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LOW-INTENSITY ULTRASOUND FOR AMYLOID- β CLEARANCE IN EARLY ALZHEIMER'S DISEASE

Previous studies have demonstrated that low-intensity ultrasound (LIUS), applied at intensities too low to open the blood-brain barrier, generates a directional fluid flow caused by the radiation force of the ultrasound waves as they pass through tissue. Animal studies have found that this streaming effect enhances the movement and clearance of the fluid pathways that constitute the glymphatic system, particularly in the cerebral cortex. This study examined the effects of LIUS on amyloid- β deposition and cognitive performance in early-stage Alzheimer's disease (AD).

This prospective, single-arm pilot study included 10 amyloid-positive participants who received LIUS three times weekly for four weeks (30-minute sessions at 250 kHz). All underwent contrast-enhanced MRI sessions before and after the four-week LIUS treatment. Blood-brain barrier permeability and glymphatic activity were analyzed using MRI scans acquired at specified time points. The effect of LIUS on neuropsychological function was measured using various cognitive function assessment methods.

All 10 participants completed treatment without significant adverse events. Cognitive scores improved significantly [Trail Making Test-Black & White, part A ($p=0.017$) and part B ($p=0.044$); Korean version of the Quality of Life ($p=0.046$); Attention Questionnaire Scale ($p=0.036$)]. Amyloid deposition decreased mainly in APOE4 carriers, with a greater reduction in the bilateral frontal and temporal lobes compared to noncarriers ($p<0.05$). Cerebral cortical putative glymphatic activity increased ($p=0.048$) but was not significant after the Bonferroni correction.

Conclusion: This study of patients with early Alzheimer's disease found that four weeks of low-

intensity ultrasound was safe, improved cognition, and reduced amyloid- β deposition (particularly in APOE4 carriers).

Jo, S., et al. Effects of Low-Intensity Ultrasound on Amyloid- β Clearance in Early-Stage Alzheimer's Disease: A Potential Role of Glymphatic Activity. *Acta Neurol Scand.* 2026;1: 1538313.

TAMING THE INFLAMED HEART

Coronary artery inflammation is emerging as a critical driver of cardiovascular risk. This study evaluated the prognostic value of the number of inflamed coronary arteries for cardiac mortality and major adverse cardiac events.

Data were obtained from a cohort within the Oxford Risk Factors and Non-Invasive Imaging study. Consecutive patients underwent routine clinical coronary computed tomography angiography. These were used to calculate the fat attenuation index (FAI) scores for each of the three epicardial coronary arteries. The FAI quantifies coronary inflammation by measuring three-dimensional gradients of CT attenuation (radiodensity in Hounsfield units) in concentric layers of perivascular adipose tissue surrounding the coronary arteries on routine coronary CT angiography (CCTA) scans, capturing inflammation-driven changes in fat composition. The index score is then obtained by applying AI-based adjustments for technical parameters, anatomical factors related to vessel-specific fat distribution, and biological factors such as age and sex. Inflamed arteries were defined as those with index scores above the 75th percentile. The patients were followed over a median of 7.7 years for cardiac mortality and major adverse cardiac events.

Among 3,393 subjects, the number of inflamed arteries showed an additive impact on cardiac

mortality. Compared to those with no inflamed arteries, one inflamed artery increased the cardiac mortality risk 13-fold (hazard ratio 13.0, $p<0.001$), two inflamed arteries increased the risk 20-fold (hazard ratio 20.4, $p<0.001$), and three inflamed arteries increased the risk 30-fold (hazard ratio 29.8, $p<0.001$). The authors note that the only drug that has been approved by the US Food and Drug Administration to reduce cardiovascular inflammation is colchicine.

Conclusion: The number of inflamed coronary arteries detected by artificial intelligence-enhanced imaging predicts cardiac mortality and major adverse cardiac events in a dose-response manner.

Harrison, C., et al. Taming the Inflamed Heart. *Nat Med.* 2026, June; 32: 2322-2323.

IMPACT OF ENHANCED EXTERNAL COUNTERPULSATION ON CEREBRAL BLOOD FLOW AND FUNCTIONAL OUTCOMES IN ISCHEMIC STROKE

Enhanced external counterpulsation (EECP) is a noninvasive circulatory support device that has been shown to improve perfusion in cardiovascular diseases. This process involves compression of the legs during diastole with deflation of the cuffs at the start of systole. Its effectiveness in ischemic stroke (IS) is not well understood. This study evaluated the effectiveness of EECP on cerebral blood flow (CBF) and functional outcomes in patients with IS.

A literature review was completed for studies published up to June 2025. Studies that were chosen included randomized and non-randomized controlled trials reporting pre- and post-EECP data on CBF, activities of daily living (Barthel Index), disability (modified Rankin Scale), or neurological impairment (NIHSS) in adults with ischemic stroke. Data were pooled for

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analysis.

