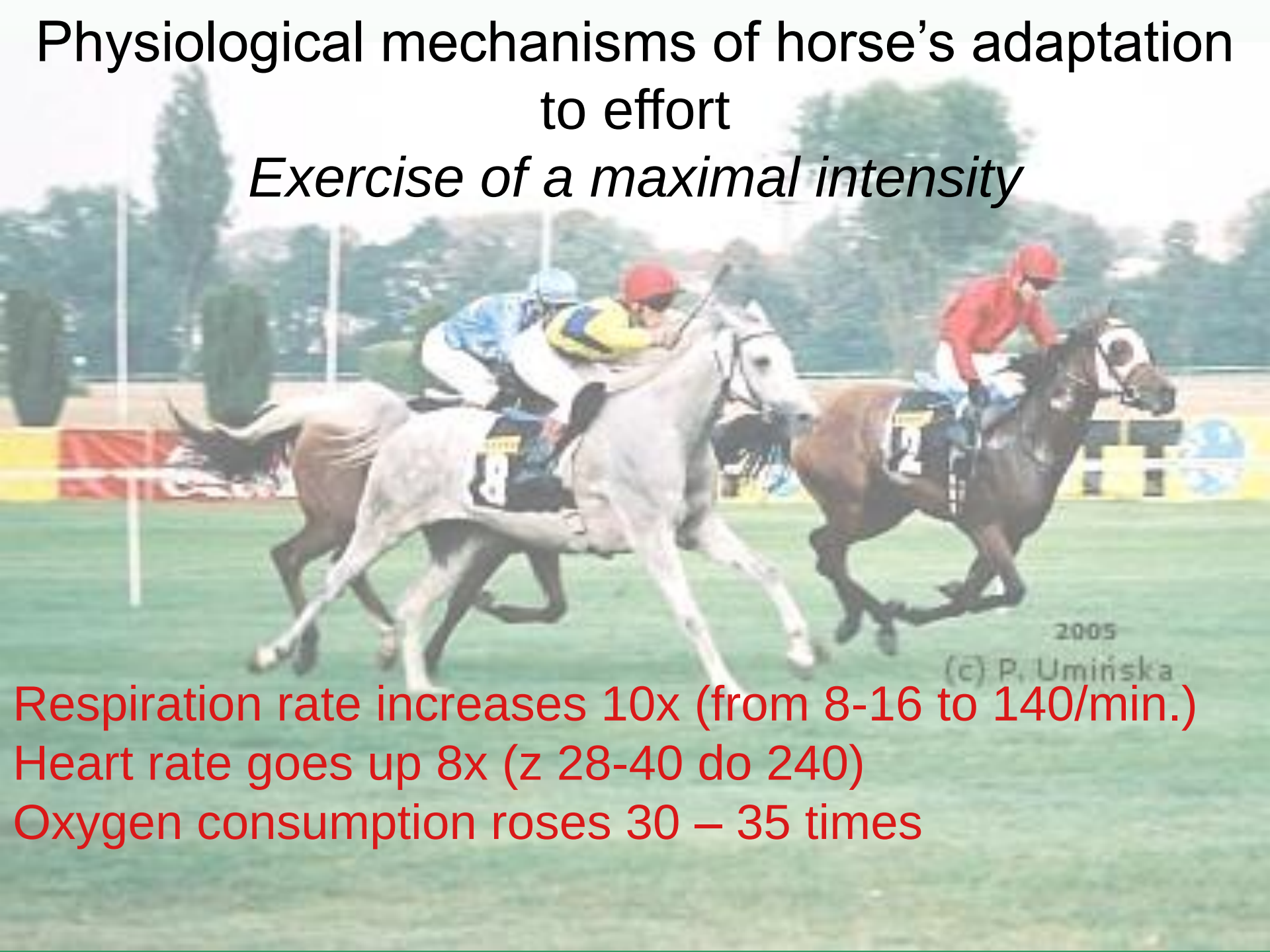
Physiological mechanisms of horse's adaptation to effort

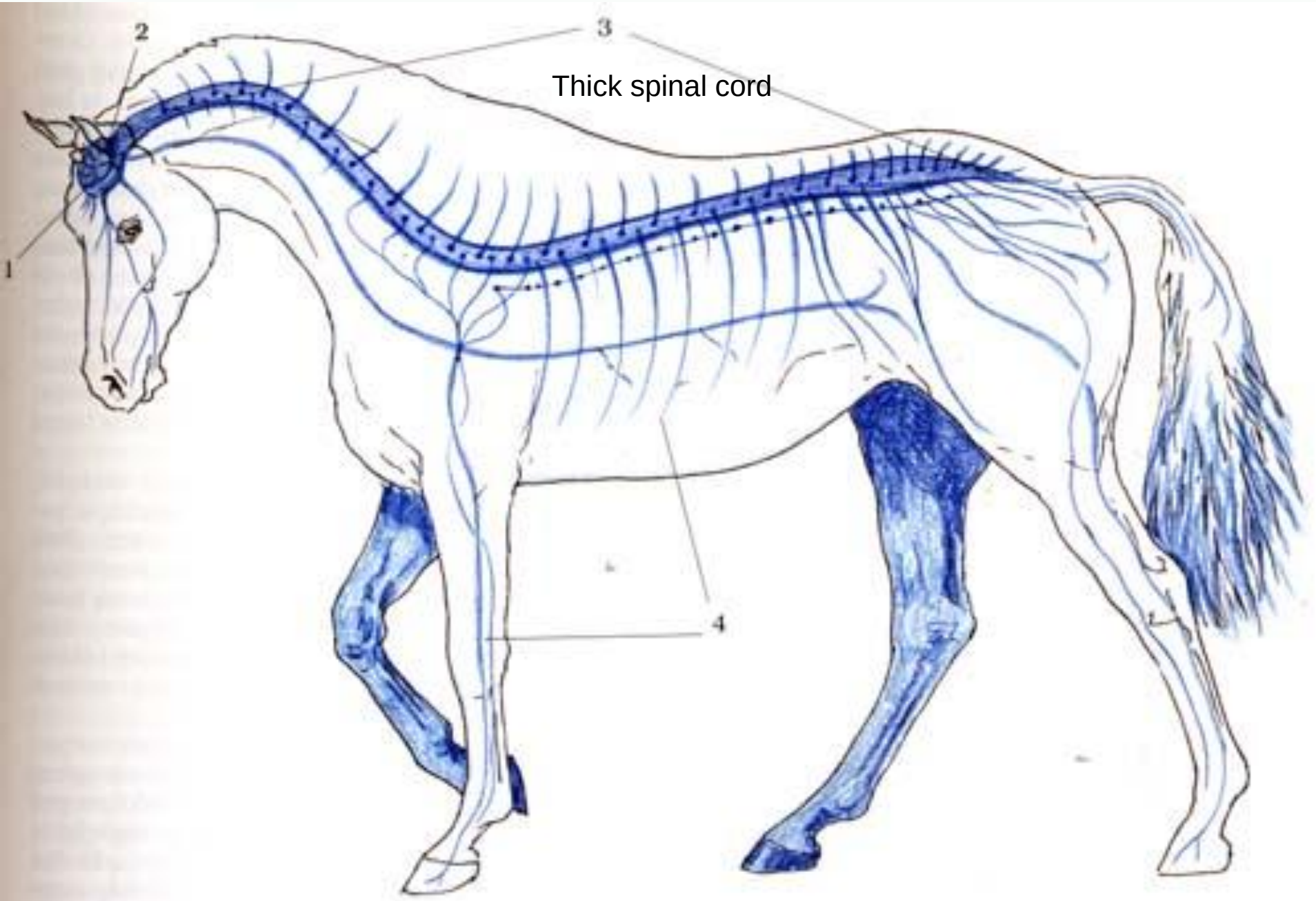
Exercise of a maximal intensity



Respiration rate increases 10x (from 8-16 to 140/min.)

