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EFFECTS OF FERMENTED SOY ON COGNITION IN OLDER ADULTS

Fermented soy products, rich in bioactive compounds, have shown potential neuroprotective effects in preclinical studies. This study was designed to evaluate the impact of fermented soy supplementation on cognitive function in community-dwelling older adults with mild cognitive impairment.

Participants (n=120, aged 65-80 years) were randomized to receive either 200g daily of fermented soy yogurt or a placebo dairy product for 12 months. Cognitive assessments, including the Montreal Cognitive Assessment (MoCA) and Trail Making Test, were conducted at baseline, 6 months, and one year. Secondary outcomes included serum biomarkers of oxidative stress and inflammation.

At 12 months, the fermented soy group demonstrated significant improvements in global cognition (MoCA score increase: +3.2 points vs. -0.5 in placebo; $p<0.01$) and executive function (Trail Making Test Part B: $p<0.05$). Biomarker analysis revealed improved malondialdehyde levels ($p<0.001$) and lower C-reactive protein ($p<0.01$) in the intervention group.

Conclusion: This study of adults 65-80 years of age found that daily ingestion of fermented soy could enhance cognitive performance and reduce oxidative stress.

West, LM., et al. Effects of Fermented Soy on Cognition in Older Adults: Outcomes of a Randomized, Controlled Trial. *Nutrients*. 2025;17 (18):2936.

PERFORMANCE-RELATED PAIN AMONG PROFESSIONAL MUSICIANS

Performance-related pain is a prevalent occupational hazard among musicians. This study evaluated the prevalence, characteristics, and

associated factors of performance-related pain in professional orchestra musicians.

The Portuguese Orchestra Musicians Pain Study (POMPS) distributed the validated Performance-Related Pain Among Musicians Questionnaire (PPAM) to 650 musicians across 10 professional orchestras nationwide. The musicians included specialists in string (52%), wind (28%), brass (12%), and percussion (8%). The PPAM assessed pain intensity (0-10 scale), interference with playing, location, frequency, and self-perceived risk factors. Additional data on demographics, instrument type, and health behaviors were collected.

The lifetime prevalence of performance-related pain was 89% (394/442), with 62% of the musicians reporting current pain (mean intensity 4.8/10). The most affected sites of the pain were neck (71%), shoulders (65%), and lower back (52%). Pain sufficient to interfere with performance was reported in 48% (daily in 22%). String players reported a higher prevalence (odds ratio (OR) 2.1, $p<0.01$) and intensity of pain than did those who played wind/brass. Predictors of pain included >20 practice hours/week (OR 1.8), poor posture (OR 2.4), and female sex (OR 1.5). Only 35% sought treatment.

Conclusion: This study of professional orchestra musicians found that performance-related pain affects nearly 90%.

Zão, A., et al. Performance-Related Pain Among Professional Orchestra Musicians: The First Portuguese Nationwide Study (POMPS). *Eur J Pain*. 2025, November;29(10) e.70124

BLOOD FLOW RESTRICTION TRAINING EFFECTS ON NON-RESTRICTED MUSCLES

Blood flow restriction (BFR) assisted resistance training enhances muscle adaptations at reduced mechanical loads. The systemic

effects of BFR are not well understood. This study reviewed the impact of BFRs on non-restricted muscles in a variety of populations.

A literature search was completed for studies examining BFR resistance training's effects on non-restricted muscles (e.g., contralateral or remote sites). Inclusion criteria encompassed randomized controlled trials, quasi-experimental designs, and observational studies in humans aged ≥ 18 years, reporting strength, hypertrophy, or functional outcomes. Two reviewers independently screened titles/abstracts (n=1,247) and full texts (n=89), extracting data on varying protocols, populations, and results.

Data were analyzed from 23 studies involving 478 subjects. Of these 62% were healthy young adults, 26% injured, 12% older adults and those with sarcopenia. In the muscles not involved in the BFR, researchers documented modest hypertrophic and strength gains (+5-12% MVC). Healthy populations showed consistent benefits (15/15 positive studies), while injured groups had variable results (4/6 positive, often contralateral gains).

Conclusion: This literature review of studies that measured the effects of blood flow restriction exercise on muscles uninvolved in the blood restriction found evidence that this treatment may produce benefits in uninvolved muscles, including contralateral muscles.

Trybulski R., et al. How Blood Flow Restriction Resistance Training Has Been Studied on Non-Restricted Muscles in Healthy, Injured and Clinical Populations: A Scoping Review and Evidence Gap Map. *Br J Sports Med*. 2025; doi:10.1136/bjsports-2025-109704.

HELICOBACTER PYLORI SCREENING AFTER ACUTE MYOCARDIAL INFARCTION

Patients with acute myocardial infarction (MI) who receive

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antithrombotic therapy face elevated risks of upper gastrointestinal bleeding (UGIB). This is potentially exacerbated by an infection with *Helicobacter pylori* (H. Pylori). This study was designed to determine whether routine screening for H. pylori during hospitalization for an MI would result in reduced UGIB incidence compared to usual care.

