

# Objective Evaluation of Stress

*Presented By*

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# Stress

Mental, Physical or Emotional

Tension, Strain or Distress

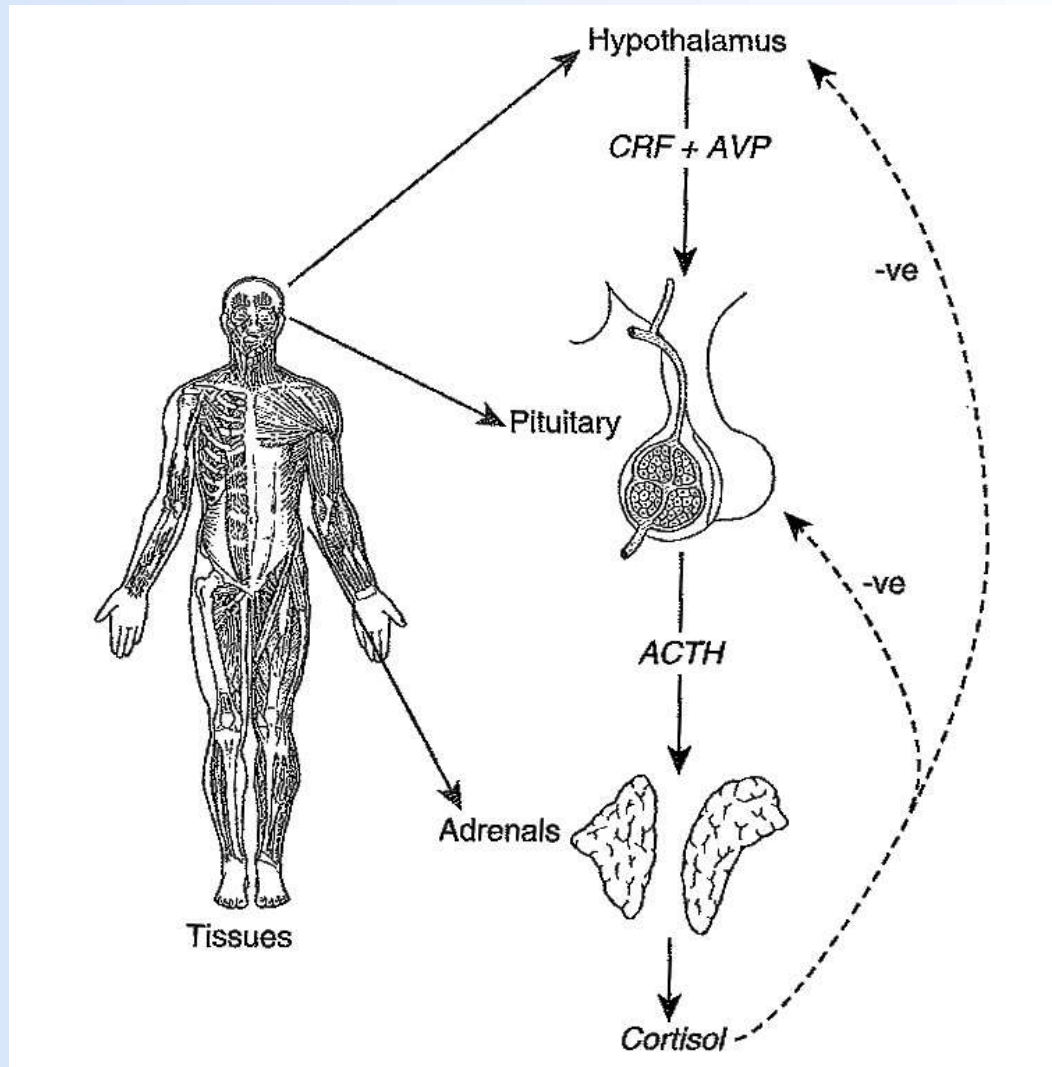
(Webster)

- Underlies, directly or indirectly, significant employee absence (est. 1 million/day)
- “Diagnosis of exclusion” – based on clinical impression and (costly) testing.
- Cries out for simple, objective evaluation to establish its presence and extent.