Fifteen studies, comprising 506 participants, were used in the analysis. The EECF protocols varied but typically involved daily 45- to 60-min sessions, five to six times per week, over two to seven weeks. The meta-analysis found a small yet significant difference in CBF. Additional analyses found that EECF significantly improved daily living activities ($p=0.0002$), reduced disability ($p=0.0009$), and improved neurological function ($p = 0.006$).

Conclusion: This literature review and meta-analysis of patients with ischemic stroke found that enhanced external counterpulsation may be effective as an adjunct therapy for improving functional outcomes.

Fatima, H., et al. Impact of Enhanced External Counterpulsation Treatment on Cerebral Blood Flow and Functional Outcomes in Ischemic Stroke Patients: A Systematic Review and Meta-Analysis. *QJM*. 2026, May; 119: 367-376.

BILATERAL AURICULAR NERVE STIMULATION FOR POST-STROKE MOTOR RECOVERY

Vagus nerve stimulation, including unilateral, non-invasive, transcutaneous auricular approaches, is a promising adjunct for post-stroke motor rehabilitation. This study evaluated the efficacy and safety of bilateral transcutaneous auricular nerve stimulation (BtaNS) as an adjunct to routine rehabilitation, as compared with left-sided unilateral stimulation (LtaNS) or sham, for motor recovery in patients with post-stroke hemiplegia.

This prospective, double-blind, three-arm, randomized, controlled trial enrolled patients with subacute or chronic ischemic or hemorrhagic stroke, two or more weeks post-onset. Participants were randomized 1:1:1 to BtaNS, LtaNS, or control (sham). All received standardized routine rehabilitation (upper and lower limb task-oriented training).

Active groups received stimulation (20 Hz) for 30 minutes twice daily, six days per week, for four weeks. The primary outcome variables were the Fugl-Meyer Assessment Upper Extremity (FMA-UE) and Lower Extremity (FMA-LE), and the Wolf Motor Function Test (WMFT), measured for up to eight weeks.

Of 111 enrolled patients, 102

completed the trial (34 per group). Both LtaNS and BtaNS groups showed significantly greater improvements than the control group in FMA-UE, FMA-LE, and WMFT scores at post-intervention time points ($p<0.05$ to $p<0.001$). Superior gains in motor scores were found in the BtaNS group compared to the LtaNS group. BtaNS also yielded significantly greater improvements on the Berg Balance Scale and Modified Barthel Index at four weeks, compared with both the LtaNS and control groups ($p<0.05$ to $p<0.001$). No serious adverse events occurred; only mild, transient skin irritation was noted.

Conclusion: This study of patients with post-stroke hemiplegia found that bilateral transcutaneous auricular nerve stimulation was superior to unilateral stimulation or routine rehabilitation alone for enhancing motor recovery, balance, and daily living independence.

Wang, J., et al. Bilateral Transcutaneous Auricular Nerve Stimulation Promotes Motor Function Recovery after Stroke: A Randomized, Controlled Trial. *Ther Adv Neurol Disord*. 2026; 19: 1-20.

AI RETINAL IMAGING FOR MULTIDISEASE DETECTION

The rising burden of endocrine and metabolic diseases requires scalable, noninvasive screening tools beyond conventional blood-based methods. This study was designed to develop and validate a multitask AI framework that uses retinal color fundus photographs for simultaneous detection of multiple endocrine and metabolic diseases.

The Reti-Pioneer is an artificial intelligence system that was initially programmed with three previously trained "expert" computer programs (Swin Transformer, Vision Mamba, and RETFound). The information provided by each was combined by the Reti-Pioneer, which then used an iterative process to refine the detection capability using 107,730 color fundus photographs from 53,865 individuals drawn from the U.K. Biobank and hospitals in China.

Each photo came with information regarding the person's age, gender, weight, ethnicity, and diagnoses. After training, the program was tested with new photographs of people with known diagnoses. In addition, using photos taken from 2006 through

December of 2021, the system was tested for the ability to predict those who later developed one of the diseases.

The Reti-Pioneer accurately detected six endocrine and metabolic diseases, with area under the receiver operating characteristic curve (AUROC) values of 0.833 for type-2 diabetes mellitus (T2DM), 0.832 for gout, 0.787 for osteoporosis, 0.740 for hypertension, 0.736 for hyperlipidemia, and 0.699 for thyroid disease. In the predictive phase of the study, the program showed strong predictive capability for future disease onset, achieving AUROCs of 0.736 for 10-year incident T2DM, 0.719 for hypertension, 0.735 for hyperlipidemia, 0.753 for gout, 0.813 for osteoporosis, and 0.662 for thyroid disease.

Conclusion: This large study found that Reti-Pioneer, an artificial intelligence framework to interpret retinal images, could provide reasonable accuracy for screening for type-2 diabetes mellitus, gout, osteoporosis, hypertension, hyperlipidemia, and thyroid disease.

