Effect of excessive adrenaline on children
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“Mum, it always feels like little insects walking under my skin. It is over my whole body, even my head and they are bothering me. I’m itching all the time and that is why I am always scratching. And I cannot stand the noise!”

This was the response of little Adriaan who just couldn’t sit still in class, who was always on the go or had some body part moving. All his classmates and teachers labelled him being ADD (Attention Deficit Disorder) or as being naughty.

Did Adriaan truly have ADD? Or was excessive adrenaline the cause of his restlessness?

WHAT IS ADRENALINE?
Adrenaline (Epinephrine) is a hormone that is produced in the medulla of the adrenal glands which is attached at the top our kidneys and is our bodies’ natural boost of energy. In our brains we have a normal level of adrenaline that gives us a healthy balance.

Adrenaline is secreted by the adrenal medulla after which it is released into the bloodstream. The sympathetic nervous system and the parasympathetic nervous system regulate the secretion and level of the hormone. If these two systems go out of balance it leads to an intensification of the body’s normal functions (Chirmule, 2007; Dooley, 2008; Anon, 2015; Brogaard, 2015).

For a detailed explanation of the secretion of adrenaline: https://www.youtube.com/watch?v=8lfK0L8xDPO

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WHEN IS ADRENALINE RELEASED?

When a person has physical or mental stress adrenaline will usually be released. If the brain is under constant stress more adrenaline is released to satisfy the body’s needs.

- Typical situations that will stimulate the secretion of adrenaline include:
  - loud noises
  - bright lights
  - high temperatures
  - homework not done
  - examinations and/or assignments
  - anticipation of big events (Bennington, n.d.).

- It is believed some children have higher than normal amounts of adrenaline if the Moro reflex doesn’t inhibit (Anon, 2015).

- Humans are the only species that can cause the secretion of adrenaline with just a thought. Therefore our bodies are ready to fight to survive even if the danger is perceived and not real (Hartmann, 2004).

- Anxiety is a form of fear and a physiological state of the body when too full of adrenaline. When we are in perceived circumstances the action needed to get rid of the adrenaline doesn’t occur and therefore adrenaline builds up in our bodies. This puts us in a constant state of being alert and ready to fight or flight. The more adrenaline is secreted the more the perceived circumstances increase and the more adrenaline is released (Hartmann, 2004; Mayo Clinic Staff, 2013).

EFFECTS OF ADRENALINE

Adrenaline has always been part of the lives of mankind. Early man had physical, life threatening threats that would have warranted a surge of adrenaline. Today (except for the crime rate in South Africa), we are not generally faced with physical life threatening circumstances. We stress about work, homework, situations at home and so forth. Today higher amounts of adrenaline than needed are stored in the body but if stress continues over a period of time the person remains in a state of high alert (fight of flight) (Anon, 2015; Mayo Clinic Staff, 2013).

The purpose of adrenaline is to prepare the body for the fight or flight reflex in times of stress. When we feel that we are in danger the body’s endocrine system interacts with the nervous system which leads to a temporary shutdown of other systems in our body to get us into the fight or flight mode (Brogaard, 2015; Chirmule, 2007).

Typical physical symptoms we can expect when adrenaline is released into the bloodstream include:

- increased heart rate
- increased blood sugar levels
- increased metabolic rate
• dilation of blood vessels and airways
• higher blood pressure
• involuntary muscle contraction
• increased rate of respiration
• dilation of pupils in the eyes
• increased sweat production
• suppressed immune system
• feelings of fear (Hartmann, 2004; Mayo Clinic Staff, 2013; Dooley, 2008; Chirmule, 2007; Anon, 2015; Brogaard, 2015).

The reason why we experience the above is that our bodies need to produce the highest level of energy which is utilised for quick and efficient reactions. If the levels of adrenaline increase, the sensory neurons becomes more sensitive which enables us to do things that we wouldn’t be able to under normal circumstances when the adrenaline levels are normal (Chirmule, 2007). After the adrenaline surge is no longer needed our hormones need to go back into balance (Mayo Clinic Staff, 2013).

EFFECT OF TOO MUCH ADRENALINE IN THE BODY

Typical characteristics especially in children of the effect of too much adrenaline in the body for a prolonged period would be:

• overreaction to every noise
• fidgeting
• excessive talking
• erratic sleep patterns
• always on the move
• pins and needles over the body.

Owing to the above, classroom learning abilities are affected (Anon, 2015).
DOES ADRENALINE HAVE A POSITIVE SIDE?

The good news is yes, it does. It helps us survive when we need it but it also provides a healthy surge of energy needed for sports or exercise which in turn aids in the relief of stress and tension (Anon, 2015).

Deep breathing, regular exercise and effective stress management tools help to regulate the hormone levels in our bodies and keep us healthy (Anon, 2015).

At the end of this article are some Mind Moves to inhibit an active Moro reflex (De Jager 2009:17). If this reflex is inhibited the amount of adrenalin secreted into the body will decrease.

IN CONCLUSION

Did Adriaan fit in the box the teachers put him in? Probably not.... Adriaan’s body was always in a state of flight or flight owing to excessive adrenalin in his body. That is probably the reason why he was always on the move and complaining about noises and insects under his skin.

MIND MOVES® HOME PROGRAMME

Mind Moves is a movement programme that parents and teachers can utilise on a daily basis to address problems that lead to learning barriers. Mind Moves are exercises that need to be done in a controlled manner, and if possible, 3 times per day (De Jager, 2009).

The Mind Moves home programme that I would recommend for excessive adrenalin in the body is the same as for a learner with an aberrant Moro reflex. A learner with an aberrant Moro reflex is in a constant state of alert for danger (real or perceived). He may show typical reptilian brain behaviour and therefore his body is producing too much adrenalin, causing constant state of “flight or fight” (De Jager, 2009).

Power on

Rub the indentations just below the collar bone, in line with the left eye. To re-establish the electrical flow via the Vagus nerve (to the speech organs and stomach) to help relax butterflies and talk with ease.

Rise and shine

Simulate the reflex by flinging the arms wide open while breathing deeply and slowly and then closing the arms over the chest in a hug. The learner can hug himself, or the parent may hug him simultaneously. This move boosts relaxation, rhythmic breathing and a sense of well-being.
Lip workout

Pucker up the lips and hold for a count of eight. Say "cooeee", pulling the lips into a wide smile while stretching the "eeee" sound for the count of eight. This move improves muscle tone in and around the lips for clear pronunciation.

Confidence booster

Cross the feet and arms in a hugging fashion. Rest the tongue high against the palate, in the sucking position, in order to activate the part of the brain that calms emotions. Breathe slowly. The eyes may be closed. This move calms the body, heart and mind. It also boosts the immune system and enhances rhythm.

Supporting the development of Physical Quotient:

- Sound therapy,
- play on a swing, slide, roundabout and see-saw
- Blow out a candle.
- Exercise (De Jager, 2009)

Bibliography