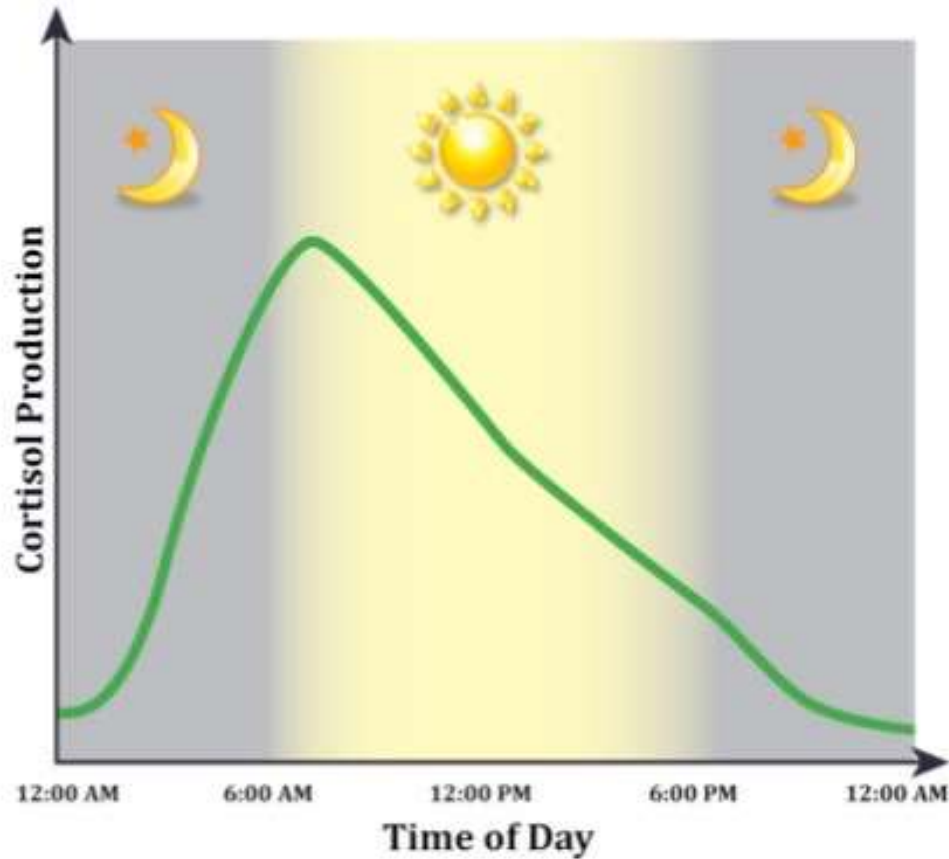
# Coping with Stress

- Acute (life threatening) – Fight or Flight
  - Autonomic Nervous System (adrenaline)
- Lesser/Subacute (daily problems)
  - Endocrine System
    - Thyroid axis
    - Insulin/Glucose Metabolism
    - Testosterone Balance
    - \*Hypothalamic / Pituitary / Adrenal (HPA) Axis
      - Cortisol
- “HPA axis plays major role in transducing subjective social- environmental experience into physiologic changes relevant to health”
  - North West University/University College London

