

Interoception-Informed Yoga:

Theory and Interactive Class

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WELCOME to our LIVE Online Course: Interoception-Informed Yoga

We are so glad that you are here! Please feel free to **say hello** in the **chat box**.

IMPORTANT: When you type in the chat be sure your message goes to **all panelists and attendees** (select **'Panelists and Attendees'** in the drop-down menu in the chat box)

To: Panelists and Attendees ▼ ⋮


| Type message here...

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WELCOME to our LIVE Online Course: Interoception-Informed Yoga

Your **handouts** were emailed to you at **24 hours, 1 hour and 5 minutes** before today's session (Please see links at the bottom of the emails).

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WELCOME to our LIVE Online Course:
Interoception-Informed Yoga


We are using the Zoom Webinar Platform which means participants **do not** have the option to **turn on their camera or microphone**.

We would still **love to hear from you**. Please feel free to put your **questions** in the **Q & A box** at any point during the session.

Molly and Kelly will answer questions during the **last 30 minutes** of the session




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**Potential
Trigger/
Content
Warning:**

- You will be invited throughout this session to tune into your inner body signals.
- Please participate in these activities in a way that meets your comfort level.
- We will also discuss trauma.
- Please be free to take a breath, a break or leave at anytime.




WELCOME to our LIVE Online Course:
Interoception-Informed Yoga

10:00-11:00	Theory, Evidence & Practical Tips
11:00-11:30	Interactive Interoception-Informed Yoga Class
11:30-12:00	Q & A



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What is Interoception?




The 8 Senses

The Outside Senses

- Ms. Visual
- Ms. Tactile
- Ms. Auditory
- Mr. Gustatory
- Ms. Olfactory

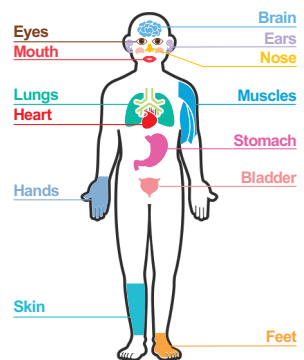
The Inside Senses

- Mr. Proprioception
- Mr. Vestibular
- Mr. Interoception



Myles, Mahler, Robbins, 2014
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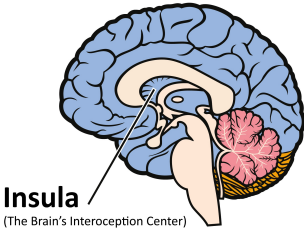
Receptor Locations for Interoception



- Brain
- Ears
- Nose
- Muscles
- Stomach
- Bladder
- Feet
- Skin
- Hands
- Heart
- Lungs
- Mouth
- Eyes

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Interoception and the Brain




Insula
(The Brain's Interoception Center)

Critchley et al., 2004

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Interoception Helps Us Feel our Emotions

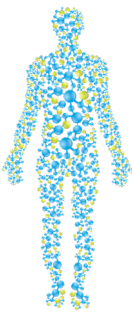
Homeostatic Emotions			Affective Emotions		
Hunger	Fulness	Thirst	Excitement	Distraction	
Sensory Overload	Pain		Joy	Frustration	Calmness
Illness	Body Temperature		Fear	Safety	Sadness
Physical Exertion	Sleepiness		Love	Focus	Anxiety
Need for the Bathroom			Boredom	Energized	



Craig, 2002

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Interoception Defined

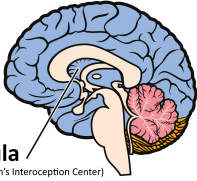


The **Sensory System** that gives us information regarding our **BODY-EMOTION** connections.

Craig, 2002

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Interoceptive Awareness (IA) Defined



The degree in which each person notices & understands their inner body sensations

Better Insula = Better Interoceptive Awareness (IA)


Craig, 2002, Mehling, 2008, Critchely, 2003
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The Value of IA

Positive Mental Health	Healthy Sleep Hygiene
Emotion Regulation	Time Management
Healthy Eating Habits	Motor Skills
Seeking Timely Medical Care	Self-Awareness and Understanding
Managing Chronic Pain	Social Connections & Relationships
Healthy Toileting Habits	Language Development
Positive Body Image	Etc., Etc., Etc.