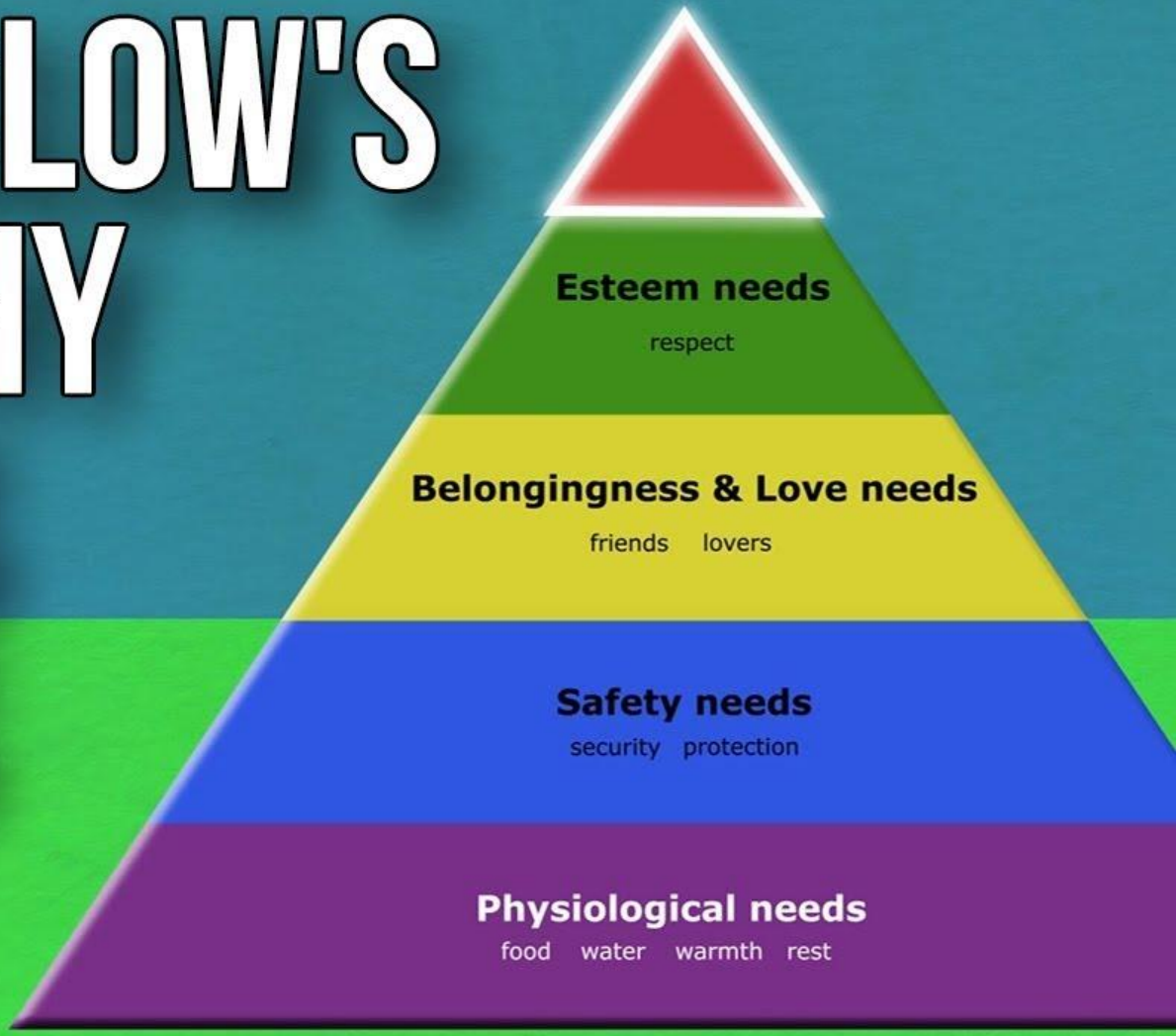
Heart rate goes up 8x (z 28-40 do 240)

Oxygen consumption roses 30 – 35 times



Układ nerwowy: 1 — mózg, 2 — móżdżek, 3 — rdzeń kręgowy, 4 — nerwy obwodowe

WHY MASLOW'S HIERARCHY OF NEEDS MATTERS

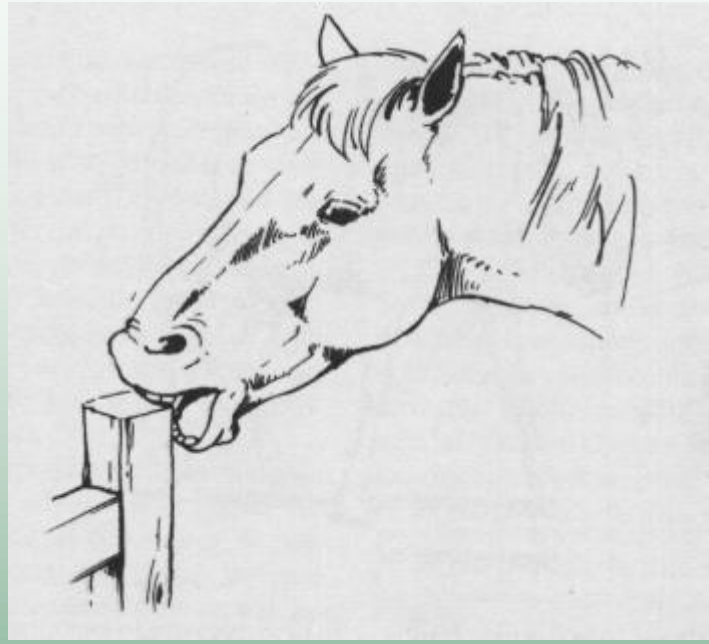


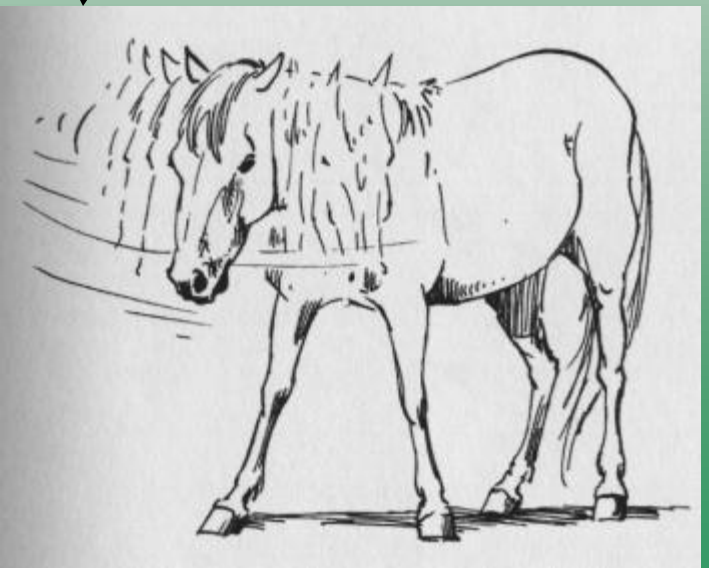
Stress, frustration resulting from the inability to meet needs lead to behavioral disorders