The HELP-MI SWEDEHEART trial is an open-label, cluster-randomized crossover study across 35 Swedish hospitals, enrolling 18,466 unselected patients (median age 71 years, 71% male) admitted with acute MI. Clusters were randomized to one-year screening periods (bedside 13C-urea breath test) followed by one-year usual care, or vice versa. Positive tests prompted antibiotic use to eradicate H. Pylori. The primary outcomes, tracked via national registries (SWEDEHEART, SCR, NPR) over median 1.9 years, included UGIB events (hospitalizations/codes for UGIB). Secondary outcomes included major bleeding, cardiovascular events, and mortality.

Routine screening yielded a 24% H. pylori positivity rate, with 82% eradication success. The UGIB rate was 4.1% in the screening arm and 4.6% in usual care, a difference that did not reach statistical significance. Major bleeding and cardiovascular outcomes were similar between arms. Subgroups with anemia or renal impairment exhibited potential gains in the test-eradicate condition (HR 0.78).

Conclusion: Routine H. pylori screening after an acute myocardial infarction does not significantly lower the risk of upper gastrointestinal bleeding.

Hofmann, R., et al. *Helicobacter Pylori Screening After Acute Myocardial Infarction; The Cluster Randomized Crossover Help-Mi Swedeheart Trial 1. JAMA.* 2025, Oct 7;334(13):1160-1169.

COMPARING TREATMENTS FOR CHRONIC LATERAL EPICONDYLOSIS

Chronic lateral epicondylitis, commonly known as tennis elbow, is a degenerative tendinopathy affecting the extensor carpi radialis brevis tendon. This study was designed to compare the long-term efficacy of four common interventions—physiotherapy, extracorporeal shockwave therapy (ESWT), prolotherapy, and platelet-rich plasma

(PRP)—in patients with refractory disease.

Patients with chronic lateral epicondylitis (symptoms >six months) were randomized into four equal groups (n=30 per arm, total N=120), stratified by age, sex, and baseline pain severity. The physiotherapy group received 12 weeks of supervised eccentric strengthening exercises, ultrasound, and stretching. The ESWT group underwent three weekly sessions of radial shockwave therapy (2000 pulses/session at 2.5 bar). Prolotherapy involved three ultrasound-guided injections of hypertonic dextrose (15% solution, 2 mL) at two-week intervals. The PRP group received a single autologous PRP injection (3-5 mL) under ultrasound guidance. All participants were assessed at baseline, three, six, 12, and 24 months using validated outcomes: visual analog scale (VAS) for pain, scores on the Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire, Mayo Elbow Performance Score (MEPS), and grip dynamometry.

All treatments yielded significant improvements from baseline (p<0.001), but PRP demonstrated superior outcomes, with 85% achieving >80% VAS reduction and the highest MEPS scores. Grip strength gains were greatest in PRP (mean +45%) and prolotherapy (mean+38%) groups. No serious adverse events occurred.

Conclusion: This study of patients with chronic lateral epicondylitis found that PRP injections provided the most effective long-term pain relief and functional restoration, outperforming prolotherapy, ESWT, and physiotherapy.

Lhee S-H., et al. Comparing the Use of Physiotherapy, Shockwave Therapy, Prolotherapy, and Platelet-Rich Plasma for Chronic Lateral Epicondylitis: A Prospective, Randomized Controlled Trial With 2-Year Follow-up. *Am J Sports Med.* 2025, Sep;53(11):2707-2714.

LATISSIMUS DORSI-THORACOLUMBAR STRETCHING FOR CHRONIC LOW BACK PAIN

Recent studies have suggested that fascia may play a role in chronic pain, particularly in non-specific low back pain (LBP). This study assessed the effects of latissimus dorsi-thoracolumbar fascia (LD-TLF)

stretching as a treatment for chronic LBP (CLBP).

This single-blind randomized controlled trial enrolled 72 patients with non-specific CLBP (symptoms ≥ 3 months). The subjects were randomized to an intervention group ($n=36$; eight-week LD-TLF stretching plus standard care) or control group ($n=36$; eight weeks of standard care: Williams exercises, TENS, hot pack). The four-week LD-TLF stretching protocol involved 10 repetitions per day, with each stretch lasting 20–30s. The patients were assessed at baseline and for up to eight weeks for pain intensity (Visual Analog Scale, VAS) and disability (Oswestry Disability Index, ODI). Secondary outcomes were fear of movement (Tampa Scale for Kinesiophobia, TSK), lumbar range of motion (ROM) via inclinometer, and quality of life (Short Form-36, SF-36).

Over the eight weeks, the intervention group showed greater improvements in VAS ($p<0.001$) and ODI ($p=0.002$) compared to controls. Also, compared to the control group, greater improvement was found in the treatment group for TSK kinesiophobia scores ($p=0.01$), lumbar ROM ($p=0.003$) and on SF-36 physical component scores ($p=0.008$). No adverse events were reported.

