

7. PELVIC ORGANS/WOMAN'S HEALTH

Sugar beverages increase odds of breast cancer

European Journal of Nutrition

pp 1–12| Cite as

Sugar-sweetened beverage consumption and incidence of breast cancer: the Seguimiento Universidad de Navarra (SUN) Project

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Purpose

Breast cancer (BC) incidence is increasing worldwide. Higher insulin resistance may potentially lead to an increased risk of BC. Sugar-sweetened beverages (SSB) are an acknowledged dietary factor that increases insulin resistance. However, the association between SSB and BC has not been widely explored. We evaluated the association between baseline consumption of SSB and the incidence of BC among relatively young women in a cohort of Spanish university graduates.

Methods

We evaluated 10,713 middle-aged, Spanish female university graduates (median age 33) from the Seguimiento Universidad de Navarra (SUN) cohort, initially free of BC. SSB consumption was collected at baseline using a validated 136-item semi-quantitative food-frequency questionnaire. Incidence of BC was confirmed by a trained oncologist using medical records. We fitted Cox regression models to assess the relationship between baseline categories of SSB consumption and the incidence of BC during follow-up. We stratified the analyses by menopausal status.

Results

During 106,189 person-years follow-up, 100 incident cases of BC were confirmed. Among postmenopausal women, regular consumption of SSB was associated with a significantly higher incidence of BC (HR 2.12; 95% CI 1.02, 4.41) in the fully adjusted model, compared to women who never or seldom consumed SSB. No association was found among premenopausal women (HR 1.16; 95% CI 0.66, 2.07).

Conclusions

Even though the number of cases was small, in this Mediterranean cohort, we observed a direct association between SSB consumption and BC risk among postmenopausal women. Nonetheless further larger longitudinal studies are needed to support this association.

8. VISCERA

isometric exercise helps to reduce BP

A Comparison Of Blood Pressure Reductions Following 12-Weeks Of Isometric Exercise Training Either In The Laboratory Or At Home

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DOI: <https://doi.org/10.1016/j.jash.2018.09.003>

Purpose

Isometric exercise training (IET) induced reductions in resting blood pressure (RBP) have been achieved in laboratory environments, but data in support of IET outside the lab is scarce. The aim of this study was to compare 12-weeks of home-based (HOM) IET with laboratory-based, face-to-face (LAB) IET in hypertensive adults.

Methods

22 hypertensive participants (24-60 years) were randomized to three conditions; HOM, LAB or control (CON). IET involved isometric handgrip training (4 x 2-minutes at 30% maximum voluntary contraction, 3 days per week). RBP was measured every 6-weeks (0, 6 and 12 weeks) during training and 6-weeks post-training (18 weeks).

Results

Clinically meaningful, but not statistically significant reductions RBP were observed following 12 weeks of LAB IET (SBP -9.1 ± 4.1 ; DBP -2.8 ± 2.1 $P > 0.05$), which was sustained for 6 weeks of detraining (SBP -8.2 ± 2.9 ; DBP -4 ± 2.9 , $P > 0.05$). RBP was reduced in the HOM group after 12 weeks of training (SBP -9.7 ± 3.4 ; DBP -2.2 ± 2.0 $P > 0.05$) which was sustained for an additional 6 weeks of detraining (SBP -5.5 ± 3.4 ; DBP -4.6 ± 1.8 , $P > 0.05$).

Conclusions

Unsupervised home-based IET programs present an exciting opportunity for community-based strategies to combat hypertension but additional work is needed if IET is to be employed routinely outside the laboratory.

Antibiotic option for appendicitis

Five-Year Follow-up of Antibiotic Therapy for Uncomplicated Acute Appendicitis in the APPAC Randomized Clinical Trial

Paulina Salminen, MD, PhD^{1,2}; ; Juha M. Grönroos, MD, PhD^{1,2} *JAMA*. 2018;320(12):1259-1265. doi:10.1001/jama.2018.13201

Question What is the long-term recurrence rate in patients with uncomplicated acute appendicitis treated with antibiotics? **Findings** In this 5-year observational follow-up of 257 patients initially treated with antibiotics for uncomplicated acute appendicitis, the cumulative incidence of recurrent appendicitis at 1, 2, 3, 4, and 5 years was 27.3% at 1 year, 34.0% at 2, 35.2% at 3, 37.1% at 4, and 39.1% at 5 years. **Meaning** Long-term follow up of patients with uncomplicated acute appendicitis suggests that initial treatment with antibiotics rather than surgery may be a feasible alternative.

