

Assessment Tools

Anxiety

- GAD-7
- Snap Shot of Anxiety *

Fatigue

- Power Supply Scale of 1-10 *
- Modified Fatigue Impact Scale (MFIS)*
 - page 47 of the pdf shared in the link sheet

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Snapshot of Anxiety

https://www.kristenallott.com/s/Snapshot-of-Anxiety_NHP-copyright.pdf

Power Supply Scale of 1-10

https://www.kristenallott.com/s/What-is-Your-Power-Supply_copywrite.pdf

Modified Fatigue Impact Scale (MFIS) – page 47

https://nmsscdn.azureedge.net/NationalMSSociety/media/MSNationalFiles/Brochures/MSQLI_A-User-s-Manual.pdf

Fatigue

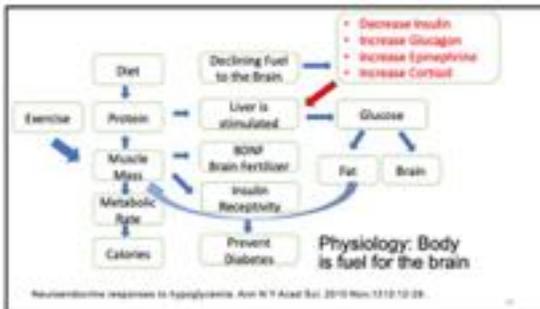
- Lack of energy and mental alertness that negatively impacts work performance, family life, and social relationships....
- Fatigue may be classified as secondary, physiologic, or chronic.
 - Secondary fatigue is caused by an underlying medical condition and may last one month or longer, but it generally lasts less than six months.
 - Physiologic fatigue is an imbalance in the routines of exercise, sleep, diet, or other activity that is not caused by an underlying medical condition and is relieved with rest
 - Chronic fatigue lasts longer than six months and is not relieved with rest.

* Am Fam Physician. 2008 Nov 15;78(10):1173-1179

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Rosenthal, T. C., Majeroni, B. A., Pretorious, R., & Malik, K. (2008). Fatigue: An Overview. American Family Physician, 78(10), 1173–1179

<http://familydoctor.org/online/famdocen/home/common/pain/disorders/031.html>



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Tesfaye N, Seaquist ER. Neuroendocrine responses to hypoglycemia. Ann N Y Acad Sci. 2010 Nov;1212:12-28. doi: 10.1111/j.1749-6632.2010.05820.x. Epub 2010 Oct 29. PMID: 21039590; PMCID: PMC2991551

https://pubmed.ncbi.nlm.nih.gov/21039590/Tesfaye_N_Seaquist_ER_Neuroendocrine_responses_to_hypoglycemia_Ann_N_Y_Acad_Sci_2010_Nov_1212_12-28_doi_10.1111_j.1749-6632.2010.05820.x_Epub_2010_Oct_29.PMID_21039590_PMCID_PMC2991551

Reactive Hypoglycemia ICD10- E16.1

“Occurrence of pseudohypoglycemic symptoms and lower glucose value was more common after ingestion of glucose itself rather than after ingestion of a balanced meal. This could suggest an important role that nutritionally balanced diet may play in maintaining correct glucose.”

Metabolic Parameters in Patients with Suspected Reactive Hypoglycemia. J Pers Med. 2021 Apr 7;11(4):276.

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Hall M, Walicka M, Panczyk M, Traczyk I. Metabolic Parameters in Patients with Suspected Reactive Hypoglycemia. J Pers Med. 2021 Apr 7;11(4):276. doi: 10.3390/jpm11040276. PMID: 33916952; PMCID: PMC8067537

<https://pubmed.ncbi.nlm.nih.gov/33916952/>

Effect on GABA and hypoglycemia

“In conclusion, the current study provides, for the first time, evidence that recurrent hypoglycemia may cause molecular alterations in Ventromedial Hypothalamus (VMH) neurons that lead to impaired regulation of GABAergic tone and, ultimately, to suppression of glucose counterregulatory responses.”

Increased GABAergic Tone in the Ventromedial Hypothalamus Contributes to Suppression of Counterregulatory Responses After Antecedent Hypoglycemia *Diabetes* 57:1363–1370, 2008

Chan O, Cheng H, Herzog R, et al. Increased GABAergic tone in the ventromedial hypothalamus contributes to suppression of counterregulatory responses after antecedent hypoglycemia. *Diabetes*. 2008;57(5):1363-1370. doi:10.2337/db07-1559

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC551879>

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Cortisol Waking Response and Anxiety and Depression

“The cortisol awakening response (CAR) predicts onsets of a combined group of anxiety disorders, as well as smaller group of social anxiety disorder onsets in older adolescents and young adults. This was true even when covarying lifetime depression (another disorder we have shown the CAR to predict) at the time of cortisol measurement as well future onsets of depression over the follow-up period.”

Prospective associations between the cortisol awakening response and first onsets of anxiety disorders over a six-year follow-up—2013 Curt Richter Award Winner. *Psychoneuroendocrinology*. 2014;44:47-59.

Adam EK, Vrshek-Schallhorn S, Kendall AD, Mineka S, Zinbarg RE, Craske MG. Prospective associations between the cortisol awakening response and first onsets of anxiety disorders over a six-year follow-up—2013 Curt Richter Award Winner. *Psychoneuroendocrinology*. 2014 Jun;44:47-59. doi: 10.1016/j.psyneuen.2014.02.014. Epub 2014 Mar 12. PMID: 24767619; PMCID: PMC4108290

<https://pubmed.ncbi.nlm.nih.gov/24767619/>

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Cortisol Waking Response and PTSD

“The evidence from this meta-analysis supports that salivary samples collected in the morning consistently showed a lower salivary cortisol level in patients with PTSD than in controls, although whether salivary cortisol could be used as a diagnostic tool requires further research.”