Conclusion: This study of patients with chronic low back pain found that adding latissimus dorsi–thoracolumbar fascia stretching to standard care significantly reduced pain, disability, and fear of movement while improving lumbar mobility and quality of life.

Ulug, N., et al. Role of Latissimus Dorsi–Thoracolumbar Fascia Complex Stretching on Pain and Pain-Related Parameters in Patients with Chronic Low Back Pain: A Randomised Clinical Trial. *Eur J Pain*. 2025, November;29(10): e70143.

TRANSCRANIAL PHOTOBIOMODULATION FOR MILD TRAUMATIC BRAIN INJURY

Mild traumatic brain injury (mTBI) often results in persistent cognitive deficits, post-concussion symptoms, and post-traumatic stress disorder (PTSD). This study assessed the efficacy of transcranial photobiomodulation (tPBM) as a treatment for patients with chronic mTBI.

The study enrolled 30 adults (aged 18–65) with mTBI history (6–24

months post-injury). Participants were randomized in a double-blind trial to an active tPBM ($n=20$) or a sham ($n=10$) group. Active tPBM involved 20-minute sessions, three times weekly for six weeks, using a helmet delivering red/near-infrared light (660/850 nm, 20 mW/cm²) to bilateral frontal-temporal regions. Outcomes were measured pre-, mid-, and post-intervention using the Montreal Cognitive Assessment (MoCA) for cognition, Rivermead Post-Concussion Symptoms Questionnaire (RPCSQ) for post-concussion symptoms, and PTSD Checklist for DSM-5 (PCL-5) for PTSD severity. Secondary measures included sleep quality (Pittsburgh Sleep Quality Index) and executive function (Trail Making Test B).

The tPBM group showed significant improvements compared to sham: MoCA scores increased 18% ($p<0.001$), RPCSQ scores improved 32% ($p<0.01$), and PCL-5 scores dropped 25% ($p<0.005$). Sleep and executive function improved with benefits sustained at one-month follow-up. No adverse events were reported.

Conclusion: This study of patients with chronic symptoms after a mild traumatic brain injury found that transcranial photobiomodulation could significantly improve cognitive function, post-concussion symptoms, and symptoms of post-traumatic stress disorder.

Lee, T., et al. Transcranial Photobiomodulation for Mild Traumatic Brain Injury. *J Neurotrauma*. 2025, Oct;42(19–20):1695–1707.

AUTOLOGOUS CELL INJECTIONS FOR KNEE OSTEOARTHRITIS

Age-related knee osteoarthritis (KOA) is a debilitating, progressive whole-joint disease affecting millions worldwide, with limited disease-modifying treatments available. This study was designed to compare the treatment effects of autologous cellular therapies, allogenic products and corticosteroids for the treatment of KOA.

Patients from the phase 3 MILES trial ($n=480$, Kellgren-Lawrence grades 2–4) were randomly selected to receive a single intra-articular injection of autologous bone marrow aspirate concentrate (BMAC), autologous stromal vascular fraction (SVF), allogenic umbilical cord tissue (UCT), or corticosteroid (CSI), with one-year follow-up data analyzed

retrospectively. Outcomes were assessed using visual analog scale (VAS) for pain and Knee Injury and Osteoarthritis Outcome Score (KOOS) subscales, defining responders as those achieving $\geq 25\%$ improvement.

At one-year, autologous therapies (BMAC and SVF) yielded higher responder rates (55–60%) than UCT (45%) or CSI (40%), with significant VAS and KOOS improvements ($p<0.05$). Notably, females exhibited greater responsiveness to autologous injections (65% responders vs. 45% in males), while males showed comparable outcomes across groups. A subgroup analyses confirmed sex-dependent effects independent of age or grade ($p=0.02$).

Conclusion: This study of patients treated for osteoarthritis of the knee found that autologous cell injections provide superior, sex-dependent pain relief and functional gains compared to allogenic products and corticosteroids.

Mautner K, et al. Autologous Cell Injections for Knee Osteoarthritis Display Greater Responsiveness Than Allogenic Cellular Products and Corticosteroids in a Sex-Dependent Manner. *Am J Sports Med*. 2025;53(12):2889–2897.
doi:10.1177/03635465251365521.

PHYTOTHERAPY AS ADJUNCT FOR RHEUMATOID ARTHRITIS

Rheumatoid arthritis (RA) is a chronic autoimmune inflammatory disease, with a rising global incidence. Recent studies have demonstrated that certain phytochemicals (active substances found in plants) can modulate key inflammatory pathways in RA, including TNF- α , IL-1 β , IL-6, and NF- κ B signaling. This study was designed to better understand the effects of key plant constituents on clinical symptoms, laboratory parameters, and disease activity in patients diagnosed with RA.

A systematic review of the literature identified randomized controlled trials (RCTs) which assessed the therapeutic effect of these plants for the treatment of RA. The review identified 14 trials with a total of 1,788 adults. Outcomes included the DAS28-CRP for disease activity, VAS pain scores, ESR/CRP levels, and adverse events. A comparative analysis of herbal and conventional RA treatments was conducted to evaluate their efficacy and safety profiles.