Importance Short-term results support antibiotics as an alternative to surgery for treating uncomplicated acute appendicitis, but long-term outcomes are not known. **Objective** To determine the late recurrence rate of appendicitis after antibiotic therapy for the treatment of uncomplicated acute appendicitis. **Design, Setting, and Participants** Five-year observational follow-up of patients in the Appendicitis Acuta (APPAC) multicenter randomized clinical trial comparing appendectomy with antibiotic therapy, in which 530 patients aged 18 to 60 years with computed tomography–confirmed uncomplicated acute appendicitis were randomized to undergo an appendectomy (n = 273) or receive antibiotic therapy (n = 257). The initial trial was conducted from November 2009 to June 2012 in Finland; last follow-up was September 6, 2017. This current analysis focused on assessing the 5-year outcomes for the group of patients treated with antibiotics alone. **Interventions** Open appendectomy vs antibiotic therapy with intravenous ertapenem for 3 days followed by 7 days of oral levofloxacin and metronidazole. **Main Outcomes and Measures** In this analysis, prespecified secondary end points reported at 5-year follow-up included late (after 1 year) appendicitis recurrence after antibiotic treatment, complications, length of hospital stay, and sick leave. **Results** Of the 530 patients (201 women; 329 men) enrolled in the trial, 273 patients (median age, 35 years [IQR, 27-46]) were randomized to undergo appendectomy, and 257 (median age, 33 years, [IQR, 26-47]) were randomized to receive antibiotic therapy. In addition to 70 patients who initially received antibiotics but underwent appendectomy within the first year (27.3% [95% CI, 22.0%-33.2%]; 70/256), 30 additional antibiotic-treated patients (16.1% [95% CI, 11.2%-22.2%]; 30/186) underwent appendectomy between 1 and 5 years. The cumulative incidence of appendicitis recurrence was 34.0% (95% CI, 28.2%-40.1%; 87/256) at 2 years, 35.2% (95% CI, 29.3%-41.4%; 90/256) at 3 years, 37.1% (95% CI, 31.2%-43.3%; 95/256) at 4 years, and 39.1% (95% CI, 33.1%-45.3%; 100/256) at 5 years. Of the 85 patients in the antibiotic group who subsequently underwent appendectomy for recurrent appendicitis, 76 had uncomplicated appendicitis, 2 had complicated appendicitis, and 7 did not have appendicitis. At 5 years, the overall complication rate (surgical site infections, incisional hernias, abdominal pain, and obstructive symptoms) was 24.4% (95% CI, 19.2%-30.3%) (n = 60/246) in the appendectomy group and 6.5% (95% CI, 3.8%-10.4%) (n = 16/246) in antibiotic group ($P < .001$), which calculates to 17.9 percentage points (95% CI, 11.7-24.1) higher after surgery. There was no difference between groups for length of hospital stay, but there was a significant difference in sick leave (11 days more for the appendectomy group). **Conclusions and Relevance** Among patients who were initially treated with antibiotics for uncomplicated acute appendicitis, the likelihood of late recurrence within 5 years was 39.1%. This long-term follow-up supports the feasibility of antibiotic treatment alone as an alternative to surgery for uncomplicated acute appendicitis.

28. REPLACEMENTS

Why replace

Article in Press

Hip Arthroscopy in Patients Ages 50 Years or Older: Minimum 5-Year Outcomes, Survivorship, and Risk Factors for Conversion to Total Hip Replacement

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Muriel R. Battaglia, B.A. Leslie C. Yuen, B.A. Benjamin G. Domb, M.D.

DOI: <https://doi.org/10.1016/j.arthro.2018.05.034>**Purpose**

To report minimum 5-year outcomes and risk factors for conversion to total hip arthroplasty (THA) in patients ≥ 50 years old undergoing hip arthroscopy to treat labral tears and femoroacetabular impingement (FAI).

