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Is Seasonal Affective Disorder A Symptom Of A Larger Collection Of Sedentary And Obesity-related Disorders?

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Seasonal affective disorder (SAD) is a subtype of major depressive disorder (MDD) that occurs during cold and overcast months. Physical activity (PA) is known to counteract depressive symptoms; however, the relationship between seasonal changes in PA and MDD is largely unexplored. Physical inactivity and consequent weight gain may contribute to a host of cardiometabolic and cerebral complications, with SAD being one diagnostic feature.

PURPOSE: To evaluate seasonal differences in MDD among obese and non-obese patients in conjunction with cardiovascular, metabolic, and cerebral diagnoses.

METHODS: We analyzed 2,306 consecutively-admitted patients at a Midwestern hospital over 3 years. Mean environmental temperature of the hospital's city during each of the 36 months was computed. Patients were assessed for obesity, MDD, diabetes, hypertension, peripheral vascular disease, congestive heart failure, cerebrovascular accidents, and dementia. Logistic regressions tested the effects of season and temperature on all diagnoses.

RESULTS: Patients were 52.1±22.4 years old, 16.3% were obese, 1.1% had MDD, 14.3% had diabetes, 36.8% had hypertension, 0.7% had peripheral vascular disease, 4.4% had congestive heart failure, 3.6% had a cerebrovascular accident, and 4.6% had dementia. Between March 1 and June 30, MDD incidence was 532.8% higher than it was during all other months (p<0.001). These were not the coldest months (mean temperature was 5.9°F higher during this period; p<0.001), but it was the period of greatest obesity (33.3% higher incidence; p=0.003). Likewise, colder temperature was a poor predictor of MDD (p=0.465), but predicted elevated rates of obesity (p<0.001), diabetes (p=0.034), hypertension (p<0.001), congestive heart failure (p=0.013), peripheral vascular disease (p=0.058), cerebrovascular accidents (p=0.003), and dementia (p=0.001).

CONCLUSION: MDD diagnosis was highest at the end of the cold season, when obesity was at its peak; in turn, the likelihood of numerous obesity-related diagnoses was increased. This suggests a possibility that seasonal incidence of depression is not exclusively caused by diminished exposure to sunlight. Perhaps a colder environment limits engagement in PA; in turn, SAD is one component of a larger picture, which includes dysfunction of numerous systems.

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Muscular Strength and Whole-Body Bone Mineral Density in Older Adults With and Without Artificial Joints

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PURPOSE: Artificial joints (AJ) are prevalent in older adults, yet commonly ignored in bone related studies. We examined the effect of AJ on the association between muscular strength (MS) and whole-body bone mineral density (BMD) in older adults.

METHODS: This cross-sectional study included 303 older adults (58% women) ≥65 years old from the Physical Activity and Aging Study (PAAS). MS (peak torque at 60°/sec) was assessed by leg extension (LE), leg flexion (LF), elbow extension (EE), and elbow flexion (EF) on the dominant limbs using isokinetic dynamometry (Biodex). Whole-body BMD (t-score) was assessed by dual-energy X-ray absorptiometry (DXA). Low BMD was defined as t-score < -1.0. AJ status was identified via medical history questionnaire. Linear and logistic regression were conducted in stratified samples of AJ status (yes/no) and sex including MS, age, hormone therapy (women only), smoking, cardiorespiratory fitness (400-meter walk test), physical activity, and body mass index (BMI). Odds ratios (ORs) of low BMD by sex-specific tertiles of MS were calculated in each stratum.

RESULTS: Forty-five (15%) older adults had AJ. T-scores were higher in individuals with AJ compared with individuals without AJ in both men (-0.6 vs. 1.9) and women (-1.4 vs. 0.6) (both p<0.01) since most materials in AJ (e.g., metals) are considered as bone tissues by DXA. LF, EE, and EF were positively associated with BMD in men without AJ (all p<0.05), but not in men with AJ after adjusting for the possible confounders including BMI. There were no associations between MS variables and BMD in women, regardless of AJ status (all p>0.05). Compared with the lowest (weakest) third of LF, ORs (95% confidence intervals) of low BMD for the middle and upper thirds of LF were 0.40 (0.15-1.08) and 0.27 (0.09-0.85) among men without AJ after adjusting for the possible confounders without BMI. We found similar results in LE. However, no associations were observed after further adjustment for BMI, possibly due to the confounding effects of BMI on both MS and BMD.

CONCLUSION: Higher MS appears to be associated with higher BMD and lower odds of having low BMD in men without AJ, but not in men with AJ. These results indicate that AJ status should be considered in studies of muscular strength and bone health in older men.

Supported by unrestricted research grant by Biospace.

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Changes in Psychological State Measures After Green versus Suburban Walking Exercise: A Pilot Crossover Study

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PURPOSE: Green exercise may have psychological benefits. This study compared changes in anxiety, mood, directed-attention abilities, and stress after walking in green (i.e., nature-based) and suburban environments.

METHODS: Twenty-three adults (4 male; 50±7 yr; BMI 31±8 kg/m²) participated in a crossover study comprised of once-weekly 50-min moderate-intensity walking sessions. Participants walked for three weeks in each of two treatment conditions: green and suburban, separated by a two-week washout period. In the first treatment period, 11 participants were assigned to green walking and 12 to suburban walking. Previously validated psychological questionnaires measured pre- and post-walk values for: 1) Anxiety: assessed by the State-Trait Anxiety Inventory; 2) Mood: evaluated via the Positive and Negative Affect Schedule; 3) Directed-attention: measured with the visual Backwards Digit-Span (BDS) Test; and 4) Stress: assessed by the Perceived Stress Scale. Linear mixed models for repeated measures assessed pre- to post-walk changes between treatments. Baseline BDS scores were included as a covariate in the BDS outcome model to control for a learned effect.

RESULTS: Pre-walk outcomes were similar between walking conditions. Results indicated that anxiety decreased after green walking and increased after suburban walking (-1.75 vs. +1.13 units, respectively; p < 0.001). For mood, positive affect improved after green walking and decreased after suburban walking (+2.16 vs. -0.32 units, respectively; p < 0.003), and negative affect decreased marginally after green and suburban walking (-0.59 vs. -0.04 units, respectively; p = 0.06). Directed-attention abilities did not improve after green and suburban walking (-0.09 vs. -0.08 units, respectively; p > 0.9). Stress levels were slightly but not significantly reduced after green and suburban walking (-0.91 vs. -0.69 units, respectively; p > 0.5). There were no sequence effects. Finally, no carryover effects were observed - suggesting adequate washout between treatments.

CONCLUSIONS: Green exercise was effective in reducing anxiety and improving mood in this sample but not in improving stress and directed-attention. Future research should identify the optimal dose of green exercise for maximum psychological health gain.