

# **49 healthy lifestyle & healthy aging abstracts**

## **april '19 newsletter**

Ashdown-Franks, G., B. Stubbs, et al. (2019). **"Handgrip strength and depression among 34,129 adults aged 50 years and older in six low- and middle-income countries."** *Journal of Affective Disorders* 243: 448-454.  
<http://www.sciencedirect.com/science/article/pii/S0165032718312801>

Introduction Handgrip strength is a simple and inexpensive marker of health and mortality risk. It presents an ideal risk-stratifying method for use in low and middle-income countries (LMICs). There are, however, no population-based studies investigating the associations between handgrip strength and depression in LMICs. We aimed to assess these associations among community-dwelling middle-aged and older adults using nationally representative data from six LMICs. Method Cross-sectional data on individuals aged  $\geq 50$  years from the World Health Organization's Study on Global Ageing and Adult Health were analyzed. Depression was based on the Composite International Diagnostic Interview. Weak handgrip strength was defined as  $< 30$  kg for men and  $< 20$  kg for women using the average value of two handgrip measurements of the dominant hand. Multivariable logistic regression analysis was conducted. Results The sample included 34,129 individuals ( $62.4 \pm 16.0$  years; 52.1% female). The prevalence of weak handgrip strength and depression were 47.4% and 6.2%, respectively. Individuals with weak handgrip strength had a higher prevalence of depression than those without this condition (8.8% vs. 3.8%;  $p < 0.001$ ). Across all countries, after adjustment for potential confounders, weak handgrip strength was associated with a 1.45 (95%CI = 1.12–1.88) times higher odds for depression, although some between-country differences were noted. Discussion Weaker handgrip strength is associated with higher odds for depression in LMICs. Future research should seek to establish the predictive value of this inexpensive measure for clinical use. Furthermore, interventional studies should examine if muscular strength can be a target of resistance-training interventions to address depressive symptoms in low-resourced settings.

Ballon, A., M. Neuenschwander, et al. (2018). **"Breakfast skipping is associated with increased risk of type 2 diabetes among adults: A systematic review and meta-analysis of prospective cohort studies."** *The Journal of Nutrition* 149(1): 106-113. <https://dx.doi.org/10.1093/jn/nxy194>

Epidemiologic studies have indicated that breakfast skipping is associated with risk of type 2 diabetes. However, the shape of the dose-response relation and the influence of adiposity on this association have not been reported. We investigated the association between breakfast skipping and risk of type 2 diabetes by considering the influence of the body mass index (BMI). In this systematic review and meta-analysis, PubMed and Web of Science were searched up to August 2017. Prospective cohort studies on breakfast skipping and risk of type 2 diabetes in adults were included. Summary RRs and 95% CIs, without and with adjustment for BMI, were estimated with the use of a random-effects model in pairwise and dose-response meta-analyses. In total 6 studies, based on 96,175 participants and 4935 cases, were included. The summary RR for type 2 diabetes comparing ever with never skipping breakfast was 1.33 (95% CI: 1.22, 1.46,  $n = 6$  studies) without adjustment for BMI, and 1.22 (95% CI: 1.12, 1.34,  $n = 4$  studies) after adjustment for BMI. Nonlinear dose-response meta-analysis indicated that risk of type 2 diabetes increased with every additional day of breakfast skipping, but the curve reached a plateau at 4–5 d/wk, showing an increased risk of 55% (summary RR: 1.55; 95% CI: 1.41, 1.71). No further increase in risk of type 2 diabetes was observed after 5 d of breakfast skipping/wk ( $P$  for nonlinearity = 0.08). This meta-analysis provides evidence that breakfast skipping is associated with an increased risk of type 2 diabetes, and the association is partly mediated by BMI.

Berleant, J., S. Dunne, et al. (2018). **"Reappraisal of incentives ameliorates choking under pressure and is correlated with changes in the neural representations of incentives."** *Social Cognitive and Affective Neuroscience* 14(1): 13-22.  
<https://dx.doi.org/10.1093/scan/nsy108>

(Available in free full text) It has been observed that the performing for high stakes can, paradoxically, lead to uncharacteristically poor performance. Here we investigate a novel approach to attenuating such 'choking under pressure' by instructing participants performing a demanding motor task that rewards successful performance with a monetary gain, to reappraise this incentive as a monetary loss for unsuccessful performance. We show that when participants applied this simple strategy, choking was significantly reduced. This strategy also influenced participants' neural and physiological activity. When participants reappraised the incentive as a potential monetary loss, the representation of the magnitude of the incentive in the ventral striatum Blood Oxygenation Level Dependent (BOLD) signal was attenuated. In addition, individual differences in the degree of attenuation of the neural response to incentive predicted the effectiveness of the reappraisal strategy in reducing choking. Furthermore, participants' skin conductance changed in proportion to the magnitude of the incentive being played for, and was exaggerated on high incentive trials on which participants failed. Reappraisal of the incentive abolished this exaggerated skin conductance response. This represents the first experimental association of sympathetic arousal with choking. Taken together, these results suggest that reappraisal of the incentive is indeed a promising intervention for attenuating choking under pressure. [See helpful discussion at <https://tinyurl.com/y8mrcxws> in the BPS Digest].

Bourassa, K. J., D. A. Sbarra, et al. (2019). **"Mismatch in spouses' anger-coping response styles and risk of early mortality: A 32-year follow-up study."** *Psychosomatic Medicine* 81(1): 26-33.  
[https://journals.lww.com/psychosomaticmedicine/Fulltext/2019/01000/Mismatch\\_in\\_Spouses\\_Anger\\_Coping\\_Response\\_Styles\\_5.aspx](https://journals.lww.com/psychosomaticmedicine/Fulltext/2019/01000/Mismatch_in_Spouses_Anger_Coping_Response_Styles_5.aspx)

Objective Research in psychosomatic medicine includes a long history of studying how responses to anger-provoking situations are associated with health. In the context of a marriage, spouses may differ in their anger-coping response style. Where one person may express anger in response to unfair, aggressive interpersonal interactions, his/her partner may instead suppress anger. Discordant response styles within couples may lead to increased relational conflict, which, in turn, may undermine long-term health. The current study sought to examine the association between spouses' anger-coping response styles and mortality status 32 years later. Methods The present study used data from a subsample of married couples ( $N = 192$ ) drawn from the Life Change Event Study to create an actor-partner interdependence model. Results Neither husbands' nor wives' response styles predicted their own or their partners' mortality. Wives' anger-coping response style, however, significantly moderated the association of husbands' response style on mortality risk 32 years later,  $\beta = -0.18, -0.35$  to  $-0.01, p = .039$ . Similarly, husbands' response style significantly moderated the association of wives' response style and their later mortality,  $\beta = -0.24, -0.38$  to  $-0.10, p < .001$ . These effects were such that the greater the mismatch between spouses' anger-coping response style, the greater the risk of early death. Conclusions For a three-decade follow-up, husbands and wives were at greater risk of early death when their anger-coping response styles differed. Degree of mismatch between spouses' response styles may be an important long-term predictor of spouses' early mortality risk.

Brodth, S., D. Pöhlchen, et al. (2018). **"Incubation, not sleep, aids problem-solving."** *Sleep* 41(10): zsy155-zsy155. <http://dx.doi.org/10.1093/sleep/zsy155>

Solving a novel problem and finding innovative solutions requires a flexible and creative recombination of prior knowledge. It is thought that setting a problem aside before giving it another try aids problem-solving. The underlying mechanisms of such an incubation period could include unconscious processing that fosters spreading activation along associated networks and the restructuring of problem representations. Recently, it has been suggested that sleep may also support problem-solving by supporting the transformation and restructuring of memory elements. Since the effect of sleep on problem-solving has been mainly tested using the Remote Associates Test, we chose three different tasks—classical riddles, visual change detection, and anagrams—to examine various aspects of problem-solving and to pinpoint task-specific prerequisites for effects of sleep or incubation to emerge. Sixty-two participants were given two attempts to solve the problems. Both attempts either occurred consecutively or were spaced apart by a 3-hour incubation interval that was spent awake or asleep. We found that a period of incubation positively affected solutions rates in classical riddles, but not in visual change detection or anagram solving. Contrary to our hypothesis, spending the incubation period asleep, did not yield any additional benefit. Our study thus supports the notion that a period of letting a problem rest is beneficial for its solution and confines the role of sleep to memory transformations that do not directly impact on problem-solving ability.

Case, C. R., K. K. Bae, et al. (2018). **"To lead or to be liked: When prestige-oriented leaders prioritize popularity over performance."** *J Pers Soc Psychol* 115(4): 657-676. <https://www.ncbi.nlm.nih.gov/pubmed/30113191>

Leaders often are faced with making difficult decisions for their group, such as when a course of action preferred by group members conflicts with one that is likely to optimize group success. Across 5 experiments (N = 1110), we provide evidence that a psychological orientation toward prestige (but not dominance) causes leaders to adhere publicly to group members' desires at the expense of group task outcomes—to prioritize popularity over performance. Experiments 1-3 demonstrated that, in private, prestige-oriented leaders chose what they saw as best for group performance but that, in public, they chose whichever option was preferred by members of their group. In private, prestige-oriented leaders' tendency to choose the performance-enhancing option was mediated by group performance motives; in public, their adherence to group preferences was mediated by social approval motives. Experiments 4 and 5 advanced the investigation by using experimental manipulations to prime an orientation toward prestige. Findings replicated those from the earlier studies: participants primed with a prestige orientation prioritized popularity over performance. Results illuminate the conditions under which "good" leaders might make poor decisions.

Chen, F., M. Du, et al. (2019). **"Association among dietary supplement use, nutrient intake, and mortality among U.S. Adults: A cohort study"** *Annals of Internal Medicine*. <https://doi.org/10.7326/M18-2478>

The health benefits and risks of dietary supplement use are controversial. To evaluate the association among dietary supplement use, levels of nutrient intake from foods and supplements, and mortality among U.S. adults. Prospective cohort study. NHANES (National Health and Nutrition Examination Survey) data from 1999 to 2010, linked to National Death Index mortality data. 30 899 U.S. adults aged 20 years or older who answered questions on dietary supplement use. Dietary supplement use in the previous 30 days and nutrient intake from foods and supplements. Outcomes included mortality from all causes, cardiovascular disease (CVD), and cancer. During a median follow-up of 6.1 years, 3613 deaths occurred, including 945 CVD deaths and 805 cancer deaths. Ever-use of dietary supplements was not associated with mortality outcomes. Adequate intake (at or above the Estimated Average Requirement or the Adequate Intake level) of vitamin A, vitamin K, magnesium, zinc, and copper was associated with reduced all-cause or CVD mortality, but the associations were restricted to nutrient intake from foods. Excess intake of calcium was associated with increased risk for cancer death (above vs. at or below the Tolerable Upper Intake Level: multivariable-adjusted rate ratio, 1.62 [95% CI, 1.07 to 2.45]; multivariable-adjusted rate difference, 1.7 [CI, -0.1 to 3.5] deaths per 1000 person-years), and the association seemed to be related to calcium intake from supplements ( $\geq 1000$  mg/d vs. no use: multivariable-adjusted rate ratio, 1.53 [CI, 1.04 to 2.25]; multivariable-adjusted rate difference, 1.5 [CI, -0.1 to 3.1] deaths per 1000 person-years) rather than foods. Results from observational data may be affected by residual confounding. Reporting of dietary supplement use is subject to recall bias. Use of dietary supplements is not associated with mortality benefits among U.S. adults.

