# Fact Sheet on the Nervous System, Dysregulation and Eating

**This fact sheet is written by dietitians for dietitians; other healthcare and education professionals may also find the information helpful. It is evidence-informed, using available evidence alongside lived experience and clinical expertise.**

When someone is struggling to eat or drink, it can be tempting to focus immediately on what they are eating. However, understanding what is happening in the nervous system may help us better understand the eating and drinking difficulties. This enables us to create a holistic treatment plan which may at times include prioritising the nervous system, in order to improve food and drink intake.

The aim of this fact sheet is to give a simple overview of:

- The role of the nervous system and impact of nervous system dysregulation in eating and drinking
- Why supporting regulation and felt safety may be an important first step towards meaningful changes in eating and drinking
- Strategies to support nervous system regulation to facilitate eating and drinking

## The role of the nervous system in eating and drinking

The nervous system plays an important role in many processes involved in eating and digestion[1], including:

- Recognising hunger and fullness
- Saliva production and swallowing
- Gastrointestinal motility
- Release of digestive secretions
- Nausea and other gut sensations
- Energy regulation

The autonomic nervous system helps regulate many of these processes automatically. It includes the sympathetic and parasympathetic nervous systems, while the enteric nervous system has an important role in regulating the gastrointestinal tract[1]. An individual's stress level and their subconscious perception of felt safety influence the activity of each branch of the autonomic nervous system[2,3], which determines gut function and whether eating is helped or hindered.

## What is regulation? What is dysregulation?

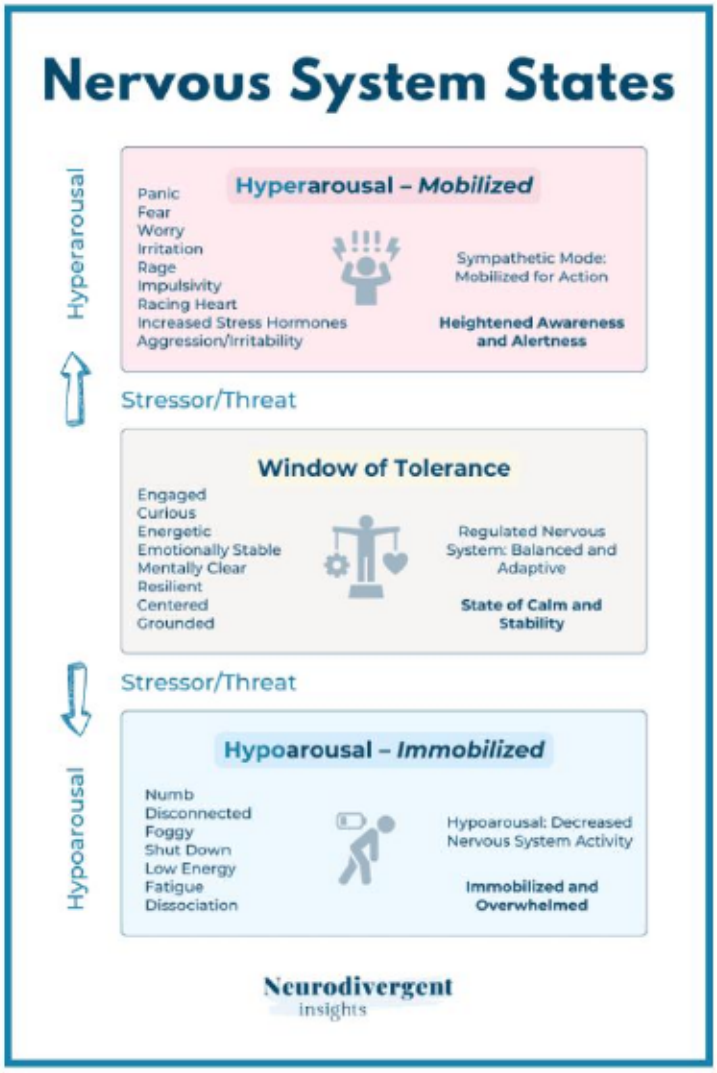
Regulation refers to managing emotional and physiological states. The Window of Tolerance concept, developed by Siegel[4], can be helpful for understanding regulation and arousal states. Our Window of Tolerance, or optimal zone of arousal, is the state where we are able to process information, connect with others, cope with stress and engage in everyday activities[5]. In this state, sometimes termed "rest and digest"[1], the parasympathetic nervous system facilitates eating through enabling saliva production, swallowing, hunger and satiety cues, and gut perfusion to support optimal motility and digestion[1,2,3].



