Deutsche Sporthochschule Köln
German Sport University Cologne

# Moderne Ergonomie –
# Form follows function zur körperlichen Aktivität

Dr. Boris Feodoroff

29.11.2017

# Chronisch krank nach 4 Stunden

RESEARCH Open Access

## Chronic disease and sitting time in middle-aged Australian males: findings from the 45 and Up Study

Emma S George[1*], Richard R Rosenkranz[1,2] and Gregory S Kolt[1]

**Abstract**

**Background:** Compared to females, males experience a range of health inequities including higher rates of diabetes and cardiovascular disease. Although sitting time is emerging as a distinct risk factor for chronic disease, research on the association of sitting time and chronic disease in middle-aged Australian males is limited.

**Methods:** A sample of 63,048 males aged 45-64 years was drawn from the baseline dataset of the 45 and Up Study – a longitudinal cohort study on healthy ageing with 267,153 participants from across New South Wales, Australia's most populous state. Baseline data on self-reported chronic disease (heart disease, cancer, diabetes, high blood pressure, combined chronic diseases), sitting time, physical activity (Active Australia Survey), and a range of covariates were used for cross-sectional analyses. Crude (OR), partially and fully adjusted odds ratios (AOR) and 95% confidence intervals (CI) were calculated using binary logistic regression.

**Results:** Compared to those sitting <4 hours/day, participants reporting 4 to <6, 6 to <8, and ≥8 hours were significantly more likely to report ever having any chronic disease (AOR 1.06, 95% CI 1.00 – 1.12, p = 0.050; AOR 1.10, 95% CI 1.03 – 1.16, p = 0.003; AOR 1.09, 95% CI 1.03 – 1.15, p = 0.002, respectively). Participants who reported 6 to <8 hours and ≥8 hours of sitting were also significantly more likely to report ever having diabetes than those reporting <4 hours/day (AOR 1.15, 95% CI 1.03 – 1.28, p = 0.016; AOR 1.21, 95% CI 1.09 – 1.33, p <0.001, respectively).

**Conclusions:** Our findings suggest that higher volumes of sitting time are significantly associated with diabetes and overall chronic disease, independent of physical activity and other potentially confounding factors. Prospective studies using valid and reliable measures into domain-specific sitting time in middle-aged males are required to understand and explain the direction of these relationships.

**Keywords:** Physical activity, Sedentary behaviour, Sedentary lifestyle, Chronic disease, Heart disease, Cancer, Diabetes, Blood pressure

George et al. (2013): Chronic disease and sitting time in middle-aged Australian males. Findings from the 45 and Up Study. In: *The international journal of behavioral nutrition and physical activity 10, S. 20.*

# Früher tot nach 12,5 Stunden

**Annals of Internal Medicine** ORIGINAL RESEARCH

## Patterns of Sedentary Behavior and Mortality in U.S. Middle-Aged and Older Adults

### A National Cohort Study

**Keith M. Diaz, PhD; Virginia J. Howard, PhD; Brent Hutto, MSPH; Natalie Colabianchi, PhD; John E. Vena, PhD; Monika M. Safford, MD; Steven N. Blair, PED; and Steven P. Hooker, PhD**

**Background:** Excessive sedentary time is ubiquitous in Western societies. Previous studies have relied on self-reporting to evaluate the total volume of sedentary time as a prognostic risk factor for mortality and have not examined whether the manner in which sedentary time is accrued (in short or long bouts) carries prognostic relevance.

**Objective:** To examine the association between objectively measured sedentary behavior (its total volume and accrual in prolonged, uninterrupted bouts) and all-cause mortality.

**Design:** Prospective cohort study.

**Setting:** Contiguous United States.

**Participants:** 7985 black and white adults aged 45 years or older.

**Measurements:** Sedentary time was measured using a hip-mounted accelerometer. Prolonged, uninterrupted sedentariness was expressed as mean sedentary bout length. Hazard ratios (HRs) were calculated comparing quartiles 2 through 4 to quartile 1 for each exposure (quartile cut points: 689.7, 746.5, and 799.4 min/d for total sedentary time; 7.7, 9.6, and 12.4 min/bout for sedentary bout duration) in models that included moderate to vigorous physical activity.

