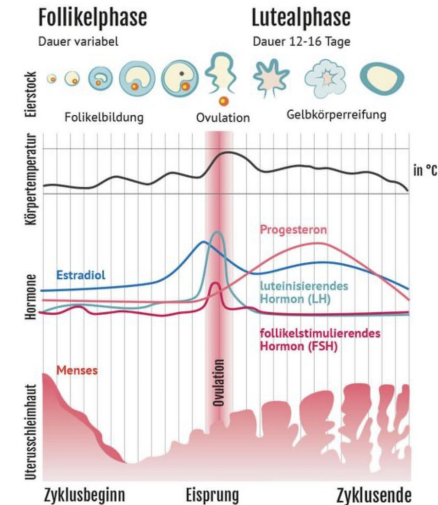
- **Östrogenkonzentration (ÖK) hoch**

*Hohe ÖK → niedr. Eiweißabbau, niedr. Verbrennung von Kohlenhydraten, hoher Fettstoffwechsel*



➔ **Änderung des Stoffwechsels bei Östrogengabe bei Männern**

(Hamadeh et al., 2004)



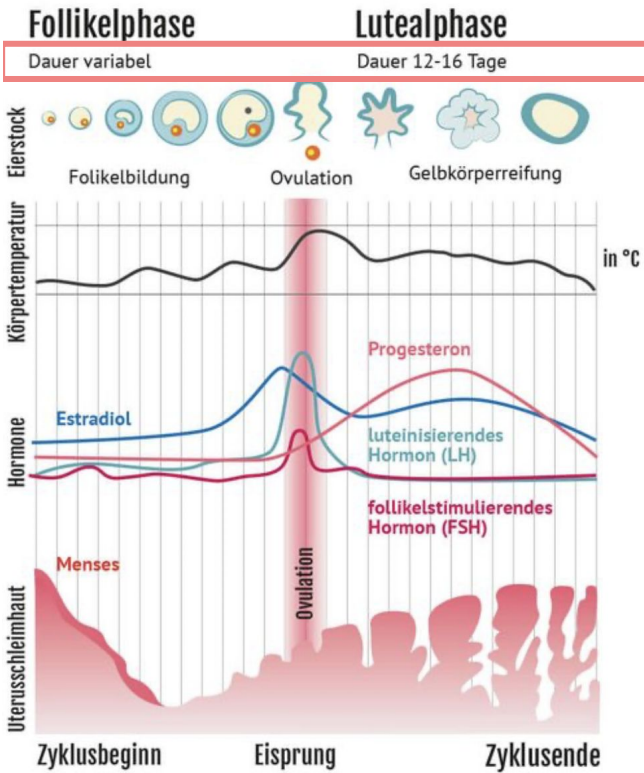


# **Zyklus der Frau vs Zyklus des Mannes.**

**Ist der Rhythmus gleich?**

# Zyklus der Frau und des Mannes

## Der weibliche Zyklus (+/- 28 Tage)



**ÖSTROGEN**

WICHTIG FÜR DIE SEXUELLE & REPRODUKTIVE ENTWICKLUNG



**PROGESTERON**

ERMÖGLICHT DIE EINNISTUNG DER BEFRUCHTETEN EIZELLE IM UTERUS



**LH**

INDUZIERT DEN EISPRUNG



**FSH**

STIMULIERT DIE REIFUNG DER FOLLIKEL

## Der männliche Zyklus (24h)

### TESTOSTERON

### Das wissen wir über den

### Hormonzyklus des Mannes

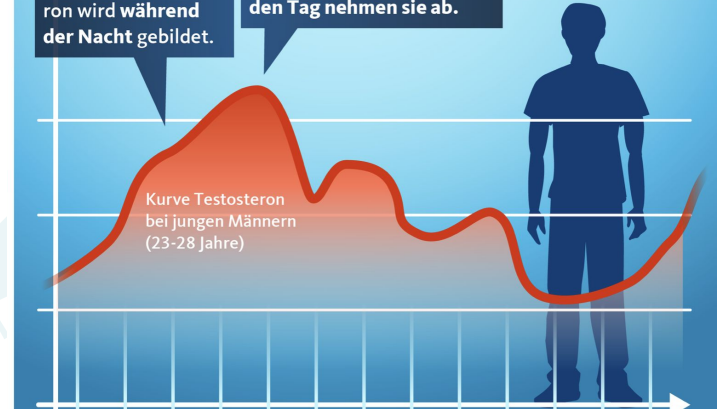
#### 24-Stunden-Rhythmus

Auch bei Männern gibt es Schwankungen in der Blutkonzentration der Sexualhormone. Allerdings nicht über einen Monat hinweg, sondern im Tagesrhythmus.

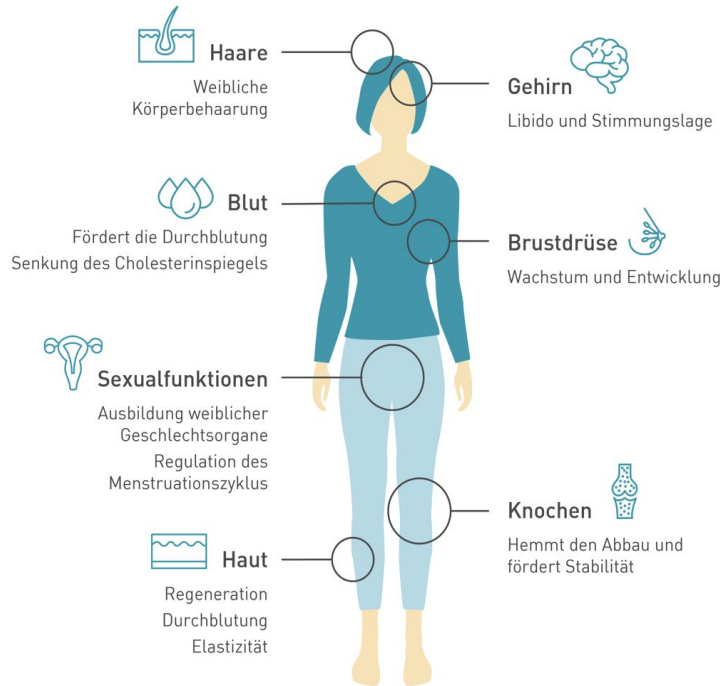
Das meiste Testosteron wird während der Nacht gebildet.

Am frühen Morgen sind die Werte am höchsten über den Tag nehmen sie ab.