# HPA axis



# Adrenal Circadian Rhythm

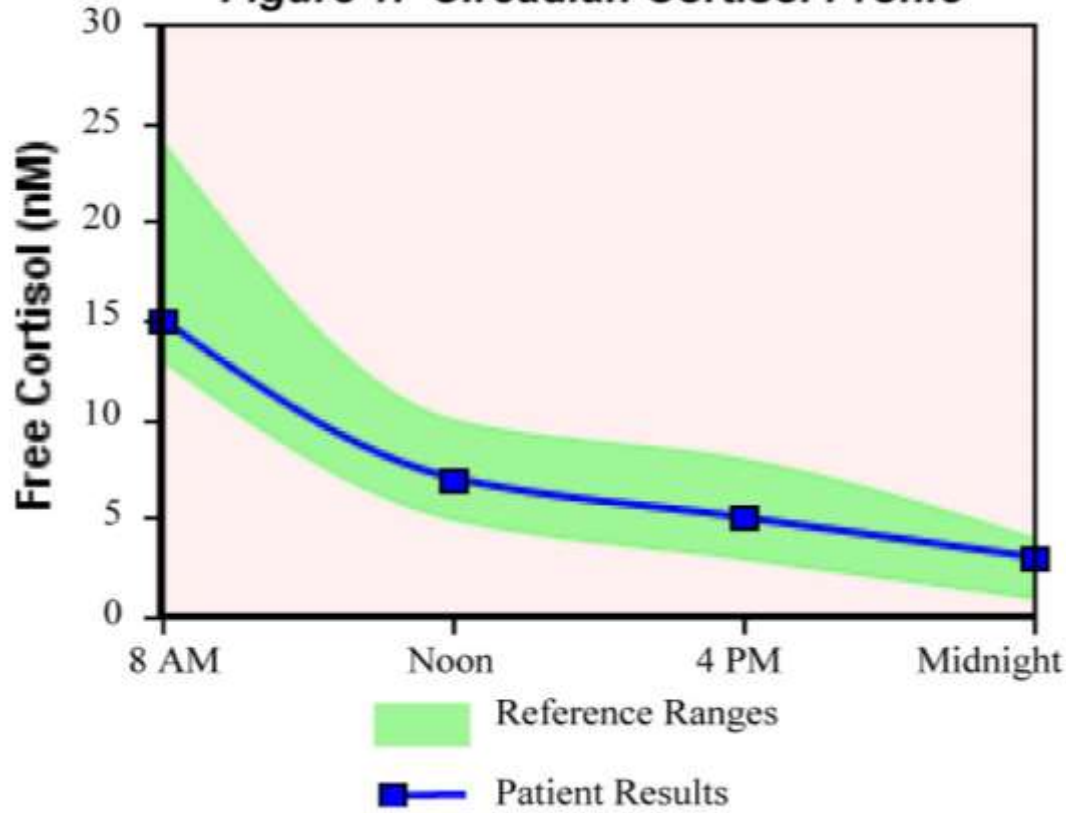


# Chronobiology



*The study of the biology of the body over time through analysis of its changes and vagaries.*

**Figure 1. Circadian Cortisol Profile**



# Adrenal Stress Index

## Profile of:

- 4 Cortisol measurements (awakening, noon, early evening, bedtime)
- DHEA/DHEA-S
- 17-OH Progesterone
- Insulin (fasting/2hr. after eating)
- Total SIgA
- SIgA Gliadin antibody



# Salivary Cortisol

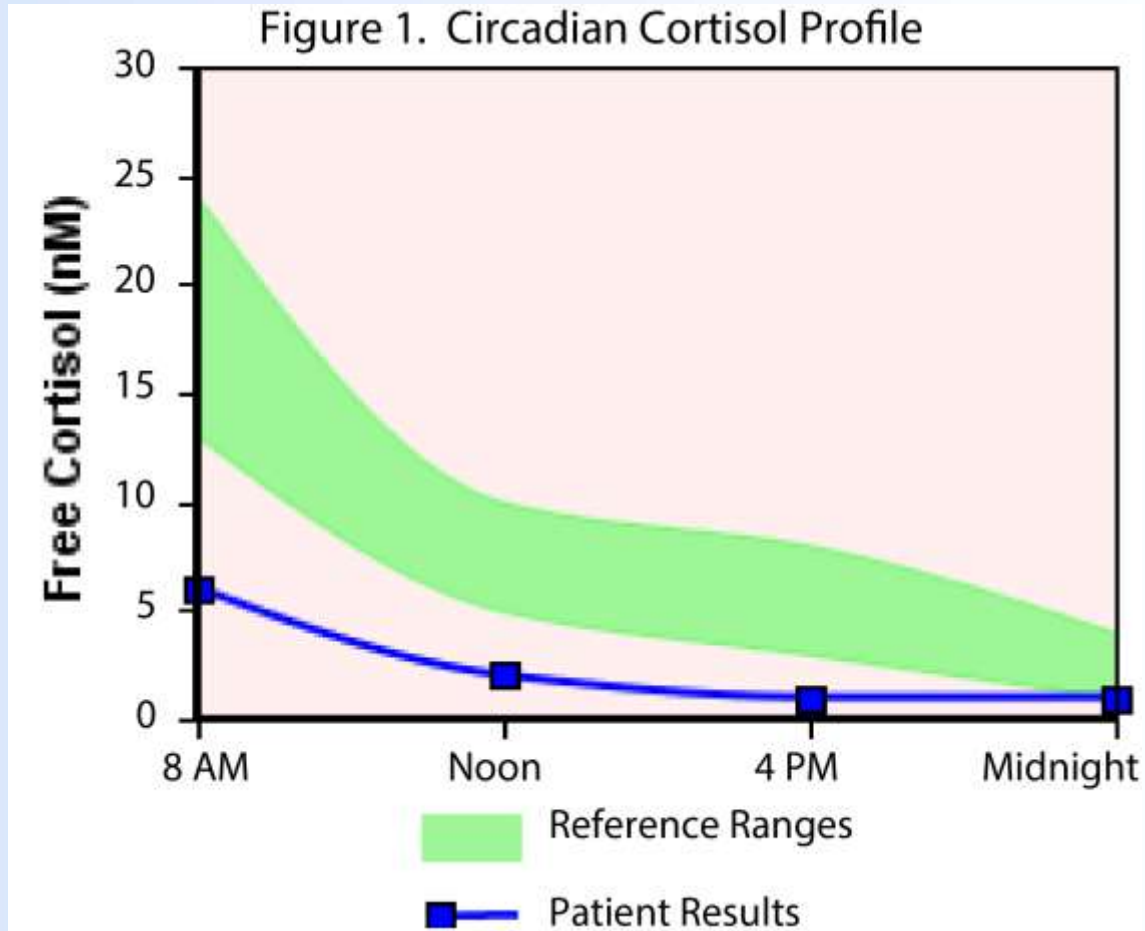
- 1116 Proteins simultaneously present in saliva and blood.  
-NIH Sponsored report (2008)
- “Salivary free Cortisol measurements offers an excellent reflection of the plasma Cortisol concentration in normality and disease.”  
-Endocrinology (DeGroot and Jameson)
- “Free Cortisol in the blood is in equilibrium with Cortisol in the saliva.”  
“Mass spectroscopy [costly] and ELISA [economical] techniques both yield 92%-100% sensitivity and 93%-100% specificity.”  
-Position Paper-Endocrine Society (2008)