Zhang, X., et al. AI Framework for Multidisease Detection via Retinal Imaging. *Nat Med.* 2026; 32: 2494-2503.

FDA APPROVES NERVE REPAIR GLUE

Peripheral nerve injuries traditionally require suturing, which can cause scarring and variable functional recovery. A bioresorbable, three-dimensional, printed, coaptation chamber with light-activated polymer has been reported to secure nerve ends without the use of sutures. This study evaluated the efficacy of sutureless digital nerve repair using this polymer-assisted, coaptation device. The U.S. FDA approved the device in June 2025 for peripheral nerve repair.

A cohort of adult patients with digital nerve injuries was prospectively enrolled at two centers as part of a first-in-human, single-arm registered clinical trial. All injuries resulted from sharp lacerations located in flexor zone one or two. For each of 10 patients, the injured nerve ends were placed within a 1.5 mm or 2 mm diameter by 7.5 mm long, three-dimensional printed bioresorbable poly (glycerol sebacate) acrylate (PGSA) coaptation chamber. The

PGSA polymer was applied circumferentially and cured with blue light. After surgery, the patients were allowed controlled active mobilization with a dorsal splint to avoid hyperextension for three weeks. The subjects were followed for 12 months; outcomes included pain (VAS) and sensory recovery (static 2PD and Semmes-Weinstein monofilament testing (SWMF)). In addition, the Impact of Hand Nerve Disorders (I-HaNDv2.0) scores were recorded.

Procedural success, defined as successful nerve coaptation at surgery, was achieved in all cases. All 10 patients reported recovery of sensation at the final follow-up. The mean SWMF score improved from 3.48 g at six weeks to 0.4 g or better at 12 months.

The mean VAS pain score was zero at 12 months, with no patient reporting pain. Improvement in the I-HaND scale was observed, with the mean I-HaND overall score decreasing from 31.1% at the two-week visit to 4.6% at the 12-month visit. All patients returned to their previous occupation within three months of the nerve repair, with four returning as soon as two weeks.

Conclusion: This study of patients with severed nerves of the hand found that a newly FDA-approved sutureless nerve repair resulted in significantly improved pain and function.

Bindra, R., et al. A Sutureless Approach to Nerve Repair: Results from a Clinical Study in Digital Nerves. *J Hand Surg Global Online.* 2026, May; 8(3): 100956.

NONSURGICAL BRAIN IMPLANT FOR FOCAL NEUROMODULATION

Bioelectronic brain implants for neuromodulation typically require invasive surgery, with associated risks. This study investigated subcellular-sized free-floating, photovoltaic devices, compatible with circulation through the bloodstream for *in vivo* electrical brain stimulation.

Using a mouse model, subcellular-sized, free-floating wireless photovoltaic electronic devices (SWEDs; $\leq 10 \mu\text{m}$ diameter) were attached to the surface of monocytes, guiding the implants to inflamed brain regions. Wireless near-infrared actuation was used to generate a local electric field to depolarize nearby neurons. Neuronal activity was assessed using c-Fos protein as

a marker.

In the experimental mice, the hybrid SWEDs selectively self-implanted in the inflamed region, whereas controls (SWEDs alone or no inflammation) showed negligible implantation. The hybrid SWEDs produced significantly higher c-Fos-positive cell density compared to controls ($p < 0.01$ to $p < 0.001$; one-way ANOVA), with stimulation localized within tens of micrometers of the target.

Conclusion: This animal study used subcellular free-floating wireless photovoltaic electronic devices, attached to immune cells, to autonomously travel to and stimulate inflamed areas of the brain.

Yadav, S., et al. A Nonsurgical Brain Implant Enabled through a Cell-Electronics Hybrid for Focal Neuromodulation. *Nat Biotechnol.* 2026; 44: 1329-1339.

PSILOCYBIN-ASSISTED THERAPY FOR TREATMENT-RESISTANT DEPRESSION

Major depressive disorder (MDD) affects approximately 300 million people worldwide. Treatment-resistant depression (TRD), commonly defined as failure to respond to at least two antidepressants at therapeutic dose and duration, is estimated to affect one-third of those who suffer from MDD. As multiple studies have shown that psilocybin-assisted therapy can produce rapid, clinically meaningful antidepressant effects in MDD, this study was designed to determine its efficacy for the treatment of TRD.

This two-arm, double-blind, randomized, placebo-controlled feasibility trial was conducted at one National Health Service site in England. Eligible participants met DSM-5 criteria for MDD. Sixty participants were randomized to receive 25 mg of psilocybin or placebo with preparation, dosing support, and integration. The primary outcome variable was depression, as measured with the Montgomery-Åsberg Depression Rating Scale (MADRS).

Among 60 participants, 59 of 60 completed the MADRS at all follow-up visits. At week three, the adjusted between-group difference on the MADRS was -10.41 , indicating a clinically significant improvement in depression, favoring the treatment group. The difference between

groups was maintained at six weeks.