**Results:** Over a median follow-up of 4.0 years, 340 participants died. In multivariable-adjusted models, greater total sedentary time (HR, 1.22 [95% CI, 0.74 to 2.02]; HR, 1.61 [CI, 0.99 to 2.63]; and HR, 2.63 [CI, 1.60 to 4.30]; *P* for trend < 0.001) and longer sedentary bout duration (HR, 1.03 [CI, 0.67 to 1.60]; HR, 1.22 [CI, 0.80 to 1.85]; and HR, 1.96 [CI, 1.31 to 2.93]; *P* for trend < 0.001) were both associated with a higher risk for all-cause mortality. Evaluation of their joint association showed that participants classified as high for both sedentary characteristics (high sedentary time [≥12.5 h/d] and high bout duration [≥10 min/bout]) had the greatest risk for death.

**Limitation:** Participants may not be representative of the general U.S. population.

**Conclusion:** Both the total volume of sedentary time and its accrual in prolonged, uninterrupted bouts are associated with all-cause mortality, suggestive that physical activity guidelines should target reducing and interrupting sedentary time to reduce risk for death.

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*Ann Intern Med.* doi:10.7326/M17-0212 **Annals.org**
For author affiliations, see end of text.
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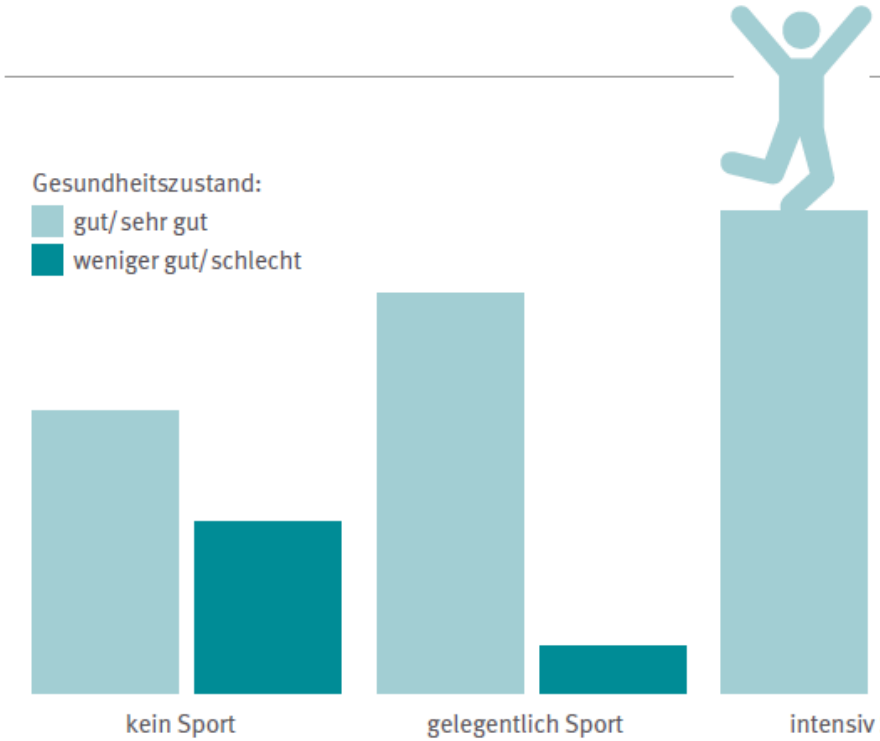
Diaz et al. (2017): Patterns of Sedentary Behavior and Mortality in U.S. Middle-Aged and Older Adults. A National Cohort Study. In: *Annals of internal medicine.*




TK-Bewegungsstudie 2016

**Selbst wenig Sport verbessert den Gesundheitszustand erheblich.** Sportliche Betätigung und Gesundheit hängen zusammen: Während 25 Prozent der „Antisportler“ über ihre Gesundheit klagen, sind es gerade mal 7 Prozent bei denen, die gelegentlich Sport treiben.