# Saliva Testing Advantages

- Accurate / Time Tested
  - Facilitates Chronobiologic Testing
  - Private
  - Convenient
  - Applicable
  - Economic
- } Industry  
Medicine

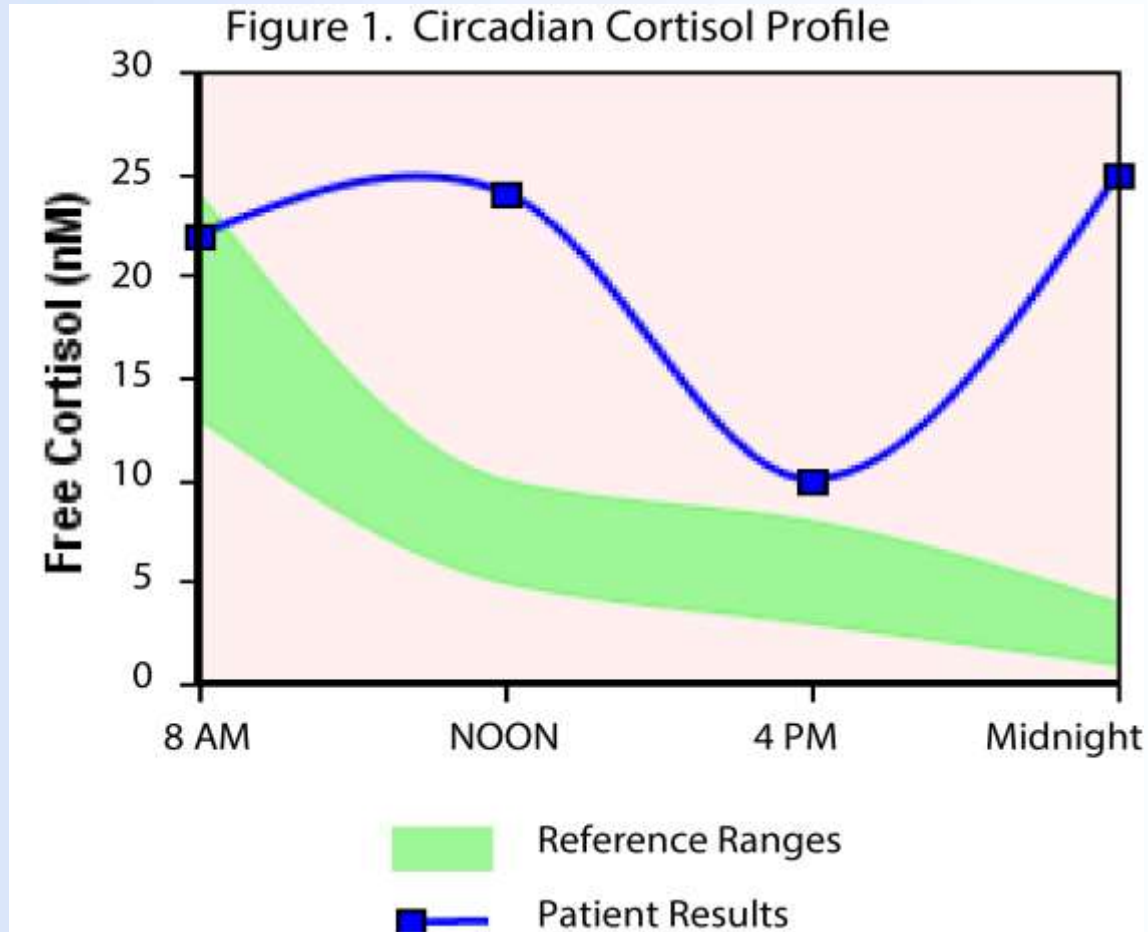
# ASI Sample Evaluation

EXHAUSTED HPA AXIS (CHRONIC STRESS-NO REST)