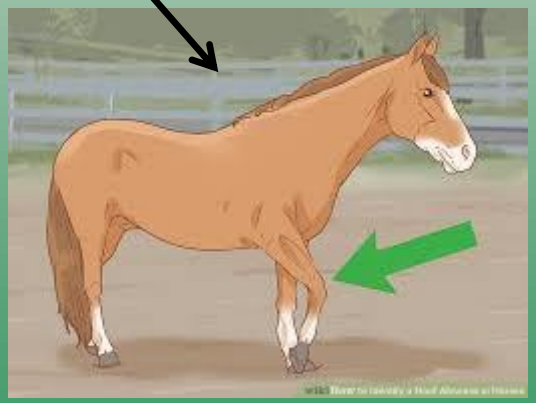
- Behavioral disorders (bad habits, harmful habits, stereotypies) are repetitive behaviors - lack an apparent goal or function
- **Crib biting** (cribbing, aerophagia) in horses is a compulsive repetitive behavioural disorder that's most common in equines that spend a lot of time stabled.
- When the horse cribs, it grasps a solid surface with their front teeth and pull back, contracting the neck muscles, swallows a gulp of air and emitting a characteristic grunting sound.
- Swallowed air dries out the mucous membranes of the esophagus and stomach which leads to esophageal and gastric ulces and colics.
- **Cribbers** may exhibit weight loss, overall poor condition, abnormal muscling in the neck, and excessive wear on the teeth.
- A number of causes for cribbing have been proposed and studied, but to date there are no definitive answers. It is likely that multiple factors are responsible for the behavior.

Abnormal behaviour (bad habits) - stereotypies

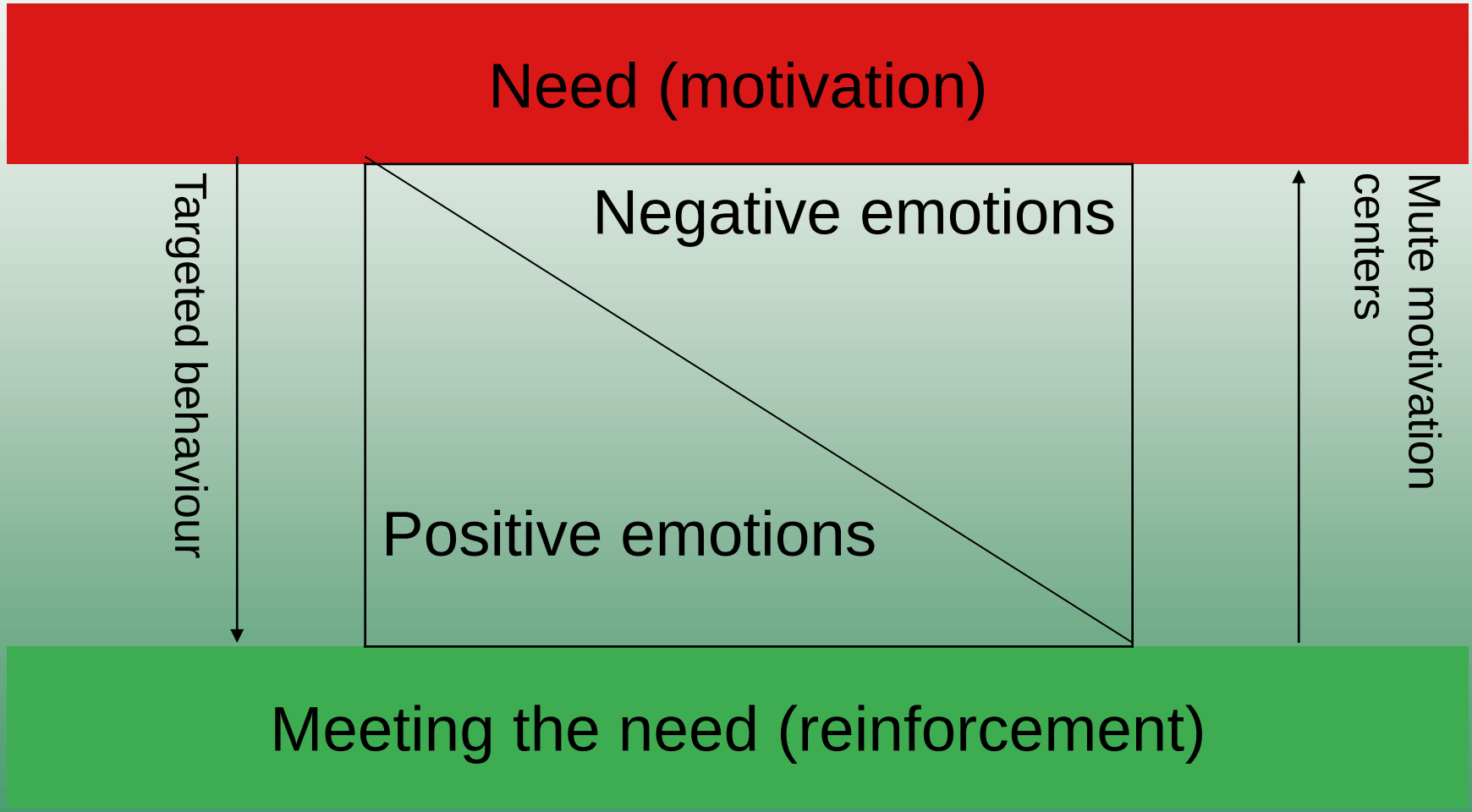
- crib bitting
- weaving
- hitting one foreleg against the ground
- head shaking
- biting and/or kicking





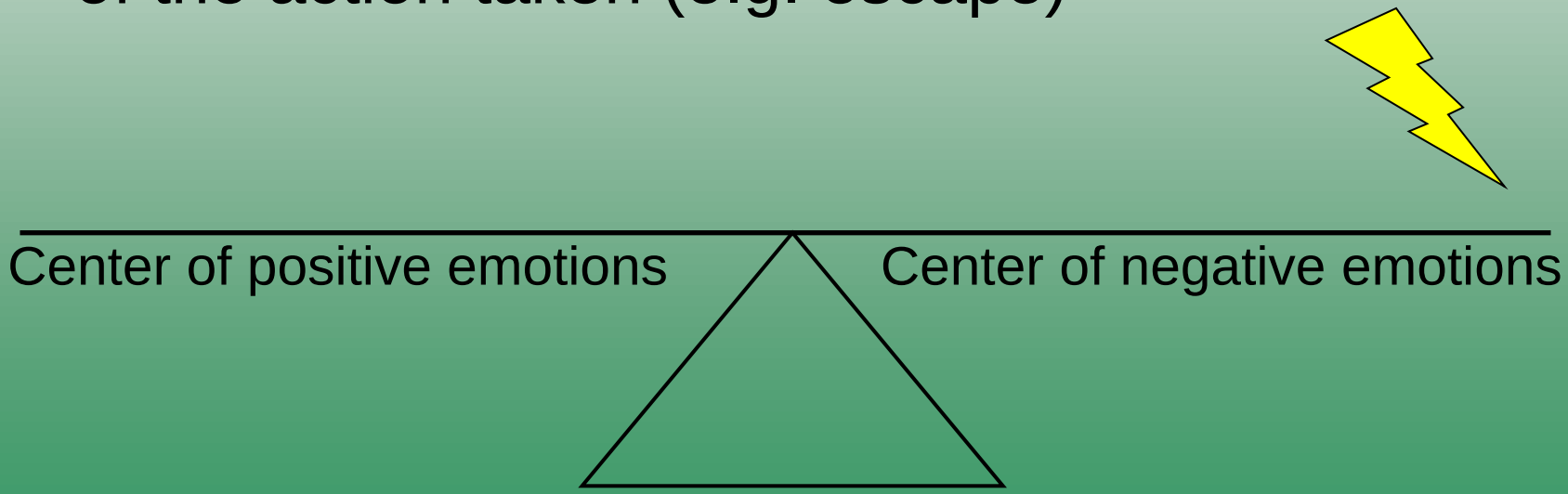


Behaviour regulation mechanism



Emotions – an important adaptive feature

- caused by an imbalance between the body and the environment
- are used to assess a given situation (stimulus)
- direct behaviour
- Facilitate the assessment of the purposefulness of the action taken (e.g. escape)



