Don't go NUTS

A Case Study on the Physiology of Stress

Teaching notes:

- Use the case study to review the basics of the autonomic nervous system and the HPA axis as applied to a new scenario
- Can be used in anatomy and physiology or pathophysiology courses

Hormonal responses to stress:

- Cortisol:
  - Cortisol increases 2-4 fold above baseline in 30 minutes after the stressor
  - Salivary cortisol represents that amount of free cortisol and impacts the amount of cortisol that can cross the blood brain-barrier, having an impact on learning, memory and emotional state
- Catecholamines:
  - Includes epinephrine and norepinephrine
  - Salivary alpha amylase production increases during sympathetic stimulation and is used as a marker of catecholamine activity

Stress:

- Physiological stress:
  - the body enters fight or flight mode in response to a physical stressor (eg. exercise, illness)
- Relative Stress:
  - the body enters fight or flight mode in response to mental or emotional stressors
  - all relative stressors can be categorized as belonging to **NUTS**: **N**ovel, **U**npredictable, **T**hreat to ego, **S**ense of loss of control (which includes time-related stressors)
  - Can also use this as an opportunity to explain methods to deal with relative stressors and how they relate to the physiology of the fight or flight response
    - Deep breathing = shift to parasympathetic dominance
    - Exercise/movement = helps to use the glucose stores released by the cortisol pathway
  - See the work of Dre.Sonia Lupien for more information regarding relative stress (Sonia Lupien - Sonia Lupien conférencière)