DeFina, L. F., N. B. Radford, et al. (2019). **"Association of all-cause and cardiovascular mortality with high levels of physical activity and concurrent coronary artery calcification."** *JAMA Cardiol.* <https://dx.doi.org/10.1001/jamacardio.2018.4628>

(Available in free full text) Few data are available to guide clinical recommendations for individuals with high levels of physical activity in the presence of clinically significant coronary artery calcification (CAC). To assess the association among high levels of physical activity, prevalent CAC, and subsequent mortality risk. The Cooper Center Longitudinal Study is a prospective observational study of patients from the Cooper Clinic, a preventive medicine facility. The present study included participants seen from January 13, 1998, through December 30, 2013, with mortality follow-up through December 31, 2014. A total of 21 758 generally healthy men without prevalent cardiovascular disease (CVD) were included if they reported their physical activity level and underwent CAC scanning. Data were analyzed from September 26, 2017, through May 2, 2018. Self-reported physical activity was categorized into at least 3000 (n = 1561), 1500 to 2999 (n = 3750), and less than 1500 (n = 16 447) metabolic equivalent of task (MET)-minutes/week (min/wk). The CAC scores were categorized into at least 100 (n = 5314) and less than 100 (n = 16 444) Agatston units (AU). All-cause and CVD mortality collected from the National Death Index Plus. Among the 21 758 male participants, baseline mean (SD) age was 51.7 (8.4) years. Men with at least 3000 MET-min/wk were more likely to have prevalent CAC of at least 100 AU (relative risk, 1.11; 95% CI, 1.03-1.20) compared with those accumulating less physical activity. In the group with physical activity of at least 3000 MET-min/wk and CAC of at least 100 AU, mean (SD) CAC level was 807 (1120) AU. After a mean (SD) follow-up of 10.4 (4.3) years, 759 all-cause and 180 CVD deaths occurred, including 40 all-cause and 10 CVD deaths among those with physical activity of at least 3000 MET-min/wk. Men with CAC of less than 100 AU and physical activity of at least 3000 MET-min/wk were about half as likely to die compared with men with less than 1500 MET-min/wk (hazard ratio [HR], 0.52; 95% CI, 0.29-0.91). In the group with CAC of at least 100 AU, men with at least 3000 MET-min/wk did not have a significant increase in all-cause mortality (HR, 0.77; 95% CI, 0.52-1.15) when compared with men with physical activity of less than 1500 MET-min/wk. In the least active men, those with CAC of at least 100 AU were twice as likely to die of CVD compared with those with CAC of less than 100 AU (HR, 1.93; 95% CI, 1.34-2.78). This study suggests there is evidence that high levels of physical activity ( $\geq 3000$  MET-min/wk) are associated with prevalent CAC but are not associated with increased all-cause or CVD mortality after a decade of follow-up, even in the presence of clinically significant CAC levels.

Dominy, S. S., C. Lynch, et al. (2019). **"Porphyromonas gingivalis in alzheimer's disease brains: Evidence for disease causation and treatment with small-molecule inhibitors."** 5(1): eaau3333.

<http://advances.sciencemag.org/content/advances/5/1/eaau3333.full.pdf>

(Available in free full text) Porphyromonas gingivalis, the keystone pathogen in chronic periodontitis, was identified in the brain of Alzheimer's disease patients. Toxic proteases from the bacterium called gingipains were also identified in the brain of Alzheimer's patients, and levels correlated with tau and ubiquitin pathology. Oral P. gingivalis infection in mice resulted in brain colonization and increased production of A $\beta$ 1-42, a component of amyloid plaques. Further, gingipains were neurotoxic in vivo and in vitro, exerting detrimental effects on tau, a protein needed for normal neuronal function. To block this neurotoxicity, we designed and synthesized small-molecule inhibitors targeting gingipains. Gingipain inhibition reduced the bacterial load of an established P. gingivalis brain infection, blocked A $\beta$ 1-42 production, reduced neuroinflammation, and rescued neurons in the hippocampus. These data suggest that gingipain inhibitors could be valuable for treating P. gingivalis brain colonization and neurodegeneration in Alzheimer's disease.

Geserick, M., M. Vogel, et al. (2018). **"Acceleration of bmi in early childhood and risk of sustained obesity."** *New England Journal of Medicine* 379(14): 1303-1312. <https://www.nejm.org/doi/full/10.1056/NEJMoa1803527>

**BACKGROUND** The dynamics of body-mass index (BMI) in children from birth to adolescence are unclear, and whether susceptibility for the development of sustained obesity occurs at a specific age in children is important to determine. **METHODS** To assess the age at onset of obesity, we performed prospective and retrospective analyses of the course of BMI over time in a population-based sample of 51,505 children for whom sequential anthropometric data were available during childhood (0 to 14 years of age) and adolescence (15 to 18 years of age). In addition, we assessed the dynamics of annual BMI increments, defined as the change in BMI standard-deviation score per year, during childhood in 34,196 children. **RESULTS** In retrospective analyses, we found that most of the adolescents with normal weight had always had a normal weight throughout childhood. Approximately half (53%) of the obese adolescents had been overweight or obese from 5 years of age onward, and the BMI standard-deviation score further increased with age. In prospective analyses, we found that almost 90% of the children who were obese at 3 years of age were overweight or obese in adolescence. Among the adolescents who were obese, the greatest acceleration in annual BMI increments had occurred between 2 and 6 years of age, with a further rise in BMI percentile thereafter. High acceleration in annual BMI increments during the preschool years (but not during the school years) was associated with a risk of overweight or obesity in adolescence that was 1.4 times as high as the risk among children who had had stable BMI. The rate of overweight or obesity in adolescence was higher among children who had been large for gestational age at birth (43.7%) than among those who had been at an appropriate weight for gestational age (28.4%) or small for gestational age (27.2%), which corresponded to a risk of adolescent obesity that was 1.55 times as high among those who had been large for gestational age as among the other groups. **CONCLUSIONS** Among obese adolescents, the most rapid weight gain had occurred between 2 and 6 years of age; most children who were obese at that age were obese in adolescence. (Funded by the German Research Council for the Clinical Research Center "Obesity Mechanisms" and others; ClinicalTrials.gov number, NCT03072537.)

Gomes-Osman, J., D. F. Cabral, et al. (2018). **"Exercise for cognitive brain health in aging: A systematic review for an evaluation of dose."** *Neurology: Clinical Practice* 8(3): 257-265.

<http://cp.neurology.org/content/neurclinpract/8/3/257.full.pdf>

**Purpose of review** We systematically appraised randomized controlled trials proposing exercise to influence cognition in older adults to (1) assess the methodologic quality using Cochrane criteria; (2) describe various exercise dose measures and assess their relationship with improved cognitive performance; and (3) identify consistent patterns of reported effects on cognition. **Recent findings** There was overall good methodologic quality in all 98 included studies. The assessment of the relationship between improved cognition and various measures of exercise dose (session duration, weekly minutes, frequency, total weeks, and total hours) revealed a significant correlation with total hours. Improvements in global cognition, processing speed/attention, and executive function were most stable and consistent. **Summary** We found that exercising for at least 52 hours (over 6 months ... so a bit over 2 hours weekly) is associated with improved cognitive performance in older adults with and without cognitive impairment. Exercise modes supported by evidence are aerobic, resistance (strength) training, mind-body exercises, or combinations of these interventions.

Gupta, R. S., C. M. Warren, et al. (2019). **"Prevalence and severity of food allergies among us adults."** *JAMA Network Open* 2(1): e185630. <http://dx.doi.org/10.1001/jamanetworkopen.2018.5630>

(Available in free full text) **Importance** Food allergy is a costly, potentially life-threatening condition. Although studies have examined the prevalence of childhood food allergy, little is known about prevalence, severity, or health care utilization related to food allergies among US adults. **Objective** To provide nationally representative estimates of the distribution, severity, and factors associated with adult food allergies. **Design, Setting, and Participants** In this cross-sectional survey study of US adults, surveys were administered via the internet and telephone from October 9, 2015, to September 18, 2016. Participants were first recruited from NORC at the University of Chicago's probability-based AmeriSpeak panel, and additional participants were recruited from the non-probability-based Survey Sampling International (SSI) panel. **Exposures** Demographic and allergic participant characteristics. **Main Outcomes and Measures** Self-reported food allergies were the main outcome and were considered convincing if reported symptoms to specific allergens were consistent with IgE-mediated reactions. Diagnosis history to specific allergens and food allergy-related health care use were also primary outcomes. Estimates were based on this nationally representative sample using small-area estimation and iterative proportional fitting methods. To increase precision, AmeriSpeak data were augmented by calibration-weighted, non-probability-based responses from SSI. **Results** Surveys were completed by 40 443 adults (mean [SD] age, 46.6 [20.2] years), with a survey completion rate of 51.2% observed among AmeriSpeak panelists (n = 7210) and 5.5% among SSI panelists (n = 33 233). Estimated convincing food allergy prevalence among US adults was 10.8% (95% CI, 10.4%-11.1%), although 19.0% (95% CI, 18.5%-19.5%) of adults self-reported a food allergy. The most common allergies were shellfish (2.9%; 95% CI, 2.7%-3.1%), milk (1.9%; 95% CI, 1.8%-2.1%), peanut (1.8%; 95% CI, 1.7%-1.9%), tree nut (1.2%; 95% CI, 1.1%-1.3%), and fin fish (0.9%; 95% CI, 0.8%-1.0%). Among food-allergic adults, 51.1% (95% CI, 49.3%-52.9%) experienced a severe food allergy reaction, 45.3% (95% CI, 43.6%-47.1%) were allergic to multiple foods, and 48.0% (95% CI, 46.2%-49.7%) developed food allergies as an adult. Regarding health care utilization, 24.0% (95% CI, 22.6%-25.4%) reported a current epinephrine prescription, and 38.3% (95% CI, 36.7%-40.0%) reported at least 1 food allergy-related lifetime emergency department visit. **Conclusions and Relevance** These data suggest that at least 10.8% (>26 million) of US adults are food allergic, whereas nearly 19% of adults believe that they have a food allergy. Consequently, these findings suggest that it is crucial that adults with suspected food allergy receive appropriate confirmatory testing and counseling to ensure food is not unnecessarily avoided and quality of life is not unduly impaired.



Guthold, R., G. A. Stevens, et al. (2018). **"Worldwide trends in insufficient physical activity from 2001 to 2016: A pooled analysis of 358 population-based surveys with 1.9 million participants."** *The Lancet Global Health* 6(10): e1077-e1086. <http://www.sciencedirect.com/science/article/pii/S2214109X18303577>

(Available in free full text) Summary Background Insufficient physical activity is a leading risk factor for non-communicable diseases, and has a negative effect on mental health and quality of life. We describe levels of insufficient physical activity across countries, and estimate global and regional trends. Methods We pooled data from population-based surveys reporting the prevalence of insufficient physical activity, which included physical activity at work, at home, for transport, and during leisure time (ie, not doing at least 150 min of moderate-intensity, or 75 min of vigorous-intensity physical activity per week, or any equivalent combination of the two). We used regression models to adjust survey data to a standard definition and age groups. We estimated time trends using multilevel mixed-effects modelling. Findings We included data from 358 surveys across 168 countries, including 1.9 million participants. Global age-standardised prevalence of insufficient physical activity was 27.5% (95% uncertainty interval 25.0–32.2) in 2016, with a difference between sexes of more than 8 percentage points (23.4%, 21.1–30.7, in men vs 31.7%, 28.6–39.0, in women). Between 2001, and 2016, levels of insufficient activity were stable (28.5%, 23.9–33.9, in 2001; change not significant). The highest levels in 2016, were in women in Latin America and the Caribbean (43.7%, 42.9–46.5), south Asia (43.0%, 29.6–74.9), and high-income Western countries (42.3%, 39.1–45.4), whereas the lowest levels were in men from Oceania (12.3%, 11.2–17.7), east and southeast Asia (17.6%, 15.7–23.9), and sub-Saharan Africa (17.9%, 15.1–20.5). Prevalence in 2016 was more than twice as high in high-income countries (36.8%, 35.0–38.0) as in low-income countries (16.2%, 14.2–17.9), and insufficient activity has increased in high-income countries over time (31.6%, 27.1–37.2, in 2001). Interpretation If current trends continue, the 2025 global physical activity target (a 10% relative reduction in insufficient physical activity) will not be met. Policies to increase population levels of physical activity need to be prioritised and scaled up urgently.