Chance of reinforcement postponed

- already taking action to gain reinforcement causes pleasant feelings
- „vision of the future”
- effort without a vision of positive reinforcements is annoying and depletes the body's strength

Vision of reinforcement

- the body's needs are revealed depending on its internal state and environmental conditions

- animal behavior is guided by predictions of success based on innate responses and acquired experience

Severity of weakening reactions

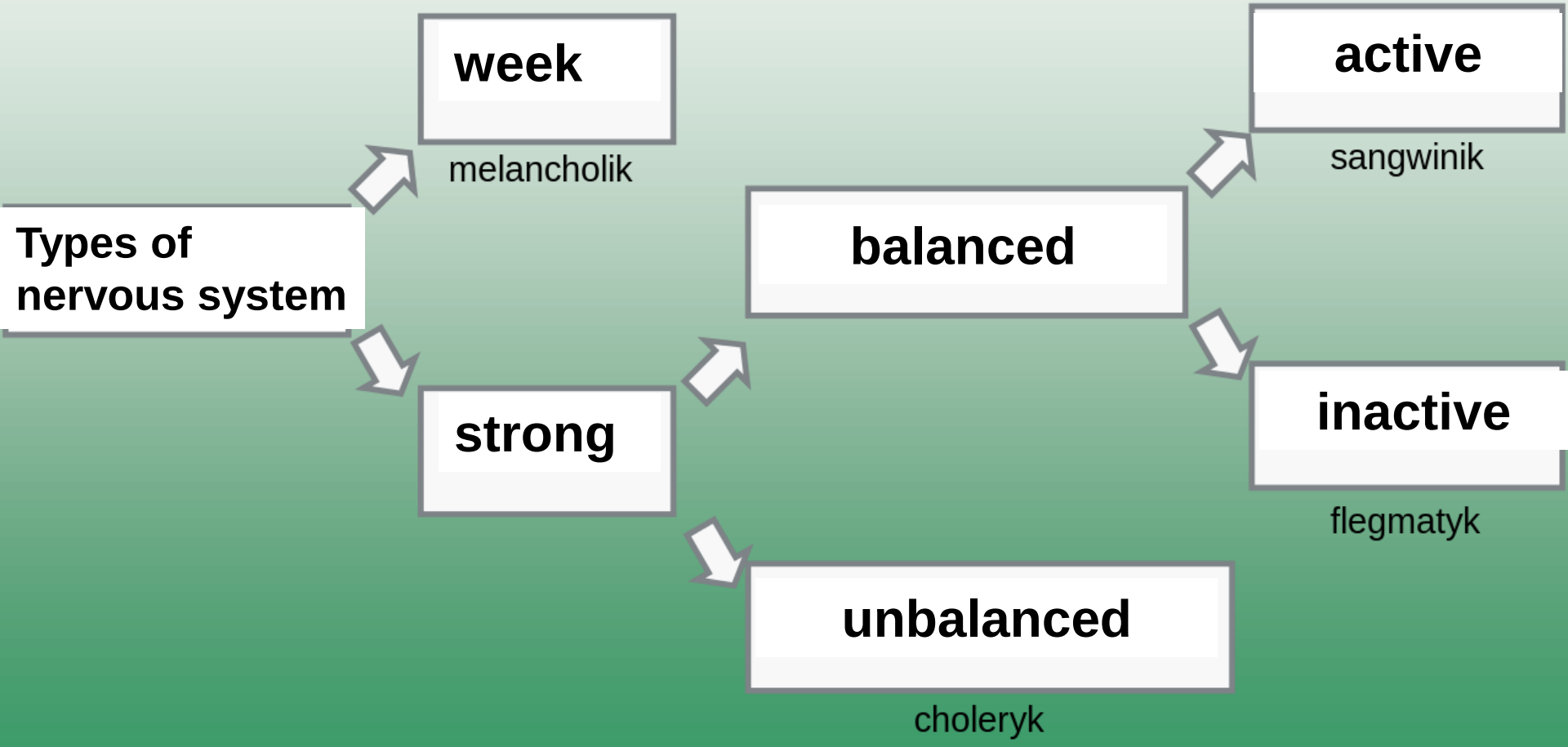
Distribution of reinforcements:

- systematic – bringd a quick but short-term effect
- sporadic – used less and less often, more delicate reinforcements, which strengthens learned behaviors

Psychology of individual horse behaviour

Temperament – innate pattern of the work of the nervous system

Types of temperament



Character

Character is a relatively durable but new quality in behaviour

- is shaped based on the innate properties of the nervous system (temperament)
- results from the acquired experience, sensations and impressions
- Positive features of the horse's character: courage, diligence, trust, obedience
- Side effects: distrust, timidity, malice, laziness

Value in use of horses and their temperament

Among draft horses – **no** with week or unbalanced temperament

70% sanguines

30% phlegmatic and choleric

>30% sanguine

>30% choleric

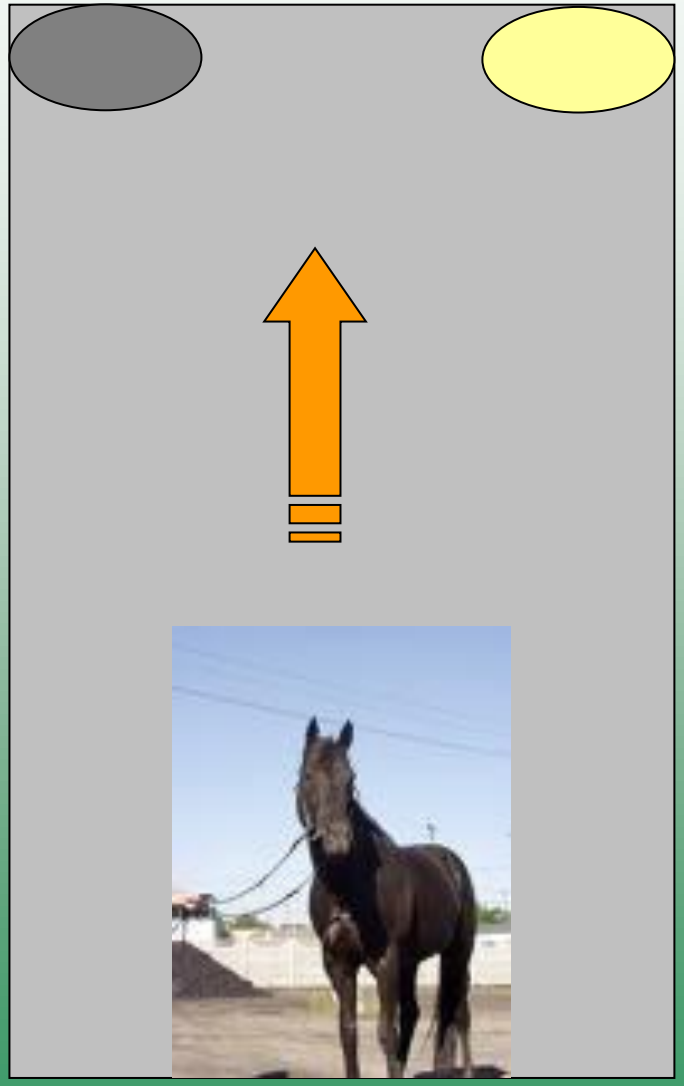
Method for determining the temperament traits of horses