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Unique Inner Experiences



WE ALL HAVE UNIQUE INTEROCEPTION EXPERIENCES!

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A Range of Interoceptive Awareness

Body Signals	Characteristics	Functional Impact Examples
too BIG	<ul style="list-style-type: none"> Strong Overpowering Too many body signals at once 	<ul style="list-style-type: none"> Somatic Complaints Chronic Pain High Anxiety Panic Disorders Self-Injury/harm
too small	<ul style="list-style-type: none"> Muted Completely miss body signals OR only notice intense body signals 	<ul style="list-style-type: none"> Difficulty identifying emotions 0 to 100 emotions Disordered eating (under or over-eating) Poor sleep Poor healthcare habits Bowel/Bladder Leakage

Too Small ← **TOO BIG**

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A Range of Interoceptive Awareness

Most of us are more aware of certain sensations and related emotions and less aware of others.

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IA Extremes

Connected to Many Conditions

Autism	Trauma Disorders
Depression	Obsessive Compulsive Disorder
Anxiety	Panic Disorder
ADHD	Suicide Attempters
Eating Disorders	Drug & Alcohol Addiction
Obesity	Chronic Pain Syndromes
Schizophrenia	Sensory Processing Disorder
Dementia	Self-injurious behavior

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IA Extremes & Mental Health

Interoception and Mental Health: A Roadmap

Sahib S. Khalsa, Ralph Adolphs, Oliver G. Cameron, Hugo D. Critchley, Paul W. Davenport, Justin S. Feinstein, Jamie D. Feusner, Sarah N. Garfinkel, Richard D. Lane, Wolf E. Mehling, Alicia E. Meuret, Charles B. Nemeroff, Stephen Oppenheimer, Frederike H. Petzschner, Olga Pollatos, Jamie L. Rhudy, Lawrence P. Schramm, W. Kyle Simmons, Murray B. Stein, Klaas E. Stephan, Omer Van den Bergh, Ilse Van Diest, Andreas von Leupoldt, Martin P. Paulus, and the Interoception Summit 2016 participants

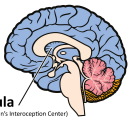
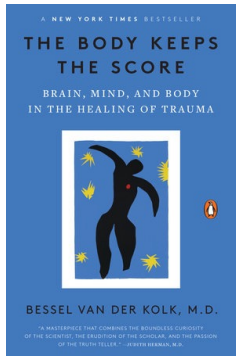
Table 3. Diagnostic Symptoms and Clinical Signs Indicating Interoceptive Dysfunction in Some Psychiatric Disorders

Psychiatric Disorder	Symptoms	Signs	Sample Studies
Panic Disorder	Palpitations, chest pain, dyspnea, choking, nausea, dizziness, flushing, depersonalization/derealization	Elevated heart rate and/or blood pressure, exaggerated escape, startle, and flinching	(5,140,141)
Depression	Increased or decreased appetite, fatigue, lethargy	Weight gain, weight loss, psychomotor slowing	(142,143)
Eating Disorders	Hunger insensitivity, food anxiety, gastrointestinal complaints	Severe food restriction, severe weight loss, bingeing, purging, compulsive exercise	(72,86)
Somatic Symptom Disorders	Multiple current physical and nociceptive symptoms	Medical observations do not correspond with symptom report	(144,145)
Substance Use Disorders	Physical symptoms associated with craving, intoxication, and/or withdrawal (drug specific)	Elevated/decreased heart rate, respiratory rate, and/or blood pressure, pupil dilation/constriction, others (drug specific)	(101,146,147)
Posttraumatic Stress Disorder	Autonomic hypervigilance, depersonalization/derealization	Exaggerated startle, flinching, and/or escape responses, elevated heart rate and/or blood pressure	(148)
Generalized Anxiety Disorder	Muscle tension, headaches, fatigue, gastrointestinal complaints, pain	Trembling, twitching, shaking, sweating, nausea, exaggerated startle	(149,150)
Depersonalization/Derealization Disorder	Detachment from one's body, head lightheadness, tingling, lightheadedness	Physiological hypoactivity to emotional stimuli	(151,152)
Autism Spectrum Disorders	Skin hypersensitivity	Selective clothing preferences	(107,153,154)