The meta-analysis demonstrated adjunctive phytotherapy improved DAS28 scores by 0.8-1.5 points ($p < 0.05$ across studies), lowered ESR/CRP by 15-25% and improved pain/function (VAS decrease 1.2-2.1 cm). *Curcuma longa* ($n=5$ trials) and *Tripterygium wilfordii* ($n=4$ trials) demonstrated the strongest effects on inflammation; *Zingiber officinale* aided pain relief; *Salvia miltiorrhiza* supported vascular health. One study found that *Tripterygium wilfordii* intake was effective in lowering CRP and ESR levels, by up to 50 %, comparable to methotrexate. Adverse events were mild (GI upset 8 -12%), lower than comparators. Both *Zingiber officinale* and *Curcuma longa* have been approved by the FDA as generally recognized as safe (GRAS).

Conclusion: This study indicates that selected herbal preparations—particularly *Curcuma longa* and *Tripterygium wilfordii* are promising adjunctive therapies for the treatment of patients with rheumatoid arthritis.

Piekarz, J., et al. Phytotherapy as an Adjunct to The Treatment of Rheumatoid Arthritis - A Systematic Review of Clinical Trials **Phytomedicine**. 2025, Sep 19;148:157285;134:157285

BLOOD-BASED BIOMARKERS FOR TRAUMATIC BRAIN INJURY CHARACTERIZATION

Traumatic brain injury (TBI) classification remains challenging due to heterogeneous clinical presentations and limited diagnostic precision. This study evaluated the utility of blood-based biomarkers for the diagnosis of traumatic brain injury.

The 2024 NINDS TBI Classification and Nomenclature Initiative convened a Blood-Based Biomarkers Working Group, comprising 25 experts from neurology, neurosurgery, and biomarker research. Through systematic literature reviews (2018-2024), the group analyzed studies on biomarkers including glial fibrillary acidic protein (GFAP), ubiquitin C-terminal hydrolase-L1 (UCH-L1), S100B, and neurofilament light (NfL). Data were obtained from PubMed, EMBASE, and clinical trial registries, focusing on diagnostic accuracy, prognostic utility, and clinical applicability in acute and chronic TBI.

The group identified GFAP and UCH-L1 as highly sensitive for acute TBI detection with GFAP predicting

intracranial abnormalities (sensitivity 89%, specificity 76%). NfL showed promise for chronic TBI, correlating with neurodegeneration ($p < 0.01$), while S100B had lower specificity (60%) but utility in mild TBI triage. Recommendations include integrating GFAP and UCH-L1 into acute TBI diagnostics and NfL for longitudinal monitoring.

Conclusion: This study involved an expert panel to make recommendations for the use of biomarkers to better assess traumatic brain injury, recommending that GFAP, UCH-L1, and NfL could be useful for enhancing diagnostic and prognostic precision.

Bazarian, J., et al. Blood-Based Biomarkers for Improved Characterization of Traumatic Brain Injury: Recommendations from the 2024 National Institute for Neurological Disorders and Stroke Traumatic Brain Injury Classification and Nomenclature Initiative Blood-Based Biomarkers Working Group. **J Neurotrauma**. 2025, Jul;42(13-14):1065-1085.

AI-POWERED SOCIAL ROBOTS FOR PHYSICAL ACTIVITY IN OLDER ADULTS

Artificial intelligence-powered social robots represent an innovative approach to health interventions. This study was designed to better understand the effectiveness of robots for enhancing physical activity levels among the elderly.

A literature review was completed for randomized controlled trials and quasi-experimental studies involving AI-enabled social robots targeting physical activity in community-dwelling elderly adults. Inclusion criteria required interventions of at least four weeks duration with objective or self-reported physical activity outcomes.

From the review 12 studies were chosen, including a total of 1,248 subjects with a mean age of 72 years. Most studies demonstrated moderate improvements in physical activity with robots providing personalized coaching, reminders, and social interaction using AI-driven dialogue. Engagement was high (dropout $< 10\%$).

Conclusion: This literature review indicates that AI-powered social robots show promise as tools to boost physical activity in older adults.

Shen, J., et al. Artificial Intelligence-Powered Social Robots for Promoting Physical Activity in Older Adults: A Systematic Review. **J Sport Health Sci**. 2025, December;14(6):789-802.

TRENDS IN NON-TRAUMATIC SPINAL CORD INJURY IN INPATIENT REHABILITATION

Non-traumatic spinal cord injury (NTSCI) in older adults is increasing due to aging populations and comorbidities. This study examined temporal trends of patients with NTSCI treated at inpatient rehabilitation facilities (IRFs) from 2013 to 2018.

Using data from the Uniform Data System for Medical Rehabilitation, researchers analyzed 23,785 NTSCI cases of patients ≥ 65 years across 827 IRFs. All were assessed for functional capacity using Functional Independence Measure (FIM) scores. Key variables included demographics, clinical factors, impairment group, admission motor FIM score, length of stay (LOS), and discharge destination.

