

while having social resources for supporting *ibasho*. Our results also suggest that, for Hikikomori undergoing treatment, the promotion of social activities, particularly in relation with staff at their *ibasho*, might be linked with a reduction of their interpersonal tension.

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## Disrupted white matter integrity in anterior corona radiata of patients with anorexia nervosa

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**Introduction:** Patients with Anorexia Nervosa (AN) show structural change in the brain such as atrophy. Although white matter of AN patients has been evaluated with Diffusion Tensor Imaging (DTI) technique, results were inconsistent and inconclusive. **Methods:** A total of 19 AN patients (14 restrictive type and 5 binge-purge type) and 22 healthy controls (HC) were participated in this study. All were female and right-handed. This study was approved by the Ethics Committee of Tohoku University Graduate School of Medicine. Images of all participants were acquired with 3.0 T MRI scanner. Fractional Anisotropy (FA) was calculated and compared between two groups. **Results:** There was no difference in age between AN patients ( $20 \pm 4$  years) and HC ( $19 \pm 2$  years). Body Mass Index of AN patients ( $14.4 \pm 1.9$  kg/m<sup>2</sup>) was lower than that of HC ( $20.0 \pm 1.5$  kg/m<sup>2</sup>) (two sample t-test,  $p < 0.01$ ). Eating Attitude Test (EAT)-26 of AN patients ( $19.5 \pm 15.9$ ) was lower than that of HC ( $6.4 \pm 5.7$  kg/m<sup>2</sup>) ( $p < 0.01$ ). FA in the anterior corona radiata and corpus callosum were significantly lower in AN patients than in HC. **Conclusions:** Anterior corona radiata is a component of the limbic-thalamo-cortical circuit, which plays an important role for cognitive and emotional regulation. Disrupted white matter integrity in anterior corona radiata of patients with anorexia nervosa may be relevant with the onset and maintenance of the disease.

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## Involvement of hippocampus in chronic fatigue syndrome

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In this presentation, we concentrate on the role of the hippocampus in the development and perpetuation of chronic fatigue syndrome (CFS) and attempt to show that this focus provides an understanding of some puzzling facets of patients' difficulties to follow treatments and improve and guide us in the need for rehabilitation strategies. New knowledge of hippocampal function has shown that impairment not only disturb the capacity to encode and retrieve new events but also the ability to navigate in the environment, to think forward, to imagine new scenarios, and make predictions about the future. The hippocampus is also an important actor in the regulation of stress and chronic stress has a detrimental effect on its integrity and on neuroplasticity. There are several comorbidities in CFS associated with defective function of the hippocampus formation, namely subjective memory impairments, one of the most common complaints of patients with CFS, infections and inflammation, especially if they are chronic, are detrimental for the functional integrity of the hippocampus. Chronic stress, one of the main active components of CFS, is known to affect the hippocampal regulation of the hypothalamic-pituitary-adrenal (HPA) axis. There is also a connection between inactivity, which is a major consequence of the illness, and neurogenesis in the hippocampus. Sleep disturbances and the presence of depressive thoughts are also known to affect the hippocampus. We discuss the implications of these results for the rehabilitation of patients with chronic fatigue syndrome.

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## Changes in self-reported symptoms of depression and physical wellbeing in healthy individuals following a Taiji beginner course – Results of a randomized controlled trial

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**Introduction:** Taiji is a mind-body practice being increasingly investigated for its therapeutic benefits in a broad range of mental and physical conditions. The aim of the present study was to investigate potential preventive effects of Taiji practice in healthy individuals with regard to their depressive symptomatology and physical wellbeing. **Methods:** A total of 70 healthy Taiji novices (mean age 35.5 years) were randomly assigned to a Taiji intervention group, i.e. Taiji beginner course (Yang-Style Taiji, 2 hours per week, 12 weeks) or a waiting control group. Self-reported symptoms of depression (CES-D) and physical wellbeing (FEW-16) were assessed at baseline, at the end of the intervention, as well as two months later. **Results:** Physical wellbeing in the Taiji group significantly increased when comparing baseline to follow up (FEW-16 sum scale  $T(27) = 3.94$ ,  $p = 0.001$ , 95% CI 0.17 - 0.55). Pearson's correlation coefficients displayed a strong negative relationship between self-reported symptoms of depression and physical wellbeing ( $p$ 's  $< 0.001$ ,  $r$ 's  $\geq -.54$ ). **Conclusions:** In this randomized controlled trial we found significant evidence that a Taiji beginner course of three months duration elicits positive

effects with respect to physical wellbeing in healthy individuals, with improvements pronouncing over time. Physical wellbeing was shown to have a strong relationship with depressive symptoms. Based on these results, the consideration of Taiji as one therapeutic option in the development of multimodal approaches in the prevention of depression seems justifiable.