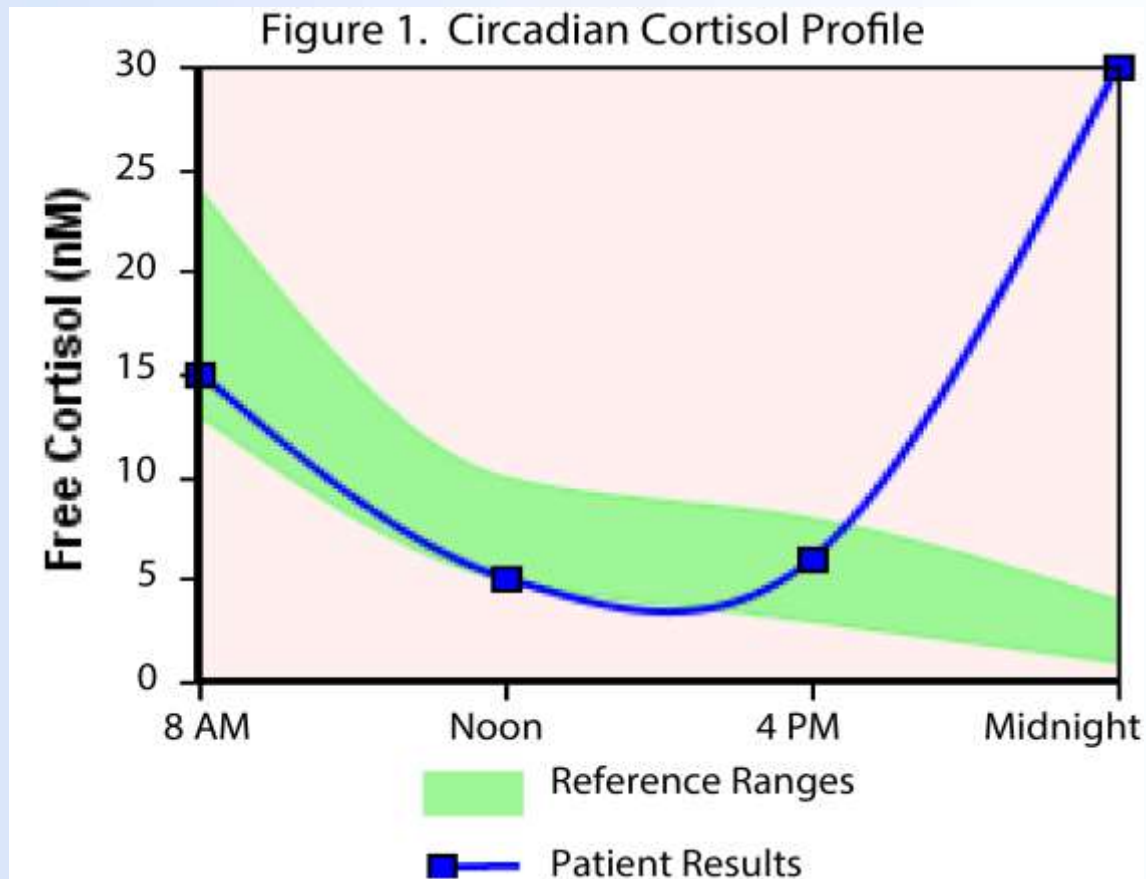
# Sample ASI Evaluation

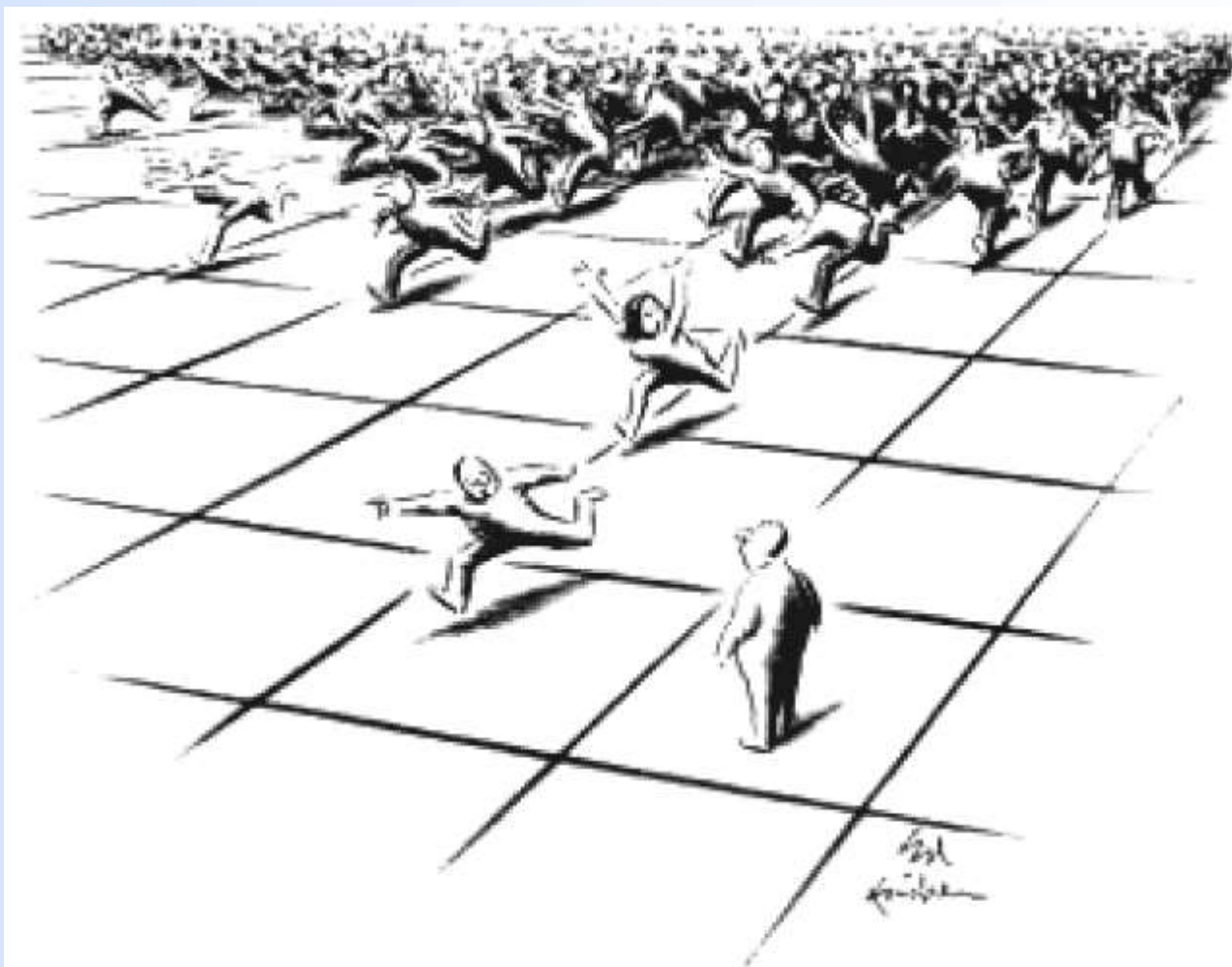
HPA AXIS COPING (REPETIVE STRESS-SOME REST)



# Sample ASI Evaluation

HPA AXIS COPING-WITH SLEEP DISTURBANCE  
(REPETIVE STRESS-SOME REST)





“Back to Square One!”

# Stress Evaluation ASI

- Proven/Accurate { Clinically (26 years)  
Public Health/Psychoneurology
- Applicable for Industry { Presence  
Extent  
Effectiveness of Therapy
- Patient Acceptability
- Easy/ Economic Basic Stress Evaluation