From 2013 to 2018, the cohort showed a rising mean age ($p < 0.001$) and comorbidity burden ($p < 0.001$), with increased vascular ($p < 0.001$) and degenerative/compressive etiologies ($p = 0.002$). Admission motor FIM scores improved slightly ($p = 0.003$), but LOS shortened ($p < 0.001$). Home discharge rates rose from 60.4% to 64.3% ($p < 0.001$).

Conclusion: This study of elderly patients with non-traumatic spinal cord injury found that, despite decreasing length of stays in inpatient rehabilitation facilities, discharges to home increased as did FIM scores.

Deutsch, A., et al. Trends in the Characteristics and Outcomes of Older Patients with Non-Traumatic Spinal Cord Injury Treated in Inpatient Rehabilitation Facilities: 2013–2018. **J Spinal Cord Med**. 2025; 48(5), 802-812.

TRENDS IN US AND INTERNATIONAL MEDICAL GRADUATES AT COUNTY LEVEL

The US faces a projected shortage of physicians estimated at 90,000 by the end of 2025. This study was designed to assess temporal trends in the relative contributions of US medical graduates (USMGs) and International Medical Graduates (IMGs) to the total physician workforce from 2010 to 2022.

During the study period, the mean physician density was approximately 10 per 10,000 population. Urban counties had a mean physician density of approximately 19 per 10,000 population. The highest proportion of IMGs (approximately 21%) was in urban counties that had medically underserved areas (MUAs).

Conclusion: In the US the proportion of physicians trained in US medical schools has remained constant, with rural counties having a higher proportion of US medical school graduates than rural counties.

Hailat, R., et al. Trends in the Proportion of US and International Medical Graduates at County Level. *JAMA*. 2025;334(14):1294-1295.

ECONOMIC BENEFITS OF PALLIATIVE CARE INVESTMENT

Palliative care, which focuses on improving quality of life for patients with serious illnesses, has garnered increasing attention for its potential to reduce healthcare costs while enhancing patient outcomes. This study was designed to better understand the economic benefits of palliative care.

A medical literature review was conducted for studies evaluating the cost-effectiveness of palliative care interventions across various settings, including hospitals, hospices, and community-based programs. Studies were selected that contained quantitative economic analyses, such as cost-benefit, cost-utility, and cost-savings models. Outcomes included reduced hospitalizations, length of stay, and end-of-life expenditures. Studies were selected that involved neurotrauma and chronic conditions. Data synthesis was qualitative, highlighting return on investment (ROI) metrics.

The data demonstrated consistent evidence that palliative care investments yield substantial economic returns, with average cost savings ranging from \$2,000 to \$10,000 per patient, realized through decreased intensive care utilization and emergency visits. Early integration reduced long-term care costs by up to 30%. Limitations included heterogeneity in study designs and underrepresentation of low-resource settings.

Conclusion: This literature review of patients hospitalized for neurotrauma suggests that palliative care can deliver economic advantages by lowering healthcare

expenditures and improving efficiency.

Gwyther, L., et al. Economic Benefits of Investment in Palliative Care: An Appraisal of Current Evidence and Call to Action. *J Neurotrauma*. 2025; 42(13-14):1234-1245.

INTRA-ARTERIAL ALTEPLASE AFTER SUCCESSFUL ENDOVASCULAR REPERFUSION IN ACUTE STROKE

In patients presenting with an acute ischemic stroke due to large vessel occlusion (LVO) treatment often involves endovascular thrombectomy. However, even after successful reperfusion, microcirculatory impairment can limit functional recovery. This study compared the efficacy and safety of adjunctive intra-arterial alteplase with that of standard care for patients with LVO.

The PEARL trial was a multicenter, prospective, open-label, blinded-endpoint randomized controlled trial conducted at 28 stroke centers in China, enrolling 324 patients aged 18-80 with anterior circulation LVO confirmed by imaging and treated with mechanical thrombectomy within 24 hours of last known well. Eligible participants (n=504) achieved successful reperfusion and were randomized 1:1 to intra-arterial alteplase (0.225 mg/kg maximum 22.5 mg, infused over 30 minutes) or standard medical management. The primary outcome was excellent functional recovery at 90 days (modified Rankin Scale (mRS) score 0-1), assessed by blinded evaluators. Secondary outcomes included good recovery (mRS 0-2), symptomatic intracranial hemorrhage (sICH) and mortality.

At 90 days, the alteplase group had higher rates of excellent recovery (48.4% vs 36.7%; $p=0.002$) and good recovery (68.3% vs 56.9%, $p=0.004$). A sICH occurred in 5.2% vs 3.6% ($p=0.31$), and mortality in 8.7% vs 10.3% ($p=0.48$), with no significant safety differences.

Conclusion: This study of patients presenting with a large vessel occlusion and successfully treated with endovascular therapy found that adjunctive intra-arterial alteplase could improve functional outcomes without a significant risk of adverse events.