Conclusion: This study of patients with treatment-resistant depression found that a single, 25-mg dose of psilocybin with psychological support produced large, sustained reductions in depressive symptoms.

Rucker, J., et al. Psilocybin-Assisted Therapy for Treatment-Resistant Major Depressive Disorder in a Public Healthcare Setting: A Randomized, Controlled Trial. **Nat Med.** 2026, August. <https://doi.org/10.1038/s41591-026-04541-0>.

LONG-TERM EFFECT OF COVID-19 ON LONELINESS IN OLDER EUROPEANS

During the COVID-19 pandemic, individuals aged 65 years or older experienced the highest mortality and hospitalization rates. Consequently, governments implemented stricter home confinement measures for this age group. This study examined the long-term impact of the COVID-19 pandemic and government-imposed containment measures on loneliness.

Data were obtained from four consecutive interviews of the Survey of Health, Ageing, and Retirement (SHARE), a longitudinal study collecting information on health, socio-economic status, and social and family networks, including 15,497 individuals aged 50 or older, living in 27 countries. In each of the four surveys, respondents were asked about the frequency of their experience of loneliness. The periods were defined as pre-COVID (October 2019 to March 2020), COVID 1 (May to September 2020), COVID 2 (June to August 2021), and post-COVID (April to September 2022). The stringency index was used to capture the intensity of government containment measures, with scores ranging from zero (no restrictions) to 100 (maximum restrictions).

The data revealed that loneliness among European adults aged 65+ rose significantly during the second COVID-19 phase and remained elevated in the post-pandemic period relative to pre-pandemic levels. This indicated a lasting increase in emotional vulnerability, particularly among women. Higher government policy stringency was linked to greater loneliness in a curvilinear pattern: loneliness increased with stricter restrictions but plateaued and declined at the highest stringency

levels.

Conclusion: This study found that, during the COVID-19 pandemic, loneliness increased significantly and remained elevated in the post-pandemic period, with women affected more than men.

Batur, Z., et al. The Long-Term Effects of the COVID-19 Pandemic on Loneliness in European Older Women and Men: A Growth Curve Analysis. **Eur J Ageing.** 2026; 23: 14.

OUTCOMES 20 YEARS AFTER TRAUMATIC BRAIN INJURY REHABILITATION

Traumatic brain injury (TBI) is increasingly recognized as a chronic condition with dynamic long-term outcomes rather than a static injury. Data from the TBI Model Systems National Data Base (TBIMS NDB) reveal significant improvement in functional outcomes during the initial five years after injury, followed by declines in functional independence beginning around the 10-year mark. This study was designed to better understand the distributions of Glasgow Outcome Scale – Extended (GOS-E) categories (including death) over the first 20 years post-injury.

This cross-sectional analysis used prospectively collected data from the TBIMS NDB. Participants were 14,010 individuals who received inpatient rehabilitation after a moderate-to-severe TBI. The primary outcome variable for this study was the GOS-E (including death) examined at one, two, five, 10, 15, and 20 years post-injury. These results were stratified by Year-1 GOS-E category and age group at injury (16–24, 25–39, 40–59, or 60+ years). Good recovery was defined as a GOS-E of six or seven.

Good recovery rates rose slightly from 35% in year one to 38% at years two through five, declining to 28% at year 20. Severe disability fell from 33% to 10%. Mortality rose from 3% at year two to 36% at year 20. Better year-1 GOS-E predicted higher rates of maintained or improved recovery, as well as lower mortality.

Conclusion: Using data from the TBI Model Systems National Data Base, this study found that those with good recovery at year one are more likely to maintain their recovery until death.

Whiteneck, G., et al. Global Outcomes Across 20 Years after Inpatient Rehabilitation for Traumatic Brain Injury. **J Head Trauma Rehabil.** 2026, May-Jun; 41(3): E199-E206.

SHREDDED VS PLEDGET TEFLON IN DECOMPRESSION FOR TRIGEMINAL NEURALGIA

Teflon (polytetrafluoroethylene, PTFE) is used in microvascular decompression (MVD) for trigeminal neuralgia as a soft, permanent spacer to keep the offending blood vessel separated from the trigeminal nerve. The most common technique, the pledget approach, frequently leaves residual or new mechanical/inflammatory compression on the sensitive trigeminal nerve root. The shredded technique involves the packing of shredded Teflon around or against the vessel, well away from the nerve itself. This study compared long-term clinical outcomes of these two techniques in patients undergoing MVD for classical trigeminal neuralgia.

This retrospective non-randomized study reviewed 121 patients (77 women, 44 men; mean age 62 years) treated at a single center between 2001 and 2025 with TN refractory to medication. Patients received either pledget interposition (n=55) or shredded Teflon placed away from the nerve (n=66). All had minimum five-year follow-up (mean 12 years). Outcomes were assessed with the Barrow Neurological Institute pain scale, Modified Rankin Scale, and postoperative high-resolution MRI.