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IA Extremes & Trauma

Almost every brain imaging study of trauma patients finds abnormal activation of **THE INSULA** (Van Der Kolk, 2014)





(Clausen, et al., 2019; Marusak, Etkin, & Thomason, 2015; Van Der Kolk; Ansell, Rando, Tuit, Guzmancio, & Sinha, 2012; Herring, Phillips, Almeida, Insana, & Germain, 2012)

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IA Extremes & Trauma

70% of adults have experienced at least 1 trauma in their life



<https://www.therecoveryvillage.com/mental-health/ptsd/related/ptsd-statistics/>

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IA Extremes & COVID Related Trauma

- n=2501 home-quarantined college students
- Participants that reported higher levels of depression and/or symptoms of PTSD *also* reported more severe difficulty identifying and describing feelings
- What does this mean?
 - Helping young people identify and understand their feelings (aka Interoception) could provide protection (and healing) from the mental health impact of trauma

(Wanjie Tang, Tao Hu, Le Yang, Jiuping Xu, 2020)

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IA Extremes
Connected to Many Non-Conditions

Screen Time

Busy Lifestyles

Ignore Body/ Body of Little Importance

"Push through" pain or emotions

"Mental" Health & Cognitive Approaches

Compliance Approaches (*Ignore what your body needs so that you can comply with my demand and earn a reward*)

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Nurturing Interoceptive Awareness

The *Established* Evidence

Interoceptive Awareness & Body Mindfulness

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The *Established* Evidence

Why traditional body mindfulness may not work:

- Too **abstract**
- Requires a certain degree of **cognition** and **attention** and **language**
- Assumes a **safe relationship** with your internal sensations
- Too **overwhelming**

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IA Builders: Adapted Forms of Body Mindfulness

Squeeze your hands in a fist for 10 seconds. How do your hands feel while you are squeezing?

Ear	Wrist	Tip
Lower	Reaching	Foot
Hand	Shoulder	Eye
Neck	Chest	Side

- Chunked into 1 body part at a time—slow build to the entire body
- Evoking stronger sensation--captures attention
- Playful & learning while doing—feels safe
- Visual & Language supports

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What is Yoga?

What is Yoga?

Simply defined, yoga is thoughtful movement:

- Yoga can be a careful sequence of linked poses (asanas) or it can be fluid movement directed by listening to what a body needs

We've been doing this for a long time!


- The origins of yoga can be traced back over 5,000 years
- Yoga continues to change and evolve

Who can practice or lead yoga?

- Anyone who has a body they can move safely
- There is no right or wrong way to practice yoga – you cannot break it

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Interoceptive Awareness & Yoga




Could Yoga be an Effective IA Builder?

Yoga invites participants to connect with their mind and body:

- Yogis are asked to notice and feel what is happening within their bodies throughout a practice
- Folks leading a yoga class draw attention to what a student might be feeling; they offer language for what may have been unrecognized or undefined

Yoga has innate capacity for the interoceptive process


- A tenant of yoga is bringing harmony to the body and the mind
- The word 'yoga' translates to union
- With the use of careful language and guidance yoga offers the opportunity to recognize breath patterns, physical sensation and cognitive responses.
- Yoga asks students to fully engage with their bodies and senses



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IA & Yoga Studies

Despite its emphasis on mindfully noticing interoceptive sensations such as breath rate, there is a lack of formal evidence measuring the impact of yoga on IA.