Haslam, C., N. K. Steffens, et al. (2019). **"The importance of social groups for retirement adjustment: Evidence, application, and policy implications of the social identity model of identity change."** *Social Issues and Policy Review* 13(1): 93-124. <https://spspi.onlinelibrary.wiley.com/doi/abs/10.1111/sipr.12049>

(Available in free full text) Abstract Previous work in the social identity tradition suggests that adjustment to significant life changes, both positive (e.g., becoming a new parent) and negative (e.g., experiencing a stroke), can be supported by access to social group networks. This is the basis for the social identity model of identity change (SIMIC), which argues that, in the context of life transitions, well-being and adjustment are enhanced to the extent that people are able to maintain preexisting social group memberships that are important to them or else acquire new ones. Building on empirical work that has examined these issues in the context of a variety of life transitions, we outline the relevance of SIMIC for one particular life transition: retiring from work. We identify four key lessons that speak to the importance of managing social group resources effectively during the transition to retirement from the workforce. These suggest that adjustment to retirement is enhanced to the extent that retirees: (1) can access multiple important group memberships and the psychological resources they provide, (2) maintain positive and valued existing groups, and (3) develop meaningful new groups, (4) providing they are compatible with one another. This theory and empirical evidence is used to introduce a new social intervention, Groups 4 Health, that translates SIMIC's lessons into practice. This program aims to guide people through the process of developing and embedding their social group ties in ways that protect their health and well-being in periods of significant life change of the form experienced by many people as they transition into retirement.

Hooton, T. M., M. Vecchio, et al. (2018). **"Effect of increased daily water intake in premenopausal women with recurrent urinary tract infections: A randomized clinical trial."** *JAMA Internal Medicine*. <http://dx.doi.org/10.1001/jamainternmed.2018.4204>

(Available in free full text) Importance Increased hydration is often recommended as a preventive measure for women with recurrent cystitis, but supportive data are sparse. Objective To assess the efficacy of increased daily water intake on the frequency of recurrent cystitis in premenopausal women. Design, Setting, and Participants Randomized, open-label, controlled, 12-month trial at a clinical research center (years 2013-2016). Among 163 healthy women with recurrent cystitis ( $\geq 3$  episodes in past year) drinking less than 1.5 L of fluid daily assessed for eligibility, 23 were excluded and 140 assigned to water or control group. Assessments of daily fluid intake, urinary hydration, and cystitis symptoms were performed at baseline, 6- and 12-month visits, and monthly telephone calls. Interventions Participants were randomly assigned to drink, in addition to their usual fluid intake, 1.5 L of water daily (water group) or no additional fluids (control group) for 12 months. Main Outcomes and Measures Primary outcome measure was frequency of recurrent cystitis over 12 months. Secondary outcomes were number of antimicrobial regimens used, mean time interval between cystitis episodes, and 24-hour urinary hydration measurements. Results The mean (SD) age of the 140 participants was 35.7 (8.4) years, and the mean (SD) number of cystitis episodes in the previous year was 3.3 (0.6). During the 12-month study period, the mean (SD) number of cystitis episodes was 1.7 (95% CI, 1.5-1.8) in the water group compared with 3.2 (95% CI, 3.0-3.4) in the control group, with a difference in means of 1.5 (95% CI, 1.2-1.8;  $P < .001$ ). Overall, there were 327 cystitis episodes, 111 in the water group and 216 in the control group. The mean number of antimicrobial regimens used to treat cystitis episodes was 1.9 (95% CI, 1.7-2.2) and 3.6 (95% CI, 3.3-4.0), respectively, with a difference in means of 1.7 (95% CI, 1.3-2.1;  $P < .001$ ). The mean time interval between cystitis episodes was 142.8 (95% CI, 127.4-160.1) and 84.4 (95% CI, 75.4-94.5) days, respectively, with a difference in means of 58.4 (95% CI, 39.4-77.4;  $P < .001$ ). Between baseline and 12 months, participants in the water group, compared with those in the control group, had increased mean (SD) urine volume (1.4 [0.04] vs 0.1 [0.04] L;  $P < .001$ ) and voids (2.4 [0.2] vs -0.1 [0.2];  $P < .001$ ) and decreased urine osmolality (-402.8 [19.6] vs -24.0 [19.5] mOsm/kg;  $P < .001$ ). Conclusions and Relevance Increased water intake is an effective antimicrobial-sparing strategy to prevent recurrent cystitis in premenopausal women at high risk for recurrence who drink low volumes of fluid daily.

Ilic, D., M. Djulbegovic, et al. (2018). **"Prostate cancer screening with prostate-specific antigen (psa) test: A systematic review and meta-analysis."** *Br Med J* 362. <https://www.bmj.com/content/bmj/362/bmj.k3519.full.pdf>

(Available in free full text) Objective To investigate the efficacy and safety of prostate-specific antigen (PSA) testing to screen for prostate cancer. Design Systematic review and meta-analysis. Data sources Electronic search of Cochrane Central Register of Controlled Trials, Web of Science, Embase, Scopus, OpenGrey, LILACS, and Medline, and search of scientific meeting abstracts and trial registers to April 2018. Eligibility criteria for selecting studies Randomised controlled trials comparing PSA screening with usual care in men without a diagnosis of prostate cancer. Data extraction At least two reviewers screened studies, extracted data, and assessed the quality of eligible studies. A parallel guideline committee (BMJ Rapid Recommendation) provided input on the design and interpretation of the systematic review, including selection of outcomes important to patients. We used a random effects model to obtain pooled incidence rate ratios (IRR) and, when feasible, conducted subgroup analyses (defined a priori) based on age, frequency of screening, family history, ethnicity, and socioeconomic level, as well as a sensitivity analysis based on the risk of bias. The quality of the evidence was assessed with the GRADE approach. Results Five randomised controlled trials, enrolling 721 718 men, were included. Studies varied with respect to screening frequency and

intervals, PSA thresholds for biopsy, and risk of bias. When considering the whole body of evidence, screening probably has no effect on all-cause mortality (IRR 0.99, 95% CI 0.98 to 1.01; moderate certainty) and may have no effect on prostate-specific mortality (IRR 0.96, 0.85 to 1.08; low certainty). Sensitivity analysis of studies at lower risk of bias (n=1) also demonstrates that screening seems to have no effect on all-cause mortality (IRR 1.0, 0.98 to 1.02; moderate certainty) but may have a small effect on prostate-specific mortality (IRR 0.79, 0.69 to 0.91; moderate certainty). This corresponds to one less death from prostate cancer per 1000 men screened over 10 years. Direct comparative data on biopsy and treatment related complications from the included trials were limited. Using modelling, we estimated that for every 1000 men screened, approximately 1, 3, and 25 more men would be hospitalised for sepsis, require pads for urinary incontinence, and report erectile dysfunction, respectively. Conclusions At best, screening for prostate cancer leads to a small reduction in disease-specific mortality over 10 years but has does not affect overall mortality. Clinicians and patients considering PSA based screening need to weigh these benefits against the potential short and long term harms of screening, including complications from biopsies and subsequent treatment, as well as the risk of overdiagnosis and overtreatment.

Jackson, S. E., J. Firth, et al. (2019). **"Decline in sexuality and wellbeing in older adults: A population-based study."** *Journal of Affective Disorders* 245: 912-917. <http://www.sciencedirect.com/science/article/pii/S0165032718319414>

Background Age-related declines in sexuality and increase in mental health complications have been well documented. However, whether these two phenomena are related has not been explored. The present study therefore aimed to investigate associations between a decline in sexuality and markers of mental health and wellbeing. Method Data were collected in 2012/13 from 2614 men and 3217 women participating in the English Longitudinal Study of Ageing, a population-representative panel study of older adults ( $\geq 50$  years). Past-year declines in sexual desire, frequency of sexual activities, and sexual function were self-reported. Three markers of wellbeing (depressive symptoms, quality of life and life satisfaction) were assessed using validated scales. Associations between declines in sexuality and wellbeing were analysed using one-way independent analyses of variance, adjusted for a range of socio-demographic and health-related covariates. Results Men and women who reported a past-year decline in sexual desire or frequency of sexual activities had a higher number of depressive symptoms (desire  $p = 0.001$ , frequency  $p < 0.001$ ) and lower quality of life (all  $p < 0.001$ ). Decline in sexual desire was also associated with lower life satisfaction in men ( $p = 0.012$ ) and decline in frequency of sexual activities was associated with lower life satisfaction in women ( $p < 0.001$ ). Declines in erectile function in men and ability to become sexually aroused in women were also significantly associated with more depressive symptoms ( $p < 0.001$ ), lower quality of life ( $p < 0.001$ ) and lower life satisfaction ( $p < 0.001$  in men,  $p = 0.024$  in women). Conclusion Older adults who experience a decline in sexuality report poorer wellbeing than those who do not.

Kaya, A., D. K. Iwamoto, et al. (2019). **"The role of masculine norms and gender role conflict on prospective well-being among men."** *Psychology of Men & Masculinities* 20(1): 142-147. <https://psycnet.apa.org/record/2018-18237-001>

Masculinity has been theorized to be an anxiety-provoking state. Consequently, many researchers have examined masculinity in relation to negative psychological outcomes such as anxiety, depression, and alcohol or substance use. However, emerging research suggests that certain facets of masculinity may also be related to positive psychological outcomes and that there is a need for more empirical research examining the differential impact of distinct masculine norms on both negative and positive outcomes. Accordingly, this study longitudinally examined the influence of masculine norms and gender role conflict on eudaimonic psychological well-being among young adult college men ( $N = 278$ ). Participants were recruited from a public university and completed Time 1 (baseline) measures of masculine norm conformity and gender role conflict as well as Time 2 (6 months follow-up) measure of eudaimonic well-being. Results demonstrated that both masculine norm conformity and gender role conflict were predictive of increased and decreased well-being among young adult men. Specifically, the masculine norms of power and playboy were negatively associated with prospective well-being. In addition, gender role conflict, particularly restricted emotionality, was negatively associated with well-being. The norm of winning was positively associated with prospective well-being. In sum, men's baseline adherence to traditional masculine norms was predictive of both positive and negative psychological well-being at follow-up, highlighting the differential impact of masculine norms on men's health. The study's theoretical and clinical implications, limitations, and future directions are discussed.

Kifley, A., G. Liew, et al. (2018). **"Dietary flavonoids and the prevalence and 15-y incidence of age-related macular degeneration."** *The American Journal of Clinical Nutrition* 108(2): 381-387. <https://dx.doi.org/10.1093/ajcn/nqy114>

(Available in free full text) The majority of research performed to date has examined the effects of commonly known antioxidants such as vitamins C, E, and A and carotenoids on age-related macular degeneration (AMD) risk and progression. To date, there is limited research on promising phytochemicals with antioxidant and anti-inflammatory properties, including flavonoids. In this exploratory study, we aimed to assess the independent associations between dietary intake of total flavonoids and common flavonoid classes with the prevalence and 15-y incidence of AMD. In this population-based cohort study, 2856 adults aged  $\geq 49$  y at baseline and 2037 followed up 15 y later were included in prevalence and incidence analyses, respectively. Dietary intake was assessed by using a semiquantitative food-frequency questionnaire (FFQ). Estimates of the flavonoid content of foods in the FFQ were assessed by using the USDA Flavonoid, Isoflavone, and Proanthocyanidin databases. AMD was assessed from retinal photographs. In cross-sectional analysis, each 1-SD increase in total overall flavonoid intake was associated with a reduced likelihood of any AMD (multivariable-adjusted OR: 0.76; 95% CI: 0.58, 0.99). Each 1-SD increase in dietary intake of total flavonols and total flavanones was associated with reduced odds of the prevalence of any AMD [multivariable-adjusted OR (95% CI): 0.75 (0.58, 0.97) and 0.77 (0.60, 0.99), respectively]. A marginally significant trend ( $P = 0.05$ ) was observed between increasing the intake of total flavanone and hesperidin (from the first to the fourth quartile) and reduced likelihood of incident late AMD, after multivariable adjustment. Participants who reported  $\geq 1$  serving of oranges/d compared with those who never consumed oranges at baseline had a reduced risk of late AMD 15 y later (multivariable-adjusted OR: 0.39; 95% CI: 0.18, 0.85). Our findings suggest an independent and protective association between dietary intake of flavonoids and the likelihood of having AMD. Additional prospective cohort studies are needed to validate these findings.