Kurve Testosteron bei jungen Männern (23-28 Jahre)



# Sexualhormone einer Frau



## Östrogen

- **Estradiol**, Estron und Estriol  
→ **wirksamste physiologische Östrogen**
- Steuerung des weiblichen **Zyklus** / Reifung der Eizelle
- **Protektiven Effekt auf den Knochen** (Proteinbiosynthese in Osteoblasten & Hemmung von Osteoklasten)
- Senkung des Cholesterinspiegels
- psychische Stimulation

## Progesteron

- Menstruationsblutung
- Anstieg der Körpertemperatur von 0,6–1 °C
- Eher psychisch dämpfende Eigenschaften

## Testosteron

- **Estradiolsynthese**
- Aufbau Muskelgewebe, Proteinbiosynthese, Knochenaufbau

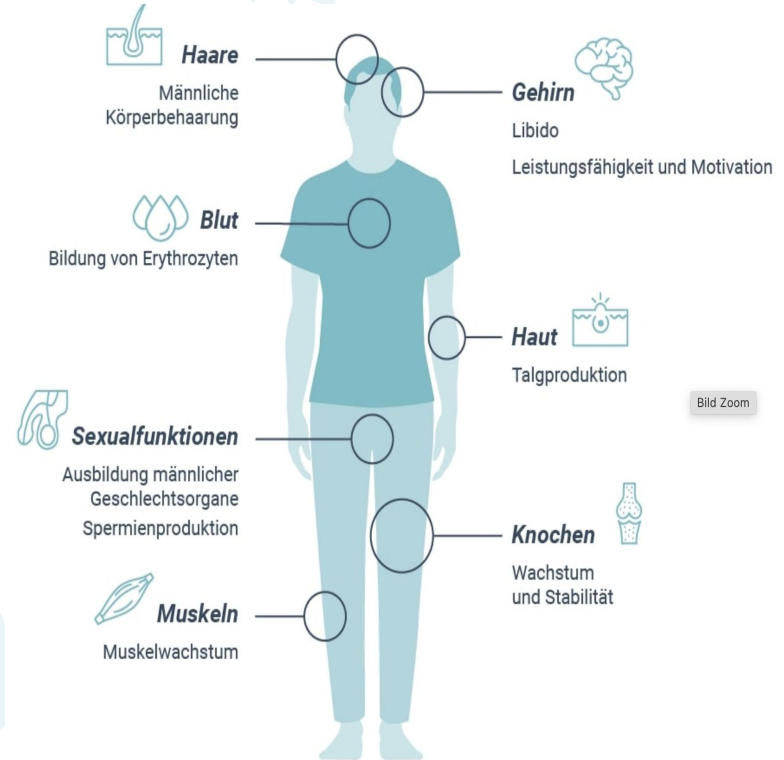
# Sexualhormone eines Mannes

## Testosteron

- Anabole Wirkungen
- Regeneration
- Bildung von Erythrozyten (Sauerstoffaufnahme)
- Knochenwachstum
- Aufbau Muskelgewebe

## Estradiol

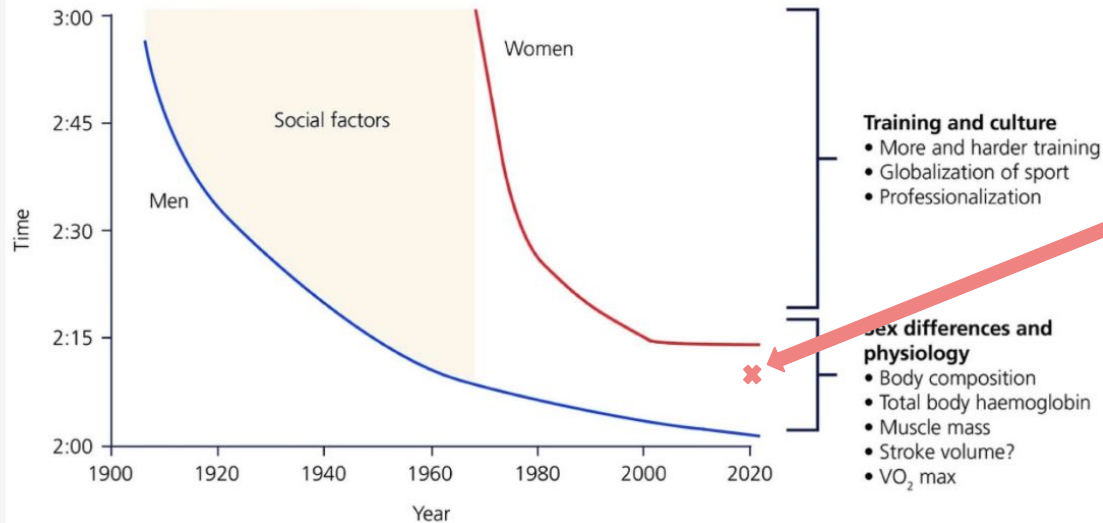
- Estradiol aus Testosteron gebildet
- Funktion u.a. Knochenstoffwechsel
- Proteinbiosynthese
- psychische Stimulation



# Der “Cultural Change”

## Der Geschlechterunterschied im Marathon wird “kleiner”

**Figure 1.** Reprinted with permission from Ref. [3]. 2017 The Physiological Society. History of world records in the marathon for men and women, modified slightly to show current world record times. The impact of changes in training and culture has helped with the steep improvement in women’s marathon record times through 2005. Physiological sex differences are primarily responsible for the gap that still exists between men’s and women’s times in all distances of individual endurance events, although cultural and training differences still exist.



2023

Open Access Systematic Review

### Sex Differences in VO<sub>2</sub>max and the Impact on Endurance-Exercise Performance

by Kelsey J. Santisteban , Andrew T. Lovering , John R. Halliwill  and Christopher T. Minson 

Department of Human Physiology, University of Oregon, Eugene, OR 97403, USA

\* Author to whom correspondence should be addressed.

*Int. J. Environ. Res. Public Health* **2022**, *19*(9), 4946; <https://doi.org/10.3390/ijerph19094946>

Submission received: 7 April 2022 / Accepted: 15 April 2022 / Published: 19 April 2022



# Sollten Frauen und Männer anders trainieren?

## Training und Risiken





# You're Not a Small Man, But You May Need to Eat Like One!


Stacy Sims, PhD

JA!



