

Positive Effekte eines Power Plate Beschleunigungstrainings auf den Verlust von Körperfett im Bauchbereich bei übergewichtigen und adipösen Erwachsenen.

Vissers D. et al., Artesis University College of Antwerp, Belgien (2009).

Ziel der Studie: Untersuchung ob ein Beschleunigungstraining auf der Power Plate zu einer Abnahme des Körpergewichtes und einer Reduktion des viszeralen Fettgewebes bei übergewichtigen Erwachsenen führen kann.

Dauer: 12 Monate
Gerät: Power Plate Pro 5 Air

Probanden: 61 übergewichtige und adipöse Erwachsene

Untersuchungsgruppen:

Gruppe I: Hypokalorische Diät (wenige Kalorien)

Gruppe II: Diät + konventionelles Fitnesstraining

Gruppe III: Diät + Power Plate Anwendungen

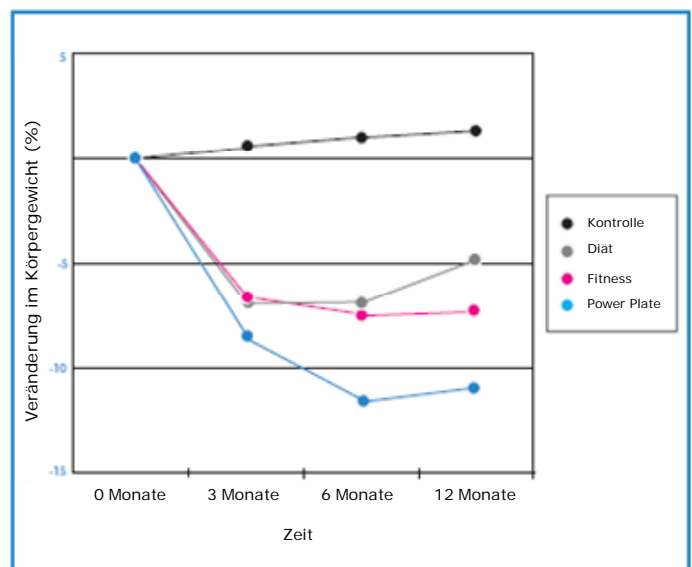
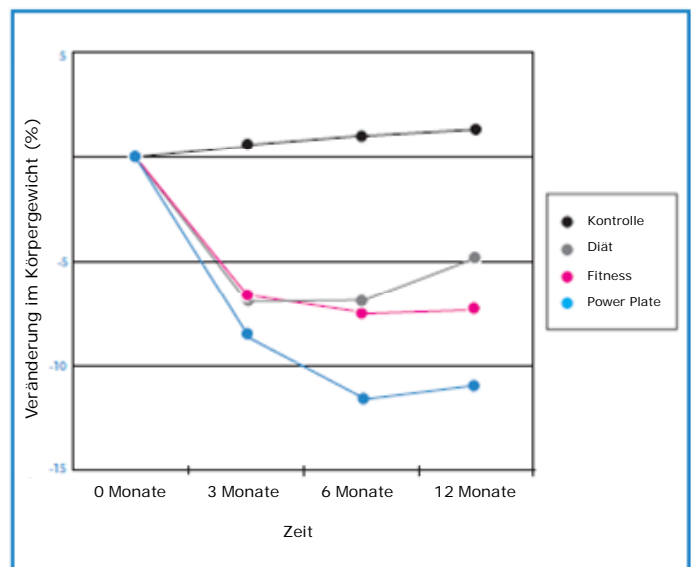
Gruppe IV: Kontrollgruppe (Kein Training oder Diät)

Das Training und die Diät erfolgten in den ersten 6 Monaten. In den Monaten 7-12 wurde keine Diät/ Training absolviert um die Dauerhaftigkeit der Resultate zu überprüfen (Kontrollperiode).

