Stress Less for Tests

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OVC
“Stress is the salt of life.”

In the eleven years since my heart attack, I have learned to cool down, to change my destructive habits, and to get the job done without killing myself. Those eleven years have been the best of my life. So why not act now on the information provided in this book instead of waiting, as I did, for a heart attack to prove the case? You'll function better and feel better about yourself.

—Robert S. Eliot, M.D.

“Stress is the kiss of death.”
indecisive
irritable
confused
exhausted
effective
creative
decisive
stimulated
alert

Optimal Performance
Optimal Health

effective
decisive
stimulated
alert

Fatigue
Comfort Zone

Healthy Tension
Boredom

Arousal Stress

Performance

GOOD STRESS DISTRESS

Test Anxiety

Ill Health

Modified after Dr. Peter Nixor
what if . . . .
fish hook hacks
I will handle it.

What can I do now to cope/work most effectively?
ACTION PLAN

to do your best on an exam

• know the material

• be an active learner and
  use strong exam writing strategies

• effectively manage exam anxiety
“Stress makes you stupid.”

When under stress / demands, our body releases:

• cortisol
  – high levels affect the hippocampus (a key learning centre) and suppress electrical activity and efficiency

• adrenaline
  – increases muscle tension and breathing rate
  
  *Hyperventilation may create mental blocks.*
  – attention narrows; the focus shifts to survival & defense
poor breathing

- impairs concentration
- impairs memory
- impairs cognitive tasks
- impairs perceptual tasks
- impairs problem solving
- impairs judgment
- impairs co-ordination, balance, dexterity

from Better Physiology
Male grad student baseline
Male grad student after 1 week breathing practice (eyes closed, no feedback)

**Graph:**
- Temp-F: 94.29
- EDR-E: 2.80
- EMG-A: 1.00
- Resp-H, Respiration Rate: 7.28
- LF % Total Power Epoch Mean: 84.27
- HRV-P, Heart Rate (beats/min): 52.07

**RSA pattern**
(respiratory sinus arrhythmia)
Heart Rate Variability (RMSSD) predicting markers of Thinking (Information Processing Efficiency, Working Memory Capacity, Sustained Attention). Higher Heart Rate Variability predicts better Information Processing Efficiency and Working Memory Capacity in 28 to 65 year olds.

- information processing
- working memory
- sustained attention
Heart Rate Variability and Enhanced Student Performance
Spafford C. Ackerly, PhD

Abstract: The author utilizes heart rate variability biofeedback as a tool to teach high school biology students about the body's autonomic nervous system. The article introduces the concept of heart rate variability, reviews relevant physiology of the cardiovascular system, and summarizes the role of specific HRV patterns in higher level wellness and performance. The author summarizes some personal experiences with HRV biofeedback and discusses the use of HRV instrumentation to teach individuals about autonomic nervous system balance.

Introduction
Heart after heart, day after day, year after year... the heart contracts over 2 billion times in an average lifetime. The heart's rhythm reflects the tempo of life, accelerating and decelerating with the waxing and waning of the day and with one's psychological and emotional state. The heart's rhythm is highly variable, over both short and long time intervals (Figure 1), exhibiting behaviors characteristic of complex, nonlinear systems (Goldberger, 1999). Despite this complexity, the analysis of heart rate patterns yields fascinating insights into the state of the autonomic nervous system (ANS), based on the analysis of beat-to-beat variations in heart rate. Heart rate variability (HRV) patterns provide the means for assessing nervous system imbalances, and for developing strategies for improved ANS function. As a high school biology teacher, I utilize demonstrations of heart rate variability to raise student awareness of the factors that enhance health and well-being, as well as performance in classes, sports, and activities (Ackerly, 2001).

Heart Rate Variability
The heart is sensitive to a variety of physiological conditions, including blood CO2 levels, arterial pressure, and hormonal and neural excitation or inhibition. In a healthy, unstressed individual, heart rate rises and falls with each inhalation and exhalation of the breath, a phenomenon related to pressure changes within the chest cavity, the heart, and the circulatory vessels (Figures 2 and 3). Researchers at the Institute of HeartMath have coined the term “coherence” to represent this orderly pattern of heart rate variability (https://www.heartmath.org). McCrory et al., 2001; Childre & Martin, 1999). Coherence heart rate patterns, also known as respiratory sinus arrhythmia (RSA), represent balanced autonomic nervous system functions (McCrory et al., 1996; McCrory et al., 2001). Interestingly, very few of my students (14 and 15 year olds) exhibit coherent HRV patterns, suggesting that ANS imbalances are fairly common.

Heart rate variability analysis allows us to monitor, in real time, the physiological integrity of our autonomic nervous systems. HRV patterns reflect inputs from both the sympathetic nervous system (SNS), a cardio-accelerator, and the parasympathetic nervous system (PNS), a cardio-inhibitor. HRV software programs assess the relative contributions of these two ANS compo-
Variability (flexibility) in the time between heart beats is desirable.
Heart Rate Variability (HRV)
Biofeedback
GOALS

0 points

½ point

total points

1 point

GOAL = 20 points before studying
Brain Breathing

Slow = approx. 6 breaths per minute

4 seconds inhale

1 second PAUSE

5 seconds exhale
Smart phone and Mobile devices

Heart Rate Variability Apps:

• Stressed Out (by Altini) $4.99
• HeartRate+ Coherence $4.50
• Camera Heart Rate Variability $6.99
• Stress Check, or Stress Check Pro $1.99

• For athletes in training: HRV4Training.com $3.99
Distress prompts DEFENSE:

- skeletal muscles tighten…
  - jaw
  - waist

- breathing changes…
  - “shoulder/chest” breathing
  - rapid breathing
  - inhale longer than exhale
  - sighing
  - breath holding

RESULT = BODY & BRAIN working differently (defense mode)
Brain’s NEGATIVITY bias:

- what if...
  - overestimate how bad it will be
  - underestimate ability to deal with it
  - sense of urgency
  - ruminating

RESULT = emotional hijacking

- reality check
- I will handle it
- write it out
- reboot brain
practice

develops and strengthens skills
RESOURCES

✓ skills training
✓ counselling
✓ books
✓ CDs / audio tracks
✓ biofeedback
Stress Management Clinic

GROUP PROGRAMS
• Relaxation & Stress Management Skills Training
• Decreasing Headaches
• Stress Less for Tests
• Take the Stress out of IBS
• STOP Worrying!
• Better Sleep

PRIVATE TRAINING
• in relaxation, stress management, and skills / topics from all group programs
• biofeedback

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