At follow up, recurrence of trigeminal neuralgia occurred in 4.54% of the shredded and 16.36% of the pledget group (p=0.037). Complications occurred less often in the shredded group as well (9.09% vs 14.55%, p=0.003). Repeat surgery occurred in 12.72% of the pledget group but in none of the shredded group. Patient satisfaction was higher with shredded Teflon (87.87% vs 69.09%, p=0.001).

Conclusion: This study of patients with trigeminal neuralgia found that the use of shredded Teflon during microvascular decompression produced superior long-term outcomes with fewer recurrences.

Vanaclocha, V., et al. Pledget Teflon in Microvascular Decompression for Trigeminal Neuralgia: A

ULTRA-PROCESSED FOODS AND ADVANCED SARCOPENIA

Ultra-processed foods (UPFs) may contribute to sarcopenia in older adults, through metabolic and inflammatory pathways. This study examined the association between UPF intake and sarcopenia stages in older Iranian adults.

This cross-sectional study analyzed data from the second phase of the Birjand Longitudinal Aging Study (BLAS). Sarcopenia was defined according to European Working Group on Sarcopenia in Older People (EWGSOP2) criteria. Dietary intake was assessed via a validated food-frequency questionnaire, with UPF consumption quantified as the percentage of total energy intake and divided into quartiles. Binary logistic and multinomial regression models evaluated associations, adjusting for demographic, behavioral, nutritional, and clinical covariates.

Among 1,006 participants with a mean age of 72.4 years, 29.1% had no sarcopenia, 54.4% had probable, 8.7% had confirmed, and 7.7% had severe sarcopenia. Fully adjusted logistic models revealed that, compared to the lowest quartile of UPF consumption, participants in the third and fourth quartiles had significantly higher odds of sarcopenia (Q3: odds ratio (OR)=2.23, $p=0.014$; Q4: OR=2.50, $p=0.005$).

Conclusion: This Iranian study found that ultra-processed food consumption is independently associated with both the presence and greater severity of sarcopenia in older adults.

Ramezani, A., et al. Ultra-Processed Foods and Advanced Stages of Sarcopenia: Multinomial Evidence from the Birjand Longitudinal Ageing Study. *Age Ageing.* 2026, Aug 3; 55 (8): doi: 10.1093/ageing/afag226.

PREVALENCE AND DETERMINANTS OF POST-STROKE FATIGUE

Poststroke fatigue is a common and debilitating nonmotor symptom that adversely affects quality of life, rehabilitation participation, and return to work after ischemic stroke. This

study assessed the prevalence of poststroke fatigue at six months and its determinants in patients with acute ischemic stroke treated with revascularization therapy.

This single-center, prospective, observational, cohort study enrolled 900 consecutive patients aged 18 years or older, each with an acute ischemic stroke treated with intravenous thrombolysis and/or mechanical thrombectomy. Data collected included baseline sociodemographics, clinical, as well as lesion characteristics. At six-month follow-up, the patients were assessed for fatigue with the Fatigue Severity Scale (FSS), functional outcome with the modified Rankin Scale (mRS), and anxiety, and depression with the Hospital Anxiety and Depression Scale (HADS).

At six months, among the stroke survivors with available FSS scores, clinically important fatigue was found in 39%. Fatigue was independently associated with depression (Odds Ratio (OR)=5.78, $p<0.01$) and anxiety (OR=2.90, $p<0.01$). Being unmarried was protective (OR=0.30, $p=0.048$). In patients with supratentorial hemispheric stroke, independent associations with fatigue included hypertension (OR=2.25, $p=0.021$), right-sided lesion (OR=2.08, $p=0.019$), depression (OR=5.35, $p<0.01$), and anxiety (OR=3.10, $p<0.01$).

Conclusion: This study of patients with acute ischemic stroke who underwent revascularization that poststroke fatigue affects nearly 40% of survivors at six months post-stroke.

Baloch, R., et al. Prevalence and Determinants of Poststroke Fatigue in Patients Treated with Acute Revascularization Therapy. *Acta Neurol Scand.* 2026. <https://doi.org/10.1111/ane.1432436>

GLOBAL EPIDEMIOLOGY OF ATRIAL FIBRILLATION AND ATRIAL FLUTTER

Atrial fibrillation and atrial flutter (AF/AFL) are major contributors to ischemic stroke, heart failure, disability, and mortality worldwide. This study was designed to provide a contemporary global analysis of AF/AFL burden, with an emphasis on incidence, prevalence, disability-adjusted life years (DALYs), and mortality.

The data were taken from the Institute for Health Metrics and

Evaluation (IHME) Global Burden of Disease (GBD), focusing on the cause category, "atrial fibrillation and atrial flutter" (AF/AFL). The primary outcomes of interest were incidence, prevalence, deaths, and DALYs. The DALYs were used as a summary measure of health lost, consistent with the GBD framework. The aim of the analysis was to describe the magnitude, distribution, and patterning of AF/AFL burden worldwide. Temporal trends were examined using historical series from 1990 onward.

