The fight or flight response: Our body's response to stress

Everyone, especially military personnel, are going to encounter some kind of stressful or dangerous situation in their lifetime, and fortunately, our body has a natural, built-in stress response to threatening situations called the 'fight or flight response'. Understanding our body's natural response to threat and danger can help us better understand the symptoms of PTSD.

The fight or flight response refers to a specific biochemical reaction that both humans and animals experience during intense stress or fear. The sympathetic nervous system releases hormones that cause changes to occur throughout the body.

What is fight or flight response?

This is the body's response to perceived threat or danger. During this reaction, certain hormones like adrenalin and cortisol are released, speeding the heart rate, slowing digestion, shunting blood flow to major muscle groups, and changing various other autonomic nervous functions, giving the body a burst of energy and strength. Originally named for its ability to enable us to physically fight or run away when faced with danger, it's now activated in situations where neither response is appropriate, like in traffic or during a stressful day at work. When the perceived threat is gone, systems are designed to return to normal function via the relaxation response, but in our times of chronic stress, this often doesn't happen enough, causing damage to the body.

The fight-or-flight response, also known as the acute stress response, refers to a psychological reaction that occurs in the presence of something that is terrifying, either mentally or physically. The fight-or-flight response was first described in the 1920s by American physiologist Walter Cannon. Cannon realised that a chain of rapidly occurring reactions inside the body help mobilise the body's resources to deal with threatening circumstances.

In response to acute stress, the body's sympathetic nervous system is activated due to the sudden release of hormones. The sympathetic nervous systems stimulates the adrenal glands triggering the release of catecholamines, which include adrenaline and noradrenaline. This results in an increase in heart rate, blood pressure and breathing rate. After the threat is gone, it takes between 20 to 60 minutes for the body to return to its pre-arousal levels.

The fight-or-flight response is also known as the acute stress response. Essentially, the response prepares the body to either fight or flee the threat. It is also important to note that the response can be triggered due to both real and imaginary threats.

The difference between anxiety and fear

Before we discuss what happens in the fight or flight syndrome, it is important to first discuss the difference between fear and anxiety. Fear is the emotion you experience when you are actually in a dangerous situation. Anxiety is what you experience leading up to a dangerous, stressful, or threatening situation. You may also experience anxiety when you think about something stressful or dangerous that could happen to you. Other words for anxiety may be 'dread' or 'apprehensiveness'.

The difference between anxiety and fear can be illustrated nicely this way. Think about the last time you went on a roller coaster. Anxiety is what you felt when you were in line looking at the hills, steep drops, and loops, as well as hearing the screams of other riders. You also likely felt anxiety when on the roller coaster as you got closer to the top of the first hill. Fear is what you experienced as you went over the peak of the hill and started your fall down the first hill.

Anxiety and fear are helpful

Anxiety and fear are very helpful responses. The human race may not even exist if it were not for these hard-wired responses to danger and threat. Anxiety and fear provides us with information. That is, they tell us when danger is present and they prepare us to act.

When you are in a stressful or dangerous situation and experience fear and anxiety, your body goes through a number of changes:

- Your heart rate may increase.
- Your vision may narrow (sometimes called 'tunnel vision').
- You may notice that your muscles become tense.
- You may begin to sweat.
- Your hearing may become more sensitive.

All of these changes are part of the fight or flight syndrome. As the name implies, these changes are preparing you for immediate action. They are preparing you to flee, freeze (kind of like a kangaroo does when caught in someone's headlights), or to fight.

All of these are adaptive bodily responses essentially designed to keep us alive, and because these responses are important to our survival, they occur quickly and without thought. They are automatic.

A downside to this response

It would be great if anxiety and fear only occurred in situations where we were in immediate danger. Unfortunately, it does not always work this way. For example, many people have fear and anxiety when speaking in front of other people. You may also have fear and anxiety when meeting someone new. A person with PTSD may experience fear and anxiety when they go out into crowded or cramped places, such as a grocery store or a subway. These situations are not dangerous in the sense that they don't threaten our survival. So, why might we have fear and anxiety in these situations?

We have fear and anxiety in these situations because of the way we evaluate these situations. Our body cannot always tell the difference between real and imagined threat. Therefore, when we interpret a situation as threatening, our body is going to respond as though that situation is dangerous and threatening, even if it really isn't in actuality.

The fight or flight response and PTSD

When people experience something traumatic and/or have PTSD, they may no longer feel as though the world is a safe place. It may feel as though danger is everywhere. As a result, a person may constantly be in a state of fear and anxiety. For this reason, cognitive behavioural treatments for PTSD often focus a lot of attention on altering the ways in which people interpret their environment. Mindfulness may be another way of 'taking a step back' from thoughts, reducing their power to activate the fight or flight response.