Writing Committee for the PEARL Investigators. Intra-Arterial Alteplase After Successful Endovascular

Reperfusion in Acute Stroke: The PEARL Randomized Clinical Trial. *JAMA*. Publish Ahead of Print, November 18, 2025. | DOI: 10.1001/jama.2025.16876

NONNUTRITIVE SWEETENER CONSUMPTION AND METABOLIC RISK IN ADULTS

Nonnutritive sweeteners (NNS) are widely used as sugar substitutes. Their role in human health is the topic of ongoing debate. This study examined the associations between NNS consumption, metabolic risk factors, and inflammatory biomarkers among adults in the Cancer Prevention Study-3 (CPS-3) Diet Assessment Sub-Study (DAS).

The Cancer Prevention Study-3 Diet Assessment Sub-Study, explored NNS consumption, metabolic risk factors, and inflammatory biomarkers among adults. The Diet Assessment Sub-Study included 13,894 adults who completed validated food frequency questionnaires to assess NNS intake from beverages and foods. Metabolic risk factors (body mass index, waist circumference, blood pressure, lipids, and glucose) and inflammatory biomarkers (C-reactive protein, interleukin-6, and tumor necrosis factor-alpha) were measured during in-person visits. Multivariable linear and logistic regression models adjusted for sociodemographic, lifestyle, and dietary factors, were used to evaluate associations between NNS consumption and outcomes.

Higher NNS consumption was associated with increased body mass index and waist circumference but not with blood pressure, lipid profiles, or fasting glucose. No significant associations were found with increased NNS intake and inflammatory biomarkers (C-reactive protein, interleukin-6, or tumor necrosis factor-alpha). However, higher NNS consumption was positively associated with IL-6 among participants who were overweight or obese.

Conclusion: This study found that higher consumption of nonnutritive sweeteners was associated with elevated BMI but was not independently associated with inflammatory biomarkers including C-reactive protein, interleukin-6, or tumor necrosis factor-alpha.

McCullough ML, et al. Nonnutritive Sweetener Consumption, Metabolic Risk Factors, and Inflammatory

Biomarkers Among Adults in the Cancer Prevention Study-3 Diet Assessment Sub-Study. *J Nutr.* 2025, June;155(6):1952-1961.

YOUTH HORSE-RELATED INJURIES

Horse-related injuries represent a substantial health risk for children and adolescents who participate in equestrian activities, exceeding rates in many other sports. This study was designed to summarize studies of youth horse-related injuries published between 2014 and 2024.

A literature search was conducted for published studies of horse related injuries to participants up to 17 years of age. After screening 548 records, seven high-quality quantitative studies were selected including 1,400 participants (78.7% female). Data were extracted concerning demographics, injury contexts, mechanisms, types, severity, and helmet use.

The records of 1,400 youths documented 1844 injuries. Of these 80.9% occurred while mounted, with falls (66.9%) and by kicks (13.6%). The most common injuries were fractures (26.4%), traumatic brain injuries (24.6%), and soft tissue injuries (18.7%). The modal injury locations were the head/brain (25.5%) and upper limbs (21.1%). Helmet use was reported in 63.3% of the injured.

Conclusion: This study reported youth horse related injuries noting that most were caused by falls, with one fourth resulting in brain injury and one fourth resulting in fractures.

Boije Af Gennäs K, et al. Youth Horse-Related Injuries (2014-2024): A Scoping Review of Epidemiological and Disciplinary Insights. *BMJ Open Sport Exerc Med.* 2025;11(3):e002589. doi:10.1136/bmjsem-2025-002589.

GENETIC AND BIOMECHANICAL FACTORS IN KNEE OSTEOARTHRITIS PROGRESSION

Osteoarthritis (OA) is a degenerative joint disease characterized by cartilage breakdown, subchondral bone changes, and synovial inflammation. This study was designed to investigate the interplay of genetic variants and biomechanical loading in accelerating knee OA progression in at-risk populations.

This prospective cohort study included 1,250 participants aged 50-

75 years with radiographic knee OA. Subjects underwent baseline genotyping for OA-susceptibility loci using whole-exome sequencing. All underwent knee joint magnetic resonance imaging (MRI) to assess cartilage volume and bone marrow lesions. A biomechanical evaluation included gait analysis with 3D motion capture and force plate measurements during walking tasks. Participants were followed for five years with annual clinical assessments (WOMAC scores, timed up-and-go test) and repeat MRI. Progression was defined as $\geq 20\%$ cartilage loss or total knee replacement.

The cohort demonstrated a 28% incidence of radiographic progression. Carriers of high-risk GDF5 variants ($n=312$) exhibited 1.8-fold greater cartilage thinning ($p<0.001$) compared to wild-type. This was accelerated among those with abnormal knee adduction moments, resulting in increased biomechanical loads. Those with genetic risk factors plus high biomechanical load exhibited a 45% progression compared to 12% among those in the low-risk/low-load groups (odds ratio 5.2).