Methods

Data were prospectively collected on patients who underwent hip arthroscopy to treat labral tears and FAI between February 2008 and January 2012. The inclusion criteria were ≥ 50 years old at surgery, arthroscopic treatment for both labral tears and FAI, and preoperative patient-reported outcome (PRO) scores for modified Harris Hip Score (mHHS), Nonarthritic Hip Score (NAHS), Hip Outcome Score-Sports Specific Subscale (HOS-SSS), and Visual Analog Scale (VAS). The exclusion criteria were Tönnis grade > 1 and previous hip conditions or surgeries.

Results

Of 103 eligible cases, 94 hips (91.3%) had minimum 5-year follow-up at a mean of 70.1 months (range, 60.0-95.1 months). All PROs and VASs demonstrated significant improvement at latest follow-up ($P = .0001$). Mean patient satisfaction was 8.4. All mean scores demonstrated durability from 2 years to latest follow-up, and NAHS ($P = .009$), HOS-SSS ($P = .02$), and VAS ($P = .04$) continued to significantly improve. Fifty-one (54.3%) of cases reached patient acceptable symptomatic state for mHHS, and 49 cases (52.1%) achieved minimal clinically important difference for this outcome measure. Four cases (4.3%) required secondary arthroscopy, and survivorship was 72.3%. Compared with survivors, the subgroup requiring THA demonstrated higher body mass indexes ($P = .01$), had larger alpha angles ($P = .0200$) and smaller lateral center-edge angles ($P = .0200$), and had higher proportions of Tönnis grade 1 ($P = .0012$), acetabular Outerbridge grade ≥ 2 ($P = .0500$), and femoral head Outerbridge grade ≥ 2 ($P = .0001$).

Conclusions

Hip arthroscopy for the treatment of labral tears and FAI in patients ≥ 50 years old demonstrates statistically significant PRO improvements at minimum 5-year follow-up. However, due to potential for subsequent need for THA in a subset of this population, surgeons should use rigorous selection criteria and counsel patients appropriately.

32 A. KNEE/ACL**Delay in ACL increases risk of OA****Preoperative and Intraoperative Predictors of Long-Term Acceptable Knee Function and Osteoarthritis After Anterior Cruciate Ligament Reconstruction: An Analysis Based on 2 Randomized Controlled Trials**

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DOI: <https://doi.org/10.1016/j.arthro.2018.07.009>

Purpose

To determine preoperative predictors of long-term acceptable knee function and the development of osteoarthritis (OA) in long-term follow-up after anterior cruciate ligament (ACL) reconstruction.

Methods

This study is a long-term follow-up of 2 previous randomized controlled trials that included 193 patients who underwent unilateral ACL reconstruction with ipsilateral hamstring tendon or patellar tendon autografts. Patients who suffered multiligament injuries, major meniscal injuries, chondral lesions requiring surgical treatment, or had a previous ACL reconstruction were excluded. Patient demographics, preoperative clinical assessments, and intraoperative findings were used to create stepwise multivariable regression models to determine the patient-acceptable symptom state (PASS) in the International Knee Documentation Committee and the development of OA defined as a Kellgren-Lawrence grade ≥ 2 . Knee laxity measurements, hop performance, patient-reported outcome, and concomitant injuries were determined as variables.

Results

A total of 147 patients (63.7% men) were eligible for inclusion, with a mean follow-up of 16.4 ± 1.3 years. The patients were an average age of 27.9 ± 8.3 years at the time of ACL reconstruction. One-half of the cohort reported an International Knee Documentation Committee evaluation system score above the PASS cutoff. The presence of a concomitant injury at operation (odds ratio [OR], 2.61; 95% confidence interval [CI], 1.10-6.21; $P = .030$) and greater preoperative anteroposterior laxity (OR, 1.87; 95% CI, 1.05-3.35; $P = .034$) increased the likelihood of achieving a PASS. A longer period between ACL injury and reconstruction (OR, 2.25; 95% CI, 1.02-5.00; $P = .046$) and older age at reconstruction (OR, 2.28; 95% CI, 1.34-3.86; $P = .0023$) increased the odds of developing OA at follow-up.