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Dysregulation is used to describe the state where the nervous system becomes overwhelmed. This leads to hyper or hypo arousal as we move outside our Window of Tolerance (see figure 1 below). We all experience overwhelm and dysregulation at times as natural responses to significant events. However, with prolonged nervous system overwhelm and dysregulation, we will spend longer periods in hyper or hypo arousal states which can make it harder to eat, digest and absorb food and nutrients. Nutritional well-being can then become compromised.

## Figure 1 Illustration of arousal states and their presentations[5]




## Neurodivergence and the Window of Tolerance

Some neurodivergent people may experience a smaller or more easily overwhelmed Window of Tolerance[5]. This may relate to differences in sensory processing, communication, interoception and nervous-system responses, as well as experiences of trauma, adverse experiences or environments that do not adequately accommodate their needs. A smaller Window of Tolerance may mean that the person becomes dysregulated more easily or spends more time outside their optimal zone[5]. This may contribute to some of the difficulties with eating, drinking, digestion and gut symptoms experienced by some neurodivergent people.



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## What you may see in practice

People can experience dysregulation in different ways. They may move between hyperarousal and hypo arousal. Sometimes people may describe feeling, or appear "stuck" in a dysregulated state[6], with little time where they feel well regulated. Figure 1 (above) gives examples of how people may feel and appear in hyper and hypo arousal states. Hyper and hypo arousal states may create barriers to engagement, requiring adjustments from professionals.

In clinical practice, someone experiencing hypo arousal may feel helpless, depressed, numb, hopeless, trapped, shut down, fatigued or may not move much. They may be unable to attend school or work, may spend more time at home or in their bedroom, and less time on personal hygiene and their usual activities.

Hypo arousal is a state of low energy or immobilisation[5]. The person may describe **"I can't"** rather than **"I don't want to."** This distinction is important. What may look like a lack of motivation can actually reflect a reduced capacity to initiate or engage when the nervous system is overwhelmed. Some people describe this as being in a freeze or shutdown response. Someone may appear calm on the outside while experiencing significant distress internally. In this state, they may experience low blood pressure and low heart rate[5].

Someone experiencing hyperarousal may present as irritated, angry, frustrated, in a rage, worried, anxious, fearful, panicked, crying, yelling, pacing, and may experience increased sensory sensitivities. Hyperarousal is a state of high energy. It is sometimes described as a fight-or-flight response and is mediated by the sympathetic nervous system[5].

## How is eating affected?

Whilst many factors affect gastrointestinal symptoms, a holistic assessment will include the role of regulation and its effects on the autonomic nervous system which influences appetite, digestion and gut motility.

When dysregulated, a person may describe:

- Not feeling or recognising hunger/thirst or having little interest in food or drink
- Feeling full quickly or difficulty recognising fullness
- Reflux and or nausea
- Abdominal bloating, discomfort or pain
- Changes in bowel habit, including constipation or diarrhoea
- Difficulty eating when overwhelmed

Eating difficulties and gut symptoms can therefore be symptoms of prolonged dysregulation, which can contribute to reduced nutritional intake and lead to nutritional vulnerability. Persistent gut symptoms should be medically reviewed.

It is important to remember that these symptoms are real physiological experiences. They should not be interpreted simply as a lack of motivation or unwillingness to eat or drink.



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## What is felt safety?

Felt safety is a subconscious, nervous system perception of safety[3]. It is different to objective safety or conscious thought; we can be objectively safe but lack felt safety[7,8]. Felt safety is determined by autonomic nervous system interpretation of signals from both our external environment (including other people) and our internal (bodily) environment[3,7,8]. The perception of felt safety helps promote nervous system regulation.