# Zum Glück unternimmt jemand etwas…

89/391/EWG

2001/95/EG

BildscharbV

ArbStättV

89/654/EWG

90/270/EWG

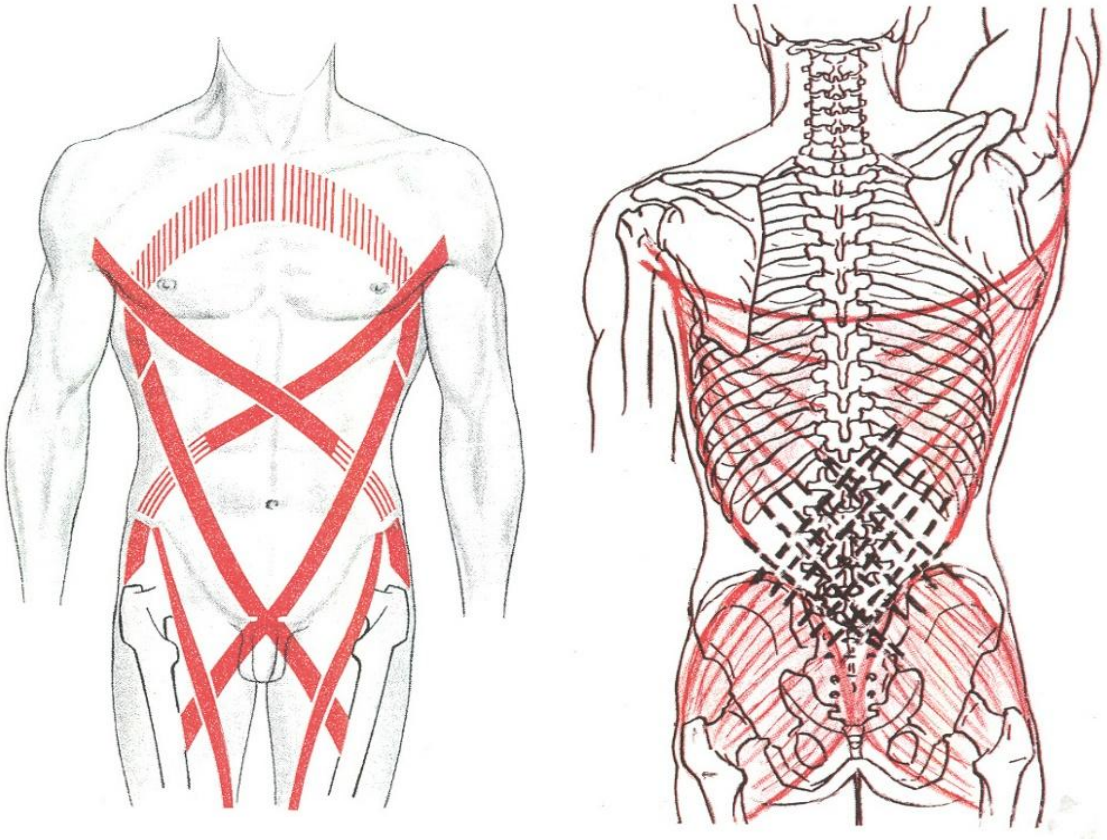
ProdSG

ArbSchG

DIN 1335

NPR 1813

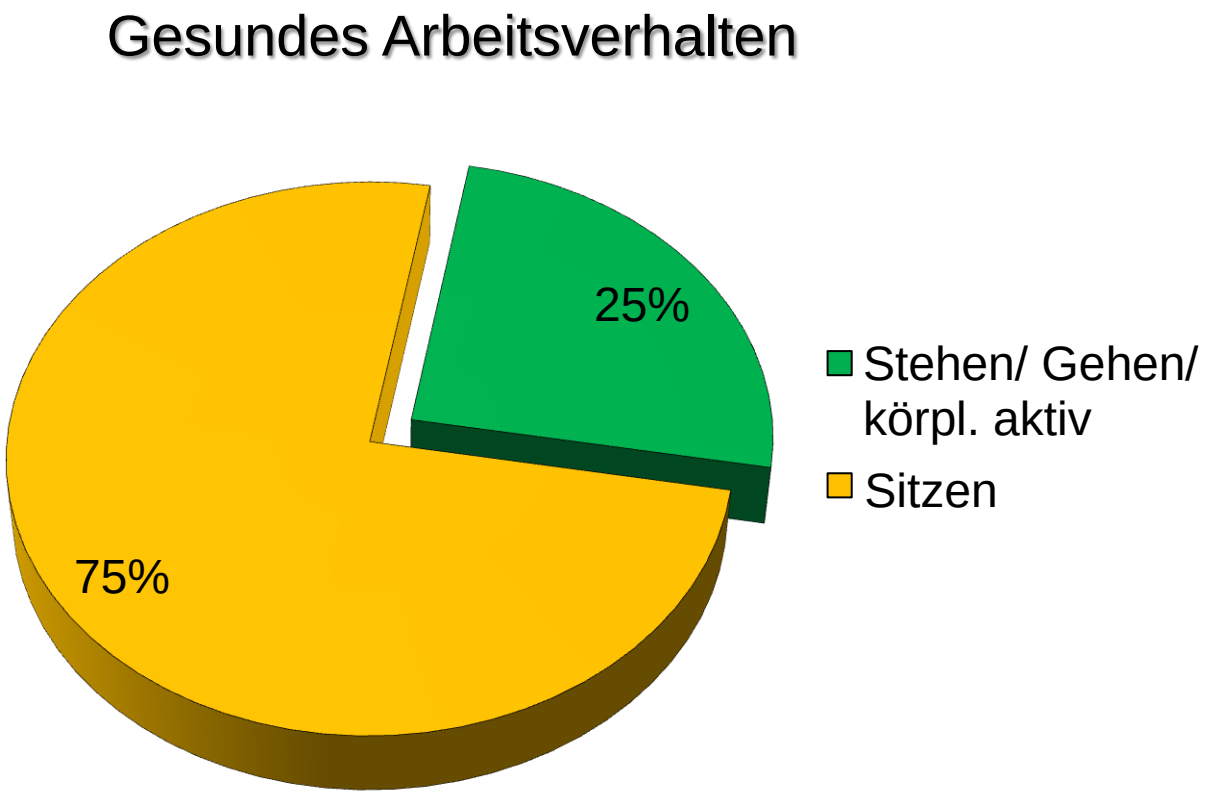
# Echte Teamplayer



Muskeln arbeiten **IMMER** zusammen!

# Was wir brauchen

# Empfehlung für das Büro




Buckley JP, Hedge A, Yates T, Copeland RJ, Loosemore M, Hamer M, et al. The sedentary office: a growing case for change towards better health and productivity. Expert statement commissioned by Public Health England and the Active Working Community Interest Company. British Journal of Sports Medicine. 2015 June 1, 2015

# Change I: Konkret

## 20-8-2: Sitting All Day? Standing All Day? Here's Why You Need to Mix Things Up

May 8, 2017 | Focal Team | Categories: Upright in Action



# Verhalten und Verhältnis

Wilkhahn

kinema active chair

# Nutzen

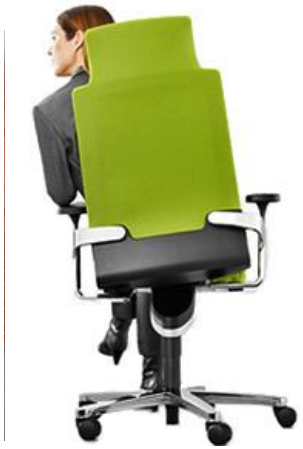
- Atemzugtiefe (VT)