Krogsbøll, L. T., K. J. Jørgensen, et al. (2019). **"General health checks in adults for reducing morbidity and mortality from disease."** *Cochrane Database of Systematic Reviews*(1). <https://doi.org/10.1002/14651858.CD009009.pub3>

(Available in free full text) Background General health checks are common elements of health care in some countries. They aim to detect disease and risk factors for disease with the purpose of reducing morbidity and mortality. Most of the commonly used individual screening tests offered in general health checks have been incompletely studied. Also, screening leads to increased use of diagnostic and therapeutic interventions, which can be harmful as well as beneficial. It is therefore important to assess whether general health checks do more good than harm. This is the first update of the review published in 2012. Objectives To quantify the benefits and harms of general health checks. Search methods We searched CENTRAL, MEDLINE, Embase, two other databases and two trials registers on 31 January 2018. Two review authors independently screened titles and abstracts, assessed papers for eligibility and read reference lists. One review author used citation tracking (Web of Knowledge) and asked trial authors about additional studies. Selection criteria We included randomised trials comparing health checks with

no health checks in adults unselected for disease or risk factors. We did not include geriatric trials. We defined health checks as screening for more than one disease or risk factor in more than one organ system. Data collection and analysis Two review authors independently extracted data and assessed the risk of bias in the trials. We contacted trial authors for additional outcomes or trial details when necessary. When possible, we analysed the results with a random-effects model meta-analysis; otherwise, we did a narrative synthesis. Main results We included 17 trials, 15 of which reported outcome data (251,891 participants). Risk of bias was generally low for our primary outcomes. Health checks have little or no effect on total mortality (risk ratio (RR) 1.00, 95% confidence interval (CI) 0.97 to 1.03; 11 trials; 233,298 participants and 21,535 deaths; high-certainty evidence, I<sup>2</sup> = 0%), or cancer mortality (RR 1.01, 95% CI 0.92 to 1.12; 8 trials; 139,290 participants and 3663 deaths; high-certainty evidence, I<sup>2</sup> = 33%), and probably have little or no effect on cardiovascular mortality (RR 1.05, 95% CI 0.94 to 1.16; 9 trials; 170,227 participants and 6237 deaths; moderate-certainty evidence; I<sup>2</sup> = 65%). Health checks have little or no effect on fatal and non-fatal ischaemic heart disease (RR 0.98, 95% CI 0.94 to 1.03; 4 trials; 164,881 persons, 10,325 events; high-certainty evidence; I<sup>2</sup> = 11%), and probably have little or no effect on fatal and non-fatal stroke (RR 1.05 95% CI 0.95 to 1.17; 3 trials; 107,421 persons, 4543 events; moderate-certainty evidence, I<sup>2</sup> = 53%). Authors' conclusions General health checks are unlikely to be beneficial. Plain language summary General health checks for reducing illness and mortality What is the aim of this review? The aim of this Cochrane Review was to find out if general health checks reduce illness and deaths. This is an update of a previous Cochrane Review. Key messages Systematic offers of health checks are unlikely to be beneficial and may lead to unnecessary tests and treatments. What was studied in the review? General health checks involve multiple tests in a person who does not feel ill. The purpose is to find disease early, prevent disease from developing, or provide reassurance. Health checks are a common element of health care in some countries. Experience from screening programmes for individual diseases have shown that the benefits may be smaller than expected and the harms greater. We identified and analysed all randomised trials that compared invitations for one or more health checks for the general public with no invitations. We analysed the effect on illness and the risk of death, as well as other outcomes that reflect illness, for example, hospitalisation and absence from work. What are the main results of the review? We found 17 randomised trials that had compared a group of adults offered general health checks to a group not offered health checks. fifteen trials reported results and included 251,891 participants. Eleven of these trials had studied the risk of death, and included 233,298 participants and assessed 21,535 deaths. This is an unusually large amount of data in healthcare research, which allowed us to draw our main conclusions with a high degree of certainty. Health checks have little or no effect on the risk of death from any cause (high-certainty evidence), or on the risk of death from cancer (high-certainty evidence), and probably have little or no effect on the risk of death from cardiovascular causes (moderate-certainty evidence). Likewise, health checks have little or no effect on heart disease (high-certainty evidence) and probably have little or no effect on stroke (moderate-certainty evidence). We propose that one reason for the apparent lack of effect may be that primary care physicians already identify and intervene when they suspect a patient to be at high risk of developing disease when they see them for other reasons. Also, those at high risk of developing disease may not attend general health checks when invited or may not follow suggested tests and treatments. How up to date is the review? The review authors searched for studies published up to 31 January 2018.

Lai, H. T., M. C. de Oliveira Otto, et al. (2018). **"Serial circulating omega 3 polyunsaturated fatty acids and healthy ageing among older adults in the cardiovascular health study: Prospective cohort study."** *Br Med J* 363: k4067. <https://www.bmj.com/content/bmj/363/bmj.k4067.full.pdf>

(Available in free full text) Objective To determine the longitudinal association between serial biomarker measures of circulating omega 3 polyunsaturated fatty acid (n3-PUFA) levels and healthy ageing. Design Prospective cohort study. Setting Four communities in the United States (Cardiovascular Health Study) from 1992 to 2015. Participants 2622 adults with a mean (SD) age of 74.4 (4.8) and with successful healthy ageing at baseline in 1992-93. Exposure Cumulative levels of plasma phospholipid n3-PUFAs were measured using gas chromatography in 1992-93, 1998-99, and 2005-06, expressed as percentage of total fatty acids, including  $\alpha$ -linolenic acid from plants and eicosapentaenoic acid, docosapentaenoic acid, and docosahexaenoic acid from seafood. Main outcome measure Healthy ageing defined as survival without chronic diseases (ie, cardiovascular disease, cancer, lung disease, and severe chronic kidney disease), the absence of cognitive and physical dysfunction, or death from other causes not part of the healthy ageing outcome after age 65. Events were centrally adjudicated or determined from medical records and diagnostic tests. Results Higher levels of long chain n3-PUFAs were associated with an 18% lower risk (95% confidence interval 7% to 28%) of unhealthy ageing per interquintile range after multivariable adjustments with time-varying exposure and covariates. Individually, higher eicosapentaenoic acid and docosapentaenoic acid (but not docosahexaenoic acid) levels were associated with a lower risk: 15% (6% to 23%) and 16% (6% to 25%), respectively.  $\alpha$ -linolenic acid from plants was not noticeably associated with unhealthy ageing (hazard ratio 0.92, 95% confidence interval 0.83 to 1.02). Conclusions In older adults, a higher cumulative level of serially measured circulating n3-PUFAs from seafood (eicosapentaenoic acid, docosapentaenoic acid, and docosahexaenoic acid), eicosapentaenoic acid, and docosapentaenoic acid (but not docosahexaenoic acid from seafood or  $\alpha$ -linolenic acid from plants) was associated with a higher likelihood of healthy ageing. These findings support guidelines for increased dietary consumption of n3-PUFAs in older adults.

Lewis, M. B. (2018). **"The interactions between botulinum-toxin-based facial treatments and embodied emotions."** *Scientific Reports* 8(1): 14720. <https://doi.org/10.1038/s41598-018-33119-1>

(Available in free full text) Botulinum toxin (BTX) injections reduce muscle mobility and are commonly used to treat the appearance of glabellar frown lines. Research shows that this cosmetic treatment leads to a reduction in depression. This reduction is consistent with the theory of embodied emotions because patients have a reduced ability to frown and so receive less negative feedback associated with this action. The current research explored this effect and three further hypotheses for the effects of cosmetic BTX injections based on embodied emotions. It was hypothesised that treatment of crow's feet (or laughter lines) would reduce mood as patients' Duchenne smiles would be impaired. It was hypothesised that facial BTX treatments would impair emotional expression recognition because the ability to mimic emotions would be reduced. Finally, it was hypothesised that, as BTX treatments prevent facial expressions associated with sexual excitement, sexual function would be impaired after treatment. Twenty four BTX-treated and twelve matched participants (all female) were tested before and after treatment. Results found that BTX treatment of laughter lines was associated with increased depression scores. Further, BTX treatment was associated with reduced emotion recognition ability and sexual function. The current results add to our knowledge of the psychological effects of injections of powerful neurotoxins and broaden the scope of the embodiment of emotions.

Madrid-Valero, J. J., J. F. Sánchez-Romera, et al. (2018). **"Heritability of sleep quality in a middle-aged twin sample from Spain."** *Sleep* 41(9): zsy110-zsy110. <http://dx.doi.org/10.1093/sleep/zsy110>

Study Objectives Sleep quality is associated with health throughout the life span, which is particularly salient in middle-age and older adulthood. Sleep quality appears to be influenced by both genetic and environmental factors. However, there is still limited information about genetic influences on sleep quality in middle-aged adults, and particularly in those from certain



geographical locations. We estimated the magnitude of genetic and environmental influences on sleep quality in a representative sample of middle-aged Spanish twins. **Methods** The sample comprised 2150 individuals born between 1939 and 1966, who participate in the Murcia Twin Registry. To estimate the heritability of sleep quality variables, we performed univariate analyses for the global score on the Pittsburgh sleep quality index and for each of its components. **Results** We found moderate but significant heritability (34%) for sleep quality. The genetic variance of the components of the Pittsburgh index ranged from 30 to 45 per cent, except for sleep efficiency for which no genetic influence could be detected. In summary, there was a moderate genetic influence on most dimensions of sleep quality in a sample of adult male and female twins. Shared environment influences were not found. **Conclusions** This study adds new information regarding the underlying determinants of sleep quality by providing heritability estimates in a middle-aged population-based representative sample from a geographical location that has not been included in studies of this type previously. This could provide a reference point for future research regarding sleep research in middle-age.

Mamalaki, E., C. A. Anastasiou, et al. (2018). **"Associations between the mediterranean diet and sleep in older adults: Results from the hellenic longitudinal investigation of aging and diet study."** 0(0).  
<https://onlinelibrary.wiley.com/doi/abs/10.1111/qgi.13521>

**Aim** Although there is some evidence of the relationships between sleep duration/quality and nutrient and/or food intake, the associations between sleep and dietary patterns have been poorly explored. The aim of the present study was to evaluate sleep duration and quality in relation to adherence to the Mediterranean diet (MeDi), and to investigate the sex- and age-specific associations in a population-representative cohort of older adults. **Methods** Participants from the Hellenic Longitudinal Investigation of Aging and Diet were included. The sample consisted of 1639 adults aged  $\geq 65$  years. Sleep duration and quality were assessed through a self-report questionnaire, whereas adherence to the MeDi was evaluated by an a priori score. **Results** Sleep quality was positively associated with the MeDi in the unadjusted and the adjusted model (age, sex, depression, years of education, body mass index, level of physical activity and total energy intake were added as covariates). In contrast, sleep duration was not associated with MeDi adherence either in the unadjusted or the adjusted models. In relation to the age-related associations, sleep quality was positively associated with MeDi adherence in those aged  $\leq 75$  years, and not in those aged  $> 75$  years. Associations between sleep and MeDi did not differ between men and women. **Conclusions** The present results suggest that sleep quality is associated with MeDi adherence in older adults; there are also age-specific associations between sleep quality and the MeDi. Although additional studies are required, improvements in diet quality should be considered in the context of sleep management interventions in older individuals.