Study 1 looked at 3 participants with a history of trauma:


- Results: participants experienced significant increases in interoceptive awareness and significant decreases in PTSD symptoms, depression, anxiety, and stress.
- Conclusion: These preliminary findings suggests that increased interoceptive awareness may be a mechanism producing the beneficial outcomes of yoga for those affected by trauma

Study 2 assessed body awareness in yogis and non-yogis:


- Results: on average, yoga practitioners scored significantly higher on the Body Perception Questionnaire (Porges, 1993) than control subjects

Neukirch, Reid, & Shires, A. 2019; David et al 2014).

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 **The Insula & Yoga Studies**

A bit more is known about the brain regions associated with a yoga-based practice, including the INSULA




Study 1 compared the brains of yogis and non-yogis:

- In the yogis group, grey matter volume in the insula positively correlated with yoga experience, suggesting a causal relationship between yoga and insular size.
- Yogis also had increased left insula white matter integrity,
- North American yogis tolerated pain more than twice as long compared to non-yogis.

Study 2 also looked at the brains of yogis and non-yogis:

- They also found increased grey matter volume in the insula of yogis compared to non-yogis

Villemure, Ceko, Cotton, & Bushnell, 2014; Froeliger et al., 2012
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 **More Reasons why Yoga could be a great IA Builder**

Yoga offers flexibility for various learning styles:


- Because yoga is innately invitational, students are given agency in how they choose to interact with their bodies
- There is no one way to practice yoga so students are allowed to move in ways that best meet the needs of their bodies
- Yoga is constantly evolving and allows to students to grow their practice as they gain IA

Sitting in stillness isn't a good fit for all minds/ bodies

- Yoga can feel less restrictive for those who feel more comfortable with the freedom to move
- Yoga uses a multisensory approach which can be a more engaging and fun path to learn IA



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 **A Mutual Relationship: How Nurturing IA can Benefit Yoga Practice**

Many common elements of a yoga practice require IA to participate in a safe way. For example, the following common cues require IA:

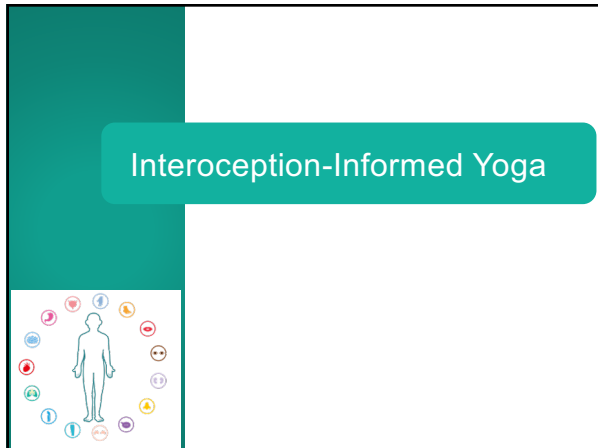
- *find your edge*
- *find ease in a pose*
- *listen to your body and do what it needs in this moment*

In cases of IA extremes, safely following these cues could be difficult and result in potential:

- Injury
- Frustration
- Mistrust



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Interoception-Informed Yoga:
4 Essential Elements

1. Trauma-Informed
2. Explicit/Direct Invitations to Notice Inner Sensations
3. Chunk into 1 Body Part/Area
4. Provide Interoception Language Supports


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Interoception-Informed Yoga:
4 Essential Elements


➔ 1. Trauma-Informed

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 Why Trauma-Informed?

70% of adults have experienced at least 1 trauma in their life




<https://www.therecoveryvillage.com/mental-health/ptsd/related/ptsd-statistics/>
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Therefore, it is best to assume a trauma background in all

 Why Trauma-Informed?