Open Access Review

## Menstrual Cycle Tracking in Sports Research: Challenges, Progress, and Future Directions

by Andrew Dole <sup>1</sup> , Martyn Beaven <sup>1</sup>  and Stacy T. Sims <sup>2,3,\*</sup> 

<sup>1</sup> Division of Health, Engineering, Computing and Science, Te Huataki Waiora School of Health, Waikato University, Tauranga 3110, New Zealand

<sup>2</sup> Sports Performance Research Institute New Zealand (SPRINZ), Auckland University of Technology, Auckland 1010, New Zealand

<sup>3</sup> Stanford Lifestyle Medicine, Stanford University, Palo Alto, CA 94304, USA

\* Author to whom correspondence should be addressed.

*Physiologia* 2023, 3(4), 598-610; <https://doi.org/10.3390/physiologia3040044>

Submission received: 19 October 2023 / Revised: 17 November 2023 / Accepted: 21 November 2023 /

Published: 24 November 2023

# Sollten Frauen anders als Männer trainieren?



IM EIERSTOCK

PRODUZIERTE HORMONE



IM GEHIRN



ÖSTROGEN

WICHTIG FÜR DIE SEXUELLE & REPRODUKTIVE ENTWICKLUNG



PROGESTERON

ERMÖGLICHT DIE EINNISTUNG DER BEFRUCHTETEN EIZELLE IM UTERUS



LH

INDUZIERT DEN EISPRUNG



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STIMULIERT DIE REIFUNG DER FOLLIKEL

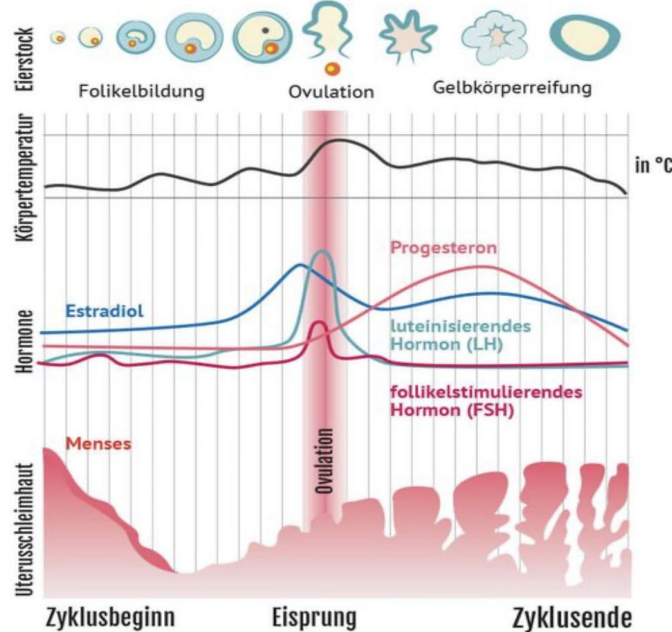


## Follikelphase

Dauer variabel

## Lutealphase

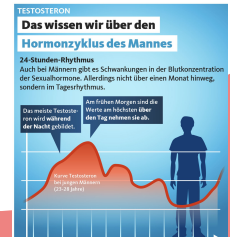
Dauer 12-16 Tage



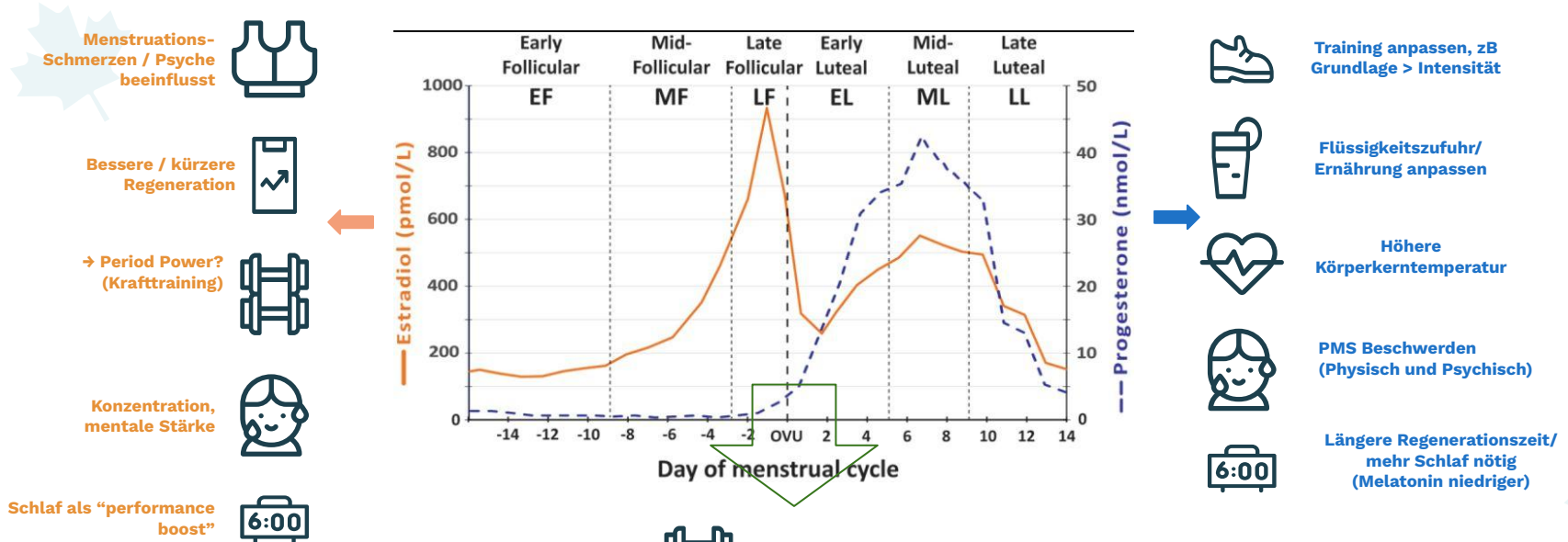
## Aktueller Forschungsstand zu Training/s-

- -umfang, -reiz, -intensität und **Regeneration**
- **Hitze-/Anpassung**
- und **psychische** Belastbarkeit/Menstruation und **Ernährung**

## ➔ Individualität vs Wissenschaft



# Sollten Frauen anders als Männer trainieren?



## SYSTEMATIC STRENGTH TRAINING AS A MODEL OF THERAPEUTIC INTERVENTION

### A Controlled Trial in Postmenopausal Women with Osteopenia<sup>1</sup>

Hartard, Manfred<sup>2</sup>; Haber, Paul; Ilieva, Diana; Preisinger, Elisabeth; Seidl, Georg; Huber, Johannes

Author Information ©

American Journal of Physical Medicine & Rehabilitation 75(1):p 21-28, January 1996.