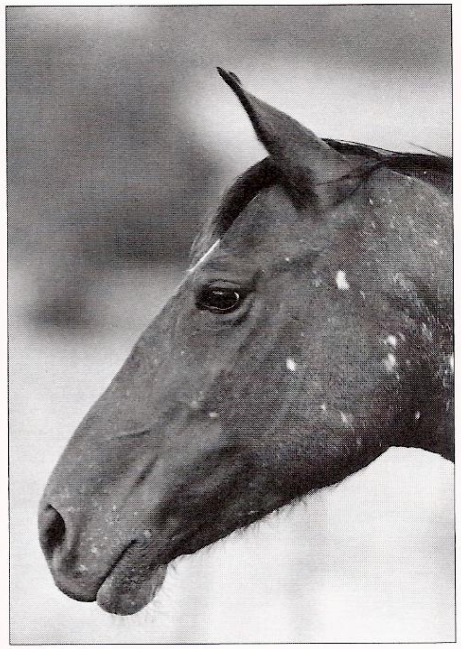
- 1st day – feeding 3-4x
- 2nd day – repetition
- 3rd day – change of cribs

  sanguine –orientation reaction

  phlegmatic – response is slow and sluggish

  choleric – rearing, neighing
- 4th day – 2 x change of cribs
- 5th day – oats in bucket + bell





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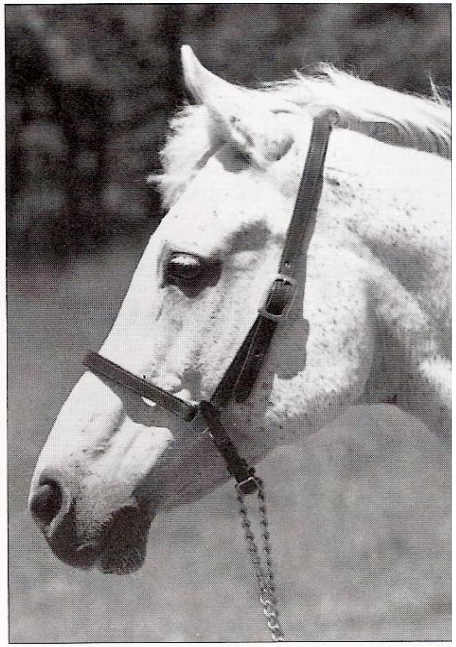

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3. *Dziwne zgrubienie poniżej oczu:*
Zazwyczaj wskazuje na dziwne i trudne do przewidzenia zachowanie.
Strome chrapy i średniej wielkości ganasze:
Przeciętna inteligencja.

4. *Odrobinę szczupacza głowa w połączeniu z długim, pełnym nosem, dużymi ganaszami i delikatnymi chrapami:*
Wysoka inteligencja.

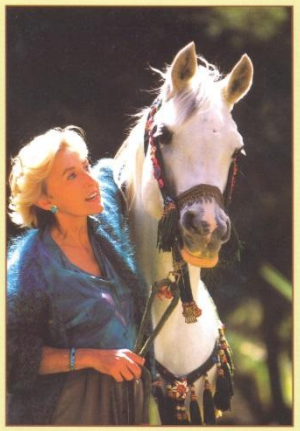
5. *Prosty profil, duże ganasze:*
Pewny siebie.

6. *Rzadko spotykany profil, czoło bardzo strome w kierunku potylicy. Duże ganasze. Strome chrapy:*
Potencjalnie oporny i uparty.

7

Prawdziwa więź z koniem

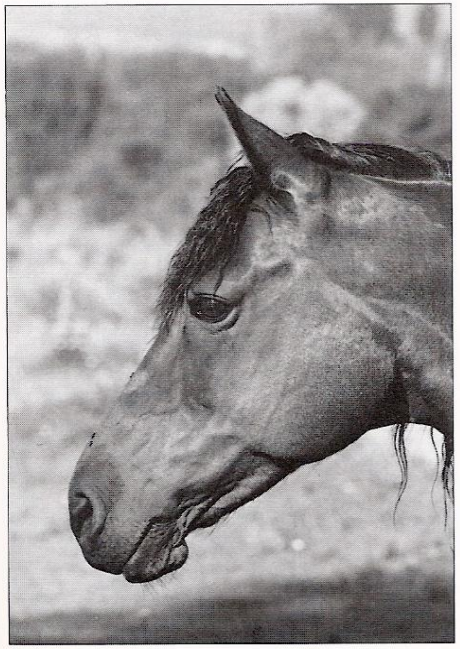
System TTouch



Linda Tellington-Jones

GALAKTYKA

10



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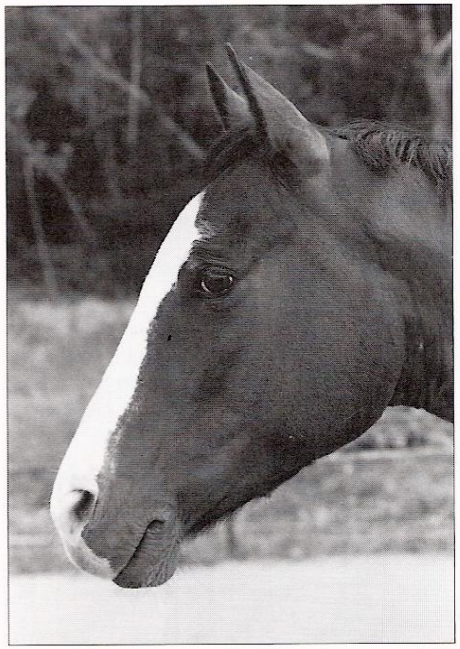

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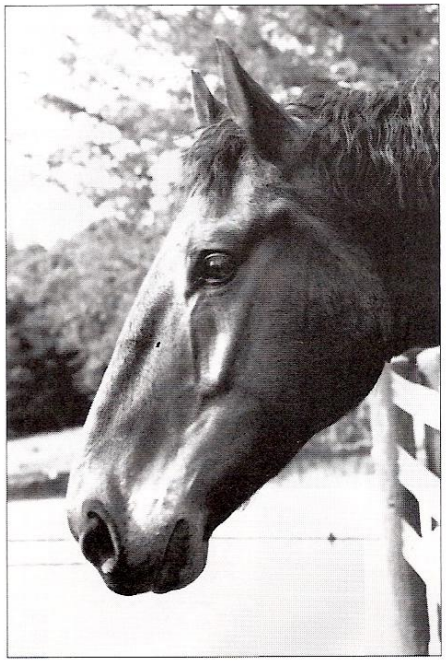