## The dietitian's role

When concerns about eating, drinking or gut symptoms occur alongside significant dysregulation, be curious about the causes of dysregulation. Supporting regulation, promoting felt safety and reducing overwhelm may help facilitate dietary change[9] and can therefore be an important part of the dietetic toolkit for promoting nutritional wellbeing.

Dietitians can support aspects of regulation around food, eating, drinking and the therapeutic environment, but they are not responsible for addressing dysregulation itself. It may be appropriate to work alongside or refer to other professionals for support with regulation. This may include occupational therapists, psychologists, psychiatrists, mental health professionals, GPs, school/education staff or other professionals who can support regulation.

## How can dietitians help?

Felt safety soothes the nervous system, reducing hyper or hypo arousal states and dysregulation. The aim is therefore to understand what supports each individual's felt safety and nervous system regulation, to support their capacity to engage with food and drink. Page 6 provides examples of supportive strategies.

### 1. Understand that nervous system regulation is part of nutritional care

For some people, supporting nervous system regulation is a prerequisite for being able to engage with eating and drinking. The process of supporting regulation is not a quick fix. It may take time and require support from the wider MDT. Be mindful of the role of nervous system regulation in gut symptoms and function.

### 2. Promote felt safety

Explore what supports individual felt safety and helps the person feel understood and in control, especially around food and mealtimes.

This might include:

- Meeting sensory needs
- Reducing demands*
- Enabling safe movement or stimming
- Building a trusting relationship
- Increasing predictability
- Supporting preferred routines
- Supporting autonomy and choice
- Considering felt safety in different settings

*Be aware that eating itself can present a demand, from both internal cues (e.g. hunger) and external sources (e.g. expectations and concerns of others).



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### 3. Support nutritional adequacy

Adequate nutrition is important for physical health, including nervous-system function and regulation, and for psychological well-being. Assess for micronutrient adequacy and nutritional risks, including in the absence of underweight/weight loss. Be aware of clinical signs of micronutrient deficiencies.

Whilst emerging evidence suggests certain probiotics may also support nervous system function via the gut brain axis[10,11], there is currently insufficient evidence to form recommendations. This complex area is beyond the scope of this resource - information about probiotics in gut health can be found here.

### 4. Reasonable adjustments

Reasonable adjustments are a legal duty to remove or reduce a disadvantage related to someone's disability[12]. **A diagnosis is not required to implement reasonable adjustments[12].** Reasonable adjustments are specific to an individual person. They can be for physical or mental health conditions. Dietitians can promote reasonable adjustments to find a different way to do something to reduce the disadvantage someone experiences from their condition such as

- Advocating to enable a child to eat in a quiet place with a trusted person and facilitate provision of safe foods in school (which may not align with the local healthy eating policy)
- Offering alternatives or adjustment to appointments or speaking to a nominated carer instead of the individual

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## References

1.Waxenbaum J, Reddy V, Das J. Anatomy, Autonomic Nervous System. In: StatPearls [online]. 2025. Available from https://www.ncbi.nlm.nih.gov/books/NBK539845/

2. Leigh SJ, Uhlig F, Wilmes L, Sanchez-Diaz P, Gheorghe CE, Goodson MS, Kelley-Loughnane N, Hyland NP, Cryan JF, Clarke G. The impact of acute and chronic stress on gastrointestinal physiology and function: a microbiota–gut–brain axis perspective. The Journal of Physiology. 2023 Oct;601(20):4491-538.

3. Porges SW. Polyvagal theory: A science of safety. Frontiers in integrative neuroscience. 2022 May 10;16:871227.

4. Siegel D. The developing mind: Toward a neurobiology of interpersonal experience. Guilford Press. 1999

5. Neff M. The Window of Tolerance: How to Build Emotional Resilience and Regulation [Internet] Neurodivergent Insights 2026 Oct. Available from https://neurodivergentinsights.com/window-of-tolerance/?srsltid=AfmBOorSONwjArRiAOIbw14ZM8fb4MG3j9eouhZXgsbuKwJbiM4LGW91

6. Ashford and St Peters Hospital NHS Foundation Trust. Nervous System Regulation [Internet] 2026 May. Available from https://www.asph.nhs.uk/nervous-system-regulation