## Heating Up to Keep Cool: Benefits and Persistence of a Practical Heat Acclimation Protocol in Elite Female Olympic Team-Sport Athletes

Stephen P Fenemor<sup>1, 2</sup>, Matthew W Driller<sup>3</sup>, Nicholas D Gill<sup>1, 4</sup>, Brad Anderson<sup>4</sup>, Julia R Casadio<sup>2</sup>, Stacy T Sims<sup>5</sup>, C Martyn Beaven<sup>1</sup>

Affiliations + expand

PMID: 36720237 DOI: 10.1123/ijsspp.2022-0071

# Sollten Männer anders als Frauen trainieren?

## Beispiel Marathon (Alter)

Exercise Sport & Movement **ACSM**

Articles & Issues Collections For Authors Journal Info

ORIGINAL INVESTIGATION

### Sex Differences in Marathon Running: Physiology and Participation

Nesburg, Rachel A.; Mason, Azara P.; Fitzsimmons, Brynn<sup>2</sup>; Hunter, Sandra K.<sup>1</sup>

Author Information

*Exercise, Sport, and Movement* 1(3):e00010, Summer 2023. | DOI: 10.1249/ESM.00000000000000010

OPEN Metrics

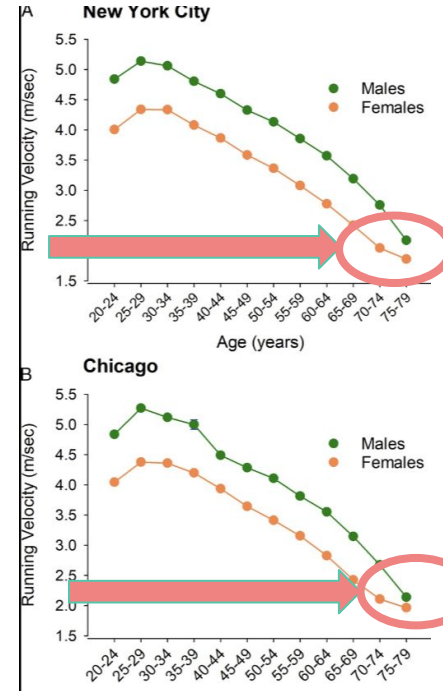
#### Abstract

#### Introduction

Males are faster than females in the marathon, largely due to sex differences in physiology, but sociological factors influencing lower participation rates of females than males may also contribute.

#### Purpose

This study aimed to determine whether the sex difference in marathon performance is predicted by the proportion of male to female runners and how this prediction changes among lower-placed runners across age groups.



**Figure 4**

Running velocity across age groups in male and female runners for the New York City (NYC) and Chicago (CHI) marathons. Running velocity (average of the top 10 finishers, 1st through 10th, in each age group for each year) decreased across the age groups for both male and female runners in the NYC marathon (A) and CHI marathon (B). The sex difference in running velocity (percent) increased across the age groups for both marathons (C). Shown are the mean  $\pm$  standard error of the mean.

#### Source

Sex Differences in Marathon Running: Physiology and Participation

Exercise, Sport, and Movement 1(3):e00010, Summer 2023.



# Sollten Männer anders als Frauen trainieren?

## Beispiel Marathon (Selbst-Einschätzung)

Author Manuscript

Peer reviewed and accepted for publication by a journal



[Med Sci Sports Exerc.](#) Author manuscript; available in PMC 2016 Mar 1.

Published in final edited form as:

[Med Sci Sports Exerc.](#) 2015 Mar; 47(3): 607–616.

doi: [10.1249/MSS.0000000000000432](#)

PMCID: PMC4289124

NIHMSID: NIHMS609019

PMID: [24983344](#)

### Men are More Likely than Women to Slow in the Marathon

Robert O. Deane<sup>1</sup>, Rickey E. Carter<sup>2</sup>, Michael J. Joyner<sup>3</sup> and Sandra K. Hunter<sup>4</sup>

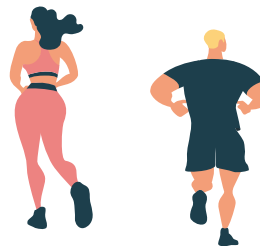
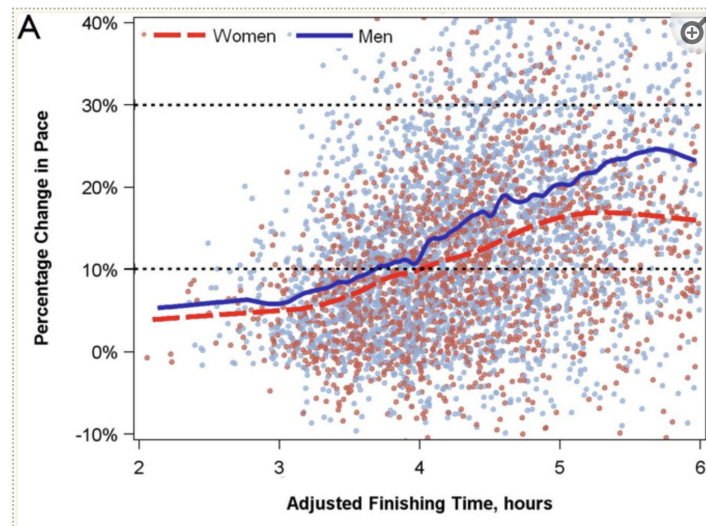
▶ Author information ▶ Copyright and License information [PMC Disclaimer](#)

The publisher's final edited version of this article is available at [Med Sci Sports Exerc](#)

### Abstract

Go to: ▶

Studies of non-elite distance runners suggest that men are more likely than women to slow their pace in the marathon.