Parameter: Bestimmung der Körpergewichtes und des viszeralen Fettanteils

Ergebnisse: In allen 3 Gruppen (Diät, Fitness, Power Plate) konnte ein signifikanter Verlust im Körpergewicht von 5-10% nach 6 Monaten beobachtet werden. Nur die Fitness und die Power Plate Gruppe konnten den Gewichtsverlust von 5% oder mehr in den anschließenden 6 Monaten ohne Anwendungen/Training (Kontrollperiode) aufrecht erhalten (Abb. 1). Die Power Plate Gruppe konnte über den gesamten Zeitraum sogar einen Gewichtsverlust von über 10% aufrecht erhalten. Der hauptsächliche Unterschied zwischen der Power Plate Gruppe und den anderen Gruppen bestand jedoch vor allem in der Abnahme des viszeralen Fettgewebes. Die Power Plate Gruppe verlor in den ersten 6 Monaten im Vergleich zur Diät- und Fitnessgruppe fast doppelt soviel viszerales Fettgewebe (Abb. 2). Das reduzierte viszerale Fettgewebe war auch nach 12 Monaten noch reduziert, während die Diät- und Fitnessgruppe nach 12 Monaten wieder ihre Ausgangswerte erreichten.

Fazit: Die Kombination aus einem Power Plate Beschleunigungstraining und einer Diät kann zu einer langfristigen Gewichtsreduktion führen und das viszerale Fettgewebe bei übergewichtigen Personen stärker reduzieren als ein konventionelles Training.



T1:RS3 – Nutrition and physical activity

T1:RS3.1

Increasing activity or reducing inactivity?

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Obesity is considered as one of the greatest health challenges in the 21st century with increasing prevalence in most parts of the world. Although obesity is multi-factorial, including genetic, biological, cultural, and socio-economic components, it is likely that an imbalance between energy intake and expenditure is the main underlying cause of the current epidemic.

Increasing overall energy expenditure in order to maintain energy balance and thereby a healthy body weight can be achieved by an increase in physical activity and a reduction in time spent sedentary, or a combination of both.

Most previous prospective population based observational studies suggests that individuals who report higher levels of physical activity tend to be less likely to gain body weight, however, the magnitude of association appears to be weak. TV viewing, frequently used as a marker for sedentary behaviour, appears to be related to obesity although this association may be mediated by other behaviours (e.g. snacking) associated with TV viewing. It has also been suggested that obesity predicts self-reported physical inactivity and sedentary behaviour whereas in these studies, there was no evidence for an influence of sedentary behaviour on the development of obesity, a reverse causality argument. Observational studies vary in their conclusion due to issues of confounding and measurement error and leave uncertainties about direction of causality. Dose-response associations can only be properly addressed by studies including objective methods for assessing physical activity and sedentary behaviour. The evidence base on whether increasing physical activity or reducing sedentary behaviour is more important for the prevention of obesity is currently weak.

T1:RS3.2

Quantity Vs Quality of diet

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Obesity—with its comorbidities such as type 2 diabetes, metabolic syndrome and cardiovascular diseases—is a major public health concern. To prevent overweight and its unhealthful effects it is obviously important to reduce the calorie content of the diet. However, the amount of food eaten is not always a good marker of energy intake given the different energy density of each food item; therefore, an appropriate food choice may have a stronger impact on overweight prevention than the sole reduction of portion size. In addition, the composition of the diet may influence satiety and energy expenditure—two important mechanisms of long-term weight changes. While there is no clear evidence that altering the proportion of dietary fat and carbohydrate has major effects on body weight, there is substantial evidence that carbohydrate-rich foods differ in relation to their impact on body weight. In particular, increased consumption of sugar-sweetened soft drinks is associated with weight gain, particularly in children, since beverages induce less satiety than solid carbohydrates. Conversely, the intake of fibre rich foods like whole-grain cereals, vegetables, legumes and fruits is associated with lower risk of weight gain in observational studies. Other nutrients may also have an impact on body weight: a moderately elevated protein intake stimulates 1) satiety, 2) thermogenesis and 3) lean muscle mass (thus influencing energy expenditure). In conclusion, in populations at risk for obesity multiple small changes in the composition of the habitual diet might be more feasible and effective for overweight prevention than the simple advice to eat less.