When you invite a person to participate in Yoga, they are **trusting you with their body**.
It is your responsibility to lead a class/practice/pose that promotes **safety** and **autonomy**




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Tips Trauma-Informed Yoga: *Tips*

Overall Goal:

Promote **regulation** and **felt-safety** so that attentional resources are available to turn within




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Tips Trauma-Informed Yoga: *Tips*

Set the environment by using a **Sensory Safety Scan**

Interoception-Informed Yoga



Sensory Safety Scan

Instructions: The goal of a Sensory Safety Scan is to consider the external sensory environment and make modifications that increase a person's regulation and felt-safety within that environment. Keep in mind that each person has a unique sensory profile and what might feel safe to one person may not feel safe to the next. Therefore, whenever possible, compare the sensory scan to collaboration. This sensory scan is not intended to be substitutive, but rather a start in helping to create sensory safe yoga environments so that a person has the attentional resources to use with their yoga experience. Please feel free to add your own items.

Sense	Key Considerations
Visual	<ul style="list-style-type: none"> Lighting Placement of participants (front/back of room, facing door/looking away from door, in lines facing forward/in a circle) Instructor blocking (not obscuring or concealing or all) Eyes closed/open
Auditory	<ul style="list-style-type: none"> Music (genre, rhythm, lyrics, volume) Chanting Speech outside of the yoga space Instructor vocal tone
Tactile	<ul style="list-style-type: none"> Use of props Placement of feet (center) Spacing between participants Amount (type or grade) of mats, approach from front, gain permission
Olfactory	<ul style="list-style-type: none"> Incense Candles Essential oils Diffusers Hygiene/Cleaning policies
General	<ul style="list-style-type: none"> Absence of interruptions Clear (open/closed) verbal communication Instructor placement (not blocking/looking around) Supportive objects, pillows, blankets, mats

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Tips Trauma-Informed Yoga: *Tips*

- Encourage **body autonomy**-from the very beginning and throughout
- Establish a **mutual relationship** where the instructor makes suggestions and invitations, but the participant is always in control
- Invitations to participate** (not a demand that must be carried out)
- Direct encouragement to participate in a way that **meets their personal comfort**

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 Trauma-Informed Yoga: *Tips*

- Direct invitations to **pause**, **take a break**, use a **modification**, or do a **different pose**
- **Offer choices** during the poses/flow
- Provide suggestions for what they can do/where they can go if they need a **break**

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 Trauma-Informed Yoga: *Tips*

- **Encourage Students to give feedback** (ask them if a pose is ok, offer them language to label sensations)
- **Use embodied cues** (avoid disembodied cues (lift your leg –not lift those legs)
- If you plan to move about the room, **share your plan** with your students

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 Trauma-Informed Yoga: *Tips*

- **Hands-on assists:**
 - Methods for Opting-in (rather than opting out)
 - Describe what you will do, before you do it
 - Always approach from the front
 - Ask for consent every time you offer physical adjustments

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Interoception-Informed Yoga:
4 Essential Elements

1. Trauma-Informed
2. Explicit/Direct Invitations to Notice Inner Sensations
3. Chunk into 1 Body Part/Area
4. Provide Interoception Language Supports

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Why Explicit Teaching/ Direct Invitations?

Implicit Teaching- assumes that a person is going to gain skill naturally by participation in whatever activity it is.

- Assume a Downward Facing Dog 
- Inhale and rise up 

Explicit Teaching- the instructor clearly outlines and offers concise methods of instruction directly.

- Notice the way your hands feel during Downward Facing Dog
- Notice the way your lungs feel as you inhale and rise up

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Explicit Teaching/ Direct Invitations: Tips

Interoception Yoga Cards
www.kelly-mahler.com
 *Digital or Preprint Options

RAG DOLL



How does your head/brain feel while holding this pose? Gently shake your head from side to side. How does your head/brain feel when you do this? Gently nod your head up and down. How does your head/brain feel when you do this?

DOWNWARD FACING DOG



Where do you feel this pose most in your body? Can you describe the feeling that you notice?

CORRA



How does your stomach feel while holding this pose? Push your belly in and out three times while holding this pose. How does your stomach feel while you push your belly in and out?