Conclusion: This study found that combining genetic profiles with biomechanical assessments was useful in identifying high-risk knee osteoarthritis subgroups.

Smith J, et al. Genetic and Biomechanical Interactions in Knee Osteoarthritis Progression. *Osteoarthritis Cartilage.* 2025; 33:1180-1193.

PERCUTANEOUS LEFT ATRIAL APPENDAGE CLOSURE IN PATIENTS WITH CARDIOEMBOLIC BREAKTHROUGH STROKE

Percutaneous left atrial appendage closure (LAAC) is a procedure used to prevent thromboembolic events in patients with atrial fibrillation (AF). This study evaluated the safety and efficacy of LAAC in patients experiencing breakthrough cardioembolic stroke despite optimal oral anticoagulation (OAC) therapy.

This international, multicenter observational study retrospectively analyzed data from 15 centers across Europe and North America, including 312 patients with a mean age of 75 years. All were diagnosed with nonvalvular AF and underwent percutaneous LAAC following a breakthrough ischemic stroke or systemic embolism while prescribed

therapeutic OAC. Follow-up data was obtained at clinical visits, and by reviewing national registries. Outcomes included ischemic events, major bleeding, and device-related thrombosis.

Procedural success was achieved in 98% of cases, with major periprocedural complications in 4.2% (primarily pericardial effusion requiring drainage). During follow-up the annualized rates of ischemic stroke/systemic embolism and major bleeding were 2.1% and 3.4%, respectively, representing an 82% relative risk reduction in thromboembolism compared to historical anticoagulation cohorts ($p<0.001$).

Conclusion: This study of patients diagnosed with atrial fibrillation found that percutaneous left atrial appendage closure is an effective procedure for reducing recurrent cardioembolic events in patients with breakthrough stroke while prescribed anticoagulation.

Galea R, et al. Percutaneous Left Atrial Appendage Closure in Patients with Cardioembolic Breakthrough Stroke: An International Observational Study. *Eur J Neurol.* 2025, September 23;32: e70365.

SOCIAL MEDIA USE TRAJECTORIES AND COGNITIVE PERFORMANCE IN ADOLESCENTS

Social media use among adolescents has surged, raising concerns about its impact on developing cognitive functions. This study examined the associations between trajectories of social media use from ages 9-13 years and cognitive performance two years later.

Data were obtained from the Adolescent Brain Cognitive Development (ABCD) Study, a prospective cohort of 6,554 children (mean age 9.9 years at baseline). Social media time (hours per day) trajectories from baseline to year two were determined to characterize distinct patterns of use over four years (ages 9-13). The use analysis identified three categories of use: no or very low social media use (57.6%, +0.3 h/d by age 13 years), low increasing social media use (36.6%, +1.3 h/d), and high increasing social media use (5.8%, +3.0 h/d). At two years post baseline, cognitive performance was assessed using NIH Toolbox tasks. The no or very low group served as the reference group.

Compared with the reference group, the low-increasing group had lower performance scores on the Oral Reading Recognition Test (ORRT), Picture Sequence Memory Test (PSMT), Picture Vocabulary Test (PVT) and total composite score. Those in the High- increasing social media use had worse performance on the ORRT, PSMT, PVT and total composite score. Associations held after adjustments.

Conclusion: This study found that greater screen time was negatively but weakly associated with adolescent cognitive performance.

Nagata, J., et al. Social Media Use Trajectories and Cognitive Performance in Adolescents. *JAMA*. Published online October 13, 2025. doi:10.1001/jama.2025.16613

FALL PREVENTION PROGRAM FOR OLDER ADULTS IN RURAL CHINA

Falls among older adults in rural settings pose significant health risks, yet tailored prevention programs are scarce. This study evaluated the effectiveness of a fall prevention program integrated into primary health care for reducing fall rates among older adults in rural China.

The FAMILY trial, a cluster-randomized controlled trial, was conducted across 28 rural villages in Hunan, China, involving 2,614 participants aged ≥65 years. Villages were randomized for intervention (14 villages, n=1,307) or control (14 villages, n=1,307). The intervention included a 12-month program with risk assessments (Timed Up and Go test, visual acuity), tailored exercise (balance, strength training), home hazard modifications, and health education, delivered by trained primary care staff. Controls received usual care. The primary outcome was the incidence of falls over 12 months, assessed via monthly self-reports. Secondary outcomes included fall-related injuries and quality of life (EQ-5D-5L).

The intervention group had a significantly lower fall incidence rate (0.62 falls/person-year vs. 0.89 falls/person-year; $p=0.001$). Fall-related injuries decreased by 28% ($p=0.002$), and quality of life improved ($p=0.01$). No serious adverse events were reported.

Conclusion: This study of elderly Chinese adults found that integrating a fall prevention program into rural primary health can significantly

reduce the incidence and injuries due to falls.

Peng, J., et al. A Fall Prevention Program Integrated in Primary Health Care for Older People in Rural China. The FAMILY Cluster Randomized Clinical Trial 2. *JAMA* 025;334 (12):1068-1076. doi:10.1001/jama.2025.12724.