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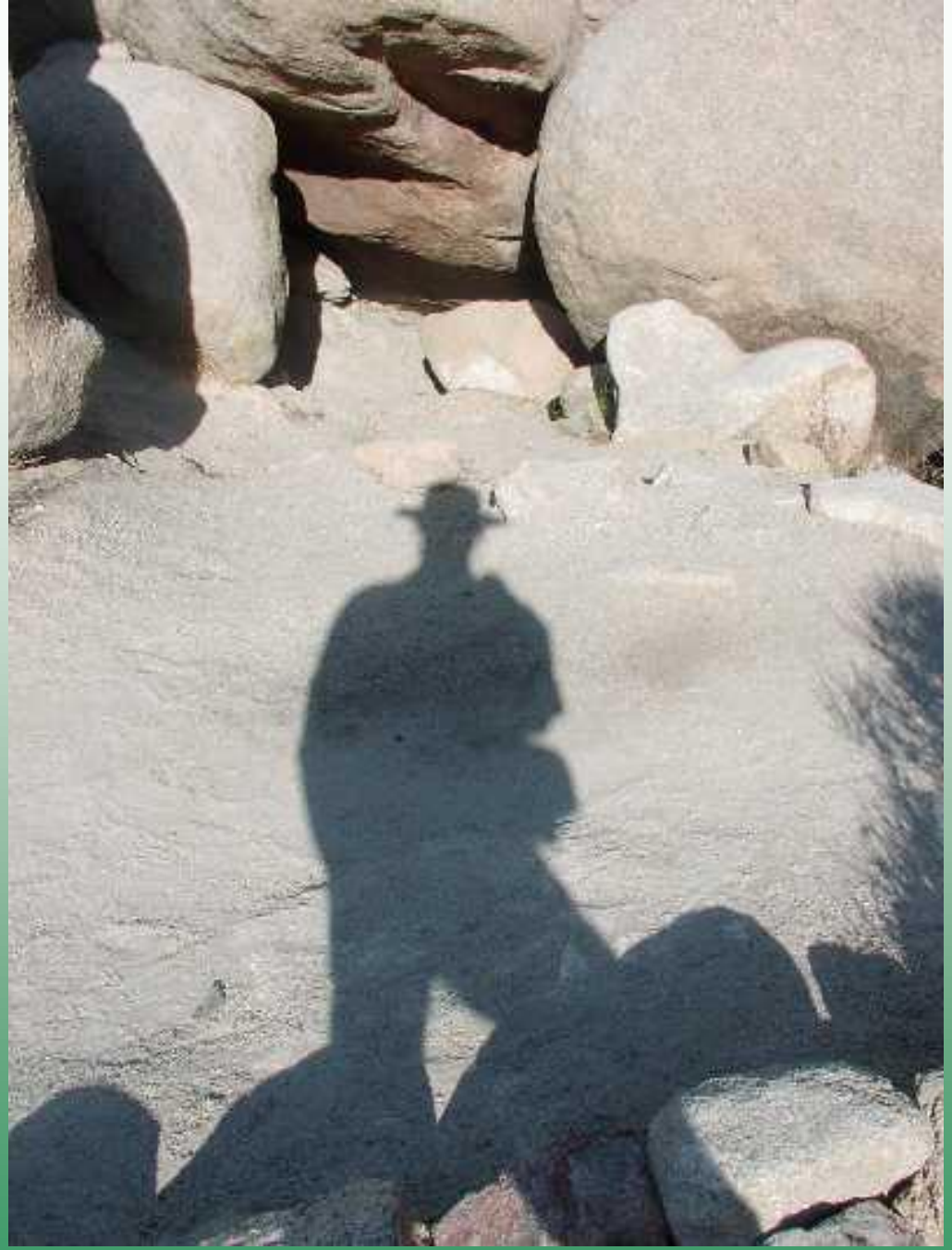
Join-up method of Monty Roberts



Man gives me food and drink - he is my god!

Man gives me food and drink - I think I'm a god!