- Sauerstoffaufnahme ($VO_2$)
- Herzfrequenz (HF)
- Kalorienverbrauch (kcal/ min)


doi: 10.1016/j.apergo.2016.10.006

- Mehr Bewegung +
  Mehr Aktivität

**= <u>Mehr Gesundheit</u> ?**

- Präsentiert wurden Alternativen zu Sitzmöbeln
- Wir arbeiten an alternativen Sitzmöbeln



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## Die Revolution des Sitzens

Wie und wo entstehen neue Ideen, innovative Geschäftskonzepte oder Grundlagen für wichtige Entscheide im Alltag?


Designing from the brain - Watch Inno-Motion founder Dr. Patrik Künzler's TEDx talk

Obwohl wir alle die positive Wirkung der Körperbewegung kennen, verbringen wir den grössten Teil unseres Lebens sitzend (oder schlafend).

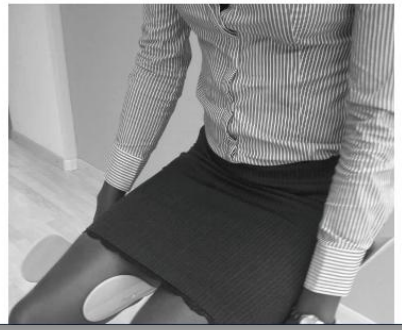
Mit dem wachsenden Aufkommen von Unterhaltungsmedien, Computer und Schreibtisch-Jobs verbringen wir heute mit durchschnittlich 9,3 Stunden pro Tag sogar mehr Zeit sitzend als schlafend (7,7 Stunden).