Conclusions

Patients who were older at the time of ACL reconstruction and had waited >1 year between the injury and reconstruction ran an increased risk of having OA 16 years after reconstruction. One in 2 patients reported acceptable long-term knee function, but no risk factor for poorer subjective knee function was identified. Patients who had a minor concomitant injury and increased preoperative anteroposterior knee laxity had increased odds of reporting an acceptable long-term knee function.

Lever Sign

Int J Sports Phys Ther. 2018 Aug;13(5):774-788.

ACCURACY OF THE LEVER SIGN TO DIAGNOSE ANTERIOR CRUCIATE LIGAMENT TEAR: A SYSTEMATIC REVIEW WITH META-ANALYSIS.

Reiman MP, Reiman CK¹, Décary S².

BACKGROUND:

The **Lever sign** has gained recent notoriety for its purported **anterior cruciate ligament (ACL)** diagnostics and simplicity of performance.

PURPOSE:

The purpose of this **systematic review** with **meta-analysis** is to summarize the diagnostic **accuracy** of the **Lever sign** for use during assessment of the knee for an **ACL tear** in subjects with suspected acute and chronic knee injury.

STUDY DESIGN:

Systematic review with **meta-analysis**.

METHODS:

A computer-assisted literature search of MEDLINE, CINAHL, and EMBASE databases using keywords related to diagnostic **accuracy** of the knee joint. The *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA) guidelines were used for the search and reporting phases of the study. Quality assessment of bias and applicability was conducted using the Quality of Diagnostic Accuracy Studies (QUADAS). Mixed effects models were used to summarize **accuracy**.

RESULTS:

Eight articles, with only two demonstrating high quality, were included. Six of the articles were included in a **meta-analysis**. Diagnostic values, utilizing arthroscopy as a gold standard, were: pooled SN 0.55 (95% CI 0.22 to 0.84), pooled SP 0.89 (95% CI 0.44 to 0.99), positive likelihood ratio (+LR) 9.2 (95% CI 0.70 to 46.1), negative likelihood ratio (-LR) 0.58 (95% CI 0.18 to 1.28). Post-test probability with a positive finding (57% sampling prevalence) reached 92% (95% CI 83 to 97%). Post-test probability with a negative finding (57% sampling prevalence) reached 43% (95% CI 39 to 47%).

CONCLUSIONS:

Based on limited evidence of heterogeneous methodological quality, the **Lever sign** can moderately change post-test probability to rule in an **ACL tear**. These results should be interpreted cautiously due to a limited number of studies, with small sample sizes and study quality affecting test **accuracy**. Future investigation should be expanded to include additional high-quality studies examining diverse clinical contexts, as they become available, to enable a more comprehensive clinical examination of this test.

LEVEL OF EVIDENCE:

3aPROSPERO Registration # CRD42018084954.

34. PATELLA

Cartilage defects from degeneration more painful than those caused by trauma

Knee Surgery, Sports Traumatology, Arthroscopy pp 1–10|

Degenerative isolated cartilage defects of the patellofemoral joint are associated with more severe symptoms compared to trauma-related defects: results of the German Cartilage Registry (KnorpelRegister DGOU)

- Julian Mehl A. Otto L. Willinger A. Hapfelmeier A. B. Imhoff P. Niemeyer P. Angele W. Zinser G. Spahn A. Schmitt

Purpose

The purpose of this study was to utilize data from the German Cartilage Registry (KnorpelRegister DGOU) to examine the hypothesis that degenerative cartilage defects of the patellofemoral joint are associated with more severe clinical symptoms compared to trauma-related defects.

Methods

All patients with isolated focal cartilage defects of the patellofemoral joint registered in the German Cartilage Registry until May 2017 were included in the study. Patients with previous surgery of the ipsilateral knee were excluded. Baseline data including etiology (traumatic, degenerative), size, location and ICRS grade of the cartilage defects as well as the duration of symptoms were analyzed. Clinical symptoms were evaluated by means of the numeric analog scale (NAS) for pain and the Knee injury and Osteoarthritis Outcome Score (KOOS). Group comparisons were performed using the Mann–Whitney-U test along with the Chi-squared test and Fisher’s exact test. A bivariate correlation analysis and a multivariable linear regression analysis were performed to investigate the association between the defect characteristics and the clinical scores.