Salivary cortisol in post-traumatic stress disorder: a systematic review and meta-analysis. *BMC Psychiatry*. 2018;18(1):324.

Pan, X., Wang, Z., Wu, X. *et al.* Salivary cortisol in post-traumatic stress disorder: a systematic review and meta-analysis. *BMC Psychiatry* **18**, 324 (2018). <https://doi.org/10.1186/s12888-018-1910-9>

<https://bmcp psychiatry.biomedcentral.com/articles/10.1186/s12888-018-1910-9#citeas>

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Thyroid

- Normal ranges for TSH: 0.450-4.500 MIU/L
- Functional optimal range: 1.5 to 2.5 MIU/L
- Run T4 and T3 initially or with follow up labs
- Consider Thyroid antibody, test cortisol, stabilize glucose, and check total protein in Comprehensive Metabolic Panel

TSH cut off point based on depression in hypothyroid patients. *BMC Psychiatry*. 2017;17(1):327

Talaei A, Rafee N, Rafei F, Chehrei A. TSH cut off point based on depression in hypothyroid patients. *BMC Psychiatry*. 2017 Sep 7;17(1):327. doi: 10.1186/s12888-017-1478-9. PMID: 28882111; PMCID: PMC5590144.

<https://pubmed.ncbi.nlm.nih.gov/28882111/>

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Economic Costs of Iron Deficiency in Women

- 1010 women who received an ID diagnosis with a blood test in the last 2 years
- In total, 354 (35.0% of the total sample) patients received an initial diagnosis other than ID. Of those, 46.8% were treated prior to the ID diagnosis with a pharmacological medical therapy or psychotherapy and carried a the following diagnoses depression, burnout, anxiety state, chronic fatigue and others.
- In Swiss dollars, the annual direct medical costs would be CHF 76 million annual indirect costs would be CHF 33 million.

Economic burden of asymptomatic iron deficiency - a survey among Swiss women (2019). *BMC women's health*, 19(1), 39.

Blank, P. R., Tomonaga, Y., Szucs, T. D., & Schwenkglens, M. (2019). Economic burden of symptomatic iron deficiency - a survey among Swiss women. *BMC women's health*, 19(1), 39. doi:10.1186/s12905-019-0733-2 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6390630/>

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Iron Deficiency: Laboratory Analysis

- Low iron strongly associated with fatigue
- RBC indices are not always enough
- Serum Ferritin less than 50 ng /mL
- Low serum iron less than 8.1 mmol/ L

Verdon (2003), Vaucher P (2012)

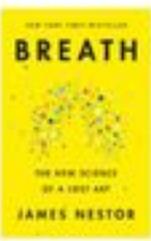
Verdon, F., Burnand, B., Stubi, C.-L. F., Bonard, C., Graff, M., Michaud, A., Bischoff, T., de Vevey, M., Studer, J.-P., Herzig, L., Chapuis, C., Tissot, J., Pécoud, A., & Favrat, B. (2003). Iron supplementation for unexplained fatigue in non-anaemic women: double blind randomised placebo controlled trial. *BMJ*, 326(7399), 1124–0. <https://doi.org/10.1136/bmj.326.7399.1124>

Vaucher, P., Druais, P.-L., Waldvogel, S., & Favrat, B. (2012). Effect of iron supplementation on fatigue in nonanemic menstruating women with low ferritin: a randomized controlled trial. *CMAJ : Canadian Medical Association Journal = Journal de l'Association Medicale Canadienne*, 184(11), 1247–1254. <https://doi.org/10.1503/cmaj.110950>

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CO2 and Anxiety

- Acute anxiety and autonomic arousal induced by CO₂ inhalation impairs prefrontal executive functions in healthy humans. *Transl Psychiatry*. 2019 Nov 12;9(1):296



Savulich G, Hezemans FH, van Ghesel Grothe S, Dafflon J, Schulten N, Brühl AB, Sahakian BJ, Robbins TW. Acute anxiety and autonomic arousal induced by CO₂ inhalation impairs prefrontal executive functions in healthy humans. *Transl Psychiatry*. 2019 Nov 12 <https://pubmed.ncbi.nlm.nih.gov/31719527/>

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Abbott Free Style Libre

- <https://www.libreview.com/> - Dashboard for clinicians



Abbott Free Style Libre <https://www.libreview.com/>

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Links from “Targeting the Endocrine System to Optimize Treatment Outcomes for Anxiety, Fatigue, & Mood Disorders” by Dr. Kristen Allott (October 2021)

Dexcom

- www.dexcom.com
- Dexcom G6 CGM



Dexcom

www.dexcom.com

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Labs for Testing Cortisol and Names

- Diagnostechs (Diagnostechs.com) Adrenal Stress Index
- Genova Diagnostics (www.gdx.net) Adrenocortex Stress Profile
- Thorne (Thorne.com) Stress Test

Diagnostechs

Diagnostechs.com

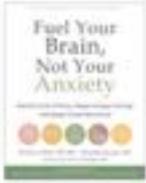
Genova Diagnostics

www.gdx.net

Thorne

www.thorne.com/

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For handouts, worksheets and resources:
<https://www.kristenallott.com/aappn>

Free handouts, worksheets and resources

www.kristenallott.com/aappn

AAPPN Handout Packet

https://www.kristenallott.com/s/Handout-Packet-for-AAPPN-2021_cc_compressed.pdf

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