Mandsager, K., S. Harb, et al. (2018). **"Association of cardiorespiratory fitness with long-term mortality among adults undergoing exercise treadmill testing."** *JAMA Network Open* 1(6): e183605.  
<http://dx.doi.org/10.1001/jamanetworkopen.2018.3605>

(Available in free full text) **Importance** Adverse cardiovascular findings associated with habitual vigorous exercise have raised new questions regarding the benefits of exercise and fitness. **Objective** To assess the association of all-cause mortality and cardiorespiratory fitness in patients undergoing exercise treadmill testing. **Design, Setting, and Participants** This retrospective cohort study enrolled patients at a tertiary care academic medical center from January 1, 1991, to December 31, 2014, with a median follow-up of 8.4 years. Data analysis was performed from April 19 to July 17, 2018. Consecutive adult patients referred for symptom-limited exercise treadmill testing were stratified by age- and sex-matched cardiorespiratory fitness into performance groups: low (<25th percentile), below average (25th-49th percentile), above average (50th-74th percentile), high (75th-97.6th percentile), and elite ( $\geq 97.7$ th percentile). **Exposures** Cardiorespiratory fitness, as quantified by peak estimated metabolic equivalents on treadmill testing. **Main Outcomes and Measures** All-cause mortality. **Results** The study population included 122 007 patients (mean [SD] age, 53.4 [12.6] years; 72 173 [59.2%] male). Death occurred in 13 637 patients during 1.1 million person-years of observation. Risk-adjusted all-cause mortality was inversely proportional to cardiorespiratory fitness and was lowest in elite performers (elite vs low: adjusted hazard ratio [HR], 0.20; 95% CI, 0.16-0.24;  $P < .001$ ; elite vs high: adjusted HR, 0.77; 95% CI, 0.63-0.95;  $P = .02$ ). The increase in all-cause mortality associated with reduced cardiorespiratory fitness (low vs elite: adjusted HR, 5.04; 95% CI, 4.10-6.20;  $P < .001$ ; below average vs above average: adjusted HR, 1.41; 95% CI, 1.34-1.49;  $P < .001$ ) was comparable to or greater than traditional clinical risk factors (coronary artery disease: adjusted HR, 1.29; 95% CI, 1.24-1.35;  $P < .001$ ; smoking: adjusted HR, 1.41; 95% CI, 1.36-1.46;  $P < .001$ ; diabetes: adjusted HR, 1.40; 95% CI, 1.34-1.46;  $P < .001$ ). In subgroup analysis, the benefit of elite over high performance was present in patients 70 years or older (adjusted HR, 0.71; 95% CI, 0.52-0.98;  $P = .04$ ) and patients with hypertension (adjusted HR, 0.70; 95% CI, 0.50-0.99;  $P = .05$ ). Extreme cardiorespiratory fitness ( $\geq 2$  SDs above the mean for age and sex) was associated with the lowest risk-adjusted all-cause mortality compared with all other performance groups. **Conclusions and Relevance** Cardiorespiratory fitness is inversely associated with long-term mortality with no observed upper limit of benefit. Extremely high aerobic fitness was associated with the greatest survival and was associated with benefit in older patients and those with hypertension. Cardiorespiratory fitness is a modifiable indicator of long-term mortality, and health care professionals should encourage patients to achieve and maintain high levels of fitness.

McCubbin, J. A., A. Nathan, et al. (2018). **"Blood pressure, emotional dampening, and risk behavior: Implications for hypertension development."** *Psychosomatic Medicine* 80(6): 544-550.  
[https://journals.lww.com/psychosomaticmedicine/Fulltext/2018/07000/Blood\\_Pressure,\\_Emotional\\_Dampening,\\_and\\_Risk.7.aspx](https://journals.lww.com/psychosomaticmedicine/Fulltext/2018/07000/Blood_Pressure,_Emotional_Dampening,_and_Risk.7.aspx)

**Objective** Elevated resting blood pressure (BP) is associated with risk for hypertension and emotional dampening, including reduced responses to emotionally meaningful stimuli. Perception of threat is a critical motivator in avoidance of risky health-damaging behavior. We hypothesize that BP-associated dampening of threat appraisal may increase risk-taking behavior. **Methods** We measured resting BP, perception of affect, and risk behavior in 92 healthy women ( $n = 49$ ) and men ( $n = 43$ ) recruited from university students and staff as well as members of the surrounding community. Mean (SE) age for the sample was 21.5 (4.3) year. BP was measured using an automated BP monitor, and risk behavior was assessed with a modified National College Health Risk Behavior Survey. We also measured recognition of affect using the Perception of Affect Task (PAT). **Results** Risk-taking behavior was positively correlated with both systolic ( $r(89) = .278, p = .008$ ) and diastolic BP ( $r(89) = .309, p < .003$ ). Regression analyses indicated that the association between risk-taking behavior and BP was not mediated by PAT scores. **Conclusions** Results show that persons with higher resting BP levels report increased risk-taking behavior. PAT scores, while correlated with systolic BP, did not mediate the relationship between BP and risk. The relationship between BP and risk behavior reflects the potential involvement of central nervous system regulation of both BP and emotional responsivity, and its relationship to health-damaging behavior and risk for hypertension.

Muise, A., C. Harasymchuk, et al. (2019). **"Broadening your horizons: Self-expanding activities promote desire and satisfaction in established romantic relationships."** *Journal of Personality and Social Psychology* 116: 237-258. <http://psycnet.apa.org/record/2018-47337-001>

In the early stages of romantic relationships, sexual desire is often intense, but over time, as partners get to know each other, desire tends to decline. Low sexual desire has negative implications for relationship satisfaction and maintenance. Self-expansion theory suggests that engaging in novel activities with a long-term romantic partner can reignite feelings of passion from the early stages of a relationship. Across 3 studies using dyadic, daily experience, longitudinal, and experimental methods, we find evidence for our central prediction that engaging in self-expanding activities with a partner is associated with higher sexual desire. In turn, we found that higher desire fueled by self-expansion is associated with greater relationship satisfaction. Self-expansion, through sexual desire, is also associated with an increased likelihood that couples will engage in sex, and when they do engage in sex, they feel more satisfied with their sexual experiences. We also demonstrate that the benefits of self-expansion for relationship satisfaction are sustained over time, and that the effects cannot be attributed solely to increases in positive affect, time spent interacting with the partner or closeness during the activity. Implications for self-expansion theory and sexual desire maintenance in relationships are discussed.

Mustafa, J., R. C. Ellison, et al. (2018). **"Dietary protein and preservation of physical functioning among middle-aged and older adults in the framingham offspring study."** *Am J Epidemiol* 187(7): 1411-1419. <https://www.ncbi.nlm.nih.gov/pubmed/29590270>

Dietary protein may help prevent age-related declines in strength and functional capacity. This study examines the independent relationship between dietary protein and longitudinal changes in physical functioning among adults participating in the Framingham Offspring Study from examination 5 (1991-1995) to examination 8 (2005-2008). Protein intakes were derived from 3-day diet records during examinations 3 and 5; functional status was determined over 12 years using 7 items selected from standardized questionnaires. Multivariable models adjusted for age, sex, education, physical activity, smoking, height, and energy intake. Functional tasks that benefitted most from a higher-protein diet ( $\geq 1.2$  g/kg/day vs.  $< 0.8$  g/kg/day) were doing heavy work at home, walking 1/2 mile (0.8 km), going up and down stairs, stooping/kneeling/crouching, and lifting heavy items. Those with higher protein intakes were 41% less likely (95% CI: 0.43, 0.82) to become dependent in 1 or more of the functional tasks over follow-up. Higher physical activity and lower body mass index were both independently associated with less functional decline. The greatest risk reductions were found among those with higher protein intakes combined with either higher physical activity, more skeletal muscle mass, or lower body mass index. This study demonstrates that dietary protein intakes above the current US Recommended Daily Allowance may slow functional decline in older adults.

Neubauer, A. C., A. Pribil, et al. (2018). **"The self-other knowledge asymmetry in cognitive intelligence, emotional intelligence, and creativity."** *Heliyon* 4(12): e01061-e01061. <https://www.ncbi.nlm.nih.gov/pubmed/30603696> <https://www.ncbi.nlm.nih.gov/pmc/PMC6307038/>

(Available in free full text) The self-other knowledge asymmetry model (SOKA) assumes that some personality traits might be open to oneself and other persons ('open area'), while other traits are more accurately perceived by others ('blind spot'); a third group of traits might be visible only to oneself and not to others ('hidden area'), and finally a trait might neither be visible to oneself nor to one's peers ('unknown area'). So far, this model has been tested only for personality traits and general intelligence, not for more specific abilities; to do so was the novel intention of our study. We tested which of six abilities (verbal, numerical, and spatial intelligence; interpersonal and intrapersonal competence; and creative potential/divergent thinking ability) are in which SOKA area. We administered performance tests for the six abilities in two samples - 233 14-year-olds and 215 18-year-olds - and collected self- and peer-ratings for each domain. Numerical intelligence and creativity were judged validly both from self- and peer-perspectives ('open area'). In the younger sample verbal intelligence was validly estimated only by peers ('blind spot'), whereas the older group showed some insight into their own abilities as well ('blind spot' to 'open area'). While in the younger group only the pupils themselves could validly estimate their intra- and interpersonal competence ('hidden area'), in the older group peers were also successful in estimating other's interpersonal competence, albeit only with low accuracy ('hidden area' to 'open area'). For 18-year-olds, spatial ability was in the hidden area too, but in 14-year-olds this could neither be validly estimated by pupils themselves nor by peers ('unknown area'). These results implicate the possibility of non-optimal career choices of young people, and could, therefore, be helpful in guiding professional career counselling.

Ocean, N., P. Howley, et al. (2019). **"Lettuce be happy: A longitudinal uk study on the relationship between fruit and vegetable consumption and well-being."** *Social Science & Medicine* 222: 335-345. <http://www.sciencedirect.com/science/article/pii/S0277953618306907>

(Available in free full text) Rationale While the role of diet in influencing physical health is now well-established, some recent research suggests that increased consumption of fruits and vegetables could play a role in enhancing mental well-being. A limitation with much of this existing research is its reliance on cross-sectional correlations, convenience samples, and/or lack of adequate controls. Objective We aim to add to the emerging literature on the relationship between fruit and vegetable consumption and well-being by using longitudinal data from a study in the United Kingdom (UK). Method We employ panel data analytical techniques on three waves collected between 2010 and 2017 (i.e., following the same individuals over time) in the UK Household Longitudinal Survey. We also control for time-variant confounders such as diet, health, and lifestyle behaviours. Results Fixed effects regressions show that mental well-being (GHQ-12) responds in a dose-response fashion to increases in both the quantity and the frequency of fruit and vegetables consumed. This relationship is robust to the use of subjective well-being (life satisfaction) instead of mental well-being. We also document a hump-shaped relationship between fruit and vegetable consumption and age. Conclusion Our findings provide further evidence that persuading people to consume more fruits and vegetables may not only benefit their physical health in the long-run, but also their mental well-being in the short-run.