Results

A total of 423 patients (203 traumatic and 220 degenerative defects) were included. Isolated degenerative cartilage defects were found to have significantly more trochlear locations (28% vs. 18%; $p = 0.006$), significantly less ICRS grade 4 lesions (50% vs. 73%; $p = 0.002$) and a significantly smaller defect size [median 300 (IQR 105–400) vs. 300 (200–400) mm²] when compared to those from traumatic etiology. Traumatic defects showed significantly better KOOS-ADL [77 (60–90) vs. 69 (56–82); $p = 0.005$], KOOS-pain [69 (56–81) vs. 61 (47–75); $p = 0.001$] and NAS [2 (1–5) vs. 4 (1–6); $p = 0.005$] scores compared to degenerative defects. The correlation analysis revealed only weak correlations between the quantitative defect characteristics and clinical scores.

Conclusions

Degenerative isolated cartilage defects in the patellofemoral joint are associated with more severe clinical symptoms in comparison to trauma-related defects. Additionally, they show a larger variance regarding their location with more trochlear defects.

45 A. MANUAL THERAPY LUMBAR & GENERAL**Learning styles**

Psychol Bull. 2016 Mar;142(3):260-90. doi: 10.1037/bul0000027. Epub 2015 Oct 5.

Thinking styles and decision making: A meta-analysis.

Phillips WJ¹, Fletcher JM¹, Marks AD¹, Hine DW¹.

This meta-analysis examined whether tendencies to use reflective and intuitive thinking styles predicted decision performance (normatively correct responding) and decision experience (e.g., speed, enjoyment) on a range of decision-making tasks.

A pooled sample of 17,704 participants (Mage = 25 years) from 89 samples produced small but significant weighted average effects for reflection on performance ($r = .11$) and experience ($r = .14$). Intuition was negatively associated with performance ($r = -.09$) but positively associated with experience ($r = .06$). Moderation analyses using 499 effect sizes revealed heterogeneity across task-theory match/mismatch, task type, description-based versus experience-based decisions, time pressure, age, and measure type. Effects of both thinking styles were strongest when the task matched the theoretical strengths of the thinking style (up to $r = .29$). Specific tasks that produced the largest thinking style effects (up to $r = .35$) were also consistent with system characteristics. Time pressure weakened the effects of reflection, but not intuition, on performance. Effect sizes for reflection on performance were largest for individuals aged either 12 to 18 years or 25+ (up to $r = .18$), and the effects of both reflection and intuition on experience were largest for adults aged 25+ (up to $r = .27$).

Overall, our results indicate that associations between thinking styles and decision outcomes are context dependent. To improve decision performance and experience, decision architects and educators should carefully consider both individual differences in the decision maker and the nature of the decision task.

48 A. STM

Roller massage

Int J Sports Phys Ther. 2018 Aug;13(5):835-845.

FOUR WEEKS OF ROLLER MASSAGE TRAINING DID NOT IMPACT RANGE OF MOTION, PAIN PRESSURE THRESHOLD, VOLUNTARY CONTRACTILE PROPERTIES OR JUMP PERFORMANCE.

Hodgson DD¹, Lima CD¹, Low JL¹, Behm DG¹.

Author information

Abstract

BACKGROUND:

Roller massagers are popular devices that are used to improve range of motion (ROM), enhance recovery from muscle soreness, and reduce pain under acute conditions. However, the effects of roller massage training and training frequency are unknown.

PURPOSE:

The objective was to compare two different roller massage training frequencies on muscle performance.

STUDY DESIGN:

Randomized controlled intervention study.

METHODS:

Twenty-three recreationally active university students were randomly allocated to three groups: control (n=8;), rolling three (3/W; n=8;) and six (6/W; n=7) times per week for four weeks. The roller massage training consisted of unilateral, dominant limb, quadriceps and hamstrings rolling (4 sets x 30 seconds). Both legs of participants were tested pre- and post-training for active and passive hamstrings and quadriceps range of motion (ROM), electromyography (EMG) activity during a lunge movement, unilateral countermovement jumps (CMJ), as well as quadriceps and hamstrings maximum voluntary isometric contraction (MVIC) forces and electromechanical delay. Finally, they were tested for pain pressure threshold at middle and distal segments of their quadriceps and hamstrings.