T1:RS3.3

Increased energy intake alone virtually explains all the increase in body weight in the United States from the 1970s to the 2000s

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Introduction: The relative contributions of increased total energy intake (TEI) and reduced physical activity (PA) to the obesity epidemic are much debated. We combined biological, epidemiological, and food supply evidence to examine the drivers of weight gain in the US from 1970s to 2000s.

Methods: Data on total energy expenditure (TEE) from doubly labelled water studies in 963 children and 1399 adults were used to derive equations relating stable weight to energy flux (EnFlux=TEE-TEI). The equations were used to predict the increases in weight in the US population using food energy supply data (adjusted for wastage), NHANES surveys (1971-76, 1999-2002), and census data. If predicted equalled observed, then increased TEI was assumed to explain the weight increase; if predicted was higher or lower than observed then changes in PA levels were assumed to have also contributed.

Results: Children: the predicted increase in mean weight (4.0kg) equalled the observed increase (4.0kg). Adults: the predicted increase in mean weight (10.8kg) was higher than the observed (8.6kg) implying that secular increases in PA may have moderated the effect.

Conclusions: The biological relationship between weight and EnFlux predicted that virtually all the observed increase in weight in the US over 30 years could be explained by increases in TEI. This supports the US epidemiological data that shows PA levels have changed little whereas TEI has increased. While reducing the obesogenicity of the food environment should be the dominant focus of strategies to reverse the epidemic, increasing PA and reducing sedentariness are also important.

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T1:RS3.4

Does whole body vibration contribute to reduction in visceral adipose tissue?

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Introduction: Although the use of whole body vibration (WBV) training is described as an alternative way of resistance training, the clinical use of WBV in an obese population remains unclear.

Objective: To determine the effect of WBV training and aerobic exercise, combined with a hypocaloric diet, on weight, body composition and metabolic risk factors in overweight and obese adults.

Methods: A randomized, controlled study in an outpatient clinic with a 6-month intervention period and a 6-month 'no intervention' follow-up. Participants were 79 overweight or obese adults, 61 of them completed the study.

Interventions: A diet only group (DIET), a diet plus fitness group (FITNESS) and a diet plus whole body vibration group (VIBRATION).

Main Outcome Measures: Anthropometric data, body composition and metabolic features were evaluated at baseline and at 3, 6 and 12 months.

Results: Only FITNESS and VIBRATION managed to maintain a weight loss of 5% or more in the long term. Visceral adipose tissue changed most in VIBRATION: -47.8, ±41.2 and -47.7, ±45.7cm² resp. after 6 and 12 months compared to CONTROL (-3.6, ±20.5 and +26.3, ±30.6cm² resp.), DIET (-24.3, ±29.8 and -7.5, ±28.3cm² resp.) and FITNESS (-17.6, ±36.6 and -1.6, ±33.3cm² resp.) (P<0.001).

Conclusion: Adding aerobic exercise or WBV training to a hypocaloric diet, can help to achieve a sustained long-term weight loss of 5-10%. These preliminary data show that WBV training may have the potential to reduce VAT more than aerobic exercise in obese adults, possibly making it a meaningful addition to future weight loss programs.

Conflict of Interest: None Disclosed. *Funding:* No Funding.

T1:RS4 – Evidence based prevention and health promotion

T1:RS4.1

Randomised control trials. The only acceptable evidence?

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The importance of evidence-informed policy and practice in public health is well recognised. Much of this discussion has focused on the nature of evidence within public health. Evidence-informed policy and practice helps to identify the potential best buys for health across the broad spectrum of health services from both upstream and downstream perspectives.

