EXERCISE PROMOTES RECOVERY, COMBATS STRESS & BUILDS RESILIENCE

Resilience is the ability to adapt successfully in the face of stress and adversity. Chronic stress can have a significant impact on brain function and structure, and can result in the development of physical and mental health problems. Building resilience increases our resistance to the deleterious effects of stress, and enables improved performance.

Science has proven that exercise has positive effects on psychological wellbeing - reducing anxiety, improving mood, improving sleep and protecting against the harmful consequences of stress (builds resilience). Researchers have found that those who participate in regular vigorous exercise are 25% less likely to develop depression or an anxiety order over the next five years.

HOW DOES IT WORK?

Studies show that exercise has a positive effect on neurobiological factors of resilience such as:

- Exercise increases NPY – A neuropeptide (small protein-like molecule used by brain cells (neurons) to communicate with each other) that inhibits anxiety and protects against stress. Reduced NPY levels are associated with posttraumatic stress disorder (PTSD) while higher levels are associated with better behavioural and stress responses.

- Exercise increases serotonin – A neurotransmitter (chemical messenger used to transmit signals within the brain) that affects the regulation of mood, anxiety, happiness and sleep. Reduced serotonin levels are associated with anxiety and depression. Chronic stress and the associated release of cortisol (stress hormone) has been shown to reduce serotonin levels.

- Exercise increases BDNF – Brain derived neurotrophic factor (BDNF) is a growth factor that supports brain development and growth, and promotes optimal brain function in adulthood. BDNF has been implicated in mood and anxiety disorders, with decreased BDNF levels found in post-mortem studies of suicide depression patients.

- Exercise increases HRV – Heart rate variability (HRV) is a measurement we use that looks at the changes in the interval between heartbeats (R-R intervals) over time. HRV reflects the health of the autonomic nervous system (ANS) by measuring the balance of sympathetic (stress response) and parasympathetic (relaxation response) activation, thereby measuring the balance between stress and recovery. A high HRV translates to improved ANS balance resulting in decreased cortisol release, and improved stress resilience. Low HRV reflects ANS imbalance consisting of sympathetic dominance and diminished parasympathetic stimulation. Population studies such as the Framingham Heart Study have found that low HRV is associated with cardiovascular pathologies such as coronary heart disease, cardiomyopathy and sudden cardiac death. Studies have also shown that low HRV is one of the negative health effects of substance abuse such as alcohol, cocaine and methamphetamine use.

Regular exercise significantly elevates HRV robustness, similarly, research has found that aerobically-trained individuals exhibit a high degree of HRV compared to sedentary individuals. This is demonstrated in the evidence from over 100,000 Firstbeat assessments that shows people who exercise regularly have higher HRV, and achieve better quality recovery when compared to inactive people.

- Exercise improves sleep – Research has shown that exercise improves not only the quantity of sleep but the quality too with studies indicating that regular exercise increases both total sleep time and slow wave sleep, the deepest and most restorative stages of sleep. Exercise has also been shown to strengthen the circadian rhythm, promoting daytime alertness and vitality, whilst helping to bring on sleepiness at night. Sleep deprivation is often associated with or driven by anxiety, depression and chronic stress. Sleep deprivation has many of the same negative effects as chronic stress and can aggravate...
the stress response creating a vicious cycle where chronic stress results in sleep deprivation and sleep deprivation results in elevated stress levels.

HOW MUCH EXERCISE IS NEEDED TO GAIN A BENEFIT?

Most of the current research linking exercise to improved resilience and reduced stress has focused on aerobic exercise (walking, running, swimming, cycling), and Yoga. Some studies show that exercise can work quickly to elevate mood with as little as 5 minutes of aerobic exercise resulting in anti-anxiety effects. This may be especially relevant when exercising outdoors in a natural environment, also known as green exercise. Research suggests that green exercise results in greater feelings of revitalisation, improved self-esteem and reduced feelings of tension, anger and depression. Being in nature helps reduce stress too with studies showing a fall in stress hormones such as adrenaline, noradrenaline and cortisol, after being within a natural environment. Interestingly, the first five minutes of green exercise appears to have the biggest impact on mood and self-esteem, suggesting an immediate psychological health benefit.

However, physiological changes such as increased HRV and improved sleep seem to require a longer exercise training period. Studies have shown significant increases in HRV after 8 weeks of aerobic and resistance exercise training performed for 1hr, 3 times per week. Researchers have also evidenced significant improvements in sleep in adults with insomnia after 16 weeks of aerobic exercise performed for 30-40 minutes, 3-4 times per week.

HOW TO GET STARTED

Make exercise an essential part of your routine, choose activities that you enjoy and fit easily into your lifestyle, not ones that create more stress. To improve motivation, make your exercise a social activity and exercise with a friend or a group.

Initially aim to exercise at a moderate-intensity — such as brisk walking, swimming or cycling — for a minimum of 150 minutes per week (30mins per day, 5 days per week). If you are new to exercise start with a few minutes a day, and increase the amount by five or 10 minutes every week until you feel comfortable to increase the intensity into the moderate range.

For additional health benefits, you should be aiming for 300 minutes per week of moderate-intensity exercise (1 hour per day, 5 days per week) OR 150 minutes of vigorous-intensity exercise — such as running, fast paced swimming, hill cycling — throughout the week. Exercise should be performed in bouts of at least 10minutes, and muscle-strengthening activities should be done involving major muscle groups (push-ups, squats, lunges) on 2 or more days a week. A stretching programme should also be included on the days of exercise.

Be careful to avoid high intensity exercise too close to bed as this can have a stimulating / alerting effect on the body, reducing your ability to fall asleep and reducing the quality of sleep in the beginning of the sleep period. Research has shown that a poor night sleep can significantly influence exercise duration the next day, so to increase your chances of adherence to your exercise routine ensure you get a good night sleep the night before.

Want to know more?

References
8. Journal of Clinical Sleep Medicine, Vol. 9, No. 8, 2013. Exercise to Improve Sleep in Insomnia: Exploration of the Bidirectional Effects

© 2016 The Centre for Personal Performance. All rights reserved.
www.personalperformance.com.au