RESULTS:

There were no significant training interactions for any measure with the exception that 3/W group exhibited 6.2% (p=0.03; Effect Size: 0.31) higher CMJ height from pre- (38.6 ± 7.1 cm) to post-testing (40.9 ± 8.1 cm) for the non-dominant limb.

CONCLUSIONS:

Whereas the literature has demonstrated acute responses to roller massage, the results of the present study demonstrate no consistent significant training-induced changes. The absence of change may highlight a lack of muscle and myofascial morphological or semi-permanent neurophysiological changes with rolling.

LEVELS OF EVIDENCE:

2c.

KEYWORDS:

flexibility; foam rolling; massage; self-myofascial release; strength

Massage does not improve performance

Int J Sports Phys Ther. 2018 Aug;13(5):789-799.

IS PREPERFORMANCE MASSAGE EFFECTIVE TO IMPROVE MAXIMAL MUSCLE STRENGTH AND FUNCTIONAL PERFORMANCE? A SYSTEMATIC REVIEW.

Mine K, Lei D¹, Nakayama T².

Author information**Abstract****BACKGROUND:**

Although **pre-performance massage** is frequently used in sports settings, the evidence regarding its effects on **muscle strength** and **functional performance** is equivocal. Purpose: The purpose of this **systematic review** was to synthesize the findings of randomized controlled trials (RCTs) investigating the effects of **pre-performance massage** on **strength** and **functional performance**. Study Design: **Systematic review** with qualitative analysis.

METHODS:

Eight electronic databases were searched from inception until June 2017. Methodological quality of included studies were assessed using Physiotherapy Evidence Database scale. Data was synthesized qualitatively.

RESULTS:

Nine crossover RCTs with varied methodological qualities met inclusion criteria. Six out of nine studies had low quality, while two were of moderate-quality and one was high-quality. Following the descriptive analysis using within-group effect sizes of interventions used in included studies, no evidence was found to support the use of any kind of **massage** interventions (passive manual **massage** or self-**massage**) to enhance **maximal strength**, sprint or jump performances of young healthy subjects. In fact, there appears to be limited evidence which implies the negative effects of passive manual **massage**. In particular, longer-duration (> 9 minutes) of **massage** interventions tended to result in negative effects on lower-limb **maximal strength**, sprint **performance** and jump height.

CONCLUSION:

In conclusion, the use of longer-duration **pre-performance massage** cannot be recommended for enhancing young athletes' **strength** and **performance** in sprint and vertical jump. More high-quality RCTs are necessary to examine overall effects of **pre-performance massage** on athletes' **performance**.

LEVEL OF EVIDENCE: 1a.

KEYWORDS: **Functional performance; muscle strength; pre-performance massage; systematic review**

56. ATHLETICS**Warm up for golf**

Int J Sports Phys Ther. 2018 Aug;13(5):828-834.

THE IMPACT OF WARM-UP ON YOUTH GOLFER CLUBHEAD SPEED AND SELF-REPORTED SHOTQUALITY.

Coughlan D¹, Taylor MJ¹, Jackson J¹.

BACKGROUND/PURPOSE:

Physical preparation in golf is now considered a key component of the game. With players becoming more athletic, **warm-up** has become an important area in a player's preparation for practice and competition. Much of the research to date has focused on the adult **golfer**, showing potential for improvements in **clubhead speed**, driving distance and **shot quality**, as well as reductions in injury risk. However, there is currently no work specifically investigating the impacts of **warm-up** in **youth** golf. The aim of this study was to examine the **impact** of a club only **warm-up** and a dynamic exercise routine followed by a club **warm-up** on club head **speed** and **self-reported shot quality**.

METHODS:

Using a counterbalanced repeated measures design, eight male and 13 female **youth** golfers completed a control (no **warm-up**), club only **warm-up** and an exercise based dynamic **warm-up** followed by club **warm-up** on three non-consecutive days. In each session, players were required to hit 10 maximal effort shots with a driver and **clubhead speed** (CHS) was recorded using a launch monitor alongside **self-reported shot quality** scores.