In 1990 there were 23.36 million prevalent cases of AF/AFL (along with 2.09 million incident cases, 3.43 million DALYs, and 114,969 deaths). By 2023, the prevalent cases had more than doubled to journals.sagepub.com59,045,058 (along with 5,021,980 incident cases, 9,265,726 DALYs, and 377,258 deaths). The highest observed counts of both incident and prevalent cases were found in the 70- to 74-year age group. The highest DALY counts were observed in the 80- to 84-year age group, reaching 1,472,608, while the highest death counts were observed in the 85- to 89-year age group, with 89,150 deaths.

Conclusion: This study found that atrial fibrillation and atrial flutter remain a major and growing global public health challenge, with the burden concentrated in older adults.

Sanchis-Gomar, F., et al. Global Epidemiology of Atrial Fibrillation and Atrial Flutter: An Increasing Worldwide Burden. *Int J Stroke.* 2026, Aug; 21(7): 902-909.

HYALURONIC ACID AND KETOROLAC VERSUS KETOROLAC ALONE FOR ADHESIVE CAPSULITIS

Adhesive capsulitis is characterized by chronic inflammation and fibrosis of the shoulder capsule, resulting in pain and significant limitation of both active and passive range of motion (PROM). For more severe cases, intra-articular injections are often used with either hyaluronic acid (HA) or corticosteroids. This study compared the clinical efficacy of hyaluronic acid plus ketorolac versus ketorolac alone.

This randomized, double-blind, controlled trial included 56 adults with adhesive capsulitis, randomized to receive either hyaluronic acid plus ketorolac ($n=28$) or ketorolac alone

(n=28), followed by standardized home physiotherapy. The primary and secondary outcomes included the Thai Shoulder Pain and Disability Index (Thai SPADI), the visual analog scale (VAS) for pain, passive range of motion, and analgesic use were assessed at baseline and at up to 24 weeks.

Both groups showed significant within-group improvements on the Thai SPADI and VAS over time, with no significant between-group differences. Those in the combination group demonstrated significantly greater external rotation at 24 weeks (p=0.039) and greater improvement in adduction at two weeks (p=0.039) and 24 weeks (p=0.012). Analgesic use was comparable. No serious adverse events occurred.

Conclusion: This study of patients with adhesive capsulitis found that intraarticular injections with ketorolac alone or combined with hyaluronic acid resulted in significant improvements in pain and function.

Thamyongkit, S., et al. Efficacy of Combined Intra-Articular Hyaluronic Acid and Ketorolac versus Ketorolac Alone in the Treatment of Adhesive Capsulitis: A Randomized, Controlled Trial. *J Shoulder Elbow Surg.* 2026; 35: 1731-1741.

COMBINED RESISTANCE TRAINING AND AMINO ACID SUPPLEMENTATION FOR SARCOPENIA

Sarcopenia is an age-related decline in skeletal muscle mass and function that increases the risk of falls, disability, and mortality in older adults. Recent studies have demonstrated that amino acids may induce greater muscle protein synthesis than intact protein. Therefore, this meta-analysis was designed to better understand whether amino acid-based supplementation, combined with resistance training would provide additional benefits over resistance training alone.

A literature review was completed with searches of PubMed, Embase, Web of Science, and the Cochrane Central Register of Controlled Trials through February 2025. Nine randomized, controlled trials were chosen with adults aged 65 years or older. Each subject was diagnosed with sarcopenia and received resistance training combined with either a placebo or a supplement of

amino acid or β -hydroxy- β -methylbutyrate. The primary outcome variables were hand grip strength, gait speed, and skeletal muscle mass index (SMI). Secondary outcomes included skeletal muscle mass, five-times sit-to-stand test results (FTSST), and Short Physical Performance Battery results (SPPB).

In 496 participants (mean age 78.3 years), compared to the control group, the combined intervention significantly improved hand grip strength (p = 0.0377), gait speed (p = 0.0414), SPPB scores (p = 0.0002), and FTSST performance (p=0.0273). No significant effects were found for skeletal muscle mass or appendicular skeletal muscle mass.

Conclusion: This literature review and meta-analysis found that resistance training plus amino acid supplementation improved muscle strength and physical function more than resistance training alone in older adults with sarcopenia.

Xie, C., et al. Combined Resistance Training and Amino Acid-Based Supplementation for Sarcopenia in Older Adults: A Systematic Review and Meta-Analysis. *BMC Musculoskelet Disord.* 2026; 27: 35; DOI: 10.1186/s12891-025-09436-8.