Emotions and the activity of adrenergic nervous system

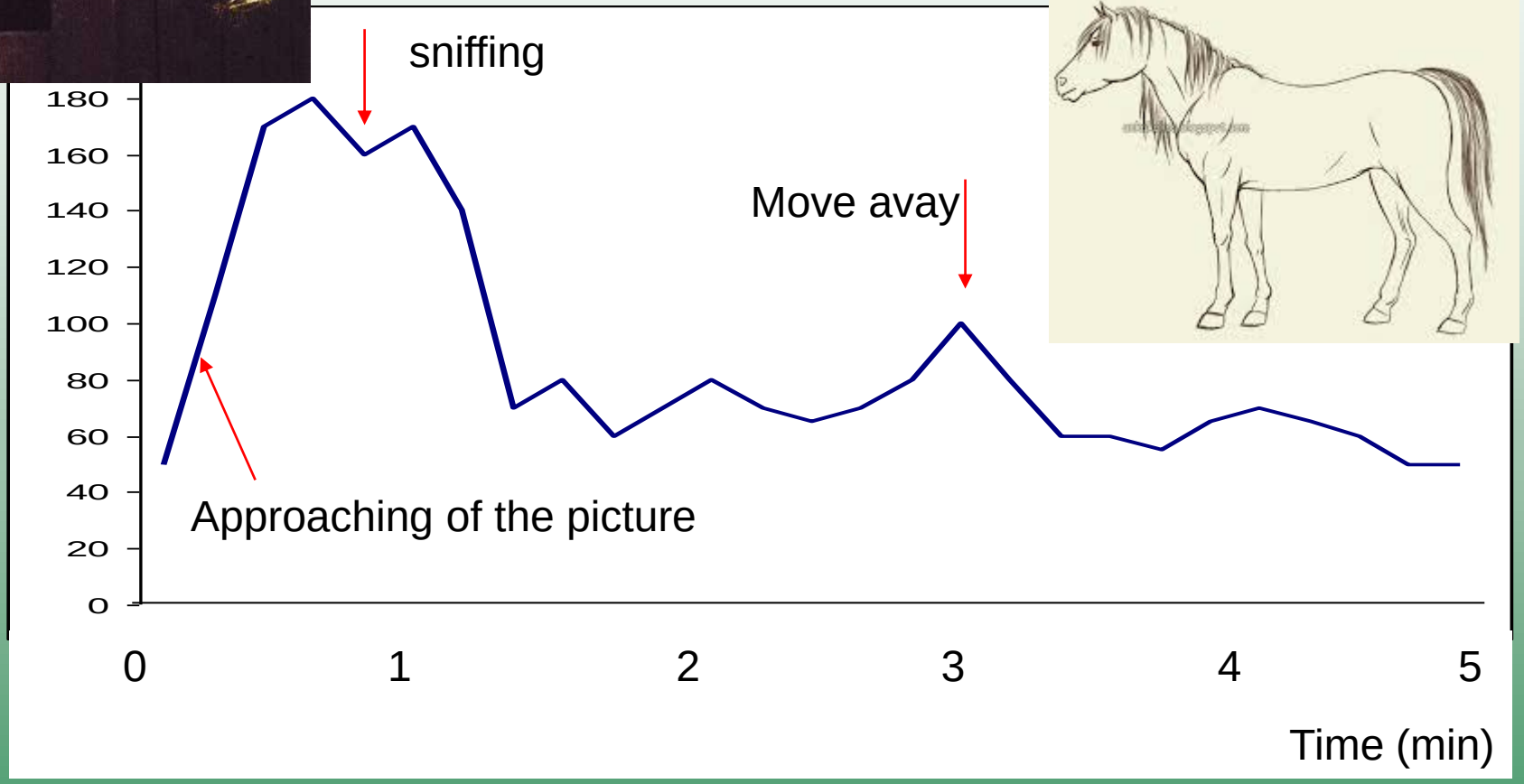
- Psychosomatic reactions

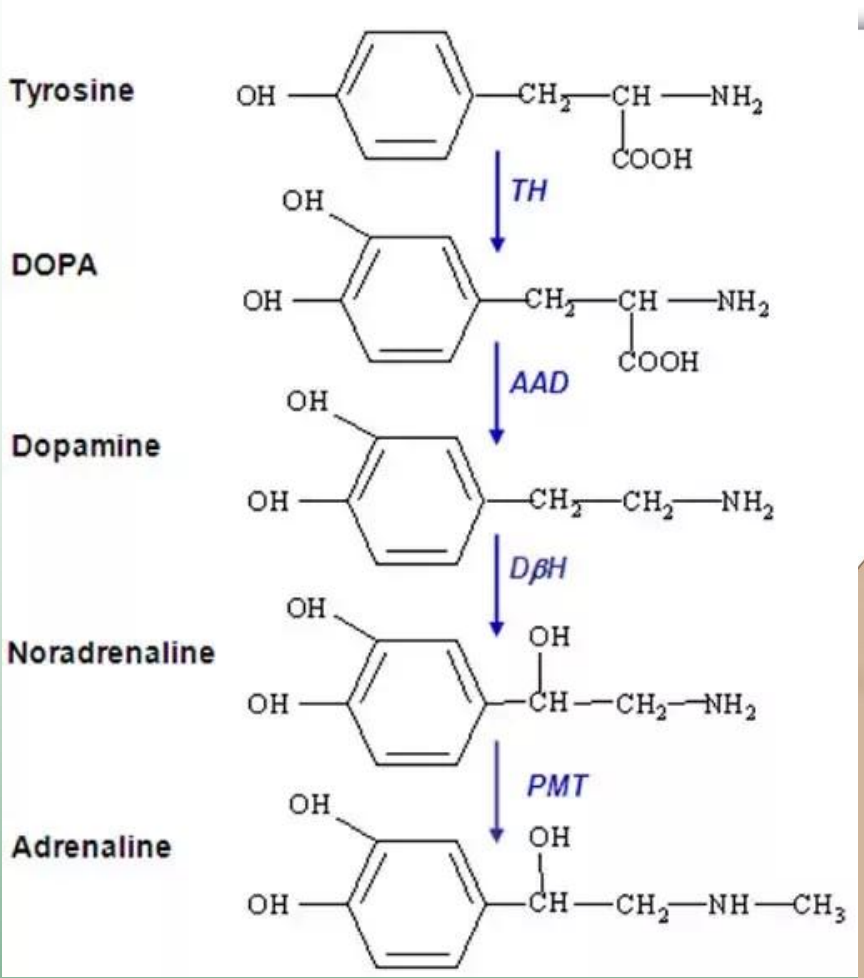
„my heart beat out of joy”

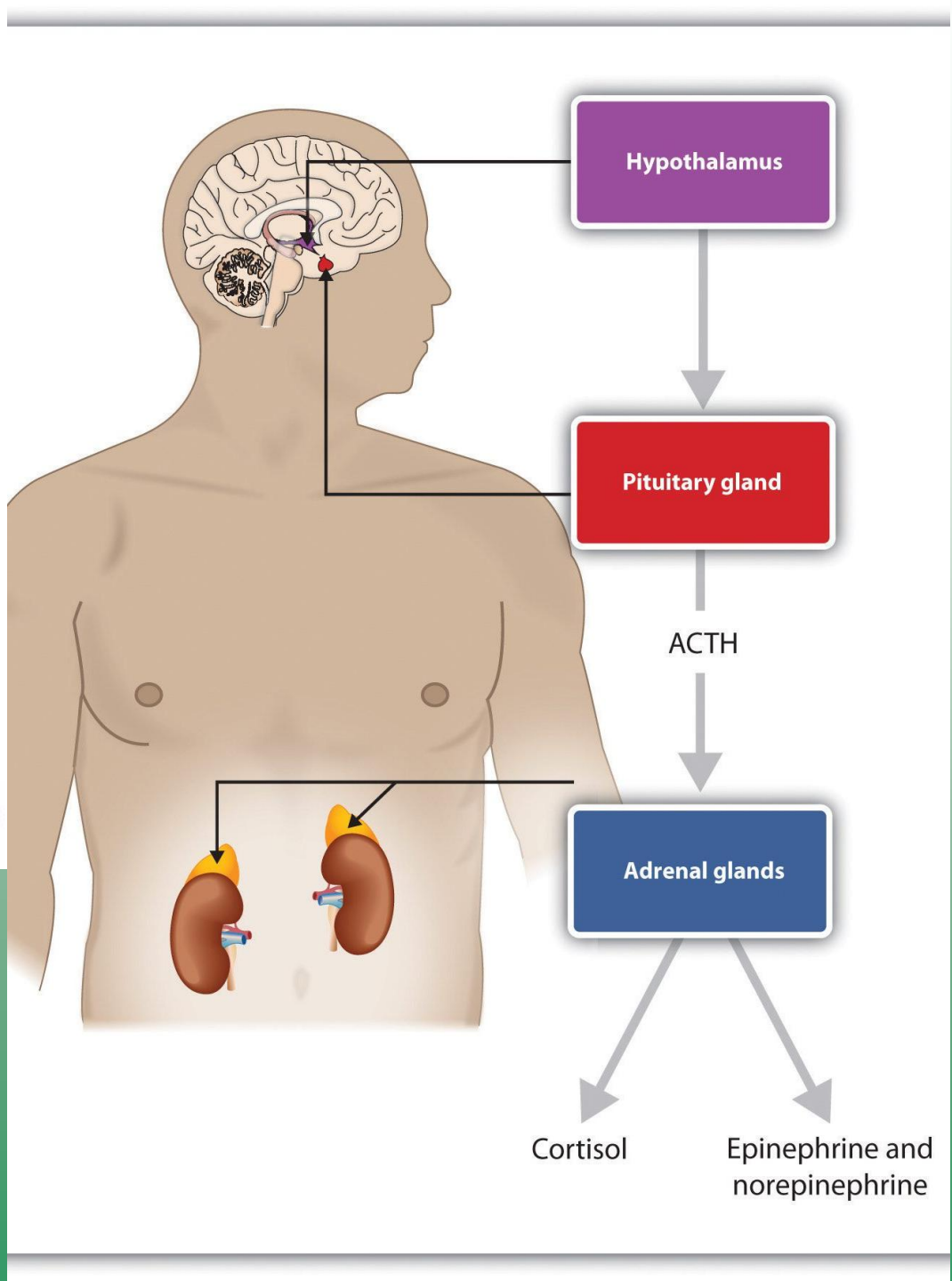
„to sweat with fear”

- Heart and breath rates increases in responce to novelty
- Pre-competiton fever
- „ proud” attitude of the dressage horse

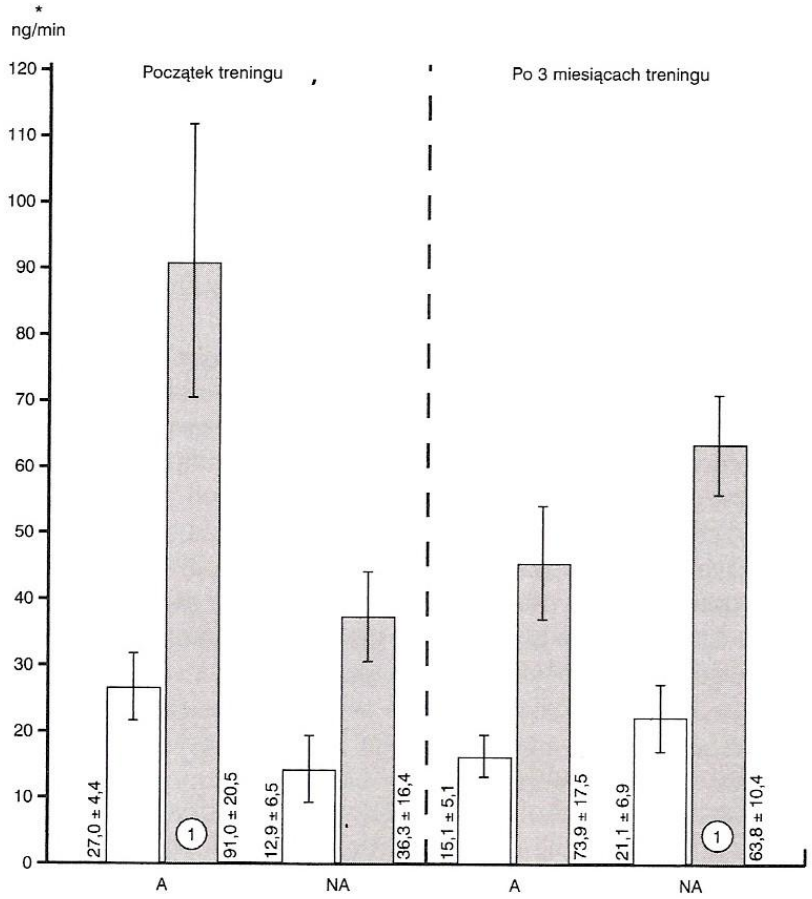
Heart rate in a horse which see a horse drawing