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Explicit Teaching/Direct Invitations: *Tips*
Knowing your Sense Cues

Sense Cue Example	Sensory System
Notice how your mat feels beneath your hands	Tactile
Notice how your hands feel as they press into the mat	Interoception
Notice the sound of your breath as you inhale and exhale	Auditory
Notice how your lungs feel as you inhale and exhale	Interoception
Notice the feel of ground as you plant your feet firmly on the mat. Where do you feel the pressure?	Tactile
Notice how your feet feel when planting them into the mat. Notice how shifting pressure on different parts of your feet, changes the way different parts of your feet feel.	Interoception

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Explicit Teaching/Direct Invitations: *Tips*

- Evoke a stronger sensation to capture attention
 - Pedal your feet, lightly pressing each heel towards the ground. Notice how your feet feel when you do this
 - Exhale and bend forward just a bit more if you have room. Notice how your legs feel when you do this. Where do you feel the most stretch?
- Providing Choice within your invitations
 - Notice the way your nose feels during this pose. But if you notice a feeling elsewhere, that is great. What is the feeling that you notice? Whei



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Interoception-Informed Yoga: 4 Essential Elements

1. Trauma-Informed
2. Explicit/Direct Invitations to Notice Inner Sensations
- ➔ 3. Chunk into 1 Body Part/Area
4. Provide Interoception Language Supports

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Why *Chunk into 1 Body Part?*

Noticing how the entire body feels all at once can be **overwhelming** and **too much of a demand** for many learners. Inviting a learner **to notice sensations within body part at a time** can make the process of tuning in **feel safer, less overwhelming** and a **better match for many attention spans**. Over time, you can **slowly build** (at the pace of the learner) to noticing how the **body feels as a whole**

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Chunk Into 1 Body Part/Area: *Tips*



Outside

1. Hands & Fingers
2. Feet & Toes
3. Mouth
4. Eyes
5. Ears
6. Nose
7. Voice
8. Cheeks
9. Skin



Inside

10. Muscles
11. Lungs
12. Heart
13. Brain & Head
14. Stomach
15. Bladder

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Chunk Into 1 Body Part/Area: *Tips*

- Evoke a stronger sensation within the body part of focus
 - *Lightly press each finger into the mat and notice how your fingers feel as you press into the mat*
- Providing Choice within your invitations
 - *Where do you notice this pose the most in your body? Take a moment to notice how that feels.*
- Suggest areas vs. specific body parts
 - *Notice the way your right heel feels as it presses on the mat vs. Notice the way your right leg and foot feels*



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Interoception-Informed Yoga:
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Why Provide Interoception Language Supports?

Many people that experience IA extremes do not develop the language to describe body sensations.

- If you have an experience is muted, overwhelming, confusing then it is tricky to develop a way to describe it
- In other words: if you don't understand something, then you can't easily describe it


Therefore, providing interoception language supports is helpful, especially in the beginning as a person begins to tune in and notice the way their body feels

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Provide Interoception Language Supports: Tips

2 Main Methods of Support:

1. Verbal Options- Providing verbal choices
 - Notice the way your legs feel when holding this position. Do they feel shaky or stable? Do they feel tight or loose? Maybe you feel something else too.
2. Visual Menus-Providing visual choices
 - Mini Menus near the mat
 - Poster on the wall





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Provide Interoception Language Supports:
Tips

Empower the learner with the language to express exactly how they are feeling

BODY CHECK RING
 (www.Kelly-Mahler.com)

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Provide Interoception Language Supports: *Tips*

- Honor and validate all interoception vocabulary.
- There are no right or wrong ways to describe inner experiences and sensations.
- Acknowledge that it can be hard to describe or put words to what it is that they are experiencing. And that is okay!
- The act of noticing the way their body feels without putting words to it is still a great step

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Interoception-Informed Yoga: Interactive Class

*You are invited to try a 30-minute Interoception Yoga Class
 Please participate in a way that makes you most comfortable*



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 Questions & Answers

FOR MORE INFORMATION:

- www.kelly-mahler.com
- Facebook-Interception: The Eighth Sensory System



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