CARDIAC MONITORING FOR ATRIAL FIBRILLATION AFTER TRANSIENT ISCHEMIC ATTACK

Atrial fibrillation (AF) is a major cause of ischemic stroke, which often remains undiagnosed. Current stroke prevention guidelines recommend initial and prolonged cardiac monitoring for AF detection after an ischemic stroke or transient ischemic attack (TIA) of undetermined cause, with a duration of monitoring of over 30 days. As these recommendations are based on data from stroke patients, this study was designed to better understand the adequate duration of monitoring for patients with a TIA.

A literature review identified prospective, observational studies and randomized trials published until May 2025. The subjects were TIA patients who underwent at least 12 hours of cardiac monitoring. Forty-two studies, comprising 3,981 TIA patients, were included in the analysis. Subgroup analyses examined monitoring duration, modality [implantable cardiac monitor (ICM) versus non-invasive], and patient selection (selected versus

unselected cohorts).

The pooled AF detection rate was 6.5%. Detection rose with longer monitoring: 3.5% at day one, 6.3% at day seven, 9.6% at day 30, 13.1% at day 90, and 19.1% at one year. Implantable cardiac monitors yielded significantly higher detection than non-invasive monitoring (20.8% versus 4.7%, p<0.0001).

Conclusion: Prolonged cardiac monitoring after transient ischemic attack detects atrial fibrillation at rates similar to those reported after ischemic stroke, with substantially higher yields from implantable monitors and longer durations.

Veltkamp, A., et al. Cardiac Monitoring for Detection of Atrial Fibrillation After TIA: An Updated Systematic Review and Meta-Analysis. *Int J Stroke.* 2026, Aug; 21 (7): 933-945.

CONCUSSION AND UPPER BODY MUSCULOSKELETAL INJURY IN NFL PLAYERS

Concussion is a mild traumatic brain injury that is common in National Football League (NFL) athletes. Concussion has been linked to elevated risk of subsequent musculoskeletal injuries, although its specific association with upper body musculoskeletal injury (UBMSI) remains unclear. This study was designed to determine whether NFL players who sustain a concussion are at increased risk of same-season UBMSI, as compared with matched controls.

Injuries were identified from publicly available NFL injury reports for the 2015 to 2017 regular seasons. From these reports, two groups were identified, a concussion (CONC) group and a matched control group (non-CONC), teammates of the same position who had no reported injuries that season. Those in the CONC group were included only if the injuries had occurred during the regular season, and the athlete had returned to play in at least one subsequent game. The UBMSIs were compared between the two groups.

Data were reviewed for 322 players in each group. Overall, 72 UBMSIs were recorded across both groups, with the shoulder being the most common injury site (47.2%). A UBMSI was reported in 14.3% of the CONC group and 8.1% of the non-CONC group (p=0.012).

Conclusion: This study of

athletes in the National Football League found that concussed players were 83% more likely than non-concussed players to experience an upper extremity injury after returning to play.

Tomasko, N. et al. The Relationship between Concussion and Subsequent Upper Body Musculoskeletal Injury in NFL Players. **Brain Inj.** 2026, August; 40 (10): 857-863.

POLYACRYLAMIDE HYDROGEL FOR KNEE OSTEOARTHRITIS

Knee osteoarthritis (KOA) is a common condition that can cause chronic pain and functional limitation. There are limited long-term non-surgical treatment options. As previous studies have indicated that injectable polyacrylamide hydrogel (iPAAG/Arthrosamid) can be effective for symptomatic knee osteoarthritis (OA), this study evaluated the long-term efficacy of this treatment.

Data were generated by a prospective, multicenter, randomized, controlled trial conducted at three sites in Denmark. Data were analyzed for the 119 participants who had received a single six mL intra-articular injection of iPAAG. Of these, 91 entered the extension phase and 58 completed the five-year follow-up. Outcomes included changes from baseline in Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)-assessed pain, stiffness, and physical function subscales (a 0 to 100 scale) and patient global assessments (PGAs).

Among the 119 participants, WOMAC-assessed pain improved by a mean of -16.2 points at five years ($p < 0.0001$). Significant improvements were also seen in WOMAC-assessed stiffness ($p < 0.0001$), physical function ($p < 0.0001$), and PGA ($p < 0.0001$). Between years one and five, 79 adverse events occurred in 47 of 91 participants (51.6%), with none thought to be related to iPAAG.

Conclusion: This study of patients with osteoarthritis of the knee found that a single intra-articular injection of iPAAG provided sustained improvements in pain and function, maintained through five years.

Bliddal, H., et al. Sustained Symptom Relief and Safety Over Five Years following A Single Intra-Articular Injection of 2.5% Polyacrylamide Hydrogel in Patients with Knee

Osteoarthritis. **Clin Exp Rheumatol.** 2026; 44: 1410-1417.

AEROBIC EXERCISE EFFECTS ON BRAIN AGE

Midlife lifestyle factors such as physical activity influence late-life brain health, yet the impact of aerobic exercise on structural brain aging in early- to mid-adulthood remains unclear. This study examined the effect of a 12-month, moderate-to-vigorous aerobic exercise intervention on structural brain-predicted age difference (brain-PAD) and explored potential mediators in healthy adults.