Tyrosine
TH
DOPA
AAD
Dopamine
DβH
Noradrenaline
PMT
Adrenaline


Hypothalamus
Pituitary gland
ACTH
Adrenal glands
Cortisol
Epinephrine and norepinephrine

The amount of released catecholamines depends on the performance

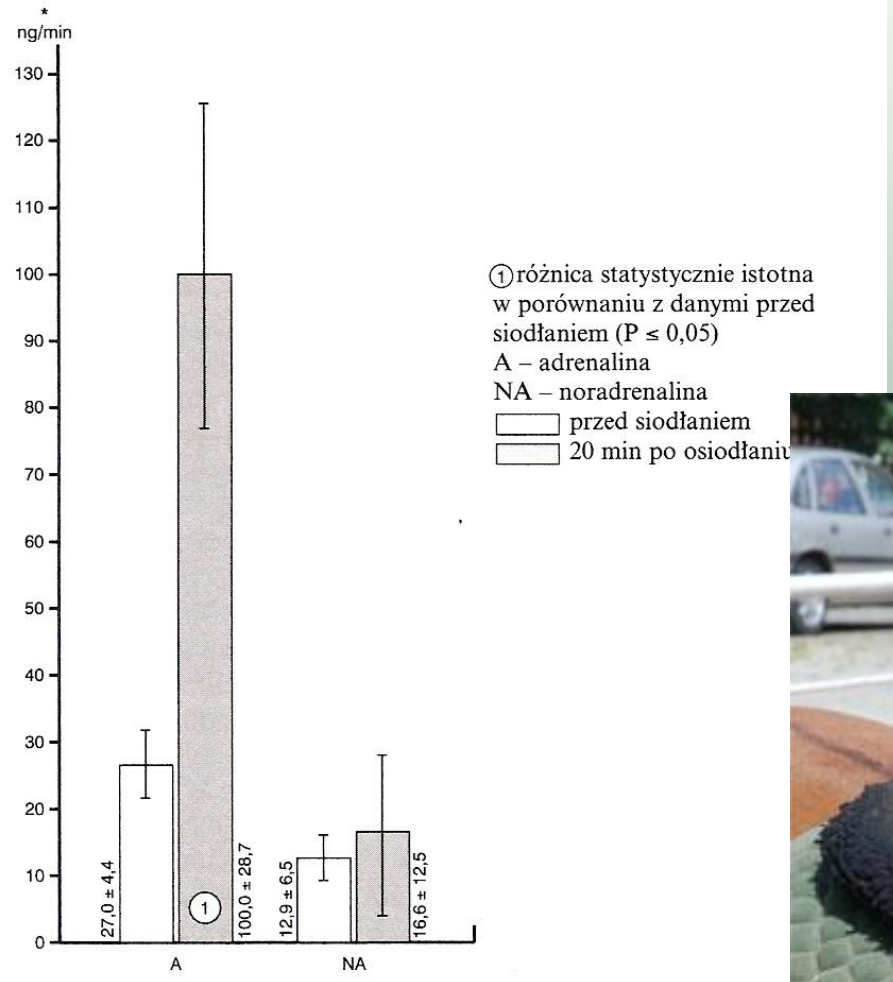


①różnica statystycznie istotna w porównaniu z danymi przed wysiłkiem ($P \leq 0,05$)
A – adrenalina
NA – noradrenalina
*ng/10^{-9}/min (wydalanie katecholamin w moczu)

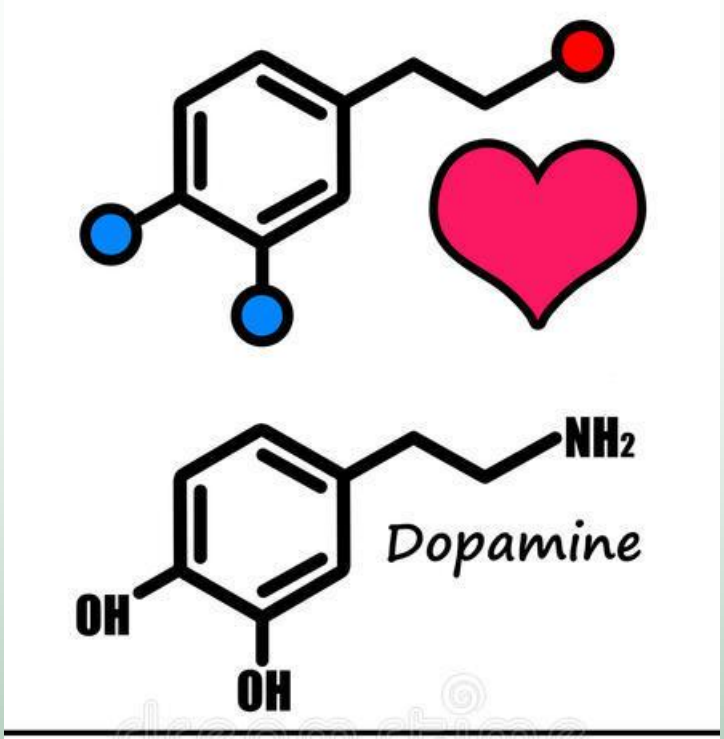
przed wysiłkiem
po wysiłku

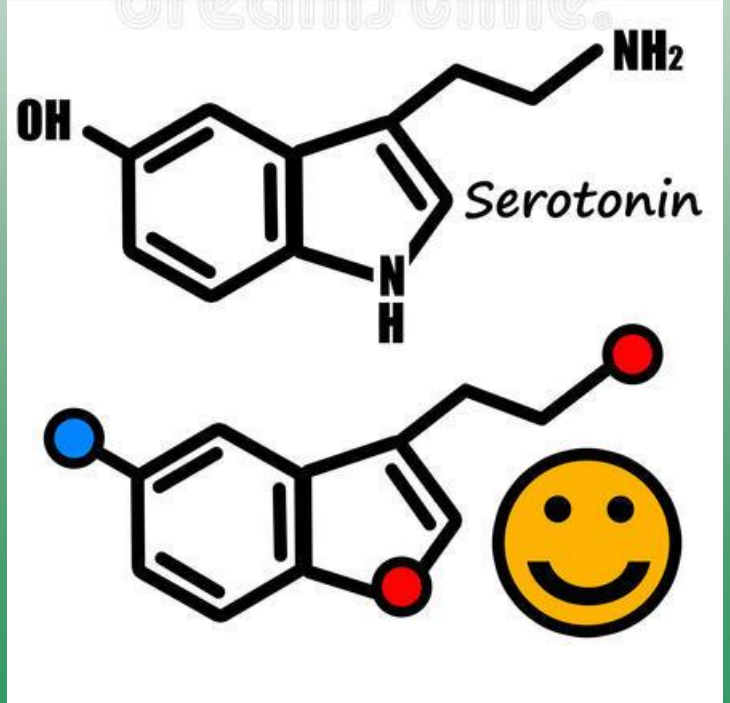
Praca treningowa w pierwszym i drugim badaniu była jednakowa i wyglądała następująco: 800 m kłusa, 1000 m galopu – tempo ok. 500 m/min, 15 minut stepa

Just saddling induces a sharp increase in catecholamines level



Rys. 4. Wpływ siodłania na wydalanie katecholamin


NH2
Dopamine
OH
OH


NH2
OH
Serotonin
N
H