# Sollten Männer anders als Frauen trainieren?

## Vergleich Langstreckenlauf

### Running Endurance in Women Compared to Men: Retrospective Analysis of Matched Real-World Big Data

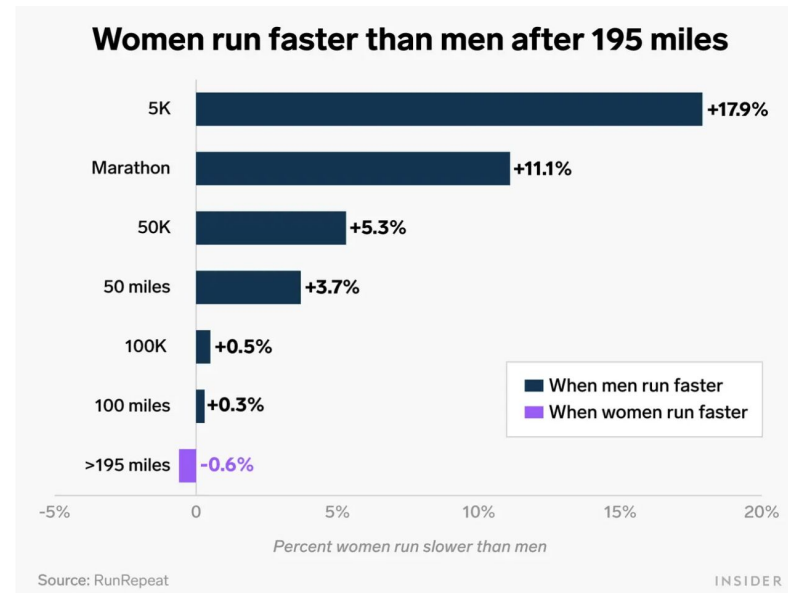
Franck Le Mat <sup>1</sup>, Mathias Géry <sup>2</sup>, Thibault Besson <sup>1</sup>, Cyril Ferdynus <sup>3</sup>, Nicolas Bouscaren <sup>1 3</sup>, Guillaume Y Millet <sup>4 5</sup>

Affiliations + expand

PMID: 36802328 DOI: [10.1007/s40279-023-01813-4](https://doi.org/10.1007/s40279-023-01813-4)

#### Abstract

**Background and objective:** To determine whether the gap in endurance performance between men and women is reduced as distances increase, i.e. if there is a sex difference in endurance, one can analyse the performance of elite runners, all participants, or one can pair women and men during short-distance events and examine the difference over longer distances. The first two methods have caveats, and the last method has never been performed with a large dataset. This was the goal of the present study.



# Muskelabbau im Alter

## Bei Frauen und Männern

Original Investigation | Nutrition, Obesity, and Exercise

### Sarcopenia and Sarcopenic Obesity and Mortality Among Older People

Elizabeth Benz, MSc, MPH; Alexandre Pinael, PhD; Christelle Guillet, PhD; Frederic Capel, PhD; Bruno Pereira, PhD; Marie De Antonio, PhD; Melanie Pouget, PhD; Alfonso J. Cruz-Jentoft, MD, PhD; Doris Egseer, PhD; Eva Topinkova, MD, PhD; Rocco Barazzoni, MD, PhD; Fernando Rivadeneira, MD, PhD; M. Arfan Ikram, MD, PhD; Marinka Steur, PhD; Trudy Voortman, PhD; Josee D. Schoufour, PhD; Peter J.M. Weijs, PhD; Yves Boirie, MD, PhD

#### Abstract

**IMPORTANCE** Sarcopenia and obesity are 2 global concerns associated with adverse health outcomes in older people. Evidence on the population-based prevalence of the combination of sarcopenia with obesity (sarcopenic obesity [SO]) and its association with mortality are still limited.

**OBJECTIVE** To investigate the prevalence of sarcopenia and SO and their association with all-cause mortality.

**DESIGN, SETTING, AND PARTICIPANTS** This large-scale, population-based cohort study assessed participants from the Rotterdam Study from March 1, 2009, to June 1, 2014. Associations of sarcopenia and SO with all-cause mortality were studied using Kaplan-Meier curves, Cox proportional hazards regression, and accelerated failure time models fitted for sex, age, and body mass index (BMI). Data analysis was performed from January 1 to April 1, 2023.

**EXPOSURES** The prevalence of sarcopenia and SO, measured based on handgrip strength and body composition (BC) (dual-energy x-ray absorptiometry) as recommended by current consensus criteria, with probable sarcopenia defined as having low handgrip strength and confirmed sarcopenia and SO defined as altered BC (high fat percentage and/or low appendicular skeletal muscle index) in addition to low handgrip strength.

**MAIN OUTCOME AND MEASURE** The primary outcome was all-cause mortality, collected using linked mortality data from general practitioners and the central municipal records, until October 2022.

**RESULTS** In the total population of 5888 participants (mean [SD] age, 69.5 [9.1] years; mean [SD] BMI, 27.5 [4.3], 3343 [56.8%] female), 653 (11.1%, 95% CI, 10.3%-11.9%) had probable sarcopenia and 127 (2.2%, 95% CI, 1.8%-2.6%) had confirmed sarcopenia. Sarcopenic obesity with 1 altered component of BC was present in 295 participants (5.0%, 95% CI, 4.4%-5.6%) and with 2 altered components in 44 participants (0.8%, 95% CI, 0.6%-1.0%). An increased risk of all-cause mortality was observed in participants with probable sarcopenia (hazard ratio [HR], 1.29; 95% CI, 1.14-1.47) and confirmed sarcopenia (HR, 1.93; 95% CI, 1.53-2.43). Participants with SO plus 1 altered component of BC (HR, 1.94; 95% CI, 1.60-2.33) or 2 altered components of BC (HR, 2.84; 95% CI, 1.97-4.11) had a higher risk of mortality than those without SO. Similar results for SO were obtained for participants with a BMI of 27 or greater.

**CONCLUSIONS AND RELEVANCE** In this study, sarcopenia and SO were found to be prevalent phenotypes in older people and were associated with all-cause mortality. Additional alterations of BC amplified this risk independently of age, sex, and BMI. The use of low muscle strength as a first step of both diagnoses may allow for early identification of individuals at risk for premature mortality.

#### Key Points

**Question** What is the prevalence of sarcopenia and sarcopenic obesity, and are these conditions associated with all-cause mortality?

**Findings** In this cohort study of 5888 older adults, 2.2% had confirmed sarcopenia; by applying the sarcopenic obesity algorithm, 5.0% had sarcopenic obesity with 1 and 0.8% with 2 altered components of body composition. The 10-year mortality risk was particularly high for participants with confirmed sarcopenia as well as sarcopenic obesity with 1 or 2 altered components of body composition.

**Meaning** These findings suggest that sarcopenic obesity may be associated with worse survival, and conducting screening for muscle function may help prevent premature death among older people.

#### + Supplemental content

Author affiliations and article information are listed at the end of this article.