Common signs

The fight or flight response is a catch-all phrase describing the body's response to stress. Fight or flight refers to the two choices our ancestors had when facing a dangerous animal or enemy. In that moment of stress (fear) the body prepares itself to be injured and to expend energy in the large muscle groups of the arms, legs and shoulders that we use to either fight or run (flight).

A fight or flight response causes a few common signs:

- **Cool, pale skin**: Blood flow to the surface of the body is reduced so that the blood flow to the arms, legs, shoulders, brain, eyes, ears and nose can be increased. Besides getting ready to run and fight, the body is preparing to think quickly and be aware of threats by hearing, seeing and smelling things better. Pulling blood away from the skin also helps decrease bleeding from cuts and scrapes.

- **Sweating**: Running or wrestling with bears will certainly cause an increase in body heat. To prepare for that, the body starts to sweat as soon as it feels stressed. So not only is our sense of smell heightened, but so is how we smell to others (body odour). In medical terms, this kind of sweating is also known as diaphoresis.

- **Dilated pupils**: To let more light in and improve sight, the pupils dilate.

- **Dry mouth**: Gastric juices and saliva production decreases because blood flow to the digestive system is decreased. The body can interrupt digestion of that hamburger until after the threat has been eliminated. Think of it as a priority system: It's more important to live now than to digest food. This same reaction can also cause an upset stomach.

The fight or flight response is a direct result of adrenaline being released into the bloodstream. Anything that causes stress to the body will trigger a fight or flight response -- angry boss, deadlines, family fight, illness, car accident, heart attack, etc.

The fight or flight response prepares the body for fast-paced action. Whether you choose to flee or fight, your body will need all of its resources. This is believed to be an evolutionary development and can only be suppressed through intense work and training.

If you have a phobia, the fight or flight response may be activated whenever you are confronted with the object of your fear. This is why you may shake, cry, become hostile or even run from the situation.

A phobia can have a long-term effect on your physical health. Frequent or chronic activation of the fight or flight response, particularly in situations in which neither outcome is practical, can lead to digestive problems, increased risk of heart disease and the other known effects of chronic stress. With treatment, however, you can learn to overcome your fear.

Taming the flight or flight response

What do you feel in your body when you feel anxious? Usually, you may notice a rapid heartbeat, shallow, rapid breathing and tense muscles.

These physical reactions are the result of the 'fight or flight' response system, an ingenious mechanism. When a person senses something perceived as potentially threatening, a number of physiological changes take place in the body. The brain sends warning signals through the central nervous system. The adrenal glands begin producing hormones (adrenalin and noradrenalin) which cause the heart to beat faster and breathing to become more rapid. Muscles tense and pupils dilate. The person's body is getting ready to do one of two things:

- Confront the threat and deal with it, or
- Get as far away from the threat as quickly as possible.

This fight or flight response is appropriate and can actually be life saving when there is an actual and imminent physical threat. For example, when the driver in front of you suddenly slams on the brakes, you need to react quickly (and without a lot of thought) in order to prevent an accident.

However, some people have an early warning system that's a little too sensitive. For these people, the fight or flight responses are triggered by events that would be ignored by many others. This hypersensitivity can be caused by a number of factors, including:

- An inherited imbalance in brain hormones, as in anxiety and bipolar disorders
- A history of verbal or physical abuse in childhood
- Other post-traumatic stress disorders

It's exhausting and uncomfortable to spend so much time in a state of high alert. In addition, there are possible physical consequences to feeling stressed all the time, including high blood pressure, tension or migraine headaches, fibromyalgia, and TMJ (temporomandibular joint) syndrome.

Fight or flight response

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What can we do? How do we discharge all that energy when we realise there really is no danger? After all, the fight or flight reaction is an *involuntary physical response* to a situation. It might not be possible to issue a mental directive to our adrenal glands to tell them to stop producing adrenalin and noradrenalin.

However, breathing exercises provide a relatively easy tool for **coming down** from this heightened state of alert. Some of the relief comes just from taking a moment to pause and notice what's going on in our bodies.

NOTE: *You might find it helpful to discharge some physical energy to relieve muscular tension before beginning a breathing exercise. After you've released some muscular tension, try the following breath exercise.*

Three-part breath

- Find a place where it's quiet.
- Sit in a straight back chair with both feet on the floor or lie on the floor with a straight spine.
- Begin inhaling by expanding the abdomen (let it inflate like a balloon), then move the breath into your rib cage and, finally, all the way into your upper chest.
- Exhale by reversing this action; begin at your collarbones and exhale down through your rib cage and into your abdomen. Contract your abdominal muscles as you finish exhaling.
- You might find it helpful to lightly place your right hand on your abdomen and your left hand on your rib cage to help direct the breath on its journey.
- Begin by practicing for one minute and then gradually lengthen the practice to five minutes.

This technique helps to eliminate shallow chest breathing and encourages full exhalation and inhalation.

Once again, there's no need to push yourself or judge yourself for being anxious. The idea is simply to be quiet for a short time and notice your breath.