7. Diekman A. Felt Safety: Understanding and Cultivating True Security [Internet] 2026 Jan 01. Available from https://www.amandadiekman.com/blog/felt-safety

8. Fetal Alcohol Spectrum Disorder Care Action Network. FASD and Felt Safety [Internet]. 2026 May. Available from FASD_and_'Felt_Safety'_-_Expanded_resource.pdf

9. Hunani N. Beyond Exposure: 5 Principles for Neurodiversity Affirming ARFID Care. 2026. Available from https://www.rdsforneurodiversity.com/resources

10. Meher AK, Acharya B, Sahu PK. Probiotics: Bridging the interplay of a healthy gut and psychoneurological well-being. Food Bioengineering. 2024 Mar;3(1):126-47.

11. Merkouris E, Mavroudi T, Miliotas D, Tsiptsios D, Serdari A, Christidi F, Doskas TK, Mueller C, Tsamakis K. Probiotics' effects in the treatment of anxiety and depression: A comprehensive review of 2014–2023 clinical trials. Microorganisms. 2024 Feb 19;12(2):411.

12. Equality Act 2010, c. 15. [cited 2026 Oct 19]. Available from: https://www.legislation.gov.uk/ukpga/2010/15/pdfs/ukpga_20100015_en.pdf



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## Example strategies to promote felt safety around food, eating and drinking

Meeting sensory needs

- Ensure mealtime environments are adapted to support the person's sensory sensitivities e.g. a quiet room, altered lighting level, avoidance of food smells, preferred music, comfortable seating, enabling movement during meals
- Reassure meals do not need to be eaten at the table or with others if this makes eating feel harder
- A movement-based sensory diet may be helpful to support regulation prior to eating, sensory-trained OTs can advise on this

Supporting preferred routines

- Routines around food and eating can create felt safety by providing predictability and reducing anxiety
- Examples may include use of preferred cutlery, cups or crockery, eating in certain places or with certain people, sticking to a regular timetable for meals, using a meal plan or visual timetable if helpful, foods presented in certain ways e.g. not touching each other

Facilitating preferred foods

- When someone is struggling to eat adequately, preferred foods should not be restricted as they provide predictability and reduce cognitive load, helping to reduce anxiety and promote felt safety
- Increased frequency or portion size of preferred foods may help boost intake if required
- Support autonomy and individual choice around food and mealtimes, "any food, any mealtime"
- Be aware that introducing new foods whilst a person is struggling with regulation may exacerbate a lack of felt safety and make eating harder

Reducing demands

- This applies to eating, mealtimes and wider life. Demands and expectations need to match a person's capacity to prevent overwhelm (note capacity varies across the day and day to day)
- Social pressure to eat with others may feel like a demand at times; eating alone is ok if helpful
- Aim to avoid: pressure, battles, persuasion, bribes, rewards for eating, punishment for not eating, comments and judgement on what is eaten
- A meal plan or visual menu may help reduce demands and provide more certainty at mealtimes
- Using food supplements and/or vitamin/mineral supplements, taking into account sensory needs and specific nutrient requirements, can help reduce demands around eating
- Tube feeding may be helpful when nutritional risks are high
- Demands and unmet needs in other areas of life e.g. school, work often contribute to dysregulation. Support may be required via the MDT to facilitate regulation to then improve eating and drinking

Supporting interests

- Interests and passions help to soothe the nervous system and should be supported. Consider if these may help with regulation at mealtimes e.g. listening to favourite music, watching a favourite programme or film, plates and mats with favourite characters on for children, discussing interests

Providing safety in relationships

- Co-regulation is an essential component of nervous system regulation. Care givers can be supported and signposted to understand and provide co-regulation
- For dietitians, supporting safety in the therapeutic relationship may require seeing the same dietitian, demonstrating trustworthiness and honesty, seeking to understand, validating experiences, promoting autonomy, working collaboratively, being flexible, liaising with parents or carers rather than the individual, virtual rather than in person appointments, and more
- Consider food/drink goals collaboratively, when the person is ready



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