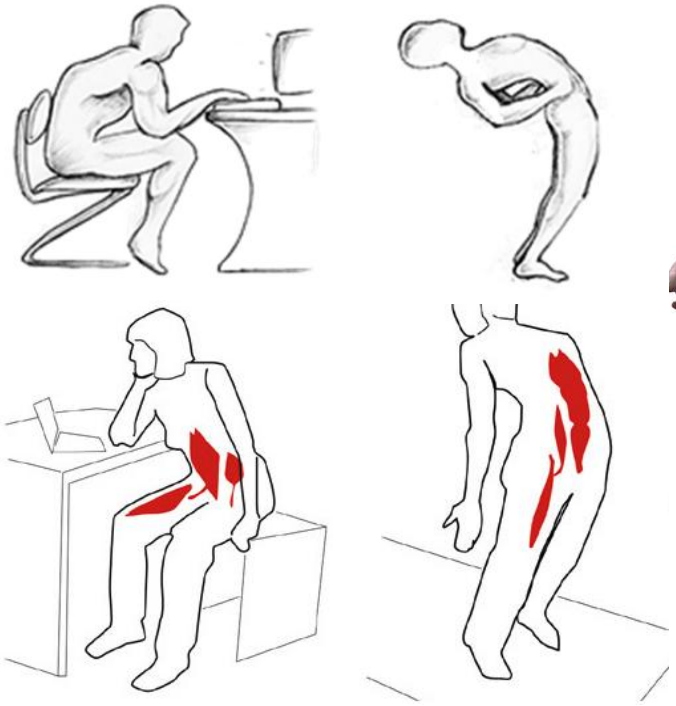
Die Folgen des Sitzen für unsere Gesundheit sind bedenklich, denn langes Sitzen verringert die Lebensqualität und macht krank.

Durch langes Sitzen wird unsere Konzentrations- und Leistungsfähigkeit zunehmend eingeschränkt und für neue Ideen und wichtige Entscheide sind wir blockiert.

Oder waren Sie schon einmal an einem Kreativ-Workshop, ohne erfrischende Auflockerungsübungen?

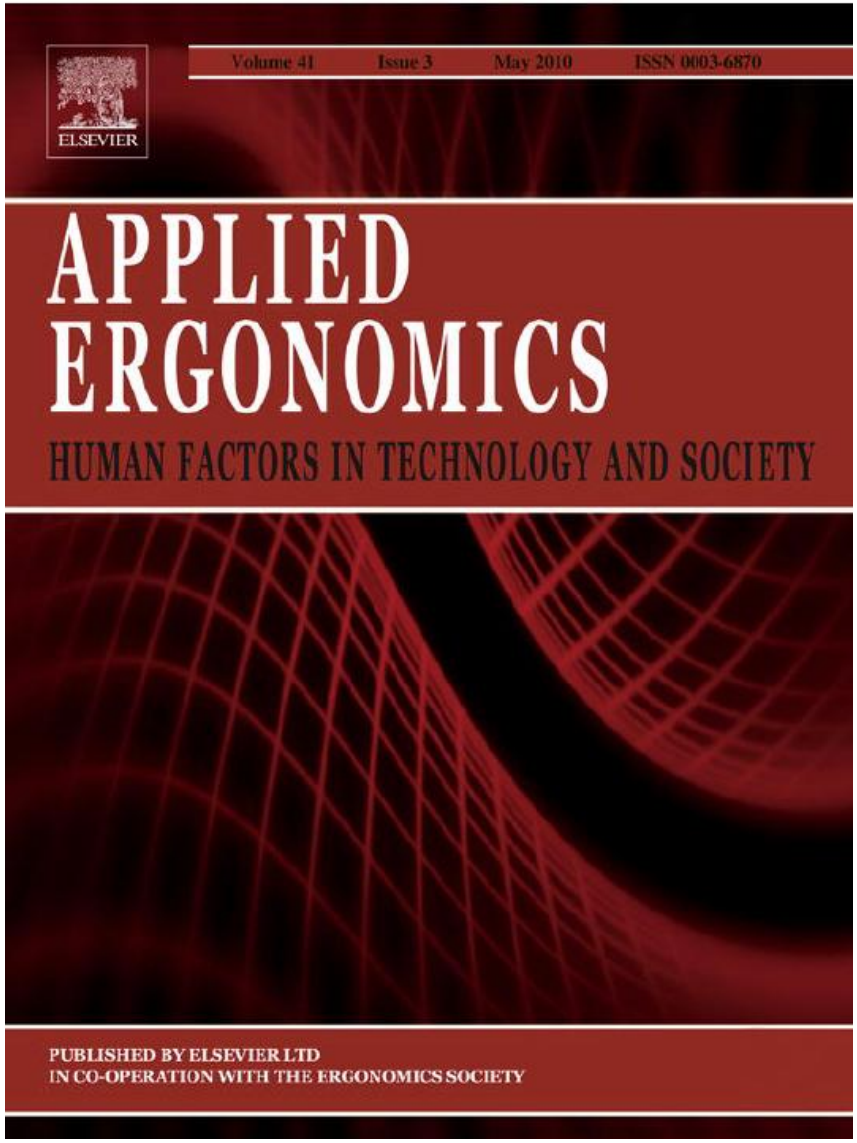
Eigentlich sind wir Menschen gar nicht für das stundenlange Sitzen gemacht, weil der Körper intuitiv Bewegung und Energie braucht.