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## The effect of sleep deprivation on pain perception: A meta-analysis

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**Introduction:** There is large evidence for an interaction of sleep and pain. However, the size of this effect and thereby the clinically relevance is vague. We conducted a meta-analysis to quantify the effect of sleep deprivation on pain perception. **Methods:** PubMed, Cochrane, Psynex, PsycInfo, and Scopus was searched for Sleep AND pain AND (“sleep restriction“ OR “sleep deprivation“ OR “sleep loss” OR “sleep interruption” OR “hyperalgesia” OR “total sleep deprivation” OR “partial sleep deprivation” OR sleep fragmentation”). Studies were included that investigated 1. sleep deprivation (total or partial) or sleep restriction and 2. pain (any kind of pain measurement, e.g., VAS or pain threshold). **Results:** Five eligible studies (190 subjects) for the between-group analysis and 10 studies (266 subjects) for the within-group analysis were identified. Sleep deprived conditions showed a medium effect to non-sleep deprived conditions in the between group analysis (SMD = 0.62 95% CI 0.12 - 1.12;  $z = 2.43$ ;  $p < 0.05$ ) and a large effect in the within-group analysis (SMD = 1.49 95% CI 0.82 - 2.17;  $z = 4.35$ ;  $p < 0.0001$ ). Test for heterogeneity was not significant in the between-group analysis ( $Q = 5.29$ ;  $df = 4$ ;  $p = n.s.$ ) and significant in the within-group analysis ( $Q = 53.49$ ;  $df = 9$ ;  $p < 0.0001$ ). **Conclusions:** This meta-analysis confirms the effect of sleep deprivation on pain perception. A medium effect (SMD = 0.62) was found for the between group analysis and a large effect (SMD = 1.49) for the within group analysis. Although this meta-analysis is based on experimental studies, a medium to large effect on pain perception seems clinically relevant.

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## The influence of psychotherapy on the outcome of patients with rheumatoid arthritis – A case study

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**Introduction:** The effectiveness of a psychoanalytic psychotherapy in the treatment of rheumatic diseases is clearly illustrated by the case at hand. **Case description:** A today 58-year-old Turkish patient was treated in 1987 at a psychosomatic ward in Frankfurt for the first spurt of chronic polyarthritis. Severe pain in the fingers and wrists with radiological changes, max. ESR, RF, and CRP confirmed the diagnosis. She could no longer work in her

profession as a precision engineer. The 6-month hospitalization included three sessions per week psychoanalysis, physical, and antiphlogistic therapy. The basic therapy with gold and methotrexate had to be cancelled due to incompatibility. The trusting doctor-patient relationship corresponded to the good father-daughter relationship. The patient had lived 11 years in Germany and married a German one year before the admission to the hospital without their parents' knowledge. She feared that she would therefore be expelled from the Turkish family. After solving the conflict, the journey was prepared despite pain symptoms. The patient returned after six weeks without symptoms. The parents accepted the marriage which is still in existence today. She takes antiphlogistics occasionally and travels annually to Turkey for a spa treatment. A rheumatoid thrust has never reoccurred. **Comment:** Chronically rheumatic diseases often (20% to 91%) associates with anxiety- and depression disorders. Only medical treatment leads to a better outcome, improves the quality of life and reduces the treatment costs. In many cases there is no psychotherapeutic treatment. There should be further research into the reasons for this.

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## Do patients in rehabilitation with adjustment disorder differ from patients with depression while and after psychosomatic rehabilitation?

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**Introduction:** Adjustment Disorders (AD) are often used as a residual category of diagnosis. Especially relating to job strain AD are often used in context with the experience of burnout or mobbing. We observed whether patients with AD differ from those with depression. **Methods:** A total of 100 patients in psychosomatic rehabilitation, treated on a special station for workplace related strain (71 female/ 29 male; age  $49.84 \pm 8.73$  years), attended this study. Seventy-three achieved the criteria of a depressive disorder, 23 of AD. To measure psychiatric symptoms we used Health-49, BDI-II, and Burnout-Screening-Scales I-III (BOSS I-III) which detect job strain, somatic disorders, and resources, at admission of rehabilitation (T0), at discharge (T1), and six month after discharge (T2). **Results:** Patients with AD showed at T0 and T1 less strain than patients with depressive disorder. Both groups could benefit from the psychosomatic rehabilitation in the same degree despite of the different base levels. Relating to the inability to work both groups did not differ at any time. Those who were inability to work decreased from 45% at T0 to 9.5% at T2. **Conclusions:** Patients with AD have as expected less psychopathology strain at T0 and T1 than patients with depressive disorders. Regarding the state of employment both groups are similar strained and both groups benefit equal and lasting from the psychosomatic rehabilitation. Future studies should research whether patients in psychosomatic rehabilitation with AD have more specific strains and whether they need the same treatment in rehabilitation as patients with depressive disorders.