→ Sarkopenie:

Zunehmender Abbau von Muskelmasse und Muskelkraft und die damit verbundene funktionelle Einschränkung.  
(Beginn ab 30 Jahre )

#### SYSTEMATIC REVIEW

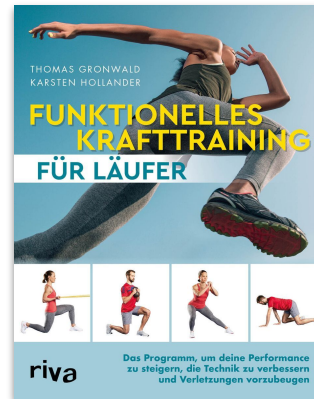
### The Efficacy and Safety of Lower-Limb Plyometric Training in Older Adults: A Systematic Review

Tomas Vetrovsky<sup>1</sup> · Michal Steffl<sup>1</sup> · Petr Stastny<sup>2</sup> · James J. Tufano<sup>1</sup>



# Krafttraining

(auch in den Alltag integrierbar:  
Treppensteigen, Tragen usw)



# Ernährung und Training: “Train your Gut”

Yes! You are an athlete. No! You shouldn't practice Intermittent Fasting.

Intermittent Fasting    Ketogenic Diet

May 10, 2021



Mit Seed-Cycling den Zyklus harmonisieren:

1. Hälfte: Leinsamen und Kürbiskerne
2. Hälfte: Sonnenblumenkerne und Sesamsamen



- Ernährung als “Regenerationsmittel”
- Einseitige oder reduzierte Energieverfügbarkeit (u.a. durch Fasten oder Keto Diät)



→ Einfluss auf den Hormonhaushalt

- Insulin-Konzentration sinkt → Einfluss auf Glukose Haushalt
- Cortisol-Konzentration steigt → Infektanfälligkeit. Steigender Blutzuckerspiegel. Stimmungsschwankungen und Reizbarkeit. Zyklusstörungen
- Einfluss auf Sympathikus (u.a. Schilddrüsenhormone)
- Einfluss auf den Menstruationszyklus → Risiko: Zyklus fällt aus / unregelmäßig



## Metabolic Impact on the Hypothalamic Kisspeptin-Kiss1r Signaling Pathway

Fazal Wahab<sup>1\*</sup>, Bibi Atika<sup>2</sup>, Farhad Ullah<sup>3</sup>, Muhammad Shahab<sup>4</sup> and Rüdiger Behr<sup>1,5</sup>

<sup>1</sup>Platform Degenerative Diseases, German Primate Center, Leibniz Institute for Primate Research, Göttingen, Germany, <sup>2</sup>Department of Developmental Biology, Faculty of Biology, University of Göttingen, Göttingen, Germany, <sup>3</sup>Department of Zoology, Islamia College University, Peshawar, Pakistan, <sup>4</sup>Laboratory of Reproductive Neuroendocrinology, Department of Animal Sciences, Faculty of Biological Sciences, Quaid-i-Azam University, Islamabad, Pakistan, <sup>5</sup>DZHK (German Center for Cardiovascular Research), Partner Site Göttingen, Göttingen, Germany



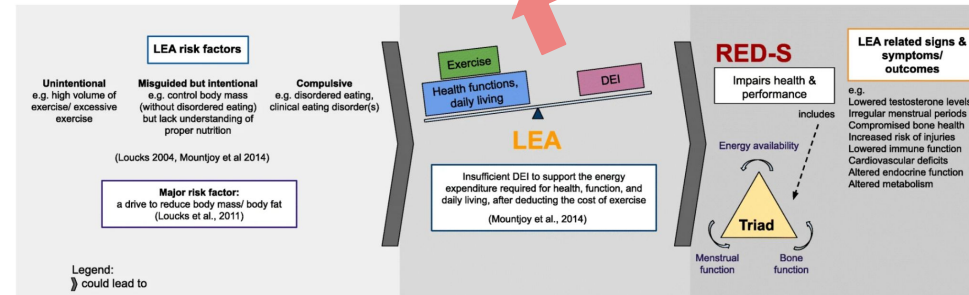
# „Relative Energy Deficiency in Sports“ (REDs)



## Niedrige Energieverfügbarkeit vs. gesundheitliche Risiken

- Essstörung
- Depression/ Stimmungsschwankungen
- Amenorrhoea / Zyklusstörungen
- Häufige Verletzungen, Stressfrakturen
- Geschwächtes Immunsystem
- Abnahme des Sexualtriebs
- Performance- / Trainingsplateau-/abfall

## From: Review: questionnaires as measures for low energy availability (LEA) and relative energy deficiency in sport (RED-S) in athletes



Unintentional, misguided but intentional, and compulsive behaviors are risk factors for low energy availability (LEA). These risk factors can result in a decrease in Dietary Energy Intake (DEI) and/ or increase in exercise energy expenditure (EEE). Overtime, these lead to Relative Energy Deficiency in Sport (RED-S), with concomitant health and performance consequences. These can present as signs, symptoms and outcomes in both male (e.g. lowered testosterone levels) and female (e.g. irregular menstrual cycle) athletes. RED-S encompasses the earlier identified condition Female Athlete Triad (Triad)

Review > Eur J Sport Sci. 2021 Nov;21(11):1567-1578.

doi: 10.1080/17461391.2020.1842510. Epub 2020 Nov 29.

## Where are all the men? Low energy availability in male cyclists: A review

Katherine L Schofield <sup>1</sup>, Holly Thorpe <sup>1</sup>, Stacy T Sims <sup>1</sup>

Affiliations + expand

PMID: 33108971 DOI: [10.1080/17461391.2020.1842510](https://doi.org/10.1080/17461391.2020.1842510)