In a single-blind, randomized, clinical trial, 130 healthy participants, aged 26 to 58 years were assigned to a moderate-to-vigorous-intensity aerobic exercise group or a usual-care control group. The exercise group completed two supervised, 60-minute sessions per week plus home-based activity to reach 150 minutes weekly. Brain-PAD (from structural MRI) and cardiorespiratory fitness (VO_2 peak) were assessed at baseline and 12 months. Intention-to-treat and completers' analyses were performed.

At baseline, higher VO_2 peak was associated with smaller brain-PAD ($p = 0.012$). After intervention, the exercise group showed a significant decrease in brain-PAD ($p = 0.034$) compared with the control group ($p = 0.217$), with a significant time $\times$ group interaction ($p = 0.019$). The BDNF levels were unaffected, and none of the proposed pathways mediated the effect on brain-PAD.

Conclusion: This study of adults 26-58 years of age found that twelve months of moderate-to-vigorous aerobic exercise reduced brain age.

Wan, L., et al. Fitness and Exercise Effects on Brain Age: A Randomized, Clinical Trial. **J Sport Health Sci.** 2026, December; 15: 101079.

PRE-OPERATIVE EXERCISE FOR JOINT ARTHROPLASTY

Earlier systematic reviews and meta-analyses of prehabilitation (often including mixed modalities such as exercise alone, education, or multimodal programs) have produced inconsistent findings. This study was designed to better understand the effectiveness of pre-operative physical activity interventions on patient and surgical outcomes in

elective total hip and knee arthroplasty.

A systematic search was completed for randomized, controlled trials investigating the effects of physical activity interventions before total hip or knee arthroplasty. The interventions included a physical activity (including exercise) component, delivered by any method. The outcomes were measured with different tools (WOMAC, SF-36, HOOS, KOOS), with mean differences (MDs) used for timed up-and-go (TUG), the six-minute walk test (6MWT), range of motion, and length of stay.

Forty trials were included, including 2,877 subjects. Significant improvements favoring intervention groups were found for health-related quality of life (knee pre-surgery; $p = 0.01$); hip and knee post-surgery ($p = 0.002$), pain (hip and knee pre-surgery, $p = 0.005$; knee post-surgery, $p = 0.02$), function (hip and knee pre-surgery, $p = 0.0002$; knee post-surgery, $p = 0.003$), and timed-up-and-go (pre-surgery $p = 0.007$; post-surgery $p < 0.00001$).

Conclusion: This literature review and meta-analysis found that pre-operative exercise improves health-related quality of life, pain, and function both before and after elective hip and knee arthroplasty.

Hares, N., et al. Are Pre-Operative Exercise Interventions for Joint Arthroplasty Effective at Improving Peri-Operative Outcomes? A Systematic Review and Meta-Analysis of Randomized Controlled Trials. **J Sport Health Sci.** 2026, Aug 31; 15: 101083.

STROKE INCIDENCE TRENDS IN ENGLAND

Stroke incidence has been rising at younger ages while declining at older ages in high-income countries. This study was designed to determine age-specific time trends in stroke incidence and modifiable risk factor prevalence in England from 2018 to 2024.

Using record-linkage of primary care, hospital admissions, death certificates, and the Sentinel Stroke National Audit Programme, researchers identified first-ever strokes in adults 18 years of age or older. Age-standardized rates were calculated for the periods 2018-2020, 2020-2022, and 2022-2024, with incidence rate ratios (IRRs) and

(Continued from page 2)

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relative temporal rate ratios (RTTRs) comparing trends by age (<55 vs ≥55 years), gender, ethnicity, deprivation, region, and subtype.

Among 643,885 strokes (2018 to 2020: 206,290, 2020 to 2022: 211,420, and 2022 to 2024: 226,175), incidence at age <55 years rose during the COVID-19 pandemic (IRR 1.07, $p<0.001$) and continued rising afterward (IRR 1.04, $p<0.001$), most markedly in Black (IRR 1.13, $p=0.0005$) and Asian (IRR 1.26, $p<0.001$) groups. Incidence at age ≥55 years was stable during the pandemic ($p=0.06$), and then increased (IRR 1.04, $p<0.001$). Undiagnosed premorbid hypertension and diabetes were also found to have increased at younger ages during the pandemic.

Conclusion: Stroke incidence increased at younger ages, particularly among ethnic minorities, during and after the COVID-19 pandemic, coinciding with missed opportunities in risk-factor diagnosis.

Kamtchum-Tatuene, J., et al. Time Trends in Stroke Incidence and Modifiable Risk Factor Prevalence in England (2018 to 2024): A Record Linkage, Population-Based Study. *PLoS Med*. 2026; 23(8): e1004999.

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