Piercy, K. L., R. P. Troiano, et al. (2018). **"The physical activity guidelines for americans."** *JAMA*. <http://dx.doi.org/10.1001/jama.2018.14854>

(Available in free full text) Importance Approximately 80% of US adults and adolescents are insufficiently active. Physical activity fosters normal growth and development and can make people feel, function, and sleep better and reduce risk of many chronic diseases. Objective To summarize key guidelines in the Physical Activity Guidelines for Americans, 2nd edition (PAG). Process and Evidence Synthesis The 2018 Physical Activity Guidelines Advisory Committee conducted a systematic review of the science supporting physical activity and health. The committee addressed 38 questions and 104 subquestions and graded the evidence based on consistency and quality of the research. Evidence graded as strong or moderate was the basis of the key guidelines. The Department of Health and Human Services (HHS) based the PAG on the 2018 Physical Activity Guidelines Advisory Committee Scientific Report. Recommendations The PAG provides information and guidance on the types and amounts of physical activity to improve a variety of health outcomes for multiple population groups. Preschool-aged children (3 through 5 years) should be physically active throughout the day to enhance growth and development. Children and adolescents aged 6



through 17 years should do 60 minutes or more of moderate-to-vigorous physical activity daily. Adults should do at least 150 minutes to 300 minutes a week of moderate-intensity, or 75 minutes to 150 minutes a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. They should also do muscle-strengthening activities on 2 or more days a week. Older adults should do multicomponent physical activity that includes balance training as well as aerobic and muscle-strengthening activities. Pregnant and postpartum women should do at least 150 minutes of moderate-intensity aerobic activity a week. Adults with chronic conditions or disabilities, who are able, should follow the key guidelines for adults and do both aerobic and muscle-strengthening activities. Recommendations emphasize that moving more and sitting less will benefit nearly everyone. Individuals performing the least physical activity benefit most by even modest increases in moderate-to-vigorous physical activity. Additional benefits occur with more physical activity. Both aerobic and muscle-strengthening physical activity are beneficial. **Conclusions and Relevance** The Physical Activity Guidelines for Americans, 2nd edition, provides information and guidance on the types and amounts of physical activity that provide substantial health benefits. Health professionals and policy makers should facilitate awareness of the guidelines and promote the health benefits of physical activity and support efforts to implement programs, practices, and policies to facilitate increased physical activity and to improve the health of the US population.

Pludowski, P., M. F. Holick, et al. (2018). **"Vitamin d supplementation guidelines."** *J Steroid Biochem Mol Biol* 175: 125-135. <https://www.ncbi.nlm.nih.gov/pubmed/28216084>

Research carried out during the past two-decades extended the understanding of actions of vitamin D, from regulating calcium and phosphate absorption and bone metabolism to many pleiotropic actions in organs and tissues in the body. Most observational and ecological studies report association of higher serum 25-hydroxyvitamin D [25(OH)D] concentrations with improved outcomes for several chronic, communicable and non-communicable diseases. Consequently, numerous agencies and scientific organizations have developed recommendations for vitamin D supplementation and guidance on optimal serum 25(OH)D concentrations. The bone-centric guidelines recommend a target 25(OH)D concentration of 20ng/mL (50nmol/L), and age-dependent daily vitamin D doses of 400-800IU. The guidelines focused on pleiotropic effects of vitamin D recommend a target 25(OH)D concentration of 30ng/mL (75nmol/L), and age-, body weight-, disease-status, and ethnicity dependent vitamin D doses ranging between 400 and 2000IU/day. The wise and balanced choice of the recommendations to follow depends on one's individual health outcome concerns, age, body weight, latitude of residence, dietary and cultural habits, making the regional or nationwide guidelines more applicable in clinical practice. While natural sources of vitamin D can raise 25(OH)D concentrations, relative to dietary preferences and latitude of residence, in the context of general population, these sources are regarded ineffective to maintain the year-round 25(OH)D concentrations in the range of 30-50ng/mL (75-125nmol/L). Vitamin D self-administration related adverse effects, such as hypercalcemia and hypercalciuria are rare, and usually result from taking extremely high doses of vitamin D for a prolonged time.

Rainey-Smith, S. R., Y. Gu, et al. (2018). **"Mediterranean diet adherence and rate of cerebral  $\alpha\beta$ -amyloid accumulation: Data from the Australian imaging, biomarkers and lifestyle study of ageing."** *Translational Psychiatry* 8(1): 238. <https://doi.org/10.1038/s41398-018-0293-5>

(Available in free full text) Accumulating research has linked Mediterranean diet (MeDi) adherence with slower cognitive decline and reduced Alzheimer's disease (AD) risk. However, no study to-date has examined the relationship between MeDi adherence and accumulation of cerebral  $\alpha\beta$ -amyloid ( $\alpha\beta$ ; a pathological hallmark of AD) in older adults. Cognitively normal healthy control participants of the Australian Imaging, Biomarkers and Lifestyle (AIBL) Study of Ageing completed the Cancer Council of Victoria Food Frequency Questionnaire at baseline, which was used to construct a MeDi score for each participant (score range 0-9; higher score indicating higher adherence). Cerebral  $\alpha\beta$  load was quantified by Pittsburgh Compound B positron emission tomography at baseline, 18 and 36 months: Only individuals categorised as " $\alpha\beta$  accumulators", and thus considered to be on the AD pathway, were included in the analysis (N = 77). The relationship between MeDi adherence, MeDi components, and change in cerebral  $\alpha\beta$  load (baseline to 36 months) was evaluated using Generalised Linear Modelling, accounting for age, gender, education, Apolipoprotein E  $\epsilon 4$  allele status, body mass index and total energy intake. Higher MeDi score was associated with less  $\alpha\beta$  accumulation in our cohort ( $\beta = -0.01 \pm 0.004$ ,  $p = 0.0070$ ). Of the individual MeDi score components, a high intake of fruit was associated with less accumulation of  $\alpha\beta$  ( $\beta = -0.04 \pm 0.01$ ,  $p = 0.00036$ ). Our results suggest MeDi adherence is associated with reduced cerebral AD pathology accumulation over time. When our results are considered collectively with previous data linking the MeDi to slower cognitive decline, it is apparent that MeDi adherence warrants further investigation in the quest to delay AD onset.

Research, W. C. R. F. A. I. f. C. (2018). ***Diet, nutrition, physical activity and cancer: A global perspective: The third expert report.*** A. J. C. P. Chair). [dietandcancerreport.org](http://dietandcancerreport.org)

(Freely downloadable) The Third Expert Report will help people who are keen to know how to prevent cancer and improve survival after diagnosis.

Robinson, E., A. Jones, et al. (2018). **"(over)eating out at major uk restaurant chains: Observational study of energy content of main meals."** *Br Med J* 363: k4982. <https://www.bmj.com/content/bmj/363/bmj.k4982.full.pdf>

(Available in free full text) Objectives To examine the energy content of main meals served in major UK restaurant chains and compare the energy content of meals in fast food and "full service" restaurant chains. Design Observational study. Setting Menu and nutritional information provided by major UK restaurant chains. Main outcome measures Mean energy content of meals, proportion of meals meeting public health recommendations for energy consumption ( $\leq 600$  kcal), and proportion of meals with excessive energy content ( $\geq 1000$  kcal). Results Main meals from 27 restaurant chains (21 full service; 6 fast food) were sampled. The mean energy content of all eligible restaurant meals (13 396 in total) was 977 (95% confidence interval 973 to 983) kcal. The percentage of all meals that met public health recommendations for energy content was low (9%;  $n = 1226$ ) and smaller than the percentage of meals with an excessive energy content (47%; 6251). Compared with fast food restaurants, full service restaurants offered significantly more excessively calorific main meals, fewer main meals meeting public health recommendations, and on average 268 (103 to 433) kcal more in main meals. Conclusions The energy content of a large number of main meals in major UK restaurant chains is excessive, and only a minority meet public health recommendations. Although the poor nutritional quality of fast food meals has been well documented, the energy content of full service restaurant meals in the UK tends to be higher and is a cause for concern.

Rutten-Jacobs, L. C., S. C. Larsson, et al. (2018). **"Genetic risk, incident stroke, and the benefits of adhering to a healthy lifestyle: Cohort study of 306 473 uk biobank participants."** *Br Med J* 363: k4168. <https://www.bmj.com/content/bmj/363/bmj.k4168.full.pdf>

(Available in free full text) Objective To evaluate the associations of a polygenic risk score and healthy lifestyle with incident stroke. Design Prospective population based cohort study. Setting UK Biobank Study, UK. Participants 306 473 men and women, aged 40-73 years, recruited between 2006 and 2010. Main outcome measure Hazard ratios for a first stroke, estimated

using Cox regression. A polygenic risk score of 90 single nucleotide polymorphisms previously associated with stroke was constructed at  $P < 1 \times 10^{-5}$  to test for an association with incident stroke. Adherence to a healthy lifestyle was determined on the basis of four factors: non-smoker, healthy diet, body mass index  $< 30$  kg/m<sup>2</sup>, and regular physical exercise. Results During a median follow-up of 7.1 years (2 138 443 person years), 2077 incident strokes (1541 ischaemic stroke, 287 intracerebral haemorrhage, and 249 subarachnoid haemorrhage) were ascertained. The risk of incident stroke was 35% higher among those at high genetic risk (top third of polygenic score) compared with those at low genetic risk (bottom third): hazard ratio 1.35 (95% confidence interval 1.21 to 1.50),  $P = 3.9 \times 10^{-8}$ . Unfavourable lifestyle (0 or 1 healthy lifestyle factors) was associated with a 66% increased risk of stroke compared with a favourable lifestyle (3 or 4 healthy lifestyle factors): 1.66 (1.45 to 1.89),  $P = 1.19 \times 10^{-13}$ . The association with lifestyle was independent of genetic risk strata. Conclusion In this cohort study, genetic and lifestyle factors were independently associated with incident stroke. These results emphasise the benefit of entire populations adhering to a healthy lifestyle, independent of genetic risk.

Saint-Maurice, P. F., D. Coughlan, et al. (2019). **"Association of leisure-time physical activity across the adult life course with all-cause and cause-specific mortality: adult life course leisure-time physical activity and mortality."** *JAMA Network Open* 2(3): e190355-e190355. <https://dx.doi.org/10.1001/jamanetworkopen.2019.0355>

(Available in free full text) Although the benefits of leisure-time physical activity (LTPA) in middle age are established, the health effects of long-term participation and changes in LTPA between adolescence and middle age have not been documented. To determine whether an association exists between LTPA life course patterns and mortality. This prospective cohort study used data from the National Institutes of Health-AARP (formerly American Association of Retired Persons) Diet and Health Study established in 1995 to 1996. Data analysis was conducted from March 2017 through February 2018. Data were analyzed for 315 059 adult AARP members living in 6 states, namely, California, Florida, Louisiana, New Jersey, North Carolina, or Pennsylvania, or 2 metropolitan areas, Atlanta, Georgia, or Detroit, Michigan. Self-reported LTPA (hours per week) at the baseline interview for ages grouped as 15 to 18, 19 to 29, 35 to 39, and 40 to 61 years. All-cause, cardiovascular disease (CVD)-related, and cancer-related mortality records available through December 31, 2011. Of 315 059 participants, 183 451 (58.2%) were men, and the participants were 50 to 71 years of age at enrollment. Ten LTPA trajectories (categorized as maintaining, increasing, and decreasing LTPA across time) were identified, and 71 377 deaths due to all causes, 22 219 deaths due to CVD, and 16 388 deaths due to cancer occurred. Compared with participants who were consistently inactive throughout adulthood, participants who maintained the highest amount of LTPA in each age period were at lower risks for all-cause, CVD-related, and cancer-related mortality. For example, compared with participants who were consistently inactive, maintaining higher amounts of LTPA was associated with lower all-cause (hazard ratio [HR], 0.64; 95% CI, 0.60-0.68), CVD-related (HR, 0.58; 95% CI, 0.53-0.64), and cancer-related (HR, 0.86; 95% CI, 0.77-0.97) mortality. Adults who were less active throughout most of the adult life course but increased LTPA in later adulthood (40-61 years of age) also had lower risk for all-cause (HR, 0.65; 95% CI, 0.62-0.68), CVD-related (HR, 0.57; 95% CI, 0.53-0.61), and cancer-related (HR, 0.84; 95% CI, 0.77-0.92) mortality. Maintaining higher LTPA levels and increasing LTPA in later adulthood were associated with comparable low risk of mortality, suggesting that midlife is not too late to start physical activity. Inactive adults may be encouraged to be more active, whereas young adults who are already active may strive to maintain their activity level as they get older.