**Free article**



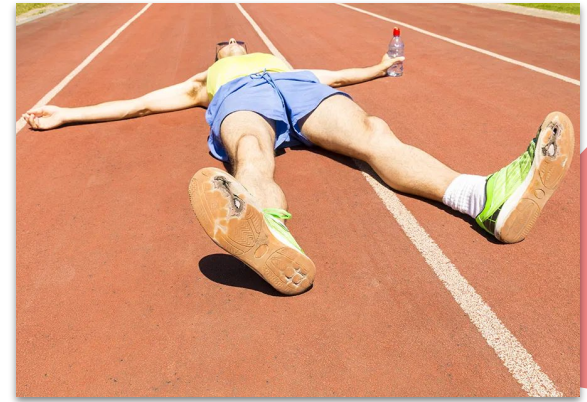
### Abstract

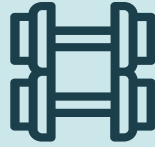
Most of the low energy availability (LEA) research has been conducted in female populations. The occurrence of LEA in male athletes is not well known, even with an understanding of the components involved in and contributing to LEA. Cycling is a major risk factor for LEA due to inherent sports characteristics: low impact, high energy demands, and a common perception that leanness is a performance advantage. The purpose of this review is to discuss the cycling-specific studies that have documented components of RED-S. The review demonstrates male cyclists (1) experience energy deficits daily, weekly and throughout a season; (2) exhibit lower bone mineral density at the spine compared to the hip, and low bone mineral density correlating with LEA and; (3) demonstrate downregulation of the endocrine system with elevated cortisol, reduced testosterone and insulin-like growth factor 1. The complexity of LEA is further explored by the socio-psychological contribution that may impact eating behaviours, and therefore increase the risk of developing LEA. Future research directions include applying multifaceted research methods to gain a greater understanding of this syndrome and the effect of LEA on male cyclists.



Mountjoy M, et al (2023) → International Olympic Committee's (IOC) consensus statement on Relative Energy Deficiency in Sport (REDs).

“There is no  
overtraining, there is  
just **underresting.**”





# Sport und Schwangerschaft

## Weitermachen oder Pausieren?



# Sport und Schwangerschaft



## Sport vor/ während der Schwangerschaft

- Verringerter Schwangerschafts-diabetes mellitus,
- Verringerter Risiko für eine Kaiserschnittgeburt oder Frühgeburt
- Reduzierte Erholungszeit nach der Geburt
- Verringerter Risiko für eine Depression nach der Geburt

→ **Körperliche Aktivität in der Schwangerschaft ist sicher und wünschenswert;**

- (+) Wandern, Walken, Joggen, Spazieren gehen
- (+) Fahrradergometer
- (+) Aerobic, Tanzen, Yoga
- (+) Kraft-/ Resistenz-Training
- (+) Wasser-aerobic
- (-) Von Ball- / Sprung- oder Kampfsportarten wird abgeraten

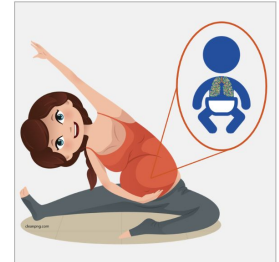
## ..positive Auswirkungen auch fürs Kind

NEWS RELEASE 5-SEP-2021

Physical activity during pregnancy is linked to lung function in offspring

Reports and Proceedings

EUROPEAN RESPIRATORY SOCIETY



## ACOG COMMITTEE OPINION

Number 804

(Replaces Committee Opinion Number 650, December 2015)

### Committee on Obstetric Practice

This Committee Opinion was developed by the Committee on Obstetric Practice with the assistance of committee members Meredith L. Brewer, MD, and Cynthia Gyntjell-Rasmussen, MD, MS.

**Physical Activity and Exercise During Pregnancy and the Postpartum Period**



# Sport und Schwangerschaft

aerzteblatt.de

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MEDIZINREPORT: Studien im Fokus

## Sport in der Schwangerschaft: Laufen hat keinen negativen Einfluss auf Geburtstermin und Gewicht des Kindes

Dtsch Arztebl 2018; 115(22): A-1061 / B-892 / C-888

Gerste, Ronald D.



Newsletter abonnieren

Zur Startseite

Artikel

Kommentare/Briefe

Statistik

Laufsport gehört für viele Frauen zu einer gesunden Lebensführung. Frühere Studiendaten hatten ergeben, dass Sport auch in der Schwangerschaft gesundheitsfördernd ist. Er beugt einer Schwangerschaftsgewichtszunahme (gestational weight gain, GWG) vor, die als Risikofaktor für einen Diabetes mellitus, für Hypertonie und Präeklampsie gilt. Wenig untersucht ist bislang, ob mehr oder weniger intensives Jogging nachteilige Effekte auf den



## IMPACT OF PREGNANCY ON TRAINING & PERFORMANCE

Reference : Darroch et al. MSSE 2022

Designed by @YLMsportScience



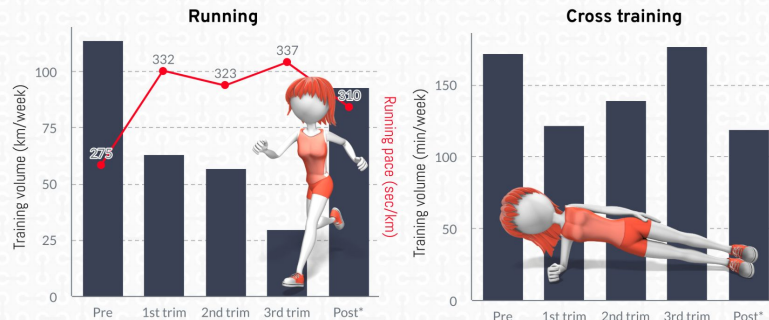
### WHAT DID THEY STUDY?

The data of 42 elite middle/long-distance runners was collected (>50% competed at the World Championships/Olympic) using :

- **Training** Retrospective questionnaire to characterize pre-, during-, and post-pregnancy training (quality/quantity/type)
- **Performance** Online resources for competition data

### RESULTS

- 1 Running volume decreased during the pregnancy but the participants returned to activity/exercise at ~6 weeks postpartum and to 80% of pre-pregnancy training volumes by 3-months



- 2 In the 60% of participants who intended to return to equivalent performance levels post- pregnancy, there was no statistical decrease in performance in the 1 to-3 years post compared to pre-pregnancy
- 3 46% improved performances post-pregnancy





# Menopause

**Soll ich anders trainieren?**



# Menopause

## Was bedeutet Menopause?

Veränderungen von Östrogen und Testosteron:

Vergleich zwischen Frauen und Männer, vor und nach den Wechseljahren

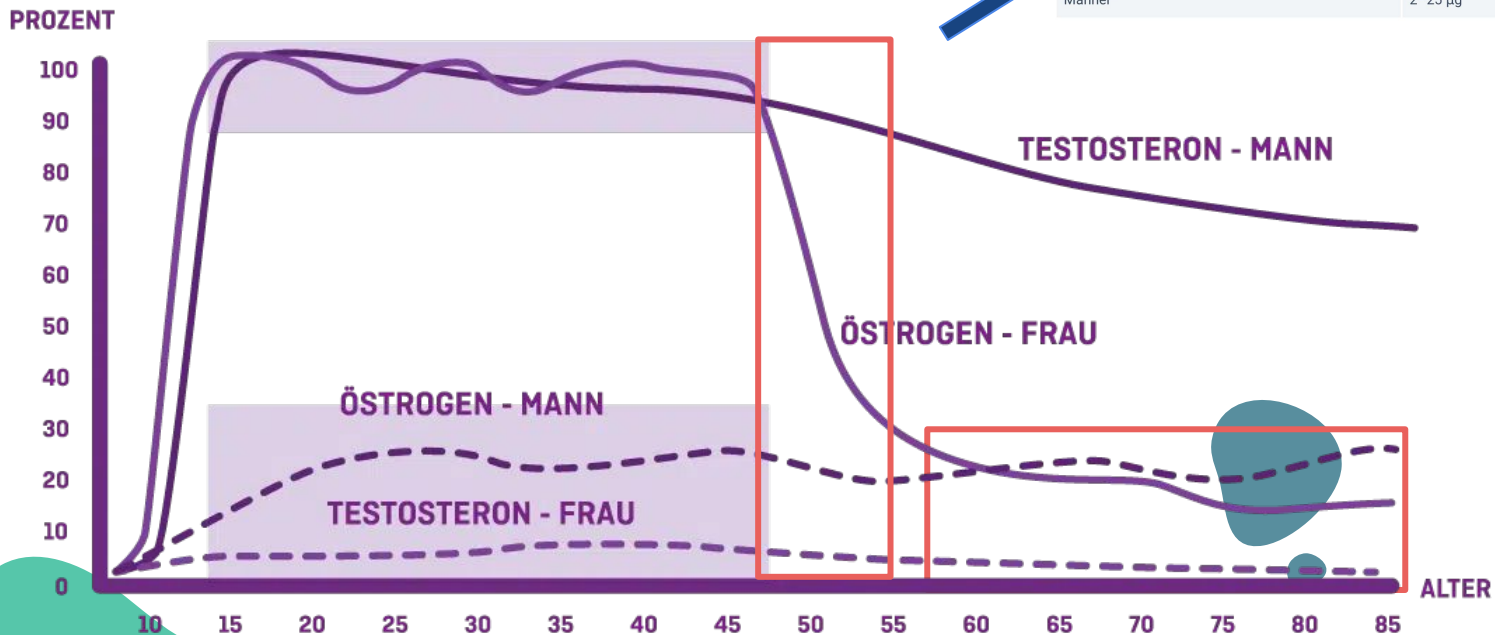


Tabelle 1: Tägliche Produktion von Estradiol

	Tägliche Estradiolproduktion
Frauen (prämenopausal)	25–100 µg
Frauen (postmenopausal)	5–10 µg
Männer	2–25 µg

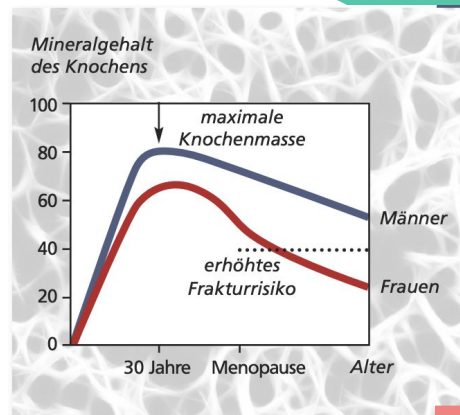


# Menopause

*Im Verlauf der Wechseljahre kommt es zu einem Absinken der Testosteron- und Estradiolspiegel..*

→ Risiko für das Auftreten von verschiedenen Erkrankungen, wie

- **Postmenopausale Osteoporose** (Aufgrund Östrogenmangels: Knochenabbau > Knochenaufbau)
- **Arteriosklerose** (Einlagerung von Cholesterinestern und anderen Fetten), Herzinfarkt, Schlaganfall



*Darstellung des normalen Mineralgehaltes des Knochens im Verlauf eines Lebens*

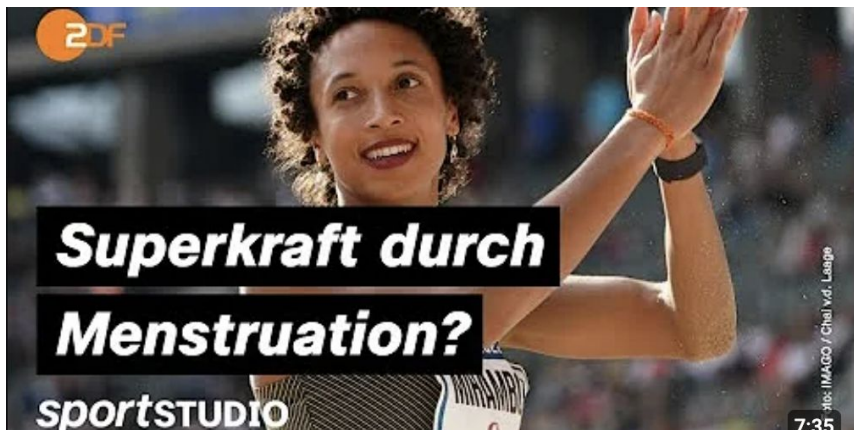


## *Warum erkranken Frauen häufiger an Osteoporose als Männer?*

Frauen haben einen zarteren Knochenbau, meist weniger Muskulatur und speichern dadurch weniger Kalzium. Bei der Frau kommt der Östrogen-Abfall in den Wechseljahren hinzu, der bei ca. jeder dritten Frau zu einem krankhaften Verlust an Knochenmasse führen kann.

**Bundesselbsthilfeverband für Osteoporose e.V. (BfO)**

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# Weiterführende Medien

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### Midlife Women Can and Should Do High Intensity Exercise

Cortisol HIIT SIT

It's time to HIIT back on cortisol myths and misunderstandings.

"Don't do HIIT, it increases cortisol!" "Don't have too

### Mainstream Menopause Advice is Misleading Active Women

Creatine Fueling Hormones Menopause Perimenopause Zone

Fasting, keto, low carb, all zone 2 all the time... those rules are not for us.

It's been two years since my menopause training

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**You're Not a Small Man, But You May Need to Eat Like One!**



**Danke** für eure  
Aufmerksamkeit!