RESULTS:

Statistically significant improvements in **clubhead speed** and **self-reported shot quality** were seen in the dynamic **warm-up** combined with club **warm-up**. No significant differences were seen in the club-**warm up** only or control groups for either **clubhead speed** or **self-reported shot quality**.

CONCLUSION:

A combined dynamic physical **warm-up** and club **warm-up** improves **clubhead speed** and **self-reported shot quality** in **youth** golfers. However, a club **warm-up** alone does not seem to be sufficient in eliciting these same improvements.

LEVEL OF EVIDENCE: 3.

KEYWORDS: **Clubhead speed**; golf; performance; **warm-up**; **youth**

65. NEUROLOGICAL CONDITIONS**Vit. D appears to help MS**

Journal of Neurology pp 1–13|

Vitamin D for the treatment of multiple sclerosis: a meta-analysis

- Laurie McLaughlin Laura Clarke Elham Khalilidehkordi Helmut Butzkueven Bruce Taylor Simon A. Broadley

Objective

There is an association between latitude, relative vitamin D deficiency and risk of multiple sclerosis (MS), and an association between vitamin D and disease progression. We have performed a meta-analysis with the aim of investigating the role of therapeutic vitamin D in MS.

Methods

A systematic search of databases was performed to identify clinical trials assessing vitamin D in patients with relapsing–remitting MS. Studies were selected based on inclusion and exclusion criteria. Analysis was performed using RevMan 5.3 software.

Results

Twelve studies involving 950 patients were included in the final analysis. Studies were divided into four groups because of heterogeneity in study design. Studies were judged to be at low or unclear risk of bias, except in three studies, and this was confirmed by funnel plots. No statistically significant difference was seen for any of the outcome measures. There were non-significant trends in favour of vitamin D for all outcome measures, particularly when only placebo-controlled studies were included. Dose comparison studies showed a significant increase in annualised relapse rate (mean difference 0.15 [95%CI 0.01–0.30]) and non-significant trends of increased Expanded Disability Status Scale and gadolinium-enhancing lesions for the higher-dose arms.

Conclusion

These findings suggest that vitamin D supplementation may have a therapeutic role in the treatment of MS. However, there is uncertainty with regard to the most appropriate dose, with high doses potentially being associated with worse outcomes. There remains the need for further well-performed randomised, dose-ranging, placebo-controlled trials of vitamin D in MS.

Paraplegia movement with sacral stim

Letter | Published: 24 September 2018 *Nature Medicine* (2018)

Neuromodulation of lumbosacral spinal networks enables independent stepping after complete paraplegia

- Megan L. Gill, Peter J. Grahn, Jonathan S. Calvert, Margaux B. Linde, Igor A. Lavrov, Jeffrey A. Strommen, Lisa A. Beck, Dmitry G. Sayenko, Meegan G. Van Straaten, Dina I. Drubach, Daniel D. Veith, Andrew R. Thoreson, Cesar Lopez,
- Yury P. Gerasimenko, V. Reggie Edgerton, Kendall H. Lee & Kristin D. Zhao

Spinal sensorimotor networks that are functionally disconnected from the brain because of spinal cord injury (SCI) can be facilitated via epidural electrical stimulation (EES) to restore robust, coordinated motor activity in humans with paralysis^{1,2,3}.

Previously, we reported a clinical case of complete sensorimotor paralysis of the lower extremities in which EES restored the ability to stand and the ability to control step-like activity while side-lying or suspended vertically in a body-weight support system (BWS)⁴. Since then, dynamic task-specific training in the presence of EES, termed multimodal rehabilitation (MMR), was performed for 43 weeks and resulted in bilateral stepping on a treadmill, independent from trainer assistance or BWS. Additionally, MMR enabled independent stepping over ground while using a front-wheeled walker with trainer assistance at the hips to maintain balance. Furthermore, MMR engaged sensorimotor networks to achieve dynamic performance of standing and stepping.

To our knowledge, this is the first report of independent stepping enabled by task-specific training in the presence of EES by a human with complete loss of lower extremity sensorimotor function due to SCI.