Schübel, R., J. Nattenmüller, et al. (2018). **"Effects of intermittent and continuous calorie restriction on body weight and metabolism over 50 wk: A randomized controlled trial."** *The American Journal of Clinical Nutrition* 108(5): 933-945. <http://dx.doi.org/10.1093/ajcn/nqy196>

Background Although preliminary evidence suggests that intermittent calorie restriction (ICR) exerts stronger effects on metabolic parameters, which may link obesity and major chronic diseases, compared with continuous calorie restriction (CCR), there is a lack of well-powered intervention studies. Objective We conducted a randomized controlled trial to test whether ICR, operationalized as the "5:2 diet," has stronger effects on adipose tissue gene expression, anthropometric and body composition measures, and circulating metabolic biomarkers than CCR and a control regimen. Design One hundred and fifty overweight and obese nonsmokers [body mass index (kg/m<sup>2</sup>)  $\geq 25$  to  $< 40$ , 50% women], aged 35-65 y, were randomly assigned to an ICR group (5 d without energy restriction and 2 d with 75% energy deficit, net weekly energy deficit  $\sim 20\%$ ), a CCR group (daily energy deficit  $\sim 20\%$ ), or a control group (no advice to restrict energy) and participated in a 12-wk intervention phase, a 12-wk maintenance phase, and a 26-wk follow-up phase. Results Loge relative weight change over the intervention phase was  $-7.1\% \pm 0.7\%$  (mean  $\pm$  SEM) with ICR,  $-5.2\% \pm 0.6\%$  with CCR, and  $-3.3\% \pm 0.6\%$  with the control regimen (P overall  $< 0.001$ , PICR vs. CCR = 0.053). Despite slightly greater weight loss with ICR than with CCR, there were no significant differences between the groups in the expression of 82 preselected genes in adipose tissue implicated in pathways linking obesity to chronic diseases. At the final follow-up assessment (week 50), weight loss was  $-5.2\% \pm 1.2\%$  with ICR,  $-4.9\% \pm 1.1\%$  with CCR, and  $-1.7\% \pm 0.8\%$  with the control regimen (P overall = 0.01, PICR vs. CCR = 0.89). These effects were paralleled by proportional changes in visceral and subcutaneous adipose tissue volumes. There were no significant differences between ICR and CCR regarding various circulating metabolic biomarkers. Conclusion Our results on the effects of the "5:2 diet" indicate that ICR may be equivalent but not superior to CCR for weight reduction and prevention of metabolic diseases. This trial was registered at clinicaltrials.gov as NCT02449148.

Stephan, Y., A. R. Sutin, et al. (2019). **"Facets of conscientiousness and longevity: Findings from the health and retirement study."** *Journal of Psychosomatic Research* 116: 1-5. <http://www.sciencedirect.com/science/article/pii/S002239991830864X>

(Available in free full text) Objectives Conscientiousness is the strongest personality predictor of longevity. The present study examined which facets of conscientiousness are the most strongly related to mortality risk in a large longitudinal sample of middle-aged and older adults. Method Seven-year mortality data were obtained from participants (total  $N > 11,000$ ) from the Health and Retirement Study (HRS, 2008-2014). Six facets of conscientiousness, demographic factors, disease burden, smoking and physical inactivity were assessed at baseline. Results Controlling for demographic factors, every standard deviation higher order, traditionalism, virtue, and responsibility was related to an approximately 10% reduced risk of mortality; industriousness was associated with an almost 25% lower likelihood of mortality. Except for traditionalism, these associations were partially accounted by health and behavioral covariates. Self-control was not related to longevity. When all facets and the covariates were simultaneously included, only industriousness was significantly associated with mortality. Conclusions The present study provides new evidence about the specific facets of conscientiousness that are related to longevity.

Stern, Y., A. MacKay-Brandt, et al. (2019). **"Effect of aerobic exercise on cognition in younger adults: A randomized clinical trial."** *Neurology*: 10.1212/WNL.0000000000007003. <http://n.neurology.org/content/neurology/early/2019/01/30/WNL.0000000000007003.full.pdf>

**Objective** To determine efficacy of aerobic exercise for cognitive function in younger healthy adults. **Methods** In a randomized, parallel-group, observer-masked, community-based clinical trial, 132 cognitively normal individuals aged 20–67 with below median aerobic capacity were randomly assigned to one of two 6-month, 4-times-weekly conditions: aerobic exercise and stretching/toning. Efficacy measures included aerobic capacity; cognitive function in several domains (executive function, episodic memory, processing speed, language, and attention), everyday function, body mass index (BMI), and cortical thickness. **Results** Aerobic capacity increased significantly ( $\beta = 2.718$ ;  $p = 0.003$ ), and BMI decreased significantly ( $\beta = -0.596$ ;  $p = 0.013$ ) in the aerobic exercise but not in the stretching/toning condition. Executive function improved significantly in the aerobic exercise condition; this effect was moderated by age ( $\beta = 0.018$  SD/y;  $p = 0.028$ ). At age 40, the executive function measure increased by 0.228 SD (95% confidence interval [CI] 0.007–0.448), and by 0.596 SD (95% CI 0.219–0.973) at age 60. Cortical thickness increased significantly in the aerobic exercise group in a left frontal region and did not interact with age. Controlling for age and baseline performance, individuals with at least one APOE  $\epsilon 4$  allele showed less improvement in executive function with aerobic exercise ( $\beta = 0.5129$ , 95% CI 0.0381–0.988;  $p = 0.0346$ ). **Conclusions** This randomized clinical trial demonstrates the efficacy of aerobic exercise for cognition in adults age 20–67. The effect of aerobic exercise on executive function was more pronounced as age increased, suggesting that it may mitigate age-related declines. Increased cortical thickness suggests that aerobic exercise contributes to brain health in individuals as young as age 20. [Clinicaltrials.gov identifier NCT01179958](https://doi.org/10.1186/s12916-018-11799-5). **Classification of evidence** This study provides Class II evidence that for adults age 20–67 with below median aerobic capacity, aerobic exercise significantly improves executive function but not other measures of cognitive function.

Su, K., P. Tseng, et al. (2018). **"Association of use of omega-3 polyunsaturated fatty acids with changes in severity of anxiety symptoms: A systematic review and meta-analysis."** *JAMA Network Open* 1(5): e182327. <http://dx.doi.org/10.1001/jamanetworkopen.2018.2327>

(Available in free full text) **Importance** No systematic review or meta-analysis has assessed the efficacy of omega-3 polyunsaturated fatty acids (PUFAs) for anxiety. **Objective** To evaluate the association of anxiety symptoms with omega-3 PUFA treatment compared with controls in varied populations. **Data Sources** PubMed, Embase, ProQuest, ScienceDirect, Cochrane Library, ClinicalKey, Web of Science, and ClinicalTrials.gov databases were searched up to March 4, 2018. **Study Selection** A search was performed of clinical trials assessing the anxiolytic effect of omega-3 PUFAs in humans, in either placebo-controlled or non-placebo-controlled designs. Of 104 selected articles, 19 entered the final data extraction stage. **Data Extraction and Measures** Two authors independently extracted the data according to a predetermined list of interests. A random-effects model meta-analysis was performed and this study was conducted based on Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines. **Main Outcomes and Measures** Changes in the severity of anxiety symptoms after omega-3 PUFA treatment. **Results** In total, 1203 participants with omega-3 PUFA treatment (mean age, 43.7 years; mean female proportion, 55.0%; mean omega-3 PUFA dosage, 1605.7 mg/d) and 1037 participants without omega-3 PUFA treatment (mean age, 40.6 years; mean female proportion, 55.0%) showed an association between clinical anxiety symptoms among participants with omega-3 PUFA treatment compared with control arms (Hedges  $g$ , 0.374; 95% CI, 0.081–0.666;  $P = .01$ ). Subgroup analysis showed that the association of treatment with reduced anxiety symptoms was significantly greater in subgroups with specific clinical diagnoses than in subgroups without clinical conditions. The anxiolytic effect of omega-3 PUFAs was significantly better than that of controls only in subgroups with a higher dosage (at least 2000 mg/d) and not in subgroups with a lower dosage (<2000 mg/d). **Conclusions and Relevance** This review indicates that omega-3 PUFAs might help to reduce the symptoms of clinical anxiety. Further well-designed studies are needed in populations in whom anxiety is the main symptom.

Taggart, T. C., N. R. Eaton, et al. (2018). **"Oral contraceptive use is associated with greater mood stability and higher relationship satisfaction."** *Neurology, Psychiatry and Brain Research* 30: 154–162. <http://www.sciencedirect.com/science/article/pii/S0941950018301763>

Oral contraceptives (OCs) are one of the most commonly prescribed medications among women. OCs have been used to ameliorate hormone-related affective symptoms (e.g., mood lability). Previous data suggest that mood stability may have downstream effects for broader life outcomes, such as relationship satisfaction, which is also correlated with OC use. However, to date, no studies have examined the role of mood lability within the OC-relationship satisfaction association. Indirect effects structural equation modeling examined the extent to which OC use was associated with relationship satisfaction (direct effect), and the degree to which this association was mediated by mood lability (indirect effect) in women ( $N = 282$ ) aged 18–32. OC users reported significantly higher relationship satisfaction (Cohen's  $d = .31$ ) and less frequent occurrences of mood lability ( $d = .41$ ) compared to non-users. Indirect effects suggested that mood lability accounted for nearly half of the variance in the OC-relationship satisfaction relationship. Findings support an emerging literature suggesting that, in addition to contraception, OC use may subsequently positively impact various domains of wellbeing for women and their families. Results support public policy efforts aimed at providing broad, affordable access to contraceptives, including for non-contraceptive benefits, and discussing OCs as a potential treatment with all women, including those not at imminent risk for pregnancy. Given their widespread use, availability, and low side effects profile, it is imperative that future research further elucidate non-contraceptive benefits associated with OC use. [See useful discussion in BPS Digest - <https://digest.bps.org.uk/2018/11/20/the-mood-stabilising-effect-of-taking-the-pill-has-downstream-benefits-for-womens-relationships-claims-new-study/> ]

Valles-Colomer, M., G. Falony, et al. (2019). **"The neuroactive potential of the human gut microbiota in quality of life and depression."** *Nature Microbiology*. <https://doi.org/10.1038/s41564-018-0337-x>

The relationship between gut microbial metabolism and mental health is one of the most intriguing and controversial topics in microbiome research. Bidirectional microbiota–gut–brain communication has mostly been explored in animal models, with human research lagging behind. Large-scale metagenomics studies could facilitate the translational process, but their interpretation is hampered by a lack of dedicated reference databases and tools to study the microbial neuroactive potential. Surveying a large microbiome population cohort (Flemish Gut Flora Project,  $n = 1,054$ ) with validation in independent data sets ( $n_{total} = 1,070$ ), we studied how microbiome features correlate with host quality of life and depression. Butyrate-producing *Faecalibacterium* and *Coprococcus* bacteria were consistently associated with higher quality of life indicators. Together with *Dialister*, *Coprococcus* spp. were also depleted in depression, even after correcting for the confounding effects of antidepressants. Using a module-based analytical framework, we assembled a catalogue of neuroactive potential of sequenced gut prokaryotes. Gut–brain module analysis of faecal metagenomes identified the microbial synthesis potential of the dopamine metabolite 3,4-dihydroxyphenylacetic acid as correlating positively with mental quality of life and indicated a potential role of microbial  $\gamma$ -aminobutyric acid production in depression. Our results provide population-scale evidence for microbiome links to mental health, while emphasizing confounder importance.