TYPE 2 DIABETES IN GLOBAL INDIGENOUS POPULATIONS

Type 2 diabetes (T2D) disproportionately affects indigenous youth worldwide. This study was designed to describe the trends in T2D among global Indigenous populations ≤ 25 years of age.

A search of the medical literature was completed for cross-sectional, population-based studies reporting T2D prevalence in indigenous youth (≤25 years). Prevalence was reported per 1000 youth, stratified by age (<10, 10–19, 15–25 years) and gender, with trends analyzed from studies with ≥2 time points.

The literature review identified 49 studies (1978–2019 data) from six countries covering ≥45 populations. Of the Indigenous populations reporting total population prevalence, 75% reported a prevalence of T2D above 1 per 1000, compared with only 17% among non-Indigenous youth as reported in the IDF Diabetes Atlas. An increased prevalence was noted with age: 0–4 per 1000 at age <10 years; 0–44 per 1000 at age 10–19 years; and 0–64 per 1000 at age 15–25 years. The trends showed increases in most populations since 1981, notably >8-fold in some US indigenous groups over two decades.

Conclusion: This review reveals alarmingly high and rising type 2 diabetes prevalence among Indigenous youth, 4–5 times greater than in non-Indigenous peers.

Papadimos, E., et al. Prevalence of Youth Type 2 Diabetes in Global Indigenous Populations: A Systematic Review. *Diabetologia*. 2025. doi:10.1007/s00125-025-06556-7.

MIROGABALIN FOR NEUROPATHIC PAIN

Neuropathic pain often disrupts sleep, impacting quality of life. As mirogabalin has emerged as a novel gabapentinoid, this study evaluated the efficacy and safety of mirogabalin for treating neuropathic pain and associated sleep interference. A literature review was undertaken for

double-blind, randomized, controlled trials (RCTs) comparing mirogabalin with placebo in adults with peripheral or central neuropathic pain conditions. Included were eight RCTs involving 3,048 participants. Primary outcomes were pain intensity, assessed using an 11- point numeric rating scale, and sleep interference, assessed using a five- point scale, at eight to 14 weeks.

Those treated with mirogabalin demonstrated significantly reduced average daily pain ($p<0.001$) and pain-related sleep interference scores as compared to controls ($p<0.001$). Subgroup analyses showed consistent benefits across doses and conditions. Adverse events were more frequent with mirogabalin (RR 1.25), mainly involving mild-to-moderate dizziness and somnolence (RR 2.42), without an increased occurrence of serious events.

Conclusion: This literature review and meta-analysis found that mirogabalin provides moderate efficacy in reducing neuropathic pain and sleep interference. While available in China and Korea, the FDA has yet to approve its use in the US.

João, R., et al. Mirogabalin for Treatment of Neuropathic Pain and Associated Sleep Interference: An Updated Meta-Analysis. *Euro J Pain*. 2025, November; 29(10): 1845-1857.

EXERCISE, RADIAL PRESSURE WAVES, AND PHOTOBIOMODULATION FOR ACHILLES TENDINOPATHY IN RUNNERS

Non-insertional Achilles tendinopathy (AT) is a prevalent overuse injury among runners. The standard treatment for non-insertional Achilles tendinopathy is an exercise (EXER) program to progressively load the Achilles tendon. Other options include radial pressure wave therapy (RPWT, commonly referred to as shockwave) and photobiomodulation therapy (PBMT). This study compared the outcomes of patients receiving EXER; EXER + RPWT or EXER + RPWT + PBMT.

Sixty-six runners with non-insertional AT were recruited, ages 18–65. Participants were randomized (1:1:1) into three groups: EXER alone (12-week progressive tendon-loading program), EXER + RPWT delivered once per week for three weeks (3000 counts at 15 Hz frequency) using each applicator head (ceramic C15 and D20-S standard oscillator for a total of 6000 counts), or EXER +

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RPWT + PBMT (three weekly sessions for four weeks, 810 nm wavelength, three J/cm²). The primary outcomes included a visual analog scale (VAS) for pain, and functional improvement using the Victorian Institute of Sport Assessment-Achilles (VISA-A). Secondary outcomes included tendon thickness (ultrasound), quality of life (SF-36), and return to running.

At 12 weeks, all groups showed significant pain reduction and VISA-A improvement. The EXER+ RPWT group demonstrated superior pain reduction (p=0.03) and improvement in VISA-A scores (p=0.02) compared to EXER alone. Adding PBMT was of no additional value.

Conclusion: This study of runners with Achilles tendinopathy found that radial pressure wave therapy could be an effective adjunct to exercise for improving pain and function.

Tenforde, A.S., et al. Exercise, Radial Pressure Waves, And Photobiomodulation for Management of Non-Insertional Achilles Tendinopathy in Runners: A Three-Arm Non-Blinded Randomised Control Trial. **BMJ Open Sport Exerc Med.** 2025, Oct 5;11(4): e002442.

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