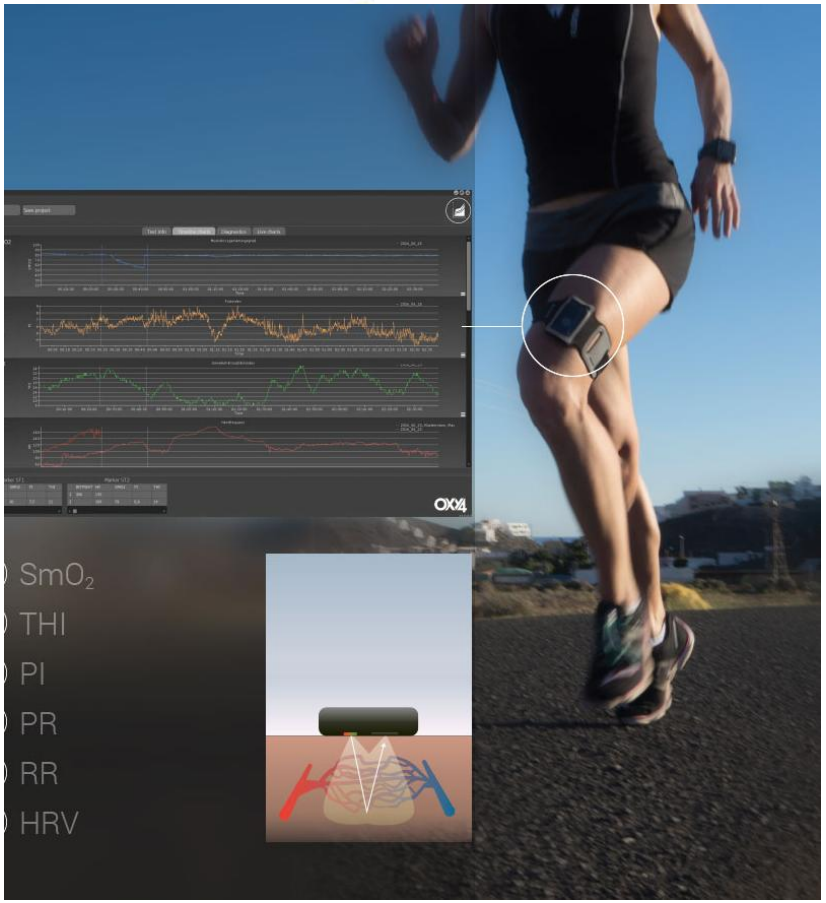
Bundesministerium
für Wirtschaft
und Energie

# Entwicklungsschritte




Bundesministerium
für Wirtschaft
und Energie

- Minimalaktivität gesteigert durch das dynamische Sitzen ist bekannt
- Verbesserte *Versorgung* der Muskulatur mit Sauerstoff?




# Exergaming