A foundational part of the production and utilisation of evidence is the conduct of high quality primary research and evaluation. The nature of research and evidence within public health and health promotion means that study designs, other than randomised controlled trials, which evaluate complex community interventions, and are generally complex and multi-faceted, are vital for informing the evidence base. The importance of utilising multiple methods and data sources, including qualitative and quantitative, experimental and observational research, in developing public health evidence is now well recognised. This emphasis on multiple methods in public health evidence reflects the growing awareness of the importance of contextual, including social, political and organisational, factors in which an intervention is conducted to evaluate design and interpret findings. Consideration of the impact of interventions on health equity, such as differences in outcomes for groups within the intervention population, is also viewed as important when conducting evaluations in health promotion and public health. This recognition of the need to focus on health inequalities provides added weight to the argument for multiple methods in order to ensure that appropriate data are collected to build a comprehensive evidence base.

Conflict of Interest: None Disclosed. *Funding:* No Funding.

T1:RS4.2

New paradigms for evidence based prevention.

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Introduction: Randomized controlled trials have been conducted to examine the efficacy or the effectiveness of obesity prevention interventions. A common paradigm has the investigator begin with focus groups, use results from the focus groups to formulate a pilot study, look for positive "signals" of success in the pilot study, and then report trends in the primary outcome that are in the hypothesized direction in a grant proposal to obtain funding for a randomized trial. We believe that obesity prevention research would benefit from additional, intermediate studies that are designed to detect changes in, or associations with, hypothesized mediators or process variables.

Conclusion: Intermediate studies have been called several names by obesity researchers including preliminary, formative, developmental, small efficacy and evidentiary. There currently exists some differences in the type of intermediate research proposed, and this is reflected in the terms, but a consensus seems to be building that more work is needed in intermediate studies prior to the launch of a large, randomized trial

to test an obesity prevention intervention. Reductionist thinking, common in laboratory research, may help to move community interventions forward. Existing research has shown that behavioral interventions can improve diet and physical activity levels and reduce body weight; nevertheless, even carefully conducted behavior change interventions are limited in their ability to induce long-term behavioral change in most people. Better behavioral interventions are needed, and their development will depend upon an improved understanding of human behavior, and translation of that understanding into feasible interventions.

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T1:RS4.3

Identifying priorities for obesity prevention

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Introduction: The Assessing Cost-Effectiveness in Obesity (ACE-Obesity) project used an evidence-based approach to evaluate the cost-effectiveness of interventions for the prevention of unhealthy weight gain in Australian children and adolescents.

Methods: Thirteen interventions across a range of settings were evaluated. To avoid methodological confounding and to provide a balanced approach to priority setting, the ACE-Obesity study used standardised methods. These included: (i) a common setting, target group and decision context; (ii) use of Australian data to calibrate the model; (iii) a two-stage concept of benefit; and (iv) extensive use of probabilistic uncertainty testing. The technical results were reported as cost per disability-adjusted life year saved, using current practice in Australia in 2001 as the comparator. Broader considerations which impinge on resource allocation decisions (level of evidence, 'equity', 'acceptability', 'feasibility', 'sustainability', and 'side effects') were taken into account.

Results: Six interventions (including restriction of TV advertising of high fat/high sugar foods and drinks, and a number of school-based programs) represented excellent 'value for money' and were potentially cost-saving. A further four interventions (including a targeted GP program, orlistat therapy and laparoscopic gastric banding) entailed additional costs, but were still cost-effective.

Conclusion: The ACE-Obesity approach enabled interventions to be ranked in order of economic merit without the normal methodological concerns about results drawn from studies lacking in comparability. It offers a tool for informing decision-makers about both the merit of individual obesity interventions, and the packaging of a strategy of 'best buys' for obesity prevention which fits a particular budget.

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T1:RS4.4

Supporting knowledge transfer into action: A portal for policy-makers, researchers, evaluators and public health practitioners on governmental action plans to tackle obesity

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Introduction: Since the WHO's call for action on obesity in 2004, several countries have adopted governmental action plan (GAP). Due to the novel approaches used in these plans and the paucity of evaluation, stakeholders need to be informed of other countries' GAP. However, having quick access to up-to-date information is challenging. Thus, we developed in 2008 a portal of GAPs on diet, physical activity and obesity and on the grey literature on these topics (www.inspq.qc.ca/pag/).