Vancampfort, D., B. Stubbs, et al. (2018). **"Handgrip strength, chronic physical conditions and physical multimorbidity in middle-aged and older adults in six low- and middle income countries."** *European Journal of Internal Medicine*. <http://www.sciencedirect.com/science/article/pii/S0953620518304527>



Purpose Handgrip strength provides a clinically validated marker of overall health and mortality risk. There are however, no multi-national population-based studies investigating the associations between handgrip strength, chronic physical conditions, and physical multimorbidity (i.e.,  $\geq 2$  chronic conditions). We aimed to assess these associations among community-dwelling middle-aged and older adults using nationally representative data from six in low- and middle-income countries (LMICs). Methods Cross-sectional, community-based data on individuals aged  $\geq 50$  years from the World Health Organization's Study on Global Ageing and Adult Health were analyzed. Eleven chronic physical conditions (angina, arthritis, asthma, chronic back pain, chronic lung disease, diabetes, edentulism, hearing problems, hypertension, stroke, visual impairment) were assessed. Weak handgrip strength was defined as  $< 30$  kg for men and  $< 20$  kg for women. Multivariable logistic regression analysis was conducted. Results The final sample included 34,129 individuals ( $62.4 \pm 16.0$  years; 52.1% female). After adjustment for potential confounders, when compared to those with no chronic physical conditions, having 1, 2, 3, and  $\geq 4$  physical chronic conditions was associated with 1.22 (95%CI = 1.08–1.37), 1.29 (95%CI = 1.11–1.50), 1.41 (95%CI = 1.18–1.68), and 1.78 (95%CI = 1.46–2.18) times higher odds for weak handgrip strength. Similar associations were observed in the analyses stratified by age and sex. There was a moderate level of between-country heterogeneity in the association between weak handgrip strength and physical multimorbidity (Higgin's  $I^2 = 67.8\%$ ) with the pooled estimate being 1.26 (95%CI = 1.06–1.50). Conclusion Weaker handgrip strength is associated with a range of chronic physical conditions and multimorbidity. Future research should seek to establish the predictive value of this inexpensive measure for clinical use.

Velten, J., A. Bieda, et al. (2018). "**Lifestyle choices and mental health: A longitudinal survey with german and chinese students.**" *BMC Public Health* 18(1): 632. <https://doi.org/10.1186/s12889-018-5526-2>

(Available in free full text) Background A healthy lifestyle can be beneficial for one's mental health. Thus, identifying healthy lifestyle choices that promote psychological well-being and reduce mental problems is useful to prevent mental disorders. The aim of this longitudinal study was to evaluate the predictive values of a broad range of lifestyle choices for positive mental health (PMH) and mental health problems (MHP) in German and Chinese students. Method Data were assessed at baseline and at 1-year follow-up. Samples included 2991 German (Mage = 21.69, SD = 4.07) and 12,405 Chinese (Mage = 20.59, SD = 1.58) university students. Lifestyle choices were body mass index, frequency of physical and mental activities, frequency of alcohol consumption, smoking, vegetarian diet, and social rhythm irregularity. PMH and MHP were measured with the Positive Mental Health Scale and a 21-item version of the Depression Anxiety and Stress Scale. The predictive values of lifestyle choices for PMH and MHP at baseline and follow-up were assessed with single-group and multi-group path analyses. Results Better mental health (higher PMH and fewer MHP) at baseline was predicted by a lower body mass index, a higher frequency of physical and mental activities, non-smoking, a non-vegetarian diet, and a more regular social rhythm. When controlling for baseline mental health, age, and gender, physical activity was a positive predictor of PMH, smoking was a positive predictor of MHP, and a more irregular social rhythm was a positive predictor of PMH and a negative predictor of MHP at follow-up. The good fit of a multi-group model indicated that most lifestyle choices predict mental health comparably across samples. Some country-specific effects emerged: frequency of alcohol consumption, for example, predicted better mental health in German and poorer mental health in Chinese students. Conclusions Our findings underline the importance of healthy lifestyle choices for improved psychological well-being and fewer mental health difficulties. Effects of lifestyle on mental health are comparable in German and Chinese students. Some healthy lifestyle choices (i.e., more frequent physical activity, non-smoking, regular social rhythm) are related to improvements in mental health over a 1-year period.

Vollbeh, N. K., A. A. Bartels-Velthuis, et al. (2018). "**Hatha yoga for acute, chronic and/or treatment-resistant mood and anxiety disorders: A systematic review and meta-analysis.**" *PLOS ONE* 13(10): e0204925. <https://doi.org/10.1371/journal.pone.0204925>

(Available in free full text) Background The aim of this study was to systematically investigate the effectiveness of hatha yoga in treating acute, chronic and/or treatment-resistant mood and anxiety disorders. Methods Medline, Cochrane Library, Current Controlled Trials, Clinical Trials.gov, NHR Centre for Reviews and Dissemination, PsycINFO and CINAHL were searched through June 2018. Randomized controlled trials with patients with mood and anxiety disorders were included. Main outcomes were continuous measures of severity of mood and anxiety symptoms. Cohen's d was calculated as a measure of effect size. Meta-analyses using a random effects model was applied to estimate direct comparisons between yoga and control conditions for depression and anxiety outcomes. Publication bias was visually inspected using funnel plots. Results Eighteen studies were found, fourteen in acute patients and four in chronic patients. Most studies were of low quality. For depression outcomes, hatha yoga did not show a significant effect when compared to treatment as usual, an overall effect size of Cohen's d -0.64 (95% CI = -1.41, 0.13) or to all active control groups, Cohen's d -0.13 (95% CI = -0.49, 0.22). A sub-analysis showed that yoga had a significant effect on the reduction of depression compared to psychoeducation control groups, Cohen's d -0.52 (95% CI = -0.96, -0.08) but not to other active control groups, Cohen's d 0.28 (95% CI = -0.07, 0.63) For studies using a follow-up of six months or more, hatha yoga had no effect on the reduction of depression compared to active control groups, Cohen's d -0.14 (95% CI = -0.60, 0.33). Regarding anxiety, hatha yoga had no significant effect when compared to active control groups, Cohen's d -0.09 (95% CI = -0.47, 0.30). The  $I^2$  and Q-statistic revealed heterogeneity amongst comparisons. Qualitative analyses suggest some promise of hatha yoga for chronic populations. Conclusions The ability to draw firm conclusions is limited by the notable heterogeneity and low quality of most of the included studies. With this caveat in mind, the results of the current meta-analysis suggest that hatha yoga does not have effects on acute, chronic and/or treatment-resistant mood and anxiety disorders compared to treatment as usual or active control groups. However, when compared to psychoeducation, hatha yoga showed more reductions in depression. It is clear that more high-quality studies are needed to advance the field.

Walker, K. A., R. F. Gottesman, et al. (2019). "**Systemic inflammation during midlife and cognitive change over 20 years: The alic study.**" *Neurology*: 10.1212/WNL.0000000000007094. <http://n.neurology.org/content/neurology/early/2019/02/13/WNL.0000000000007094.full.pdf>

Objective To examine the association between systemic inflammation measured during midlife and 20-year cognitive decline. Methods Within the Atherosclerosis Risk in Communities cohort study, inflammatory biomarkers were measured during middle adulthood. We created an inflammation composite score using 4 blood biomarkers measured at visit 1 (fibrinogen, white blood cell count, von Willebrand factor, and factor VIII); we measured C-reactive protein (CRP) at visit 2. Cognition was assessed over 3 visits spanning 20 years using measures of memory, executive function, and language. Results A total of 12,336 participants (baseline age 56.8 [5.7], 21% black, 56% women) were included. After adjusting for demographic variables, vascular risk factors, and comorbidities, each standard deviation (SD) increase in midlife inflammation composite score was associated with an additional 20-year decline of  $-0.035$  SD (95% confidence interval:  $-0.062$  to  $-0.007$ ) on the cognitive composite score. We found a similar association between each SD increase in midlife CRP level and additional 20-year cognitive decline ( $-0.038$  SD, 95% confidence interval:  $-0.057$  to  $-0.019$ ). Participants with a midlife inflammation composite score in the top quartile had a 7.8% steeper cognitive decline, compared to participants in the lowest quartile; CRP in the top quartile was associated with an 11.6% steeper cognitive decline. In cognitive domain-specific analyses, elevated midlife

inflammatory markers were most consistently associated with declines in memory. Results were similar after adjusting for attrition using inverse probability weighting. Conclusions Our findings highlight what may be an early pathogenic role for systemic inflammation as a driver of cognitive decline in the decades leading up to older adulthood.

Wild, C. J., E. S. Nichols, et al. (2018). **"Dissociable effects of self-reported daily sleep duration on high-level cognitive abilities."** *Sleep* 41(12): zsy182-zsy182. <http://dx.doi.org/10.1093/sleep/zsy182>

(Available in free full text) Most people will at some point experience not getting enough sleep over a period of days, weeks, or months. However, the effects of this kind of everyday sleep restriction on high-level cognitive abilities—such as the ability to store and recall information in memory, solve problems, and communicate—remain poorly understood. In a global sample of over 10000 people, we demonstrated that cognitive performance, measured using a set of 12 well-established tests, is impaired in people who reported typically sleeping less, or more, than 7–8 hours per night—which was roughly half the sample. Crucially, performance was not impaired evenly across all cognitive domains. Typical sleep duration had no bearing on short-term memory performance, unlike reasoning and verbal skills, which were impaired by too little, or too much, sleep. In terms of overall cognition, a self-reported typical sleep duration of 4 hours per night was equivalent to aging 8 years. Also, sleeping more than usual the night before testing (closer to the optimal amount) was associated with better performance, suggesting that a single night's sleep can benefit cognition. The relationship between sleep and cognition was invariant with respect to age, suggesting that the optimal amount of sleep is similar for all adult age groups, and that sleep-related impairments in cognition affect all ages equally. These findings have significant real-world implications, because many people, including those in positions of responsibility, operate on very little sleep and may suffer from impaired reasoning, problem-solving, and communications skills on a daily basis.

Wootton, R. E., R. B. Lawn, et al. (2018). **"Evaluation of the causal effects between subjective wellbeing and cardiometabolic health: Mendelian randomisation study."** *Br Med J* 362. <https://www.bmj.com/content/bmj/362/bmj.k3788.full.pdf>

(Available in free full text) Objectives To investigate whether the association between subjective wellbeing (subjective happiness and life satisfaction) and cardiometabolic health is causal. Design Two sample, bidirectional mendelian randomisation study. Setting Genetic data taken from various cohorts comprised of the general population (mostly individuals of European ancestry, plus a small proportion of other ancestries); follow-up analysis included individuals from the United Kingdom. Participants Summary data were used from previous genome wide association studies (number of participants ranging from 83 198 to 339 224), which investigated traits related to cardiovascular or metabolic health, had the largest sample sizes, and consisted of the most similar populations while minimising sample overlap. A follow-up analysis included 337 112 individuals from the UK Biobank (54% female (n=181 363), mean age 56.87 years (standard deviation 8.00) at recruitment). Main outcome measures Subjective wellbeing and 11 measures of cardiometabolic health (coronary artery disease; myocardial infarction; total, high density lipoprotein, and low density lipoprotein cholesterol; diastolic and systolic blood pressure; body fat; waist to hip ratio; waist circumference; and body mass index). Results Evidence of a causal effect of body mass index on subjective wellbeing was seen; each 1 kg/m<sup>2</sup> increase in body mass index caused a –0.045 (95% confidence interval –0.084 to –0.006, P=0.02) standard deviation reduction in subjective wellbeing. Follow-up analysis of this association in an independent sample from the UK Biobank provided strong evidence of an effect of body mass index on satisfaction with health ( $\beta$  = –0.035 unit decrease in health satisfaction (95% confidence interval –0.043 to –0.027) per standard deviation increase in body mass index, P<0.001). No clear evidence of a causal effect was seen between subjective wellbeing and the other cardiometabolic health measures, in either direction. Conclusions These results suggest that a higher body mass index is associated with a lower subjective wellbeing. A follow-up analysis confirmed this finding, suggesting that the effect in middle aged people could be driven by satisfaction with health. Body mass index is a modifiable determinant, and therefore, this study provides further motivation to tackle the obesity epidemic because of the knock-on effects of higher body mass index on subjective wellbeing.